MINERAL RESOURCE UTILIZATION AND REGIONAL BACKWARDNESS:

A CASE STUDY OF THE SOUTH-EAST RESOURCE REGION OF INDIA

(1857 – 2010)

Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirements for the award of the Degree of

MASTER OF PHILOSOPHY

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Dedicated to Baba and Maa

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DECLARATION

I, Tanushree Kundu, hereby declare that the dissertation entitled "**Mineral Resource Utilization and Regional Backwardness: A Case Study of the South-East Resource Region of India, (1857 – 2010)**" submitted by me in partial fulfilment for the degree of Master of Philosophy of Jawaharlal Nehru University, New Delhi, is my bona fide work and may be placed before the examiners for evaluation and it has not been submitted so far in part or in full, for any degree or diploma of this University or any other University.

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FORWARDED BY

We Recommend that this dissertation be placed before the examiners for the evaluation.

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I dedicate this endeavour to my father whose enduring support, encouragement and inspiration to persistently work hard with complete sincerity has shaped my individuality and my mother who is not only the source of my very entity but has been the eternal spring of immense love, care and faith in my life. I am thankful to my younger brother Somen Kundu whose mature suggestions surpassed my life's experiences towards dealing with work pressures and stress situations during the arduous phases of this work. I am extremely grateful towards my friend Prashant Kumar Arya for his constant support and motivation during the rigorous process of this work and deeply acknowledge him for the entire cartographical guidance and assistance for dealing with archival maps which has strengthened my work further.

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26.07.2012 **Tanushree Kundu**

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List of used Abbreviations

Abbrev.	Details
B.C.C.L.	Bharat Coking Coal Limited
C.C.L.	Central Coalfields Limited
C.I.L.	Coal India Limited
C.M.A.L.	Coal Mines Authority Limited
C.M.P.D.I.	Central Mine Planning and Design Institute
D.V.C.	Damodar Valley Corporation
E.C.L.	Eastern Coalfields Limited
E.I.R.	East Indian Railway
G.S.I.	Geological Survey of India
H.C.L.	Hindustan Copper Limited
H.S.L.	Hindustan Steel Limited
I.B.M.	Indian Bureau of Mines
I.I.S.C.O.	Indian Iron and Steel Company
M.C.L.	Mahanadi Coalfields Ltd.
M.E.C.L.	Mineral Exploration Corporation Ltd
N.A.L.C.O.	National Aluminium Company Limited
N.C.D.C.	National Coal Development Corporation
N.C.L.	Northern Coalfields Ltd.
N.M.D.C.	National Mineral Development Corporation
N.M.I.	National Mineral Inventory
O.M.S.	Output per Man-Shift
S.A.I.L.	Steel Authority of India Limited
S.C.O.B.	Steel Corporation of Bengal
S.E.C.L.	South Eastern Coalfields Ltd.
T.I.S.C.O.	Tata Iron and Steel Company
W.C.L.	Western Coalfields Limited

Chapter 1:

Introduction

Chapter 1:

Introduction

1.1 Statement of Problem:

Contextualizing perennial Regional Backwardness amidst enduring Resource Utilization in the resource regions of developing countries entails a comprehension of its causal factors in a historical perspective. The significance of a historical approach rests in uncovering the "*potentially* relevant factors" and "*potentially* significant combinations among them" which relates to the "current problem" of regional backwardness.[1]

The terms "Developed", "Underdeveloped" or "Backward" have been variedly defined and understood. The consideration of "development" in terms of "maximization of all available resources"[2] shall end up designating all the countries or regions as "underdeveloped" because absolute efficient utilization of all existing resources is a near impossibility. Therefore defining these terms is done "on a comparative basis"[3] or what **Gerschenkron (1952)** designates as "*relative backwardness*"[4]. Given the multidimensionality and lack of absolute standards defining *Backwardness*, the Regional Backwardness under consideration here is strictly in the economic sense. Backwardness or Underdevelopment can be comprehended corresponding to "reasonably clearly defined *Potentialities*".[5] Natural resource endowment and availability comprises of an integral part of the "potentiality". If development deficit exists simultaneously with the "*potentiality*" for such development, then the region can be designated as "*economically underdeveloped*"[6] or backward.

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[1] Gerschenkron Alexander (1952): "Economic Backwardness in Historical Perspective" in Bert F. Hoselitz (ed.), *The Progress of Underdeveloped areas*, The University of Chicago Press, Chicago, pp. 4

[2] Ginsburg Norton (1957): "Natural Resources and Economic Development", *Annals of the Association of American Geographers*, Vol. 47, No. 3, September 1957, pp. 198

[3] *Ibid*, pp. 198

[4] Gerschenkron (1952), *Op. Cit.*, pp. 5

[5] Fisher Joseph L. (1964): "The Role of Natural Resources" " in H.F. Williamson and J.A. Buttrick (ed.), *Economic Development: Principles and Patterns*, pp. 32.

[6] *Ibid.* pp. 32

As per the general conception, such underdeveloped areas, potentially endowed with economically useful natural resources, are in a better position to accelerate their development. The pre-conditions for such development exists in "*appropriate policies*" such as "employment and training of local people", sustained exploration, "permanent capital improvement of the area, wide distribution of gains from such development"[7] etc. With these accompanying policies, mineral exploitation can serve as the "*nucleus for economic development*"[8] and engine of economic growth as has been the case in most developed countries like Britain where the mineral resource endowment heralded the golden era of economic development. However, experiences of the developing countries have been on the contrary, and Resource *Utilization* and *Regional Backwardness* nexus has rather been the characteristic uniqueness in most Resource regions of the developing countries including India which has undergone a process of "*Arrested Economic development*".[9]

In the South East Resource Region of India, i.e. the region under investigation, an acute and persistent deficiency of such "*appropriate policies*" have led to an "*unbalanced*"[10] development which has failed to bring forth an economic and consequential overall regional development scenario worthy of its kind. Occurrence of mineral resources is considered as a boon for any given region, but unfortunately the South East Resource region has suffered the brunt of it, the *bane of abundance*, resulting into "*poverty amidst plenty*". The causality behind the emergence of this region as a *resource rich-yet-perennially backward* section of the country must be sought in its historical evolution, commencing from the very inception of development process in the region, the roots of which can be traced back into the later half of the nineteenth century i.e. during the late colonial period when the mineral resource regions surfaced into the foreground.

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[7] *Ibid.* pp. 33

[8] Neal S. Zank (1995): "Privatizing the minerals sector", *Natural Resources Forum*, Vol. 19, No. 3, pp. 217

[9] Helen B. Lamb (1964): "India: A Colonial Setting" in H.F. Williamson and J.A. Buttrick (ed.), *Economic Development: Principles and Patterns*, pp. 461.

[10] Fisher J.L. (1964), *Op. Cit.*, pp. 33

With the British infiltration and Imperialist expansion, the impetus for commercial exploitation of the minerals in this resource region came from without. This had intense implications for the economic development of this region because the initial tempo and direction of development was determined by the British interests, who intended not to pioneer the regional economic growth but merely to acquire cheap sources of raw materials to feed their growing industrial needs. Therefore, the process and pattern of mineral resource exploitation in the Resource region followed the demands of an alien economy rather than indigenous development. The introduction of railways in this region, which was obviously not in response to the internal needs of either traffic or trade and commerce but was dictated by the needs of British administrative and imperialist strategy,[11] opened up large vistas of territory affluent in mineral resources for exploitation and foreign investment.

As a consequence of the new extractive industry imposed on the region but serving the purpose of the metropolitan economy, with marginal employment of its native population, the scope of this prosperous region was restricted in the form of an "*economic enclave*"[12] or rather a "*mining enclave*"[13] which set the ball rolling for the pattern of economic development in this region for the subsequent decades. This enclave character handicapped the economic growth and muffled the regional development process to an extent that the steel plants and industrial towns in a much later stage were equally isolated. The "mining enclave" continue to exist in the post Independence period, if not entirely in the same form but in the same spirit under the impact of *"internal colonialism"*[14] and is on its way of becoming a perpetual reality under the Neo-Liberal era. While the imperialists believe that the "empire heralded modernity in India", the nationalist thinkers linked the existing backwardness to the Colonial rule which heralded underdevelopment in the rich lands in the name of

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[11] V.B. Singh (1970): *Indian Economy: Yesterday and Today* , People's Publishing House, New Delhi, pp. 4-5

[12] Rothermund Dietmar (1978): "The Coalfield – An Enclave in a Backward Region" in Dietmar Rothermund and D.C. Wadhwa (ed.), *Zamindars, Mines and Peasants*, Manohar Publications, New Delhi, pp. 3

[13] *Ibid.* pp. 6

[14] *Ibid.* pp. 2 - 4

modernity. Even Karl Marx admitted that the "modernity came with a cost".[15] Nothing has ever seemed to change for the peripheral hinterlands which continue to remain persistently backward, ever since the opening up of the resource region. It is in this context of the perennial regional backwardness associated with the dynamics of the resource utilization process that the present study desires to proceed.

1.2 Literature Review:

The process of economic development in developing countries became the epicentre of social science research, more so in the post Second World War period. The early 1950s witnessed the rise of a bulk of outstanding literary work in this field which set the tune for future research. **Hoselitz** ed. (1952) *The Progress of Underdeveloped Areas*, **Rostow** (1952) *The Process of Economic Growth*, **Viner** (1952) *International Trade and Economic Development*, **Frankel** (1953) *The Economic Impact on Underdeveloped Societies*, **Arthur Lewis** (1955) *The Theory of Economic Growth*, **Buchanan** and **Ellis** (1955) *Approaches to Economic Development*, **Kuznets, Moore** and **Spengler** eds. (1955) *Economic Growth: Brazil, India and Japan*[16] etc are the few to be mentioned amongst the vast storehouse.

The broad discussion revolved around the pivot issue of whether the economic development models of developed countries can be replicated for the growth of developing countries. The Marxian generalization pronounced that it is history of the developed countries which paves the way for the development of the backward countries. "The industrially more developed country presents to the less developed

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[15] Roy, Tirthankar (2002): "Economic History and Modern India: Redefining the Link", *Journal of Economic Perspectives*, Volume 16, No. 3, pp. 109

[16] **Hoselitz Bert F**, ed. (1952): *The Progress of Underdeveloped areas*, The University of Chicago Press, Chicago; **Rostow W.W.** (1952): *The Process of Economic Growth*, W.W. Norton, New York; **Viner Jacob** (1952): *International Trade and Economic Development*, The Free Press, Glencoe; **Frankel S.H.** (1953): *The Economic Impact on Underdeveloped Societies*, Basil Blackwell, Oxford; **Lewis W.A.** (1955): *The Theory of Economic Growth*, George Allen and Unwin Ltd, London; **Buchanan N.S. and Ellis H.S.** (1955): *Approaches to Economic Development*, Twentieth Century Fund, New York; **Kuznets S., Moore W.E. and Spengler J.J.**, ed. (1955) *Economic Growth: Brazil, India and Japan*, Duke University Press, Durham.

country a picture of the latter's future"[17] But **Gerschenkron (1952)** argued in his theory of ***"relative backwardness"*** that "the development of a backward country may, by the very virtue of its backwardness, tend to differ fundamentally from that of an advanced country"[18]. This stands true for most of the developing countries where the nature, process, pattern and rate of economic growth has digressed and varied with each unit.

1. 2. 1 Natural Resources and Economic Development -

Natural Resources comprises of an integral factor in the course of economic development. According to **Fisher (1964),** they exert decisive impact in various successive stages of the evolutionary process of economic advancement, from providing food and fuel in the early subsistence stage to complex minerals and raw materials in the industrially highly diversified or specialized levels. The precise role that the natural resources perform in the process of economic development depends largely upon the existing level of development of the region, nature of available resources, capital and human resources which includes skill and technology. [19]

Ginsburg (1957) derives simple generalizations regarding the role of natural resources in economic growth. He points out that for any country or region planning for a rapid economic growth, the ownership of substantial and varied natural resources is always a major advantage. The endowment of accessible natural resources not only serves as catalyst for capital accumulation but is also a symbol of "over-all regional capability". The degree of importance of natural resources in economic development varies with the stages of development. In case of developing countries, the significance of the indigenous resource base is magnified in the absence or paucity of other factors like huge capital supply, skilled labour force, sophisticated technology etc. [20]

Natural endowment of potentially valuable mineral resources like coal and iron-ore are the chief economic asset of any developing country as the opportunity to accelerate growth multiplies. Utilization and indigenous development of the mineral

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[17] Marx, Karl, *Das Kapital* (1st ed.), Vol. I, Preface. quoted in Gerschenkron Alexander (1952), *Op cit,* pp. 4

[18] Gerschenkron (1952). *Op. Cit.*, pp. 5

[19] Fisher J.L. (1964), *Op Cit,* pp. 29

[20] Ginsburg Norton (1957). *Op Cit,* pp. 211 -212

resources consists of immense potential to proliferate backward and forward linkages in the resource region and its regional economy by rendering comparative advantage, economies of scale, and external economies. Direct linkages develop in the form of immediate job creation in the mining sector and indirect impacts are prominent in the field of infrastructure development which acts as a precursory to mineral extraction from comparatively inaccessible mineral bearing regions.[21]

The role of natural resources in economic development is anything but simplified in the sphere of developmental studies. From being a rather neglected theme in the field of economic geography, role of natural resources in regional development has acquired various dimensions. Identified as the **Staple theory of Regional Development** by Canadian economic historians **Harold Innis (1956)** and **W.A. Mackintosh (1964),** it went on to become a subject of academic debate between the Dependency theorists and Comparative Advantage theorists[22] and being controversially labelled as "Curse of natural resources"[23] or "Resource Curse"[24]. **Gunton (2003)** in his review of Canadian Staple theory of natural resources and economic development remarks that while **Mackintosh (1964)** staple tradition was associated with the optimist Comparative advantage school which believe that resources can accelerate development as they form an important asset in providing comparative advantage to resource-rich developing countries; **Innis (1956)** followed the dialectically pessimist Dependency tradition which affirmed that resource abundance may form an obstruction to development by installing detrimental economic dependence. The Dependency theorists contended that extraction of natural resources or staples in developing countries, by the virtue of its requirement of high capital investment, is often carried out by foreign entrepreneurs of advanced countries. Such an alien domination of resource extraction results in a 'truncated' regional economy, conspicuous by the absence of forward-

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[21] Neal S. Zank (1995), *Op Cit*, pp. 216 -217

[22] Gunton Thomas (2003): "Natural Resources and Regional Development: An Assessment of Dependency and Comparative Advantage Paradigms", *Economic Geography*, Vol. 79, No. 1, pp. 67

[23] Sachs. J.D. and Warner. A.M. (2001): "The curse of natural resources", *European Economic Review*, Vol. 45, No. 4–6. pp. 827–838.

[24] Auty. R. M. (1993): *Sustaining development in mineral economies: The resource curse thesis*, Routledge. London

backward linkages in the resource region and the profits being 'leaked' to the foreign economy.[25]

While **North's (1955)** Export-led growth theory and **Rostow's (1960)** Stages of growth theory sided with the Comparative advantage paradigm, several studies built on their pioneer works to integrate and synthesize the dialectical paradigms of Comparative advantage and Dependency. **Watkins (1963)** ingeniously blended the two and emphasized on diversification of the economy by developing intra regional linkages in order to evade the limitations of resource based development. Similar synthesizing discussions ensued in the international academic arena with **Hirschman (1981), Walker (2001), Findlay and Lundahl (2001)** asserting the positive significance of resource based development.

The role of natural resources in economic growth in case of developing countries rich in natural resources have been considered extensively by **Auty** (1990, 1993, 1995, and 2001), **Auty and Mikesell** (1998), **Gelb** (1988), **Sachs and Warner** (1995, 1997, 1999, 2001), **Gylfason et al.** (1999) etc. The point of intersection among all these studies rests in the inverse relationship established between the abundance of natural resources and rate of economic growth. On the basis of this, **Auty (1993)** formulated the **"Resource Curse"** theory in which he argued that despite the fact that natural resources become an obstacle in the developmental process in various ways, they do have the potential for yielding sustained growth which is dependent on appropriate public policy and efficient utilization of resource earnings. Other decisive factor which comes into play is the political economy of the region or the type of political state which determines the linkage between 'natural resource endowment and economic outcomes'[26].

Auty's theory was repeatedly reaffirmed by **Sachs and Warner (2001)** as the **"Curse of Natural Resources"** where empirical investigations asserted that resource abundant economies have a tendency of slow economic growth. A universally accepted

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[25] Gunton Thomas (2003), *Op Cit*, pp. 69

[26] Auty, Richard M. and Gelb, Alan H. (2000): "The political economy of resource abundant states", Paper prepared for the Annual Bank Conference on Development Economics, Paris, pp. 2

justification for this curse is however absent but Sachs and Warner (2001) puts it as a "crowding-out logic" as in natural resource abundance may have a tendency to *crowd-out* manufacturing activities (Sachs and Warner: 1995, 1999 and Sachs: 1996), or education (Gylfason et al.: 1999 and Gylfason: 2000), or entrepreneurial activity or innovation. As a result the resource rich regions may suffer from poor technological innovation, lesser entrepreneurial endeavours, and slower growth rates. Further, **Auty (2000)** indicates yet another type of *crowding* in the form of political processes which determine the approach and utilization of resources in the resource-rich regions.[27]

1. 2. 2 Resource Development and Backwardness: A theoretical insight

A search for the causal factors of backwardness in the resource regions of the developing countries requires a retrospection of the theoretical paradigms. The need to study the process of development in the developing countries separated from the models and experiences of the advanced countries have been justified beyond doubt in various studies.[28] While Latin America abounds in theoretical research as well as case studies in this field, which was later extended to Africa[29], studies dealing with resource utilization and their impact on the economic and regional development of the resource region are however still meagre for mineral belts of India. Although the nature of backwardness in every developing region may vary to a great extent depending on its social, political and cultural structure, a chord of similarity strikes among those countries which have undergone *arrested economic development*[30] or *dependent development*[31] or *underdevelopment*[32] in the form of *colonies*.

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[27] Sachs, J.D. and Warner, A.M. (2001), *Op Cit*, pp. 835

[28] Gerschenkron (1952); Hoselitz Bert F (1952); Frankel S.H (1953); A.G. Frank (1966) etc

[29] Walter Rodney (1972) extended the idea of Capitalist Underdevelopment to Africa by his work – Rodney Walter (1972): *How Europe Underdeveloped Africa*, (London and Dar es Salaam: Bogle - L'Ouverture and Tanzania Publishing House).

[30] Helen B. Lamb (1964), *Op Cit*, pp. 461

[31] Chilcote, R.H. (1978): "A Question of Dependency", *Latin American Research Review*, Vol. 13, No. 2, pp. 60

[32] Frank, A.G. (1968): *Development and Underdevelopment in Latin America*, Monthly Review Press, New York:

The European domination through exploitation of natural resources, resultant underdevelopment in the colonies and their persistent status as *underdeveloped* or *backward* or the nominally upgraded 'developing' regions have been extensively and intensively studied by the Latin American "*Dependentista*" or Dependency School of development thinkers. **Andre Gunder Frank (1966)** in his seminal work "*The Development of Underdevelopment*" proposed that the present developing world is still *underdeveloped* due to its age long involvement in the process of advancing World Capitalist development and that such an *underdevelopment* in the backward areas of the developing regions is the outcome of the solitary historical process of the development of Capitalism which also led to progress in the developed world.

While stressing on the importance of an historical outlook, dealing with the economic and social history of the regions, in studying the contemporary backwardness, **Frank (1966)** remarked that the existing underdevelopment is not a manifestation of the region's exclusive socio-economic, political and cultural structure but the product of the past and long-standing relations between the developed *metropolis* and its underdeveloped economic colonies or *satellites*. He perceived this *metropolis-satellite* structure and the development of the Capitalist system as the root cause for persistent backwardness in the developing countries. While refuting the "*Dual Society thesis*", which believed that certain parts of the developing countries remained backward due to their relative isolation and lack of Capitalist influence whereas the other parts modernized with the Midas-touch of the 'outside' Capitalist world, Frank argued that the expansionist character of the Capitalist system left no region or sector untouched and that the lingering traditionalism of native institutions do not partake in explaining the causality of persistent backwardness in these regions as much as the advancing Capitalism does. He firmly believed and confirmed that the regions which are perpetually the most underdeveloped are the same regions which were closely linked to the metropolis in their past in the form of ultimate exporters of primary natural resources. The complex *metropolis-satellite* structure of Capitalism, which gave rise to national, regional and local metropolis which ultimately served as satellites to the World metropolis or the Capitalist core, worked as a suction mechanism to extract and exploit the capital or economic surplus out of the '*satellized*' resource regions. Such a '*monopolistic structure*' and exploitative relationship resulted in "super-satellite development" of these resource regions which in contemporary times are suffering from

"ultra-underdevelopment".[33] **Frank (1967)** in his thesis of Capitalist development of underdevelopment blamed the structure of Dependent Capitalism, which thrived in the resource regions of the developing world as a corollary of their *satellized* incorporation in the World Capitalist system, as the root cause of perpetual regional backwardness or underdevelopment in these regions.

Among the various theoretical propensities of Dependency, **Theotonio Dos Santos's (1970)** concise explanation of its essential principles stands well acclaimed. He describes dependency as "a situation in which the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected".[34] Such an interdependent relationship adopts the *dependency* character when the *dominant* countries continue to develop whereas the *dependent* countries have a limited development based on the upshot of progress of the former which may have a constructive or destructive impact on the development of the dependent ones. **Dos Santos (1970)** perceives the internal backwardness prevailing in the developing regions as a product of their incorporation in the World economy which operates on the lines of "unequal" relationships, where dominant countries develop at the cost of dependent ones, and "combined development" where a combination of such inequalities are coupled with transfer of natural resources and economic surplus from the dependent resource regions to advanced countries. He echoed **A.G. Frank's (1966)** disposition and concluded that "the alleged backwardness of these economies is not due to a lack of integration with capitalism but that, to the contrary, the most powerful obstacles to their full development come from the way in which they are joined to this international system and its laws of development".[35]

Dos Santos (1970) further elaborates three basic forms of dependence: a) Colonial; b) Financial – Industrial; and c) Multinational. Colonial Dependence, according to **Dos Santos (1970),** was characterized by the dominance of European colonialist state along with commercial and financial capital over the colonies in the

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[33] Frank, A.G. (1970): "The Development of Underdevelopment", in Robert I. Rhodes, *Imperialism and Underdevelopment,* Monthly Review Press, New York

[34] Dos Santos, Theotonio (1970): "The Structure of Dependency", *American Economic Review,* Vol. 60, pp. 231

[35] *Ibid.* pp. 235

form of 'trade monopoly' coupled with monopolized control over the natural, mineral and human resources. Financial – Industrial dependence in which expansion of the hegemonic centres was materialized by controlling the huge capital and investing it in a 'productive structure' in the dependent "export economies"[36] which were geared to mere producing and exporting their natural resources in the form of raw materials to the consuming hegemonic centres. Such a dependent development was designated as "foreign – oriented development" by the Economic Commission for Latin America (ECLA). A yet another form of "new" dependence has emerged after the Second World War and is operational in the contemporary times in the form of large multinational corporations which operate in the developing countries by investing in industries which cater to the domestic markets of these countries. Such a "technological-industrial" dependence has the potential of restricting the size of local markets, creating income inequality and ultimately limiting the development of the newly- industrializing-independent countries. The common string in all the above forms of dependence is an alien economy controlling the 'international relations' as well as 'internal structure' of the developing countries in some form or the other.[37]

A parallel school of thought existed in the form of evolutionary Diffusion model, which was contradictory to the *"Dependentista"* in its fundamental tenets, had a very restricted perimeter for underdevelopment and delimited it in terms of per capita income, illiteracy, inequality, political instability etc. According to **Chilcote (1978)** it was based on the belief that underdevelopment was such a situation which every country including the present advanced ones have been in some phase of their economic development and that through diffusion of foreign capital, technology and organizational methods in the form of government aid programs, financial institutions and private corporations, development will gradually evolve and trickle down from the advanced capitalist countries to the backward regions of the developing countries. The diffusionists opined that just as feudal England progressed with the rise of capitalism,

[36] I.V. Lenin designated these kind of economies as "Export economies" in his work: Lenin, I.V. (1964): *The Export Economies*. Harvard University Press, Harvard.

[37] Dos Santos, Theotonio (1970). *Op Cit.*, pp. 232

the backward areas will rise over and above their backwardness by the Midas-touch of Capitalist forces.[38]

The Diffusion model was heavily criticised by the Dependency protagonists. **Frank (1966),** based on historical perspective, argued that: "neither the past nor the present of the underdeveloped countries resemble in any important respect the past of the now-developed countries" and that "the now-developed countries were never *under*developed, though they may have been *un*developed."[39] He held the diffusion of capitalism responsible for the prevailing underdevelopment and that economic development in these backward regions can only occur on liberation from the diffusionist relations.

1. 2. 3 Contemporary issues in Resource utilization in Developing Countries -

The process of exploitation and utilization of resources has undergone substantial transformation in the contemporary times. Although the 'means' have changed the 'end' tends to remain the same, while there is a 'change' in the methods and process of economic extraction, a 'continuity' exists in the pattern of extraction from the developing regions to the advanced ones. The "New" dependency of Dos Santos, within which a new "technological-industrial" dependence emerged during the post war period with investments by Multinational Corporations, followed by the New International Division of Labour, wherein reorganization of production locations took place, marked the beginning of the transition. The dislocation of production centres in the developed countries and their relocation in the developing regions marked the end of classical dependence. However the fundamental effect continued to remain the same. **Evans (1979)** explained that the establishment of production centres in the peripheral developing region was marked by the conspicuous absence of the traditional "multiplier effect" as the "disarticulated" peripheral economies continued to depend on the centre for technology, equipments and capital goods. **Furtado (1969)** labelled such handicap as "structural deformation" of the peripheral economy.

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[38] Chilcote, R.H. (1978): "A Question of Dependency", *Latin American Research Review*, Vol. 13, No. 2, pp. 55 - 56

[39] Frank, A.G. (1970). *Op Cit.* pp. 5

The mineral resource sector also witnessed new patterns of economic ownership. According to **Cardoso (1972)** the new forms of economic dependency were characterized by joint venture enterprises consisting of 'local state capital', 'private national capital' and 'monopoly international investment', as a result, unlike classical imperialism, foreign investment ceased to remain a simple synonym of exploitation. **Cardoso (1972)** further elucidated that the contradiction between *dependency, monopoly capitalism* and *development* began to fade away and gave way to a form of *dependent capitalist development* in the developing countries which were incorporated into the new form of 'monopolistic expansion'. He argued that while the pattern of contemporary 'international capitalist expansion' and control of dependent economies exhibit a metamorphosis, the nature of economic relationship remains grossly imperialist. The corollary impact was witnessed as the transpiration of an "internal colonialism" in the developing countries. **Cardoso** referred to an 'internal structural fragmentation' in the mineral economies of Argentina, Brazil, Mexico, South Africa and India wherein the developed regions within these countries were linked with the international capitalist system whereas the backward regions of these dependent countries acted as "internal colonies". Under such "Structural Dualism" regional inequality is bound to increase and 'internal differentiation' destined to deepen.[40]

Rothermund (1978) stressed on the existence of a "persistent economic dualism" in case of India and other countries with similar development conditions in the past under the colonial rule. Based on the evidences of an Indian Coalfield, he explained that the advanced – urban –industrial regions were separated from the backward-rural regions by a firm threshold instituted during the colonial regime and the elimination of which has largely been an unattainable task for the developing countries even after decades of Independence. The perseverance of such an economic dualism is substantiated by the enduring existence of economic "enclaves" which can be sharply differentiated from their hinterlands and the furtherance of which have been maintained even in the post independence period by the entrepreneurs of the advanced regions. The profits from the Coalfield, instead of "leaking abroad" are invested in the relatively developed sub-regions of India rather than in the backward hinterlands of the mining

[40] Cardoso, Fernando Henrique (1972): "Dependency and Development in Latin America", *New Left Review*, Vol. 74, pp. 88 – 90.

region. Rothermund characterizes such magnetism of advanced regions and simultaneous neglect of backward regions as a universal feature of economic development marred by dualism and locates the present case of the Indian coalfield under the purview of "Internal Colonialism".[41]

The dynamics related to mineral resource development witnessed a plethora of issues regarding approaches to develop the minerals sector in the resource rich developing countries and debates related to policy reforms. Advocates of the private sector blame the overextended role of public sector and restrictions on private sector, in the context of control and utilization of mineral resources, for the slow growth in the developing countries. In their perception, the developing countries are incapable of modernizing their economies and attain high growth rates without the assistance of the private sector mainly large mining companies and multinational corporations. They opine that inclusion of private sector in the form of local private investment, foreign investment and privatization in development strategy will lead to economic efficiency and self-sustained growth. Privatization has a wide array of forms ranging from change of ownership status, transfer of decision making authority from public to private sector, resulting in either a 'complete or partial divestiture', public-private joint ownership etc.[42] Such contemporary issues of policy reform or liberalizing economic policies, privatizing state owned mineral companies, joint ventures, foreign investments focus completely on accelerating the economic growth and lack profusely in welfare dimension. These policy issues are being implemented far and wide in the developing countries to the detriment of intensifying regional backwardness in the mineral resource regions which suffer from 'structural' and 'persistent economic dualism' and "internal colonialism".

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[41] Rothermund Dietmar (1978), *Op Cit*, Introduction pp. xix - xx and pp. 3 – 4.

[42] Zank, Neal S. (1995): "Privatizing the minerals sector", *Natural Resources Forum*, Vol. 19, No. 3, pp. 215 - 221

1. 2. 4 Regional Backwardness in Mineral resource regions: Experiences from Developing countries –

If theoretical framework forms an integral part on which the present study is to be based, then together with examination of the theoretical paradigms, relating them to the actual ground experiences become an essential component as well. In this case Latin America forms excellent experimental ground where various studies have been conducted to apply the theoretical assumptions. Although the Indian case exhibits similar conditions, a profusion of studies dealing with backwardness of the resource regions is however absent.

Stanley and Stein (1970) in their phenomenal work "The Colonial heritage of Latin America: Essays on economic dependence in perspective" have produced a vivid account of the colonial economy of Latin America and the impact of this colonial heritage on the post independent economic development of the Latin American countries. They have portrayed the economic dependence, underdevelopment or backwardness along with the "internal chasm" between the metropolises and the rural hinterlands rising from the acute economic polarization under the colonial auspices and its blatant continuation in the form of persistent economic dependence and internal dichotomies even after a century of independent national existence. The sustained backwardness of the dependent-peripheral-colonial region has been viewed in the light of the lingering colonial legacy.

The Spanish colonialism witnessed the development of colonial mining sector producing high value minerals and a frontier mining economy, as early as in the sixteenth century, for maintaining the metropolitan economy. The private entrepreneurship with limited local profits resulted in the mining boom of 1545-1610 on the Mexican Plateau and Central Andes and by 1700; the Spaniards had established a series of mining cores in Mexico and Peru. [43] By the mid-nineteenth century, which marked the end of the colonial rule in Latin America, there was negligible progress in the spatial expansion of economic development and major economic activities remained

[43] Stanley, J. and Stein, Barbara H. (1970): *The Colonial Heritage of Latin America: Essays on Economic Dependence in Perspective*. Oxford University Press, New York, pp. 28 - 32

highly concentrated in the developed cores of Mexico and Peru. **Odell and Preston (1973)** highlighted yet another polarization around the coasts which was distinctively marked by important contact points between the metropolitan powers of the North Atlantic and the local administrations. The vestige of the geographically limited economic development of Latin America during the colonial period had long-lasting influence on the newly independent countries and the colonial centres subsequently became the capital cities and development pivots of the national economies and with the continued 'initial advantage', emerged as the "core regions" in Latin America's contemporary economic geography. Such a spatial concentration gave birth to severe regional imbalances and backwardness in the peripheries which have been sustaining to the day.

The early nineteenth century belief held that the introduction of external capital and technology would kindle the development of Latin America and help get rid of colonial imprints. **Stanley and Stein (1970),** quoted the works of **Alexander Von Humboldt (1807)** on Mexico which seconded such a belief, opined on the contrary that escaping the heritage of colonial dependence is not a ubiquitous phenomenon for the ex-colonial nations. While analysing the historical dimension of economic change in Latin America, **Stanley and Stein (1970)** noted the failure of Latin American attempts of creating sustained economic growth as indicator of its strong colonial legacy, which has effectively delayed the transformation of these "externally oriented export economies" into modernized societies. It took Latin America more than a century after its independence to begin economic modernization through industrialization. The marked absence of an autonomous, self-sustaining economy achieving economic growth through industrialization and diversification, led **Stanley and Stein** to designate the Latin American economy as "**Neo-Colonial**" wherein the colonial patterns of production, capital accumulation, investment, income distribution and expenditure sustained long after attaining political autonomy.[44]

Odell and Preston (1973) emphasized the post independence socio-economic environment and processes in Latin America in a geographical perspective, which was marked by foreign and non-Spanish entrepreneurial investment in the resource rich

[44] *Ibid.* pp. 124 - 137

region to extract its mineral deposits for export to Europe and North America. They provided with an account of foreign exploitation of Latin America's Mineral wealth in the later nineteenth and first half of twentieth century.

The nineteenth century development of mineral resources was marked by the exploitation of Nitrates in **Chile** which followed by copper created demands for rail transport and the expansion of which bestowed the arid regions of Chile with matchless transport infrastructure. However, the establishment of such an extractive industry proved more beneficial for the entrepreneurial economies of Britain and United States than to Chile itself. This led to the "Chileanization" followed by nationalization of the copper industry. In the mid-nineteenth century the Chilean copper industry led supreme with sophisticated technology but by 1880s the decline began with Chile being unable to respond back. The probable factors forwarded for the Chilean "lag" ranges from policy failures to capital requirements. **Wright and Czelusta (2003)** noted that Chile's backwardness was not due to resource abundance but the time lag in developing its resources potential and such a delay can be accounted to the narrow outlook of Spanish and Portuguese colonizers who rarely looked beyond gold and silver to other minerals' development. However the revival of the Chilean copper industry in the first half of the twentieth century was characterized by enhancement of domestic technical expertise followed by nationalizations of 1971 and extending private rights in mining concessions by 1983 while retaining the majority share in copper production with the state-owned copper mining company. Ever since 1990 Chile has witnessed tremendous economic growth, with the mining sector especially copper remaining an integral constituent of it and the state owned mineral developing country being the driving factor.[45]

The petroleum industry in Latin America, in the words of **Odell and Preston (1973),** presents the most blatant example of "enclave" formation wherein the foreign-owned-controlled extractive industry remains alienated and insulated from the rest of the backward region and national economy. **Mexico** witnessed the rise of "petroleum enclaves" in the later half of the nineteenth century when foreign oil companies, mainly

[45] Wright, G. and Czelusta, J. (2003): "Mineral Resources and Economic Development", Paper prepared for Conference on Sector Reform in Latin America, Stanford Centre for International Development, November 13-15, 2003, pp. 8-9 and 18-19.

of Britain and U.S., obtained land concessions for extracting petroleum in the Gulf coast and produced oil not for the domestic economy but for selling it abroad. In order to gain short term profits, they went to the extent of intentionally over-exploiting the oil fields at the expense of future sustainability. This led to the Mexican revolution of 1910, which reflected growing concern for the backward areas of the country. In 1938, the Mexican government confiscated the oil companies and while re-establishing the state sovereignty over alienated territory, placed the entire oil industry under national ownership. The state took control of the enclaves which have for long remained economically as well as politically separated.

Another Latin American country with similar experience is **Venezuela**, where the oil industry was completely under foreign control and the production and export of oil remained detached from the domestic needs. The 'oil colonialism' gave rise to "enclaves of modernization" and "isolated islands of economic development" amidst backward regions. The modernization influence ended at the enclave boundaries, producing negligible intra regional linkages in terms of employment and transport facilities, rendering the entire periphery to survive at subsistence levels. These 'isolated islands' also lacked in functional relationship, specialized services and emergence of a settlement hierarchy.[46] **Rodriguez and Sachs (1999)** proponents of the "resource curse" thesis labelled the Oil-rich Venezuela as the world's "most tremendous development failures". It's rising significance ever since the mid 1920s witnessed a decline after 1970s which has been characterized by an array of causal factors ranging from "simple depletion of natural resource" to "resource abundance-slow growth" syndrome or 'Dutch disease'. **Wright and Czelusta (2003)** however remarks that backwardness or underdevelopment should be perceived within the ambit of "specific historical episode" and not as characteristics of resource development.

[46] Odell, P.R. and Preston, David A. (1973): *Economies and Societies in Latin America: A Geographical Interpretation*, Wiley-Interscience Publication, London, pp. 151 - 154

1. 2. 5 Mineral Belt of India: Studies in Regional Backwardness perspective -

The South East Resource Region of India, which is the prime mineral belt of India, has seldom been considered in totality, however, the constituent parts i.e. Jharkhand, Orissa and Chattisgarh have been extensively studied under a plethora of issues dealing with backwardness. Along with this, Chotanagpur region which roughly coincides with the mineral region has also attracted various research interests. Although the backwardness and ramifications arising from the development deficit scenario in this region have been widely dealt in various perspectives, explaining the roots of regional backwardness within the nature and process of resource utilization is an issue yet to be unravelled in its full potential.

The most pertinent research project conducted in this line of work is **Rothermund and Wadhwa ed. (1978)** "Zamindars, Mines and Peasants: Studies in the History of an Indian Coalfield and its Rural Hinterland" which studied the Dhanbad Coalfield (now in Jharkhand) as a mining enclave during the colonial period and the contrasting backwardness in its hinterlands. The historical approach undertaken in this study explains the emergence, growth, stagnation and depression of the enclave economy in the backward region which to a great extent explains the persistent backwardness in its immediate surrounding region.

The major path breaking research in this subject with a similar theoretical framework, which can be designated as the predecessor of the present work, was conducted by **Dwivedy Shubhra (1979)** in her unpublished dissertation[47] followed by her unpublished doctoral thesis **Dwivedy S. (1982)**[48]. She undertook an untiring ground work in this domain, paving the way for further research which unfortunately has rarely

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[47] Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi

[48] Dwivedy Shubhra (1982): "Utilization of mineral resources and spatial organization of mining enclaves in a colonial setting – A case study of the Mineral belt of South Eastern India (1850 – 1947)", Unpublished Doctoral Thesis, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi

been considered. She minutely studied the resource utilization process under the colonial regime and its corollary impact on industrialization, urbanization, infrastructure development, economic transformation etc as to whether the linkages created in the region have responded to the mineral resource development.

Other existing literature for the resource region depicts substantial research in the field of industrial development, mining displacement - marginalisation and tribal situation.[49] But resource-based development of the mineral rich region as prime research subject has remained quite a less treaded path for this region in the last few decades. **Karan (1953)** delineated nineteen economic regions in Chotanagpur based on their economic geography characteristics, regional pattern of mineral production and industrial development. **Misra (1959)** identified the localisation factors in a socio-economic perspective in the steel city of Jamshedpur. **Pandey (1970)** while accounting the history of Chotanagpur region also outlined various factors operational in the industrial growth and their impact on the growth of population in the cities of the region. **Pati (1993)** have tried to uncover the colonial roots of underdevelopment of Orissa taking into account the overall regional development ever since the colonial period. **Areeparampil (1996)** dealt with the impact of opening up of mines and expansion of mining activities on the indigenous population leading to their displacement. **Roonwal and Wilson (1998)** outlined the potential of India's mineral resources and critically analysed an amalgam of issues relating to the mineral sector in India ranging from the effectiveness of the domestic mineral industry, prospects of the Exclusive economic zones in the mining regions and foreign investment in the mining sector. **Nathan and Dayal (2009)** in their paper entitled "Resource curse and Jharkhand" considered the political economy perspective of resource use and backwardness in Jharkhand. They have talked about the politics involved in issuing licences for mineral resource extraction and consequential regional backwardness. **Das Keshab (2006)** in his paper "Underdevelopment by design?" blamed the political approach in the post independence and post liberalisation periods for the regional backwardness of Orissa. He explained the constant neglect of developing vital

[49] **Sengupta (1980), Corbridge (1988, 2000), Rao (2003), Maharatna and Chikte (2004), Firdos (2005). Prakash Amit (2007)** etc have remained involved with the dynamics in the mineral belt ranging from tribal livelihood, displacement, marginalisation issues to political economy perspectives.

infrastructure in Orissa as a major factor of its backwardness and held the quasi-federal government of India responsible for the regional deprivation rather the "blame-it-on-the-colonial-past syndrome". **Ahuja (2009)** in his book "Pathways of Empire: Circulation, 'Public Works', and Social Space in Colonial Orissa (C 1780-1914)" dealt with the history of transport in colonial Orissa and depicted how the colonial rule created prospects as well as aggravated regional transport and socio-economic imbalances.

1.3 Objectives:

In adherence with the central theme of the study under consideration and the research questions to be addressed, the following objectives have been outlined. The objectives shall act as the guiding framework within which the present study is intended to be carried out:

- The core objective is to trace out the historical roots of the persistent Regional Backwardness in the Resource region and to explore the causality of such Backwardness within the process of Development and Utilization of Mineral Resources in the study region.

- To study the distribution and development of the mineral resource base of the region and the approach undertaken towards its exploitation during each phase of its development.

- To analyse the consequential influence of mineral resource development on the pattern and process of industrial development, transport infrastructure development and urban development in the resource region, under colonialism, nationalised economy and neo-liberal era.

- To review the contemporary ramifications existing in the region, emerging from the nature of development process and as consequence of the persistent development deficit in the resource rich region.

1.4 Research Questions:

Given the scope of the present study which sets off at the backdrop of British imperialism, flows through the transformation into an independent, planned, mixed economy system and the transition into an open, globalized economy with the prime emphasis on the nature and pattern of resource utilization and the consequential regional development scenario; the following research questions are to be addressed in the upcoming chapters.

1. What have been *the approach* of the Imperialist and the National Government towards Mineral Resource Development, in general and towards the study region in particular and whether the resultant pattern has been beneficial towards the *indigenous development*?

2. Whether the mineral resource development and the *pattern and process of industrial development* been compatible and synchronized?

3. Has the subsequent *pattern of transport infrastructure* development in the region been geared towards establishing *regional linkages* or was oriented towards the objective of *resource drain*?

4. Whether the *utilization of the indigenous resources* proved *beneficiary to the urbanization process* in the region?

5. What are the apparent ramifications of the *development deficit* persisting currently in the *resource-rich-yet-perennially backward region* of India?

1.5 The Region:

The usual purpose of a study region is to merely serve as a case study under a theoretical framework. The region has to be representative of the broader socio-economic-political issue in question. But the spatial unit taken up for investigation in this case is a plethora of such issues in itself. This region has the capacity of fitting in a wide array of theoretical frameworks within its ambit. Thus, by escalating the region's

significance much beyond the scope of the present study, there is neither an attempt to distance the present study from the Systematic or General branch of geographical study nor declaring the study's proximity towards its dichotomous Regional counterpart, but simply trying to put the well identified - yet forgotten region into the limelight again.

The ***South East Resource region***[50] ***of India***, as it stands today, with its immense potential as a development impetus for the stagnating, perennially backward region of India, was drawn out way back in 1973, by the Planning Commission in association with the State Governments concerned, the Central Government and the Town and Country Planning Organization of the Government of India, for the development of resources and subsequent overall regional development of this *resource-rich-yet-backward* region of India. It constitutes the mineral bearing districts of Jharkhand, Orissa, Chattisgarh, parts of Madhya Pradesh and West Bengal. (Appendix I)

The region, christened as the ***South East Resource region*** by the Planning Commission, was delineated on the basis of physiography, climate, soil, land use pattern, mineral resource distribution, demographic attributes, levels of development pertaining to economic in nature and the linkages in terms of mineral resources within the region[51]. The apparent cohesiveness of this region is well explained by physical as well as human factors. Physiographically, the region roughly coincides with the Eastern Plateau Region of India and constitutes of the physiographic sub–regions of Chotanagpur Plateau, Baghelkhand Plateau, the Garahjat Hills or the Orissa Highlands, the Chattisgarh Plateau, Dandakaranya and the northernmost portion of the Eastern Ghats.[52]

These sub-regions together constitute the core of India's mineral resources. The entire area has a rich dominance of metallic as well as non-metallic mineral ores and energy resources, together with densely vegetated lands affluent in forest resources and perennial sources of well-heeled water resources. The Chotanagpur Plateau and the

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[50] South East Resource Regional Plan, Vol. I, Town and Country Planning Organization, Government of India, 1973

[51] *Ibid.* p- 485

[52] Singh, R.L. ed. (1975): *India: A Regional Geography*, National Geographical Society Of India. Varanasi.

Orissa Highlands abounds in mineral deposits such as coal found in the richest mines of Jharia-Raniganj, iron ore, mica, bauxite, copper, manganese and chromites. Dandakaranya has prolific deposits of iron ore in the Bailadila hills, besides huge deposits of quartz, bauxite, manganese and limestone. The Baghelkhand Plateau specialises in non-metallic minerals such as coal, limestone, bauxite and building stone.

Historically, it constituted parts of the British Provinces of Bengal, Bihar, Orissa and the Central Provinces. The region encompassed a total of 13 British districts and 25 Feudatory states which imparts this region an administrative complexity. The anthropocentric factors of this region's cohesiveness can be explained in its predominant tribal population base. It roughly forms the tribal belt of East India, including the tribal territories of the eastern parts of the Central Indian Tribal Belt. It inherits a common history of mineral as well as human resource exploitation and a legacy of *underdevelopment* from the colonial rule in India. It also constitutes the perennially backward region of India including a large number of the industrially backward districts.[53] This Region has undergone rapid regional development processes since independence in the form of development projects like multipurpose dams which in turn triggered social processes as well which led to redistribution of its indigenous tribal population in this *cul-de-sac*.[54]

[53] The Backward districts as identified by the Pande Committee (1968) set up by National Development Council, (Identification of Backward Areas, Planning Commission, Govt. of India,1969)

[54] A. Ahmad (1985): "A Regional Distribution Process and Redistribution of Tribal population in Mid – India" in L.A.Kosinki and K.M.Elahi (eds.) *Population Redistribution and Development in S. Asia*, Reidle Publishers Co., p.66.

Fig: 1.1 **Location of the South East Resource Region**

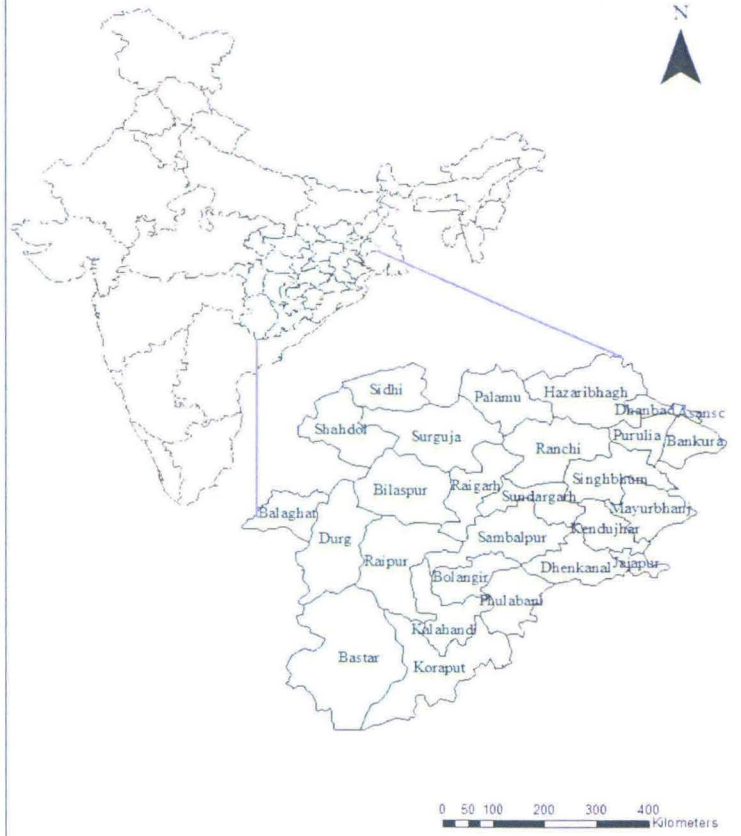

Fig: 1.2

South East Resource Region 1971

Source: South East Resource Regional Plan, vol I, Town and Country Planning Organization, Government of India, 1973

Fig: 1.3

Administrative Boundaries of the South East Resource Region

2001

Source: Census of India, 2001

1.6 The Data Base:

Given the extensive nature and scope of the present study, a wide array of data sources has been sought and utilized. The data has been obtained from secondary sources.[55] The study of the colonial legacy requires an in depth analysis of the colonial literature and for this the Gazetteers are invaluable source of information. They give extensive information regarding the regional structure.

- **Thornton's Gazetteer:** published first in 2 volumes in 1844 and the second edition in 4 volumes in 1854, this series provides information regarding location, history, physiographic, population, communication lines etc for the territories under East India company and Native states. This series of Gazetteer is a very useful database for building the background of this study. The valuable information regarding the colonial period prior to 1872 can be obtained from this source.

- **Hunter Series:** The Hunter's Statistical Account published in 20 volumes in 1875-1877 gives important information regarding location, population, agriculture, communication, commerce, administration etc. For this study the following three volumes are very useful:

Volume name	Volume no.	Year
1. Hazaribagh and Lohardaga	Vol. 16	1866.
2. Singhbhum, Chotanagpur and Manbhum	Vol. 17	1877.
3. Burdwan Bankura and Birbhum	Vol. 4	1876

- **Imperial Gazetteer of India:** first published in 9 volumes in 1881 and then in 14 volumes in 1885-1887, this series provides detailed information regarding agriculture, forests, mines, minerals, manufactures. Commerce, trade, irrigation, navigation, rail, road, post and telegraph etc.

[55] The archival data has been collected from the Nehru Memorial Museum and Library (Teenmurti library), Central Secretariat. National Archives. Other relevant Government documents have been obtained from Town and Country Planning Organization, Indian Bureau of Mines-Ministry of Mines and Jawaharlal Nehru University Library.

For this study, "The Indian Empire: its people, history and Products" edited by W.W. Hunter in 1893 and Vol. 3 – Economic are of prime importance. The Imperial Gazetteer contributed preciously in tracing the origin of the factors for the origin of towns.

- **O'Malley Series:** The District Gazetteer of Bengal edited by L.S.S. O'Malley and published in 38 volumes from 1906 – 1925 is an invaluable piece of detailed account.

  For this study the following volumes are very useful:

Bengal District Gazetteer

Volume name	Volume no.	Year
1. Palamau	Vol. 9	1907
2. Sambalpur	Vol. 16	1909
3. Singhbhum, Saraikela, Kharsawan	Vol. 20	1910
4. Manbhum	Vol. 28	1911
5. Bankura	Vol. 14	1908
6. Burdwan	Vol. 23	1910

Bihar and Orissa District Gazetteer

Volume name	Year
1. Palamau	1917
2. Singhbhum	1917

- **Census of British India:** The first Indian Census under the British Empire was published in 1872. For this study the useful volumes are listed in (Appendix II).

- **Census of India – Provinces of Bengal and the Central Provinces: 1872 to 1931, Tables and Reports** – this series has been of immense help especially the Part A- General Tables of Occupation or Means of Livelihood from 1872 to 1931, which provided statistical information on occupational structure at the district level; Part E – Statistics for Industries and Particulars of Ownership of Mines (1911 and 1921) which provided data for the approach and development of the resource base in the region.
- Census of India – Bengal – 1941 (Tables).
- Census of India – 1872 to 1941 – Pt. II, Imperial Tables for Population in districts.

- **Census of India:** The published secondary data of Census of Independent India is available from 1951 – 2001. The following parts shall be useful for the study here:

1. Primary Census Abstracts- 1951 to 2001.
2. District Census Handbooks for the respective districts of Jharkhand, Chattisgarh, and Orissa for 1951 – 2001.
3. Economic Tables, Census of India, 1951 – 2001.
4. Socio- cultural tables, Census of India, 1951- 2001.

- **Indian Minerals Year Books:** Published by the Indian Bureau of Mines, Ministry of Mines, Government of India, it gives Post independence state wise data on reserves, details of exploration activities, Mineral production and Mineral based industries. It also gives Mineral wise data on reserves by states/ coal fields/ Types, exploration details, production, despatches, stocks, mining (no. of mines), allocation policies, foreign collaboration, consumption and foreign trade, which proved to be very crucial for the present study.

- **Report of the Chief Inspector of Mines in India, 1902-1947:** This report has been utilized for statistical information on output of minerals. The section on Output of minerals, especially the tables providing data on mine/district-wise output of minerals, total number of mines opened or closed, has been extensively used in the present study.

- **Report of the Indian Industrial Commission, 1916-1918:** This report engages itself with a plethora of issues on industries and industrial development in the given temporal phase. It has been widely referred mainly the segments on Bengal Coalfields, minerals for industries and imports of machinery.

Table: 1.1 Specific Databases and Government Documents

Subject	Database / Government Documents
Study Region	*South East Resource Regional Plan*, Vol. 1, Town and Country Planning Organization, Government of India, 1973; *South East Resource Region: Report on Mining and Minerals*, 1973; *Regional Development Plan for South East Resource Region: A brief Summary*, TCPO, 1976.
Coal	*Memoirs of the Geological Survey of India;* *Note on the Production and Consumption of Coal in India*, 1907; *Report on the Production and Consumption of Coal in India*, 1914, 1923 to 1937 *Statistics of British India,* Vol. I, Commercial Statistics, 1918; Report of the *Indian Coal Committee*, 1925; *Coalfields' Committee Report*, 1946; *Indian Coal Statistics,* Government of India; *Coal Directory of India*, Coal Controller's Organisation, Kolkata; *Indian Minerals Yearbook*, Indian Bureau of Mines (Nagpur); Provisional Coal Statistics, *Coal Directory of India* Annual Report, Director General of Mines Safety (DGMS), Government of India, 2007.
Iron Ore	*Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi; *Indian Minerals Yearbook*, Indian Bureau of Mines (Nagpur); *National Mineral Inventory*, 2010, Indian Bureau of Mines, (Nagpur).
Other Minerals	*Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi; *Indian Minerals Yearbook*, Indian Bureau of Mines (Nagpur).
Mining Leases	*Bulletin of Mining Leases & Prospecting Licenses, 2010,* Indian Bureau of Mines, (Nagpur); *Indian Minerals Yearbook*, Indian Bureau of Mines (Nagpur).

Traditional Industry	Hunter, W.W., A *Statistical Account of Bengal,* 1877; Hunter, W.W. , *The Imperial Gazetteer of India,* 1885, 1887 *The Imperial Gazetteer of India,* 1908 Nelson, A. E., *Central Provinces District Gazetteer,* 1909, 1910; *Bengal District Gazetteers,* 1910, 1917; *Report of the Indian Industrial Commission, 1916-18.*
Iron and Steel Industry	*Statistics for Iron & Steel Industry in India*, Hindustan Steel Ltd, Ranchi; Tata Steel, *Annual Report* and *Tata Steel Diamond Jubilee- 1907 – 1967*, Tata Iron and Steel Company, Jamshedpur; *Productivity Trends in Iron & Steel Industry in India, 1974*, National Productivity Council, New Delhi Annual Report, 2011-12, Ministry of Steel, Government of India;
Urbanization	*General Population Tables* and *Primary Census Abstract*, Census of India, 1872 to 2001
Origin of Towns	Grant, Charles, *The Gazetteer of the Central Provinces of India*, 1870; W.W. Hunter, *Imperial Gazetteer of India*, 1885, 1886, 1887; Thornton Edward, *A Gazetteer of the territories under the Government of the Viceroy of India*, 1886; L.S.S. O'Malley, *Bengal District Gazetteer*, 1907; *The Imperial Gazetteer of India*, 1908; H. Coupland, *District Gazetteer of Manbhum*, 1911; M.G. Hallett, *Bihar and Orissa District Gazetteer* , 1917; *Bankura District Gazetteer,* 1968 *Orissa District Gazetteer* , 1973, 1980, 1986; *Madhya Pradesh District* Gazetteer, 1978; *Gazetteer of India*, Orissa State, 1991;
Forest Cover	*State of Forest Reports*, Ministry of Environment & Forest, 1991 to 2007
Tribal Economy & Distribution	*Special Tables for Scheduled Tribes,* Census of India, 1971 and 1991 *General Population Tables* and *Primary Census Abstract*, Census of India, 1961 to 2001

1.7 Methodology:

- The identification of the study region has been done in adherence with the boundaries delineated by the Planning Commission in association with the State Governments concerned, the Central Government and the Town and Country Planning Organization of the Government of India, under the South East Resource Regional Plan, 1973.[56]

- The districts within the resource region have been considered as the lowest unit of study as far as possible, however, given the temporal enormity and the immensity of scope of the present study, which required a wide array of data sources, in case of unavailability of data on district level, the three major states (Jharkhand, Orissa and Chattisgarh)[57] have been considered as the unit of study.

- Administrative boundaries of the states and districts have been considered as per demarcated in Census of India 1971.[58] These boundaries are to be coincided with the Boundaries of the Pre-Independence years.

- For digital handling of the maps of Pre and Post Independence years, the exact area demarcation and superimposition based on Geo-referencing of the co-ordinates of the study region, the use of the software **Arc GIS 9.3** has been of great help.

- The methodology adopted for analysis differs from chapter to chapter depending on the scope of the study; therefore, the methodology undertaken shall be highlighted at each and every step in each chapter respectively.

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[56] South East Resource Regional Plan, Vol. I, Town and Country Planning Organization, Government of India, 1973

[57] The administrative boundaries of the three states Jharkhand, Orissa and Chattisgarh are considered in adherence with the Census of India, 2001.

[58] South East Resource Regional Plan, *Op. Cit*

1.8 Organisation of the Study:

The present study has been contemplated with an ambitious motive of probing into the causative factors of *regional backwardness*, which in this case seems to be rooted in utilization and development of resources in the pattern of *dependent development* and *underdevelopment*. A sincere attempt has been made to explore the purpose in great details as far as possible by dividing it into eight chapters and each chapter being further explained into respective sub-chapters. The outline of the main chapters is as follows:

Chapter 1: **Introduction** - The study begins with an introductory note stating the problem, explaining the significance of the topic as to why it requires a detailed analysis. The available literature relating to role of natural resources in economic development; utilization of mineral resources towards regional development; development of resources under colonial setting, dependent capitalism, planned economy under the mixed economy system and under the globalization era; have been reviewed which forms the inevitable backbone of the present study. This shaped the theoretical framework which forms the basis of the present study. The research questions which are to be addressed have been outlined, followed by a brief description of the study region, the study period, the database on which the study has been based and the broad methodology adopted at each step of the present study.

Chapter 2: **Mineral Resource Base: Development and Approach**– this section begins with an introduction to the resource base of the region, distribution and exploitation of mineral resources in the region specifically coal - phases of development of coal mining and other important minerals resources in the region. This is followed by a comparative analysis of trends in mining, grant of mining leases and licenses, ownership pattern of mines, Government's commercial policy towards important mineral resources and their exploitation in colonial, post-independence and globalization era. This shall mirror the Government's attitude towards mineral exploitation in the different phases. The pattern of ownership shall echo the pattern of external dominance over mining activities in the region which is believed to have a profound impact on the development or rather the "*underdevelopment*" scenario of the region.

The introduction of the railways is believed to have an enormous impact on the pattern of Resource Utilization in the region in the Colonial setting. The subsequent pattern of infrastructure development in the region, especially railways, has been identified and mapped to gauge the approach of the government towards infrastructure development as to whether it was directed towards introducing regional linkages and regional development or mere resource extraction.

Chapter 3: **Pattern and Process of Industrial Development**– Industrial development is of crucial importance when we talk of a resource region. The abundance of rich mineral resources like coal, iron etc in this region is bound to give rise to a strong industrial base. An attempt has been made here to delve into the pattern of industrial development in this region and to seek its conformity with the indigenous resource base available. The development of coal mines in a colonial setting, the pre-existing indigenous industrial base, the transition to the modern industrial sector, development of leading industries, technological development and the overall impact of all these, pertaining to different phases, on the region's development has been dealt with.

Chapter 4: **Characteristics of Urbanisation** – this section is rather corollary in nature where an effort has been made to seek whether the resource utilization in the region has succeeded in begetting urban development, whether the urbanisation process in the resource region has responded to the process of development and utilization of resources. Urbanization has been empirically tested through various indices of degree/ level, speed/ tempo, force and concentration of urbanisation and urban growth. In the later half, a comparison of colonial and post-independence factors of origin and decline of towns has been traced to analyse the process of urbanisation and where is it headed under the recent scenario.

Chapter 5: **Regional Backwardness: A Reality, Contemporary Ramifications and the way ahead** – in this segment the complex consequences of the resource utilization process in this region has been extensively dealt with pertaining to development deficit or regional backwardness and its further ramifications in the form of Naxalite movements, tribal upsurge and identity movements and various

other aspects critical of this region in the recent past like development projects leading to dislocation of indigenous people, the problem of their relocation and rehabilitation, the POSCO project deal etc have been dealt with in the context of regional backwardness. The future prospect, under the given condition, has been glanced upon as to whether the region is headed towards development or towards dependency yet again.

Chapter 6: **Summary of Findings and Conclusions** – This chapter will basically summarise the findings of the present study and provide the future scope of the study in the form of other aspects which can be dealt under this issue to further investigate the viability of the findings.

Chapter 2:

Mineral Resource Base: Development and Approach

Introduction

2.1 Mineral Resource Base of the Region

2.2 Distribution and Development of the Mineral Resources

2.2.1 Coal

2.2.2 Iron

2.2.3 Bauxite

2.2.4 Chromite

2.2.5 Copper

2.2.6 Dolomite

2.2.7 Kyanite

2.2.8 Limestone

2.2.9 Manganese Ore

2.2.10 Mica

2.3 Mineral Resource Development: The Approach

2.3.1 Mining Legislation and Mineral Policy

2.3.2 Mineral Concessions: Transformation of Rules

2.3.3 Pattern of Ownership

2.3.4 Investment Policy

2.4 Infrastructure Linkages

2.4.1 Development of the Railways

2.4.2 Pattern of Railway Growth in the Mineral Belt

2.4.3 Pattern of Road Network in the Mineral Belt

2.5 Conclusions

Chapter 2:

Mineral Resource Base: Development and Approach

The delineation of South East Resource Region of India by the Planning Commission was done on the basis of physiography, climate, soil, land use pattern, mineral resource distribution, demographic attributes, levels of development pertaining to economic in nature and the linkages in terms of mineral resources within the region.[1] Mineral resources forms the most integral part of the resource base of this region which has played a decisive role in not only its historical evolution but also in its regional economic structure of persistent underdevelopment. A diligent effort is made here to give an account of the existing mineral resource base in this region, its distribution pattern, its sequential development ever since the inception of commercial exploitation in this region and the underlying approach towards its development and utilisation in the form of mining legislations, government policy, rules for granting lease and licences and pattern of ownership of mines in various phases of evolution of the mineral resource region.

2.1 Mineral Resource Base of the Region:

The South East Resource region of India is considered to be the prime mineral belt of India. The region constitutes the mineral bearing districts of Jharkhand, Orissa, Chattisgarh and parts of West Bengal and Madhya Pradesh. The three major constituent states of Jharkhand, Orissa and Chattisgarh together contributes more than half of the mineral reserves and production of the country including the power resources of coal.

As per the most recent estimations of 2010, the South East Resource Region accounts for about 84% of the total coal reserves of the country which includes the proved, indicated and inferred reserves. The Coalfields of Jharkhand constitute the maximum proportion of 28% of the total reserves of the country and 33% of the reserves of the Resource region which is followed by Orissa which accounts for about

[1] South East Resource Regional Plan, Vol. I, Town and Country Planning Organization, Government of India, 1973, pp. 485

24% of the total coal reserves of the country and about 29% of the coal in the Mineral belt. The three major states of the Mineral Belt i.e. Jharkhand, Orissa and Chattisgarh together constitutes about 70% of the total coal reserves of the country.

Table: 2.1 Coal Reserves in the South East Resource Region of India,

(As on 1st April, 2010)

State	Total Reserves* (in million tons)	Share** (In %)	Share # (In %)
Jharkhand	76963.69	27.80	33.1
Orissa	66307.25	23.95	28.5
Chattisgarh	46682.01	16.86	20.1
West Bengal***	23730.81	8.57	10.2
Madhya Pradesh***	18726.54	6.77	8.1
S.E.R.R: Total	**232410.30**	**83.96**	**100.0**
All India: Total	**276810.41**	**100.00**	

Source: *Indian Minerals Yearbook, 2010*, Indian Bureau of Mines, Ministry of Mines, Government of India;

* Total Reserves = Proved + Indicated + Inferred reserves

**Share = Percentage share of All India's total reserves

Share = Percentage share of S.E.R.R.'s total reserves

*** Figures of only those coalfields of West Bengal and Madhya Pradesh which are part of the S.E.R.R. of India

The South East Resource region abounds in a wide array of mineral resources. The major minerals which hold great economic importance in the region are Iron ore, Bauxite, Chromite, Copper, Dolomite, Kyanite, Limestone, Manganese ore and Mica. Iron ore mainly the Hematite variety has been of utmost significance in the region which together with coal has shaped the regional-economic structure of this part of the country. This Mineral belt accounts for about 77% of the total Iron ore (Hematite) resources of the country as per the recent estimations of 2010. Orissa alone contributes 33% of the total iron ore resources of the country, followed by Jharkhand which contributes about 26%. There are about 82 iron ore mines in Orissa out of which 51 are located in Keonjhar district and 25 in Sundergarh district. Jharkhand has 21 iron ore mines and all of them are situated in Singhbhum district. Chattisgarh has 12 iron ore

mines out of which 6 each is situated in Bastar and Durg districts in the Bailadila ranges.

The Mineral belt has a rich deposit of Bauxite which accounts for about 61% of the total resources of India. Orissa alone holds half of the bauxite resources of the country. It has only 4 bauxite mines, out of which 2 each are located in Koraput and Sundergarh districts. The mines of Koraput district alone contribute the major chunk of Bauxite for not only Orissa but also of the entire country. More than 93% resources of Chromite are located in Orissa mostly in Jajpur and Keonjhar districts of the Resource region. Jharkhand contributes for 19% of the total copper ore resources of the country which is extracted from a single mine in Singhbhum district. Chattisgarh accounts for 11% of the dolomite resources which are mainly extracted from the mines of Bilaspur district. Jharkhand contains 6% of the total Kyanite resources of the country but contributes about 80% to the total Kyanite production, all of which is extracted from Singhbhum mines. Chattisgarh holds about 5% of the Limestone resources of the country which is mainly obtained from mines in Raipur and Durg districts. Orissa tops the total resources of Manganese ore with 44% share and is mainly obtained from 21 mines in Keonjhar and 19 mines in Sundergarh district.

Table: 2.2 Mineral Resources* in the South East Resource Region

(As on 01.04. 2010 (P)

Minerals	Jharkhand		Orissa		Chattisgarh		All India	
	Quantity	Share (%)	Quantity	Share (%)	Quantity	Share (%)	Quantity	Share (%)
Bauxite	146.3	4.2	1810.5	52.0	171.0	4.9	3479.6	100
Chromite	0.7	0.4	190.0	93.4	-	-	203.3	100
Copper ore	288.1	18.5	6.1	0.4	-	-	1558.5	100
Dolomite	41.4	0.5	673.0	8.7	846.7	11.0	7730.6	100
Iron ore (H)	4596.6	25.7	5930.2	33.2	3291.8	18.4	17882.1	100
Iron ore (M)	10.5	0.1	0.2	0.002	-	-	10644.1	100
Kyanite	6.0	5.8	-	-	-	-	103.3	100
Limestone**	745.8	0.4	1738.4	1.0	9037.7	5.2	175344.9	100
Manganese	13.7	3.2	190.0	44.2	-	-	430.0	100
Mica	1.7	0.3	-	-	-	-	532.2	100

Source: *Indian Minerals Yearbook, 2010,* Indian Bureau of Mines, Ministry of Mines, Govt. of India. * **Resources** indicate the Total Resources (Total Reserves + Total Remaining Resources) Quantity (in million tonnes); **Mica** (in '000 tonnes); **Limestone (as on 01.04.2005)

2.2 Distribution and Development of the Mineral Resources:

An introduction to the rich mineral resource base of the South East Resource Region is succeeded by a comprehensive account of the pattern of distribution of the minerals, which have been identified as of prime economic importance[2], in the form of reserves and number of mines. The chronological development of each mineral resource with reference to quantity of production will constitute the development component of the resource base. Coal and Iron are the two major resources in this region and therefore has been dealt in greater details, followed by brief account of other important minerals like mica, manganese, limestone, dolomite, copper, kyanite, bauxite and chromite.

2.2.1 Coal:

The history of coal mining in this region dates back to 1774 when Warren Hastings granted permissions John Sumner and Suetonius Grant Heatly to open coal mines in Bengal. The first coal mines were subsequently opened in the Raniganj field near Sitarampur; at Aiture (Ethora) probably in the Dishergarh seam, at Chinakuri near the Damodar River possibly in middle Raniganj seams; and at Damulia seemingly in the Nega-Raniganj seam. However, such initial attempts went in vain after the coal raised from these mines was labelled as of "poor quality". After a gap of about forty years, mining activities commenced in 1814 near Egara (Raniganj) and between 1820 and 1825 further exploitations of Raniganj coal were undertaken, situated between Sitarampur and Chinakuri and near Raniganj. Systematic geological surveys were carried out by Mr. D.H. Williams, the Geological Surveyor to the East India Company, during 1845-46 and further examined in details by Dr. W.T. Blanford during 1858-60. These explorations witnessed an annual average production of about 282,000 tons from as much as 50 collieries during 1858-60, much of which was dispatched to Calcutta in country boats through Damodar River.[3]

The opening up of the East Indian Railway (E.I.R.) in 1854 and linking the Raniganj Coalfield to Calcutta by 1855 and its further extension to Barakar coal areas by 1865 provided the most crucial impetus to the coal mining industry in the region.

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[2] South East Resource Region Plan, *Op. Cit.*, pp. 88

[3] Gee, E.R. (1940): "History of Coal Mining in India", *Geological Survey of India*, Vol. VI. No. 3. pp. 313-314

Consequently, for about a century after the initiation of coal mining in the region, Raniganj Coalfield retained its utmost significance as the most important coal producer. It was towards the end of the nineteenth century when the coal of the Barakar measures in the Jharia field gained importance due to its huge reserves and superior quality. The first geological survey was conducted by Mr. T.W.H. Hughes of the Geological Survey of India (G.S.I.) in 1865-66 followed by Dr. V. Ball of G.S.I. in 1887 and ultimately by Mr. T.H. Ward of East Indian Railway Company in 1890, after which the Grand Chord line was extended from Barakar to Katrasgarh via Dhanbad by 1894 and a branch line was opened from Kusunda to Patherdih in 1895. The establishment of railway communications provided a boost to the Jharia coalfield which led to its rapid development to the extent that by 1906 it surpassed the production of Raniganj field.[4]

During the same period, Giridih or Karharbari coalfield emerged in importance with good quality coking coal, with mining commencing as early as in 1857 and railway connection reaching there by 1871, the output of this field exceeded half a million tons by close of the nineteenth century in 1890. The Bokaro Coalfield came up in 1908 and was linked with the transport network by 1919 after which there has been no looking back for this prosperous field. Other fields like Ramgarh in Bihar (1920), Karanpura in Bihar and Talcher in Orissa (1923-24) enhanced this region's worth as the most overwhelming coal-bearing region of the country.[5] The entire chain of coalfields constituting Raniganj, Jharia, Bokaro, Ramgarh, Karanpura, Auranga and Daltonganj turned out to be the largest known coal resources of the world out of which Raniganj, Jharia, Bokaro, Giridih and Karanpura proved to be the five most important fields.[6]

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[4] Report of the Coal Mining Committee, 1937 and Gee, E.R. (1940), *Op Cit*, pp. 314-315.

[5] Gee, E.R. (1940), *Op Cit*, pp. 315-317

[6] Papendieck, Henner (1978): "British Managing Agencies in the Indian Coalfield" in Rothermund, Dietmar and D.C. Wadhwa (ed.), *Zamindars, Mines and Peasants,* Manohar Publications, New Delhi, pp. 172

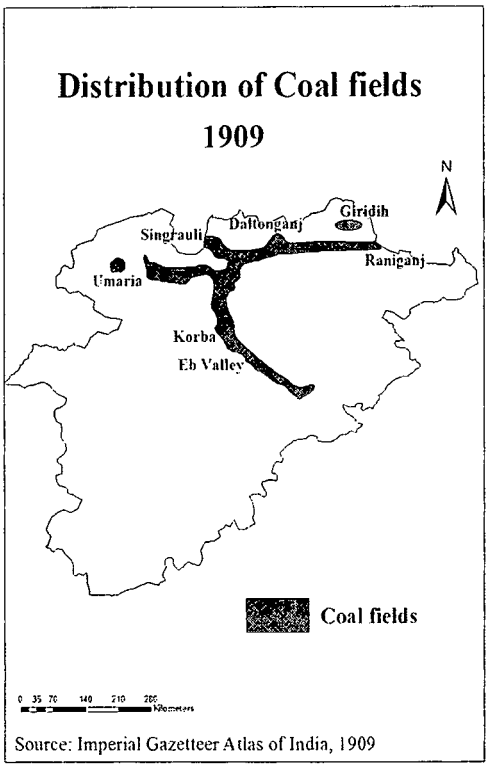
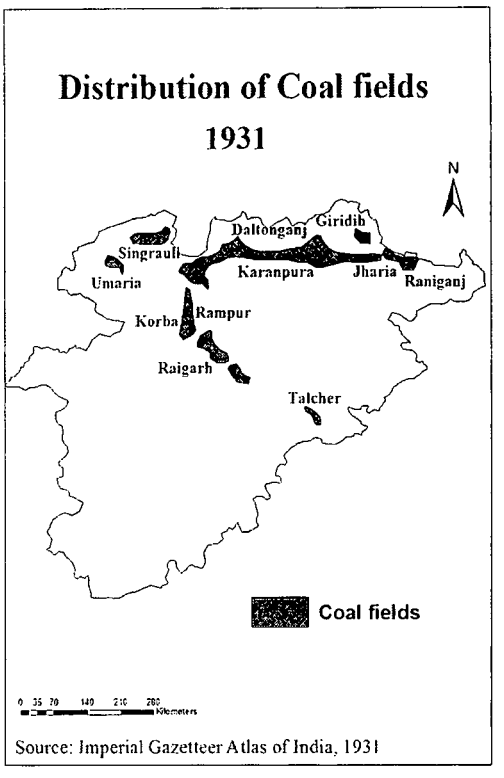


Fig: 2.1.



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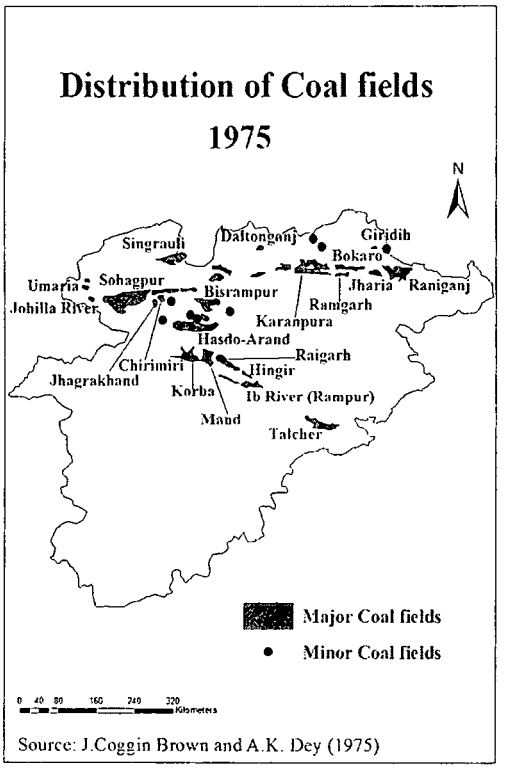

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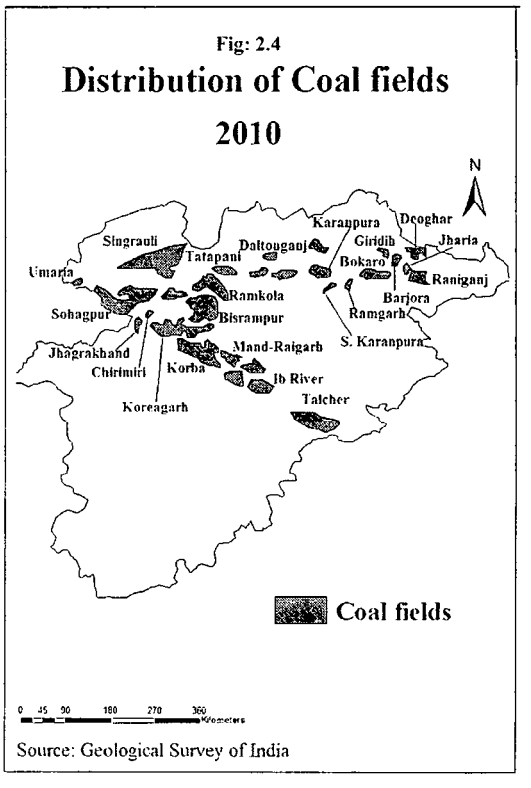

Fig: 2.4.

2.2.1.1 Coal Reserves: Initial estimations and recent scenario-

The question of estimating the coal reserves of the country was taken up by the Geological Survey of India, after the Coalfield Committee Report of 1920, under the direction of Dr. C. S. Fox. Majority of the work was completed by 1930 and was subsequently published in a series of memoirs. The Jharia[7] and Gondwana[8] fields were reported by Dr. Fox and Raniganj[9] field by Mr. E. R. Gee. The compiled data on reserves was published in 1935 in Sir L.L. Fermor's paper entitled "India's Coal Resources";[10]

The total coal reserves of the entire Gondwana region, to a depth of 1000 ft amounted to about 60,000 million tons with the majority share being contributed by Raniganj, Jharia, Bokaro and Karanpura fields which were the star coalfields of the South East Resource region. These, together with the reserves of Chattisgarh and Mahanadi valley; Giridih, Deogarh and Rajmahal hills and parts of Umaria coalfields which are situated within the South East Resource region constituted more than half of the entire country's coal reserves. The total coal reserves imply all the coal including good and bad and all the seams down to a foot in thickness, while workable reserve means only those with a thickness of 4ft or more and less than 25 per cent of moisture-free ash content.

Dr. Fox's estimation of good quality coal, which denotes the coal with less than 16 per cent moisture-free ash content, with seam thickness of above 4ft and occurring within a depth of 2000ft from the surface, amounts to about 5000 million tons, while that of Sir Lewis Fermor accounts to 4,500 tons with modified figures for Bokaro and Karanpura fields. [11] This initial estimation depict huge reserves of good quality coal at

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[7] Fox, C.S. (1930): "The Jharia Coalfield", *Memoirs of Geological Survey of India*, Vol. LVI.

[8] Fox, C.S. (1935): "The Lower Gondwana Coalfields of India", *Memoirs of Geological Survey of India*, Vol. LIX.

[9] Gee, E.R. (1932): "The Geology and Coal Resources of the Raniganj Coalfield", *Memoirs of Geological Survey of India*, Vol. LXI.

[10] Fermor, L.L. (1935): "India's Coal Resources", *Bulletin of Indian Industry and Labour*, No. 54, Records of Geological Survey of India, Vol. LXIX, pp. 336 - 352

[11] Krishnan, M.S. (1940): "India's Coal Reserves", *Geological Survey of India*, vol. VI, No. 3, pp. 326.

Raniganj, Jharia and Bokaro which together constituted about 77 percent of the country's total reserves of good quality coal.

Table: 2.3 Total and Workable Reserves of Coal, 1935

Coal - Bearing areas	Coal Reserves (in million tons)	
	Total	Workable
Raniganj, Jharia, Bokaro and Karanpura	25,000	10,000
Wardha – Godavari valley	18,000	6,400
Son Valley – Auranga to Umaria – Sohagpur	10,000	2,000
Chattisgarh and Mahanadi Valley	5,000	1,200
Mohpani to Kanhan and Pench Valleys	1,500	250
Giridih, Deogarh and Rajmahal hills	350	130
Darjeeling foothills and E. Himalaya	150	20
Total	**60,000**	**20,000**

Source: Krishnan, M.S. (1940): "India's Coal Reserves", *Geological Survey of India,* vol. VI, No. 3, pp. 326.

Table: 2.4 Reserves of Good Quality Coal, 1935

Coal - Bearing areas	Coal Reserves (in million tons)
Raniganj	1,800
Jharia	1,250
Bokaro	800
Karanpura (North and South)	750
Talcher to Korba	200
Huta, Johilla, Burhar	50
Ballarpur – Singareni	50
Giridih and Jainti	40
Kanhan and Pench Valleys	30
Kurasia, Jhilmili etc	30
Total	**5,000**

Source: Krishnan, M.S. (1940): "India's Coal Reserves", *Geological Survey of India,* vol. VI, No. 3, pp. 326.

The reserves of coking coal which is most useful for metallurgical purposes was estimated to be about 1,500 million tons by Dr. Fox, which was further modified by Sir Lewis Fermor to 1,694 million tons. The entire reserves of coking coal was to be found in the Lower Gondwana fields of Bihar and Bengal which comprised of the major coalfields of Raniganj, Jharia, Bokaro and Giridih out of which Jharia constituted 900 million tons i.e. about 60 per cent of the entire reserves of coking coal that was recorded.

Table: 2.5 Reserves of Coking Coal, 1935

Coalfields	Coal Reserves (in million tons)	
	Fox's estimates	Fermor's estimates
Raniganj	250	241
Jharia	900	900
Bokaro	320	515
Giridih	30	38
Total	**1,500**	**1,694**

Source: Krishnan, M.S. (1940): "India's Coal Reserves", *Geological Survey of India,* vol. VI, No. 3, pp. 327.

These initial estimations of the coal reserves of India provide a synoptic view of the South East Resource region's enormous potential that was discovered to be ingrained in its prosperous coalfields which accounted for more than two-thirds of the country's entire coal reserves, 92 per cent of the good quality coal and entire reserves of the coking coal. The most recent estimations of coal reserves in the country i.e. the latest available figures for 2010 reports about 276810.41 million tonnes of total reserves which includes the proved, indicated and inferred reserves. The South East Resource Region accounted for 232410.30 million tonnes of total coal reserves which is about 84% of the entire coal reserves of the country. The coalfields of Jharkhand alone account for about 28% of the total coal reserves of India, followed by Orissa 24% and Chattisgarh 17%. The maximum total reserve was reported in Talcher Coalfield in Orissa (16% of the total coal reserves of India) followed by the oldest coalfield of Raniganj in West Bengal (8.6% of the total coal reserves of India).

Table: 2.6 Reserves of Coal in the South East Resource Region,

(State / Coalfield wise - as on 1st April, 2010)

State / Coalfield	Total Reserves*	Share** (%)
Jharkhand	**76963.69**	**27.80**
Raniganj	2036.30	0.74
Jharia	19430.06	7.02
East Bokaro	8083.29	2.92
West Bokaro	5012.49	1.81
Ramgarh	1049.47	0.38
North Karanpura	17073.24	6.17
South Karanpura	6150.11	2.22
Aurangabad	2997.11	1.08
Hutar	249.82	0.09
Daltonganj	143.96	0.05
Deogarh	399.84	0.14
Rajmahal	14338.00	5.18
Orissa	**66307.25**	**23.95**
Ib-River	22448.49	8.11
Talcher	43858.76	15.84
Chattisgarh	**46682.01**	**16.86**
Sohagpur	104.38	0.04
Sonhat	2665.24	0.96
Jhilimili	267.10	0.10
Chirimiri	362.16	0.13
Bisrampur	1614.70	0.58
East Bisrampur	41.75	0.02
Lakhanpur	451.40	0.16
Panchbahini	11.00	0.00
Hasdeo-Arand	4993.70	1.80
Sendurgarh	279.21	0.10
Korba	11704.83	4.23
Mand-Raigarh	22177.64	8.01
Tatapani-Ramkola	2008.90	0.73
West Bengal* **	**23730.81**	**8.57**
Raniganj	23730.81	8.57
Madhya Pradesh* **	**18726.54**	**6.77**
Umaria	181.29	0.07
Sohagpur	6128.74	2.21
Singrauli	12416.51	4.49
S.E.R.R: Total	**232410.30**	**83.96**
All India: Total	**276810.41**	**100.00**

Source: *Indian Minerals Yearbook*, 2010, Indian Bureau of Mines, Ministry of Mines, Govt. of India;

* Total Reserves = Proved + Indicated + Inferred reserves (in million tonnes)

**Share = Percentage share of All India's total reserves

** Figures of only those coalfields of West Bengal and Madhya Pradesh which are part of the S.E.R.R. of India

Whether the utilization of these enormous coal reserves was directed towards indigenous development or not, was greatly determined by the approach and process undertaken to develop them in different phases. An attempt has been made here to trace the different phases of development of these coal reserves and depict the trend in coal mining development followed by the analysis of the policy approach undertaken in each phase.

2.2.1.2 Development of Coal mining:

The process of development of coal mining in this mineral resource region underwent various phases ranging from rise or escalation to stagnation and depression ever since the surfacing of the affluent coalfields. The elucidation of the different phases of development of coal mining in the mineral belt requires to be done in the context of the development of the British Indian colonial economy. The colonial nature of capital organization and control of the most important sector of the Indian economy, the coal mining industry, from the very stage of its inception and early stages of expansion is believed to have long lasting impact upon its characteristic structure.

2.2.1.2.a The Inception: 1820 – 1890

The period since the commencement of coal mining in the region, i.e. the early part of the nineteenth century around 1820 till 1890 constitutes the first and initial phase of coal mining development. During this phase the coal mining industry, centred in the Raniganj field, grew steadily with the help of government contracts, guaranteed purchases and direct subsidies for establishing transport network and catered to the requirements of the various departments of the East India Company viz. Military, Mint etc. This period is characterized by two phases of rapid growth. The first episode of escalation came with the increasing demand for steamboats during 1830s and 1840s. The demand for coal for steam navigation grew as early as in 1828 when the inland steamers in Calcutta depended entirely on the supply of coal from Raniganj coalfield which was delivered by country boats through the Damodar River. However, the uncertainty of navigation intermittently interrupted the coal supply which led the Coal Committee to suggest improvements in transport in the form of railways. This resulted in the establishment of the railway line linking the coalfield of Raniganj with Howrah in 1854 and marked the second phase of rapid growth during 1860s to 1880s emerging

from the increasing demand of coal for the expansion of railways in this region. The expansion of the railways had its own contributing share which not only served as a carrier and major consumer of the local coal but also proved to be a boon for coal production in this region. The volume of production went up to 1 – 1.5 million tons during 1880 to 1890. This led to the appearance of some pioneer companies based on indigenous capital among which the Bengal Coal Company dominated the development of the Raniganj coalfield until 1890. [12]

2.2.1.2.b Rapid Expansion amidst fluctuations: 1890 – 1920

This phase is quite debatably designated as the beginning of "the industrialisation of British India" and launch of an 'industrial revolution' in this region by Walter Hoffmann while being contradictorily labelled as a period of "de-industrialization", "ruralisation", "peasantisation" and of "arrested development" by other scholars like Daniel Thorner. The reason can be sought in the rapid growth of the coal mining industry coupled with strong fluctuations influenced by various world events. The coal mining industry in this region, by the very virtue of being controlled and operated by foreign hands, responded according to the external world events to an extent that acceleration or retardation of coal production, opening or closing down of coal mines was determined to a great degree by the external demand-supply situation.

There was an initial spurt in coal production and labour recruitment in the initial years of this phase which was followed by a period of stagnation during 1895-1901. [13] With some of the major coalfields rising to significance during the end of the nineteenth century, the dawn of the next century witnessed a thumping 6.1 million tons of total coal production of India during 1900, out of which Raniganj, Jharia and Giridih fields together contributed about 5 million tons.[14]The fluctuation continued with the next spurt in 1901-02 subsequently followed by three years of slow growth.

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[12] Papendieck, Henner (1978), *Op Cit*, pp. 165.

[13] Rothermund Dietmar (1978): "The Coalfield – An Enclave in a Backward Region" in Dietmar Rothermund and D.C. Wadhwa (ed.). *Zamindars, Mines and Peasants* (New Delhi: Manohar Publications), pp. 7

[14] Gee, E.R. (1940), *Op Cit*, pp. 316

Table: 2.7 Coal Productions in the Mineral Belt and India, 1890 - 1920

Year	India*	Bengal**	Bihar and Orissa ***
1890	2.17	1.63	
1891	2.33	1.75	
1891	2.54	1.92	
1893	2.56	1.90	
1894	2.82	2.04	
1895	3.54	2.72	
1896	3.86	3.04	
1897	4.07	3.14	
1898	4.61	3.62	
1899	5.09	4.04	
1900	6.12	4.98	
1901	6.64	5.49	
1902	7.42	6.26	
1903	7.44	6.36	
1904	8.22	7.06	
1905	8.42	7.23	
1906	9.78	8.62	5.33
1907	11.15	9.99	6.49
1908	12.77	11.56	7.99
1909	11.87	10.66	7.13
1910	12.05	10.78	7.04
1911	12.72	11.47	7.61
1912	14.71	13.43	9.13
1913	16.21	14.88	10.23
1914	16.46	15.09	10.66
1915	17.10	15.69	10.72
1916	17.52	15.76	10.77
1917	18.21	16.56	11.93
1918	20.72	18.98	13.68
1919	22.63	20.90	15.12
1920	17.96	16.19	11.98

(Production in million tons - Production figures are rounded off)

Source: Based on *Statistics of British India*, Vol. I, Commercial Statistics, 1918 (Eighth Issue), Table 29, pp. 88; Note on the Production and Consumption of Coal in India (1907); Report on the Production and Consumption of Coal in India (1914); *Coalfields' Committee Report*, 1946 and Report of the *Indian Coal Committee*, 1925, Appendix I and Derived from Papendieck, Henner (1978): "British Managing Agencies in the Indian Coalfield" in Rothermund, Dietmar and D.C. Wadhwa (ed.), *Zamindars, Mines and Peasants*, Manohar Publications, New Delhi, Table: 7.1, pp. 181

* "India" refers to the provinces of British India and Princely states

** "Bengal" refers to the original Bengal Province prior to the administrative changes of 1905. The production in this province refers to the total combined production of Raniganj, Jharia and Giridih.

*** "Bihar and Orissa" became a separate province out of Bengal which included Jharia and Giridih. Its production figures from 1906 onwards are included in figures for Bengal to ensure continuity.

The main spurt came during 1905-1908 when there was a steep rise in the production figures. The coal boom in India reached its peak in 1908 which is characterized as year of massive increase in production. During this period there was steady increase in the amount of coal being exported and simultaneous decline in the imports.[15]

These years proved to be extremely decisive for the coalfield with unprecedented increase in foreign trade and connection with the world market which made the economy vulnerable to economic depressions. The impact was soon visible in the form of a short depression of 1909-1911 wherein the productions declined considerably as a consequence of World Trade depression in 1908. The crisis was however short-lived and expansion proceeded unabated resulting in the boom of 1913. This Pre-War period was marked by continued progress in the Indian coal mining with a total output of nearly 16.5 million tons in 1914, out of which 9.15 million tons was produced by Jharia field alone with a decisive difference from the 5 million tons being contributed by Raniganj field. The expansion of coal mining in this period was heralded by the rapid increase in coal production in the Jharia field which almost entirely carried the booms and depressions during this phase.

During the First World War, the demand for coal became acute and the growing industrial activities in the country provided further momentum which led to the exceeding demand for coal over supply during 1915. The war stimulated coal production in the region as Indian coal was substituted for English coal as a feasible option for South East Asia. As a result, the exportation of Indian coal was on a rise which surpassed the one million ton mark and simultaneously brought down the coal imports by 1916. This wartime episode became a crucial phase when the Indian coal played an important role as an export commodity, which otherwise had remained confined to the domestic demands until then. The demand for coking coal was considerably improved by the establishment of the Iron and Steel works at Tatanagar. As a result, while many new collieries were opened up to meet the rising demand, few of them started working high grade seams and open cast mining was replaced by underground mining. This phase also witnessed the introduction of machine mining and

[15] Chowdhury, M. (1930): *Evolution of India Industries*, Calcutta, pp. 39

electrification of coalfields to augment the supply of coal. This period of rapid expansion reached its climax by the end of the war in 1919 when the coal productions in the mineral belt as well as the country figures exceeded 20 million tons. Soon after this, by 1919-1920 the demand started falling and the culmination of the War also marked the end of the phase of rapid expansion with substantial decline in coal productions.

2.2.1.2.c Stagnation and Depression: 1920 – 1935

By the end of the War a peculiar post war recession had set into the British Indian economy, which got immediately reflected in the coal production figures which declined by more than 3 million tons. The Trade Depression of 1920-21 affected the Indian coal mining industry quite badly, so much so that this abrupt change to substandard trade conditions exposed the weakness of the industry. This phase of depression was characterized by reduction in demand for Indian coal, resulting from bad reputation obtained by not sending coal according to specification in the scarcity markets during the war; labour troubles, loss of export markets, rapid decline in the export trade and loss of internal markets. This resulted in the forced closure of a number of mines which dealt with inferior grade seams. Such conditions were further aggravated by an adverse foreign trade balance in coal during 1921-1923. Coal exports which amounted to 1.22 million tons during 1920 went down to 0.81 million tons and imports which were about 0.44 million tons increased to 1.14 million tons during 1921-22. As a corollary the period from 1920 to 1923 witnessed stagnation. [16]

By 1930 the coal mining industry had regained with production shooting up to about 24 million tons out of which 21.39 million tonnes was contributed by the Mineral belt, but yet another trade depression in the early part of this decade led to the closure of mining activities in the smaller and inferior fields of Rajmahal area, Hutar and Daltonganj. The production further declined to 20 million tons in 1932 and sank below the 20 million mark in 1933. This sensitive decline in coal output was synchronized with the world wide post-war economic whiteout. The conditions improved drastically in the successive years from 1936 onwards.

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[16] Guha, B. (1965): "The Coal Mining Industry" in Singh, B.D. ed. *Economic History of India: 1857-1956*. Allied Publishers, Bombay, pp. 314

Table: 2.8 Coal Productions in the Mineral Belt and India, 1920 – 1935

Year	India*	Bengal**	Bihar and Orissa***
1920	17.96	16.19	11.98
1921	19.30	17.25	12.99
1922	19.01	17.04	12.71
1923	19.66	17.83	13.21
1924	21.17	19.14	14.11
1925	20.90	18.85	13.94
1926	21.00	19.09	13.95
1927	22.08	20.08	14.52
1928	22.54	20.47	14.83
1929	23.42	21.11	15.14
1930	23.80	21.39	15.07
1931	21.72	19.34	13.53
1932	20.15	17.62	11.84
1933	19.79	16.95	11.26
1934	22.06	18.79	12.63
1935	23.02	19.43	12.75

(Production in million tons - Production figures are rounded off)

Source: Based on *Coalfields' Committee Report*, 1946 and Report of the *Indian Coal Committee*, 1925, Appendix I. and Derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Statistical Appendix, Table: I and IA, pp. 276 - 280

* "**India**" refers to the provinces of British India and Princely states

** "**Bengal**" refers to the original Bengal Province prior to the administrative changes of 1905. The production figures in this province include the figures of Bihar and Orissa Province to maintain continuity.

*** "**Bihar and Orissa**" became a separate province out of Bengal. Its production figures are included in figures for Bengal to ensure continuity. The production figures of Bihar and Orissa includes the production figures of Talcher (Native State in Orissa) from 1923 onwards.

2.2.1.2.d The Wartime escalation and slump: 1936 - 1946

The phase from 1936 till the commencement of the Second World War, the coal mining industry witnessed a gradual revival of industrial activity. The new Indian Iron and Steel industry experienced an unprecedented boom with steel production surpassing the one million ton mark for the first time during the early years of the War. As a

corollary there was an increased internal demand for high grade coking coal coupled with rising external demand and the tilting of the foreign trade balance in favour of India. The industry attained new heights with total production reaching a record high of 28 million tons in 1938, a thumping majority of about 24 million tonnes being contributed by the Mineral Belt. The Bihar province (present day Jharkhand region), which constituted of the important coal mines of Jharia, Giridih and parts of Raniganj, alone contributed about 15 million tonnes. The exports rose steadily to 0.77 million tons in 1938 from 0.2 million tons in 1935. However, the growth of coal mining during the Second World War was less dramatic when compared with the boom during the First World War. This was attributed to the well established "mining enclave" structure which remained quite indifferent to the rising external demand of coal.[17]

Although the Wartime demands for coal were soaring, the production was unable to keep pace. An amalgamation of factors ranging from acute shortage of wagons, curtailment of coastal shipments, lack of machinery, scarcity of workers etc proved fatal for the coal industry and resulted in a slump. The railway wagons were being utilised in the movement of essential war materials resulting in a wagon shortage for transporting coal which were being piled up at pit heads. The mechanisation of mines could not take place because of the preceding phase of stagnation and depression. As a result the production fell substantially from 29 million tons in 1942 to 25 million tons during 1943-44.

In order to step-up production, the Government came up with a new plan for coal control, the Colliery Control Order in 1944 according to which the production, distribution, fixation of prices, planning all went under Government control. Modern mining machines were imported, labour situation stabilised and production was again boosted to 29 million tons in 1945 and 30 million tons in 1946. The Mineral belt contributed enormously to this boost with 22 million tonnes and 25 million tonnes respectively out of which Bihar Province alone contributed about 15 million tonnes and 17 million tonnes respectively.

[17] Rothermund Dietmar (1978). *Op Cit.* pp. 12

Table: 2.9 Coal Productions in the Mineral Belt and India, 1936 – 1946

Year	India*	Bengal**	Bihar***	Orissa****
1936	22.61	18.95	12.28	0.26
1937	25.04	20.81	14.28	0.44
1938	28.34	23.60	15.85	0.49
1939	27.77	22.89	15.29	0.50
1940	29.39	24.33	15.88	0.53
1941	29.46	24.36	16.42	0.60
1942	29.43	24.15	16.51	0.59
1943	25.37	20.81	14.12	0.54
1944	25.97	21.61	14.82	0.46
1945	28.97	22.33	15.04	0.45
1946	29.77	24.74	17.79	0.46

(Production in million tons - Production figures are rounded off)

Source: Based on *Coalfields' Committee Report*, 1946 and Report of the *Indian Coal Committee*, 1925, Appendix I, and Derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Statistical Appendix, Table: I and IA, pp. 276 - 280

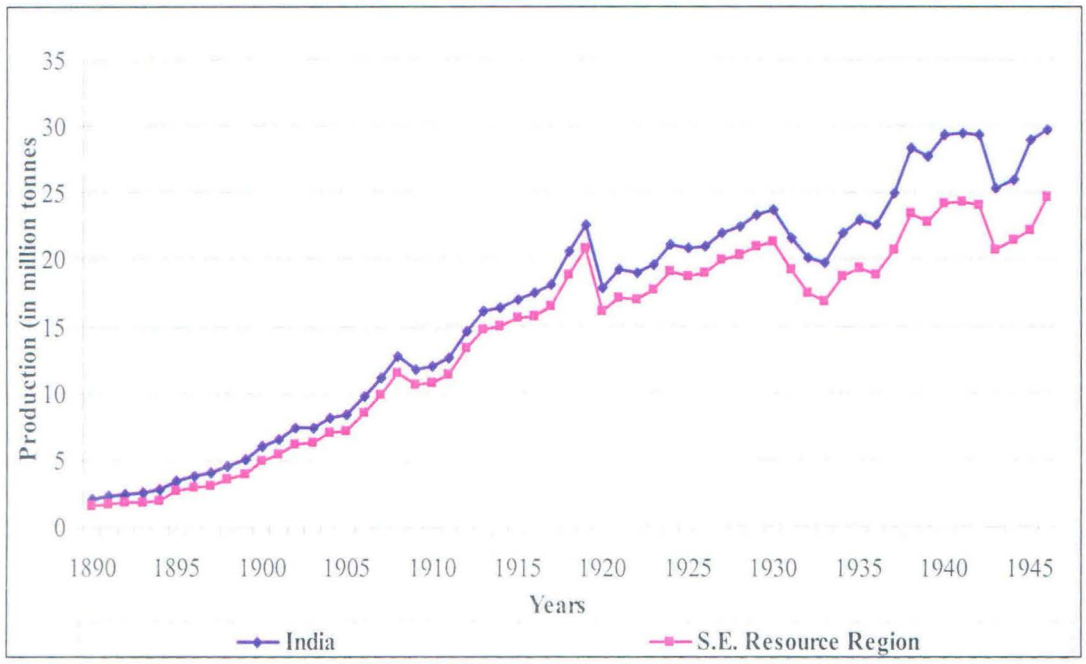
* "**India**" refers to the provinces of British India and Princely states

** "**Bengal**" refers to the original Bengal Province prior to the administrative changes of 1905. The production figures in this province include the figures of Bihar and Orissa Provinces to maintain continuity.

*** "**Bihar**" refers to the original province of Bihar and Orissa prior to the administrative changes of 1935. Bihar became a separate province out of Bihar and Orissa Province in 1935. Its production figures include the figures for Orissa from 1936 onwards to ensure continuity.

**** **"Orissa"** became a separate province out of Bihar and Orissa Province in 1935. Its production figures are included in the figures for Bihar from 1936 onwards to ensure continuity. The production figures of Orissa include the production figures of Talcher (Native State in Orissa) as well.

Fig: 2.5 Coal Production in the South East Resource Region and India, 1890 - 1946



Source: Based on Table: 2.7, 2.8 and 2.9 of the present study

2.2.1.2.e The Post Independence Planned Development: 1951 – 1970

During the planned development of the National economy, Coal retained its position as the principal fuel and raw material for development of heavy industries. The First Five Year Plan, which intended a moderate degree of industrial expansion, witnessed only a slight increase in the coal production. At the commencement of the First Five Year Plan the production of coal was 34.3 million tonnes in the country out of which the contribution of the Mineral Belt was 32.5 million tonnes which is about 93% of the total production. By 1954 the production rose to about 36.7 million tonnes with the contribution of 31.6 million tonnes by the South East Resource region which emerged as the prime Mineral Belt of the country. Within the South East Resource Region, the collieries of Jharkhand alone contributed about 60% of the total production of the Mineral Belt followed by 34% by West Bengal and 4% by Chattisgarh during 1954. Thus the Mineral belt supplied for almost all of the country's coal demand.

With a highly ambitious industrial programme during the Second Five Year Plan, the target for coal production was set at 60 million tonnes. During this plan period coal production rose from 40 million tonnes in 1956 to 56 million tonnes in 1961 for the

country. The production witnessed tremendous rise in the Resource Region form 34 million tonnes to 48 million tonnes during 1956 to 1961. It also witnessed the rising share in production by the collieries of Orissa, West Bengal and Chattisgarh while those of Jharkhand underwent simultaneous decline.

The target set for the Third Five Year Plan was 97 million tonnes initially which was revised to 76 million tonnes. The coal production ascended from 61 million tonnes in 1962 to 70 million tonnes in 1966. The production in the Mineral Belt rose form 52 to 62 million tonnes during this period. The target for the Third plan remained unachieved. The next Quinquennial progress was rather slow and marked an increase of only 5 million tonnes in total production. The coal production stood at 74 million tonnes during 1970 out of which the Mineral Belt contributed about 62 million tonnes. The share of Orissa, Chattisgarh and Madhya Pradesh marked a constant increase in the Resource Region's production. The share of the traditional coalfields of Jharia, Raniganj and Bokaro declined considerably and that of the other coalfields of Talcher, Korea and Karanpura underwent a constant increase.

2.2.1.2.f Rapid and tremendous development: 1971 – 2010

The period during 1971 to 1996 was the era of accelerated development in coal production. The technological improvement during the later decades of the post independence period marked a tremendous increase in mineral exploration and as a result the coal production shot up from 76 million tonnes during 1971 to 304 million tonnes during 1996. The South East Resource region recorded about 217 million tonnes of coal production during 1996 which was way above the 65 million tonnes of 1971. The growth in the Resource Region was however less dramatic as compared to the overall situation of the country. This region which contributed about 86% of the total coal production of the country in 1971 witnessed a slower growth and accounted for 71% of the country's coal production during 1996.The next Quinquennial progress was rather stagnating with an addition of only 38 million tonnes to the total coal production of the country by 2001. The Resource Region added only 18 million tonnes during this period. The situation however improved after 2001 with the later decades witnessing unprecedented rise in coal production both in the Resource region as well as in the overall country. The coal production in India underwent tremendous rise from 342

million tonnes in 2001 to 430 million tonnes in 2006 and 532 million tonnes during 2010. The Resource region also witnessed a thumping rise from 236 million tonnes in 2001 to 420 million tonnes in 2010. The share of the Mineral Belt in country's coal production also rose 69% during 2001 and 2006 to 79% during 2010.

Table: 2.10 Coal Productions in the Mineral Belt and India, 1951 – 2010

Year	Jharkhand**	Orissa	West Bengal	Madhya Pradesh	Chattisgarh #	S.E.R.R	India*
1951	18.8	0.4	9.7	3.6		32.5	35.0
1956	20.4	0.6	11.4	4.9		37.3	39.9
1961	27.1	0.9	17.1	6.1		51.2	55.7
1966	31.1	1.1	19.7	9.8		61.7	70.4
1971	32.8	1.5	17.3	13.4		65	75.6
1976	42.4	2.1	24.0	20.1		88.6	104.6
1981	49.6	3.2	20.4	27.4		100.6	127.3
1986	56.7	6.9	19.7	44.2		127.5	170.2
1991	68.6	19.7	17.4	70.7		176.4	237.8
1996	78.6	36.2	17.3	85.7		217.8	304.1
2001	75.2	45.6	20.0	94.8	54.2	235.6	341.5
2006	79.9	68.0	22.0	130.5	80.5	300.4	430.3
2010	105.93	106.41	23.14	184.03	109.96	419.51	532.06

(Production in million tons - Production figures are rounded off)

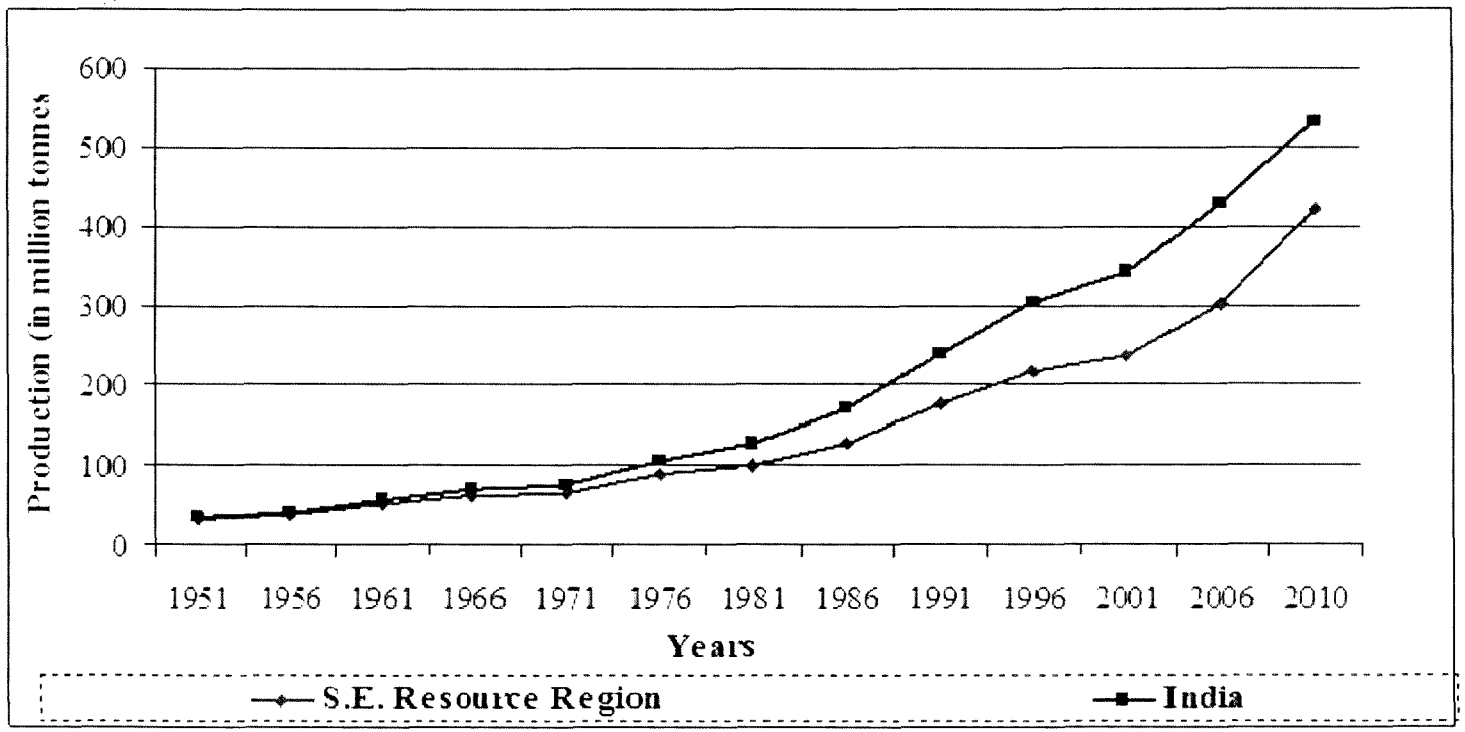
Source: Production data from 1961 to 2010 has been obtained from *Indian Minerals Yearbook*, Indian Bureau of Mines (Nagpur), Ministry of Mines, Govt. of India, 1966 to 2010 and that for 1951 – 1956 from Dewan, H.R. (1958): *Mineral Production in India*, Ministry of Steel, Mines & Fuel, Indian Bureau of Mines, Nagpur.

***India** refers to the total production of the country which includes the production figures of other states as well.

****Jharkhand** refers to the erstwhile Bihar from which it was separated in 2000. The production figures of Bihar prior to 2000 can completely represent Jharkhand as all the coal mines are situated within the administrative boundaries of present day Jharkhand.

Chattisgarh was separated from Madhya Pradesh in 2000, therefore the production figures of Madhya Pradesh includes Chattisgarh prior to 2000 and after 2000 as well in order to maintain continuity.

Fig: 2.6 Coal Production in the South East Resource Region and India, 1951 – 2010



Source: Production data from 1961 to 2010 has been obtained from Indian Minerals Yearbook, Indian Bureau of Mines (Nagpur), Ministry of Mines, Govt. of India, 1966 to 2010 and that for 1951 – 1956 from Dewan, H.R. (1958): Mineral Production in India, Ministry of Steel, Mines & Fuel, Indian Bureau of Mines, Nagpur.

Table: 2.11 Coal Production in the Mineral Belt and India, 1954 – 1970

(By States and their shares)

Years	West Bengal	%	Jharkhand	%	Orissa	%	Chattisgarh	%	Madhya Pr.	%	S.E.R.R.	%	INDIA
1954	10.6	33.6	19.1	60.4	0.5	1.6	1.4	4.4	-	-	**31.6**	100.0	**36.7**
1955	11.4	34.6	19.4	59.2	0.6	1.7	1.5	4.5	-	-	**32.8**	100.0	**38.2**
1956	11.3	33.2	20.1	59.2	0.6	1.8	2.0	5.8	-	-	**34.0**	100.0	**39.4**
1957	13.7	37.0	21.1	57.1	0.5	1.4	1.7	4.5	-	-	**37.0**	100.0	**43.5**
1958	14.2	37.1	21.8	56.7	0.5	1.4	1.8	4.8	-	-	**38.4**	100.0	**45.3**
1959	15.0	37.4	22.4	56.0	0.6	1.5	2.0	5.0	-	-	**39.9**	100.0	**47.0**
1960	16.5	36.8	25.1	55.9	0.8	1.7	2.5	5.5	-	-	**44.8**	100.0	**52.6**
1961	17.3	36.1	27.2	56.8	1.0	2.0	2.4	5.1	-	-	**47.8**	100.0	**56.0**
1962	18.8	35.9	29.8	57.1	1.2	2.2	2.5	4.7	-	-	**52.2**	100.0	**61.3**
1963	19.6	34.9	32.1	57.2	1.2	2.2	3.2	5.7	-	-	**56.2**	100.0	**65.9**
1964	19.1	36.2	29.6	56.0	1.1	2.1	3.0	5.7	-	-	**52.9**	100.0	**62.4**
1965	20.0	35.5	31.0	55.1	1.3	2.3	4.0	7.1	-	-	**56.3**	100.0	**67.2**
1966	19.8	34.8	31.4	55.3	1.2	2.1	4.4	7.7	-	-	**56.7**	100.0	**68.0**
1967	20.0	35.4	30.3	53.4	1.2	2.1	5.1	8.9	0.1	0.2	**56.6**	100.0	**68.2**
1968	20.1	34.0	31.8	53.8	1.3	2.2	5.4	9.2	0.5	0.8	**59.1**	100.0	**70.8**
1969	20.4	32.1	35.1	55.2	1.5	2.3	5.7	9.0	0.8	1.3	**63.5**	100.0	**75.5**
1970	19.2	31.2	34.3	55.8	1.5	2.4	5.3	8.7	1.1	1.9	**61.5**	100.0	**73.7**

(Production in million tons - Production figures are rounded off)

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines (Nagpur), Ministry of Mines, Govt. of India

Note: Production figures for West Bengal and Madhya Pradesh represents the coal production of only those coalfields which are part of the South East Resource Region of India. Production figures for Jharkhand and Chattisgarh represents the coal production of those coalfields which lie within the administrative boundaries of present day Jharkhand and Chattisgarh.

Table: 2.12 Coal Production in the South-East Resource Region of India, 1954 – 1970

(By Major Coalfields and their shares)

Year	Raniganj	%	Jharia	%	Bokaro	%	Giridih	%	Karanpura	%	Hingir-Rampur	%	Talcher	%	Korea	%	SERR
1954	1.66	5.3	13.19	41.8	2.38	7.5	0.26	0.8	1.44	4.6	0.25	0.8	0.27	0.9	1.36	4.3	**31.57**
1955	1.67	5.1	13.44	41.0	2.39	7.3	0.22	0.7	1.54	4.7	0.29	0.9	0.26	0.8	1.47	4.5	**32.81**
1956	1.54	4.5	14.01	41.3	2.50	7.4	0.29	0.8	1.63	4.8	0.31	0.9	0.29	0.9	1.98	5.8	**33.96**
1957	1.24	3.4	14.69	39.7	2.90	7.8	0.41	1.1	1.74	4.7	0.24	0.7	0.29	0.8	1.66	4.5	**36.98**
1958	1.33	3.4	14.94	38.9	2.93	7.6	0.43	1.1	2.06	5.4	0.26	0.7	0.27	0.7	1.78	4.6	**38.44**
1959	1.31	3.3	14.94	37.4	2.76	6.9	0.39	1.0	2.72	6.8	0.32	0.8	0.29	0.7	1.78	4.5	**39.95**
1960	1.52	3.4	16.10	36.0	2.78	6.2	0.42	0.9	3.58	8.0	0.42	0.9	0.36	0.8	2.12	4.7	**44.78**
1961	1.66	3.5	16.73	35.0	2.97	6.2	0.45	0.9	4.37	9.1	0.40	0.8	0.57	1.2	1.85	3.9	**47.82**
1962	2.16	4.1	18.51	35.4	2.95	5.6	0.50	0.9	4.98	9.5	0.44	0.8	0.73	1.4	1.80	3.4	**52.25**
1963	2.02	3.6	19.64	35.0	3.19	5.7	0.48	0.9	6.00	10.7	0.45	0.8	0.80	1.4	2.39	4.2	**56.19**
1964	1.83	3.5	18.17	34.4	3.05	5.8	0.42	0.8	5.39	10.2	0.45	0.9	0.67	1.3	2.22	4.2	**52.86**
1965	2.08	3.7	19.08	33.9	2.99	5.3	0.32	0.6	5.90	10.5	0.48	0.9	0.74	1.3	2.73	4.9	**56.30**
1966	2.15	3.8	19.42	34.2	3.33	5.9	0.33	0.6	5.50	9.7	0.49	0.9	0.69	1.2	3.02	5.3	**56.73**
1967	2.08	3.7	18.75	33.1	3.29	5.8	0.28	0.5	5.10	9.0	0.50	0.9	0.67	1.2	3.26	5.7	**56.64**
1968	2.20	3.7	19.19	32.5	3.42	5.8	0.29	0.5	5.73	9.7	0.49	0.8	0.81	1.4	3.17	5.4	**59.09**
1969	2.51	4.0	20.50	32.3	3.75	5.9	0.28	0.4	6.93	10.9	0.50	0.8	0.95	1.5	3.38	5.3	**63.49**
1970	2.42	3.9	20.01	32.6	3.54	5.8	0.28	0.5	6.99	11.4	0.51	0.8	0.97	1.6	3.09	5.0	**61.49**

(Production in million tons - Production figures are rounded off)

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines (Nagpur), Ministry of Mines, Govt. of India.

Note: Production figures for the SERR represent the entire region including these major coalfields.

Table: 2.13 Coal Production in the Mineral Belt and India, 2000-01 to 2009-10

(By States and their shares)

Year	Chattisgarh			Jharkhand			Orissa			All India	
	Quantity	Share (%)	Growth (%)	Quantity	Share (%)	Growth (%)	Quantity	Share (%)	Growth (%)	Quantity	Growth (%)
2000-01	22.803	7.3	-	33.520	10.7	-	44.803	14.3	-	313.696	-
2001-02	53.621	16.4	135.1	76.813	23.4	129.2	47.805	14.6	6.7	327.787	4.5
2002-03	56.758	16.6	5.9	78.628	23.0	2.4	52.229	15.3	9.3	341.272	4.1
2003-04	61.505	17.0	8.4	79.526	22.0	1.1	60.147	16.6	15.2	361.246	5.9
2004-05	69.253	18.1	12.6	78.038	20.4	-1.9	66.604	17.4	10.7	382.615	5.9
2005-06	76.358	18.8	10.3	85.423	21.0	9.5	70.540	17.3	5.9	407.039	6.4
2006-07	83.241	19.3	9.0	88.764	20.6	3.9	81.160	18.8	15.1	430.832	5.8
2007-08	90.172	19.7	8.3	90.895	19.9	2.4	89.482	19.6	10.3	457.082	6.1
2008-09	101.922	20.7	13.0	96.279	19.5	5.9	98.402	20.0	10	492.757	7.8
2009-10	109.959	20.7	85.4	105.933	19.9	10.0	106.409	20.0	8.1	532.062	7.9

(Production in million tons - Production figures are rounded off)

Source: Provisional Coal Statistics, 2009-10, Coal Controller's Organization, Ministry of Coal, Government of India.

2.2.2 Iron:

The profusion of Coal and Iron ore resources scripted the developmental history of this mineral resource region. The occurrence of both these resources in proximity to each other multiplied the significance of this region as the prime mineral belt of the country. The South East Resource region abounds in iron ore deposits and accounts for more than 77% of the total Iron ore (Hematite) resources and 81% of the total reserves of the country as per the recent estimations of 2010. Chattisgarh alone contributes 33% of the total resources of India followed by Jharkhand which holds about 26% of the total resources which includes the total reserves and remaining resources.

Table: 2.14 Reserves / Resources of Iron Ore (Hematite) in the Mineral Belt and India

(State wise - as on 1st April, 2010 (P)

States / Resources		Chattisgarh	Jharkhand	Orissa	All India
Total Reserves	Quantity	900	2304	3313	8094
	Share %	**11.1**	**28.5**	**40.9**	100
Remaining Resources	Quantity	2392	2293	2617	9789
	Share %	**24.4**	**23.4**	**26.7**	100
Total Resources	Quantity	3292	4597	5930	17883
	Share %	**18.4**	**25.7**	**33.2**	100

(Quantity in million tonnes: figures are rounded off)

*Share = Percentage share of All India's total Reserves / Resources

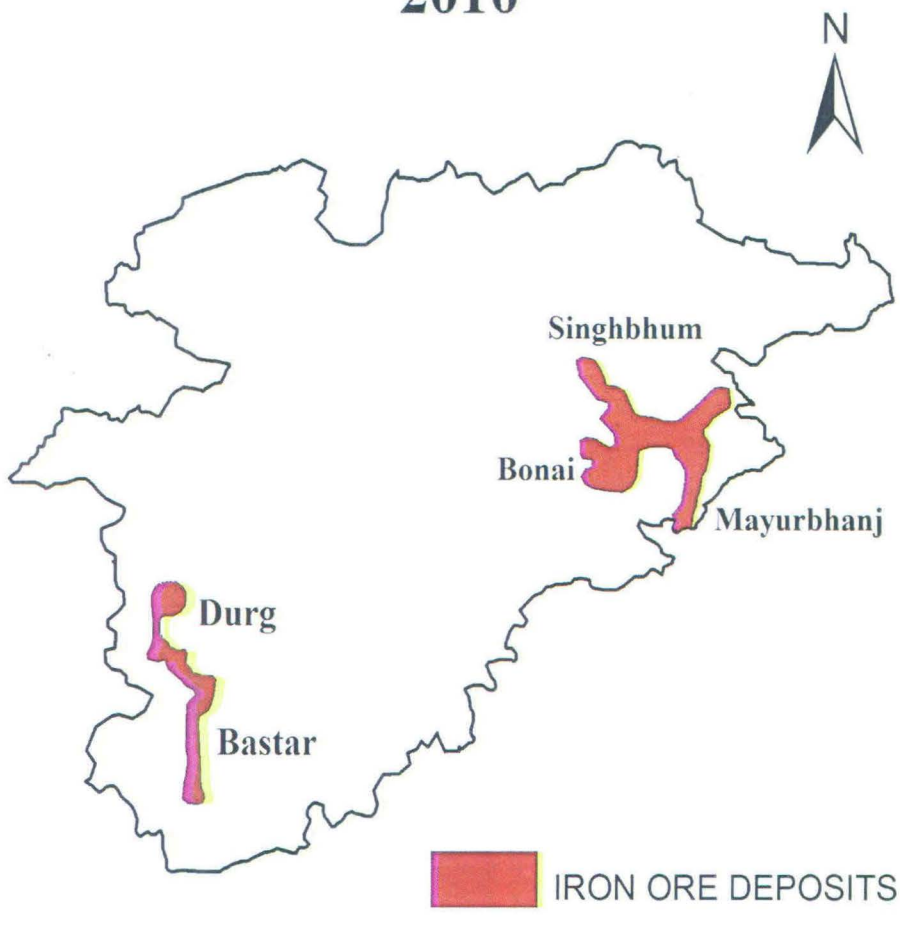
Source: *Indian Minerals Yearbook*, 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Government of India, Chapter 47, Iron Ore, Table: 1, pp. 47-3

The entire resource of Iron ore in the Resource Region is concentrated in two major regions: Singhbhum – Keonjhar - Sundergarh – Mayurbhanj region in Jharkhand and Orissa; and Bastar – Durg region in the Bailadila ranges in Chattisgarh. The Singhbhum-Keonjhar-Sundergarh -Mayurbhanj region accounts for about 60% of the total resources and 68% of the total reserves of iron ore in the country. Within this sub-region, Singhbhum alone holds 28% of the total resources and 36% of the total reserves of the country. The other sub-region of Bastar-Durg contributes 19% of the total resources and 11% of the total reserves of the country among which Bastar holds the maximum proportion.

Fig: 2.7

Distribution of Iron Ore Deposits

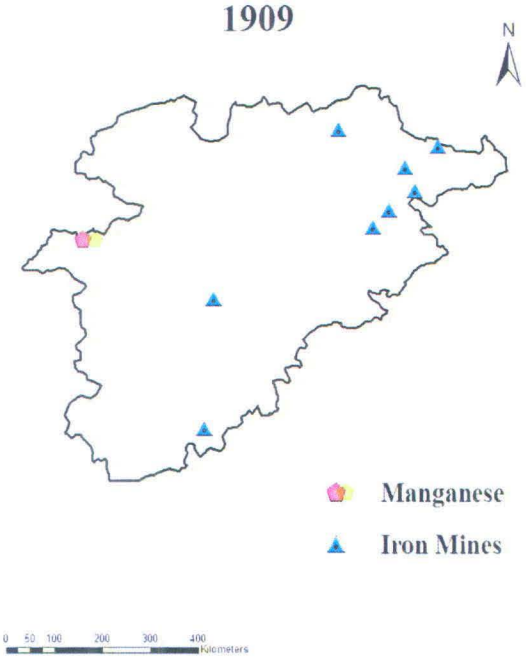
2010



Source: Indian Bureau of Mines, Nagpur, 2010

Fig: 2.8

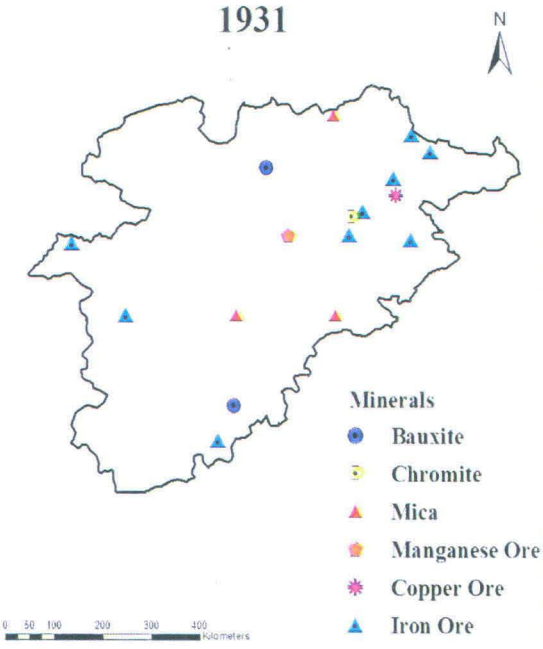
Distribution of Minerals 1909



Source: Imperial Gazetteer Atlas of India, 1909

Fig: 2.9

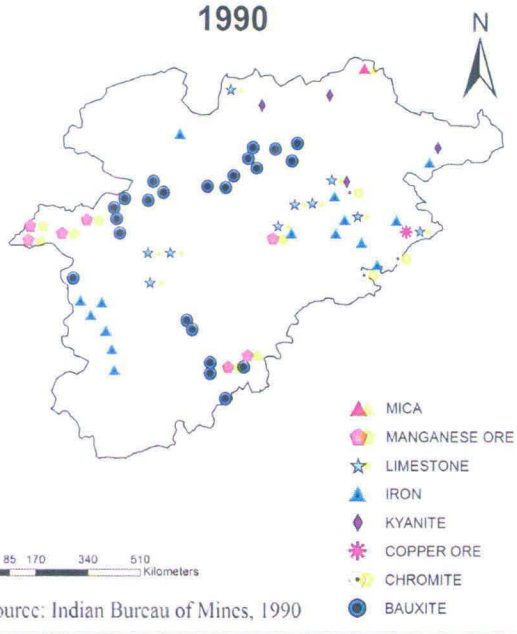
Distribution of Minerals 1931



Source: Imperial Gazetteer Atlas of India, 1931

Fig: 2.10

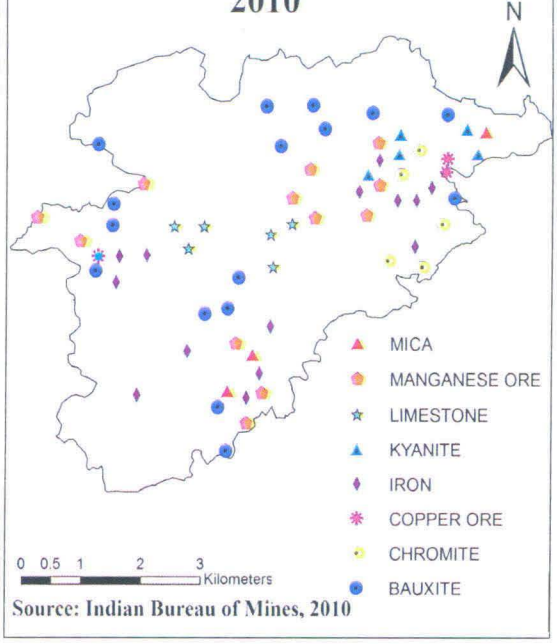
Distribution of Minerals 1990



Source: Indian Bureau of Mines, 1990

Fig: 2.11

Distribution Of Minerals 2010



Source: Indian Bureau of Mines, 2010

Table: 2.15 Reserves / Resources of Iron Ore (Hematite) in the South-East Resource Region of India

(District / State wise - as on 1st April, 2005)

States / Districts	Total Reserves		Remaining Resources		Total Resources	
	Quantity	% *	Quantity	%	Quantity	%
Chattisgarh	761	**10.9**	1970	**25.8**	2731	**18.7**
Bastar	647	9.2	1958	25.7	2604	17.8
Durg	114	1.6	13	0.2	127	0.9
Jharkhand	2494	**35.6**	1541	**20.2**	4036	**27.6**
Singhbhum	2494	35.6	1541	20.2	4036	27.6
Orissa	2252	**32.1**	2509	**32.9**	4761	**32.5**
Dhenkanal	-	-	1	0.0	1	0.0
Jajpur	4	0.1	-	-	4	0.0
Keonjhar	1510	21.6	1283	16.8	2794	19.1
Koraput	-	-	3	0.0	3	0.0
Mayurbhanj	42	0.6	42	0.6	84	0.6
Sambalpur	-	-	50	0.7	50	0.3
Sundergarh	696	9.9	1130	14.8	1826	12.5
All India	7004	**100.0**	7626	**100.0**	14630	**100.0**

(Quantity in million tonnes: figures are rounded off)

* %= Percentage share of All India's total Reserves / Resources

Source: *National Mineral Inventory*, 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Government of India.

Note: **Bastar** district refers to the erstwhile district as per 1961 Census which has been considered as the base year for all administrative divisions for the present study. It constitutes the figures of present day Bastar, Dantewada and Kanker districts as per 2001 Census for the given table. Similarly, **Durg** district comprises of the figures of present day Durg and Rajnandgaon districts as per 2001 Census for the given table.

Iron ore mining in the region dates back to 1778 in Birbhum district in Bengal followed by mining of Burdwan ore in 1839. The Iron ore deposits within the Resource region were discovered as early as in 1904 when eminent geologist P.N. Bose discovered the rich resources of Mayurbhanj[18] where mining of the ore started by 1909. This was followed by the discovery of Singhbhum deposits in 1917. The sequential opening of the iron ore deposits began with Gorumahisani deposits in around 1910, Sulaipat, in 1915; Badampahar, in 1922; Gua, in 1923; and Noamundi and Barabil, in 1925. All of these deposits were located in the Bihar and Orissa Province (within the present day Jharkhand and Orissa) which accounted for almost the entire iron ore reserves and production of the country. [19]

During the early part of the century, Singhbhum, Mayurbhanj and Keonjhar together contributed to the entire iron ore reserves and production of the country. The early estimations of the iron ore reserves of this region carried out by H.C. Jones in 1934 depict about 1000 million tonnes of high quality ore existing in the Singhbhum region alone and along with the adjoining areas of Mayurbhanj, Keonjhar and Bonai, the total estimate was as high as 3000 million tonnes. Later estimations during 1946-47 by F.G. Percival revealed amplified estimates of the iron ore reserves to the tune of 8000 million tonnes.[20]

Most of the iron ore mines were then operated by Indian Iron and Steel Company (I.I.S.C.O) and Tata Iron and Steel Company (T.I.S.C.O.). There were mainly five major iron ore deposits in the region. The most important Noamundi deposits were operated by the TISCO and the other four: Pansira Buru, Budu Buru, Gua and Jhiling Buru were worked by the IISCO. Noamundi deposit consist of two parallel iron ore ridges and extends over the southern part of the Singhbhum district of Jharkhand to Keonjhar district in Orissa. After being discovered by Tata as early as in 1917, the early estimations of its reserves amounted to 300 million tonnes of high grade iron ore.

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[18] Bose, P.N. (1904): "Notes on the Geology and Mineral Resources of Mayurbhanj," *Records of the Geological Survey of India*, Vol. 31, Part 3, pp. 167-173.

[19] Karan, P.P. (1957): "Iron Mining Industry in Singhbhum-Mayurbhanj Region of India", *Economic Geography*, Vol. 33, No. 4, pp. 350 - 351

[20] Karan, P.P. (1953): "Economic regions of Chota Nagpur, Bihar, India", *Economic Geography*, Vol. 29, No. 3, pp. 233

TISCO went on to produce about 704 thousand tonnes of iron ore from the Noamundi mines during 1944. The early estimations of iron ore reserves at Gua deposits amounted to about 100 million tonnes and that at Budu Buru to 150 million tonnes.[21] Gorumahisani, Noamundi and Barabil continued to be the most significant iron ore deposits in the region during the successive decades.

Various factors governed the spatial pattern of the distribution of mines, apart from the geological occurrence, demand from the blast furnaces and pattern of expansion of the railways played a major role in determining the spreading of the mines. The advent of the railways in this undeveloped, hilly and forested region resulted in opening up of its vast resources. The expansion of the Bengal-Nagpur Railway line witnessed the simultaneous opening and development of the rich iron ore deposits in this region. The most significant Gorumahisani mine was situated along the Jamshedpur- Gorumahisani branch line of the Eastern Railway. The further extension of this line directed the opening of Sulaipat and Badampahar mines. The construction of yet another branch line of Eastern Railway, the Raj Kharsawan – Gua line, resulted in the opening up of important mines of Gua, Noamundi and Barbil.[22] The several branches of the Bengal-Nagpur Railway line led to the numerous iron ore deposits of the region which were literally located along the railway route. Thus, the advent and expansion of the railways not only provided a boost to iron mining in the region but also determined their spatial distribution.

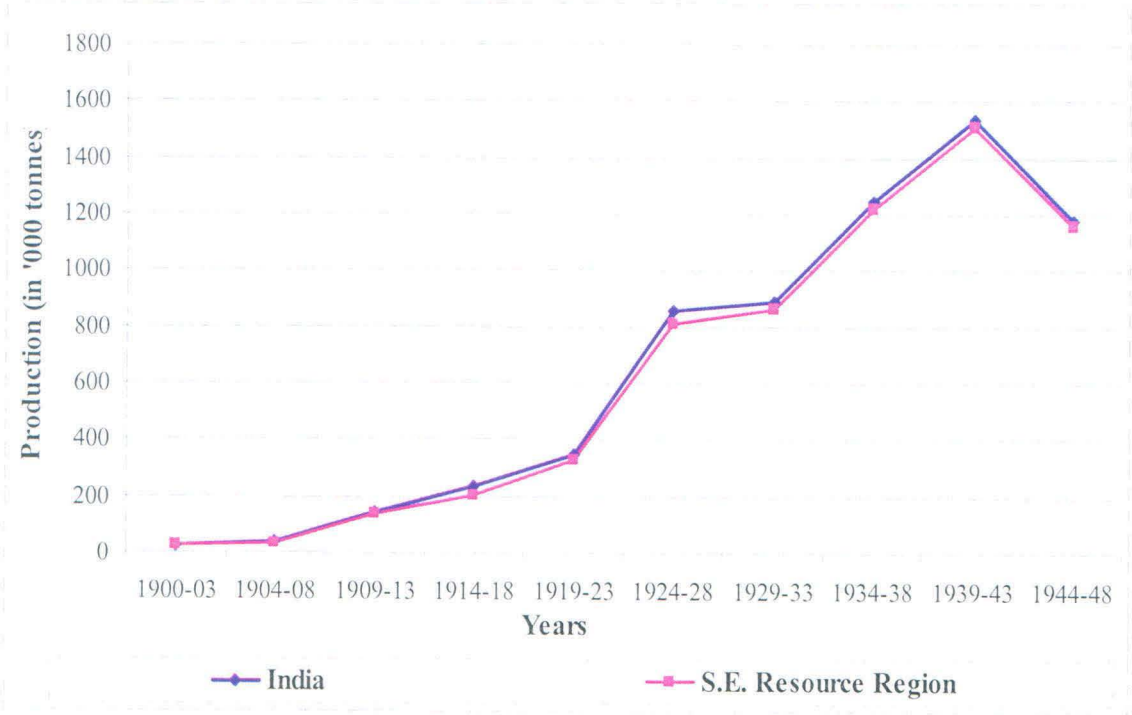
The opening up of the new mines provided tremendous boost to iron ore production in the region especially around the 1920s and later half of 1930s. The new mines were concentrated in Jharkhand – Orissa region. Due to such a pattern of development of iron mining in the region, Jharkhand and Orissa became the largest producers of iron ore in the country. They together contributed about 80% of the total iron ore production by 1955. While there has been a gradual increase in iron ore production in Jharkhand and Orissa, their share in total production has been constantly declining. Jharkhand, which contributed 41% of the total production in 1955, accounted for mere 11% during 2009-10. Orissa also provided about 40% of the total iron ore

[21] Karan. P.P. (1953). *Op Cit*, pp.233

[22] Karan. P.P. (1957). *Op Cit*. pp. 353

production during 1955 but declined to as low as 14% during 1989-90. The situation however improved during the successive decades and the recent figures of 2009-10 reports 36% share contributed by Orissa.

Fig: 2.12 Production of Iron Ore in the Mineral Belt and India, 1900 to 1948



Source: Based on C. Brown and A.K. Dey (1923): *Mineral Wealth of India,* pp. 192

At the same time Chattisgarh, with Bastar – Durg iron ore deposits, has emerged as an important producer of iron ore with ever increasing share in total production of the country. It raised its share from 0.1% of the total production in 1955 to a sudden increase of 14% during 1960 and reached 32% by 1969. The share of Chattisgarh too started declining in the successive decades and as per the recent figures of 2009-10 it contributes only 12% of the total production. Therefore, according to the recent scenario, the Mineral Belt contributes about 60% of the total iron ore production of the country out of which Orissa alone accounts for 36% of the production and stands as the largest producer of iron ore in the Resource region.

During the early decades of the post independence era, Singhbhum district in Jharkhand produced the largest amount of iron ore followed closely by Keonjhar

district. These two districts together produced about 53% of the total iron ore of the country during 1966. Durg contributed another 19% to the total kitty of iron ore production. During the successive decades, there was a drastic decline in the share of these districts to the total iron ore production, which was accompanied by a slight increase in the production figures for Singhbhum and Durg districts but Keonjhar suffered from a constant decline in its production. During 1966 to 1971, the share of Singhbhum district went down from 27% to 14% and that of Keonjhar slumped from 26% to 15%. The share of Durg district slipped from 19% to 11% during this period which witnessed a phenomenal, simultaneous rise of production in the mines of Bastar district whose share ascended from 2% to 12% during the same period.

After 1989-90, Keonjhar district witnessed a dramatic rise in its iron ore production which multiplied by several times in the following decades. Its share rose from 9% in 1989-90 to 26% in 2009-10, and thus regained its former glory. The same fate could not be true for Singhbhum and Durg districts, where the increase in iron ore production has been rather gradual accompanied by continuous decline in their share of total production. While Singhbhum district accounted for mere 11% of the total production, Durg recorded only 4% and Bastar came up with 8%. Sundergarh district contributed about 10% to the total production.

The pattern of mining development has undergone a spatial shift over the decades within the Resource Region. Mayurbhanj area used to be the initial core of iron mining during the early decades which has shifted westwards to Singhbhum-Keonjhar-Sundergarh. Gorumahisani mine in Mayurbhanj was the prime mining region but underwent a relative decline in production and resulted in the shift of the iron mining core towards Noamundi in west Singhbhum. This sub-region with its huge reserves and concentrated development of the railways became the focal point of iron mining in the Resource region.[23] The recent decades have witnessed a further movement of this core westwards with ever increasing production of Koira mining region in Sundergarh district. The two major iron mining regions during the recent period are the Bonai Iron ore ranges in Jharkhand and Orissa which consists of the mining centres of Noamundi, Kiriburu, Meghatuburu, Chiria, Gua, Thakurani, Taldi, Bolani, Joda and Daitari; and the

[23] Karan. P.P. (1957). *Op Cit.* pp. 354

second region being the North-South trending linear belt in Chattisgarh which includes the important mines of Bailadila and Dalli-Rajhara.

Table: 2.16 Production of Iron Ore in the Mineral Belt and India, 1955 to 2009-10 (By States / Shares)

Year	Jharkhand		Orissa		Chattisgarh		India
	Quantity	%	Quantity	%	Quantity	%	Quantity
1955	1951	41.0	1912	40.2	7	0.1	4753
1956	1877	39.3	1799	37.7	33	0.7	4776
1957	1966	38.0	2088	40.4	31	0.6	5167
1958	2262	36.9	2198	35.9	234	3.8	6130
1959	3234	40.5	2615	32.8	414	5.2	7982
1960	2847	26.6	3735	35.0	1449	13.6	10683
1961	2945	23.9	4696	38.1	2304	18.7	12310
1962	3016	22.3	5449	40.3	1469	10.9	13510
1963	3471	23.0	5995	39.7	2342	15.5	15093
1964	3649	23.8	5711	37.3	2874	18.8	15310
1965	4259	25.2	6396	37.8	2788	16.5	16901
1966	5366	27.1	6722	33.9	3964	20.0	19802
1967	5382	27.2	5460	27.6	4762	24.0	19802
1968	5709	27.7	5678	27.6	5559	27.0	20577
1969	5342	25.1	5994	28.2	6743	31.7	21275
1971	4886	14.3	6563	19.2	7812	22.8	34261
1976	6891	15.8	7914	18.1	11013	25.2	43740
1981	6879	16.5	6335	15.2	10128	24.4	41586
1983	6998	18.4	5398	14.2	9272	24.3	38089
1989-90	9169	16.5	7560	13.6	12435	22.4	55437
1997-98	12502	16.5	11949	15.8	18149	24.0	75723
2000-01	12403	15.4	14382	17.8	20016	24.8	80762
2005-06	17435	11.3	49880	32.3	24750	16.0	154436
2009-10	23008	10.5	79274	36.3	26476	12.1	218639

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: Production Data for 1971 to 2009-10 has been collected from *Indian Minerals Yearbook*, 1971 to 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India and that for 1955 to 1969 has been collected from *Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi, India.

The last decade i.e. from 2000-01 to 2009-10 has witnessed unprecedented rise in the iron ore production in the Mineral belt as well as India. While the total production in the mineral belt went up from 41 to 46 million tonnes during 1997-98 to 2000-01, it sped up to 90 million tonnes during 2005-06 and 128 million tonnes by the close of the most successful decade in 2009-10. Such a tremendous growth in iron ore production in the region has been simply dramatic. Orissa emerged as the largest producer of iron ore not only in the Mineral Belt but also in India due to the whopping contribution of mines in Keonjhar and Sundergarh districts. Chattisgarh emerged as the second largest producer with ever increasing production in the Bastar district. Jharkhand emerged as a close third due to augmented production in the Singhbhum district during 2009-10.

Table: 2.17 Number of Iron Ore Mines in the South East Resource Region of India, 2000-01 to 2009-10 (By States / Districts)

State / District	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10 (P)
Chattisgarh	**9**	**9**	**8**	**11**	**12**	**12**	**11**	**11**	**12**	**10**
Durg	6	6	5	6	6	6	6	6	6	6
Bastar	3	3	3	5	6	6	5	5	6	4
Jharkhand	**14**	**15**	**18**	**19**	**21**	**15**	**17**	**17**	**21**	**21**
Singhbhum	13	14	17	18	20	15	17	17	21	21
Palamau	1	1	1	1	1	-	-	-	-	-
Orissa	**73**	**73**	**77**	**82**	**84**	**81**	**87**	**80**	**82**	**72**
Keonjhar	43	43	46	46	50	50	53	48	51	44
Mayurbhanj	8	8	8	8	7	7	6	7	6	5
Sundergarh	22	22	23	28	27	24	28	25	25	23
INDIA	**208**	**221**	**242**	**266**	**281**	**261**	**290**	**300**	**328**	**319**

Source: *Indian Minerals Yearbook*, 2002 to 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India.

Note: **Bastar** district refers to the erstwhile district as per 1961 Census which constitutes the figures of present day Bastar, Dantewada and Kanker districts as per 2001 Census for the given table. Similarly, **Durg** district comprises of the figures of present day Durg and Rajnandgaon districts as per 2001 Census for the given table.

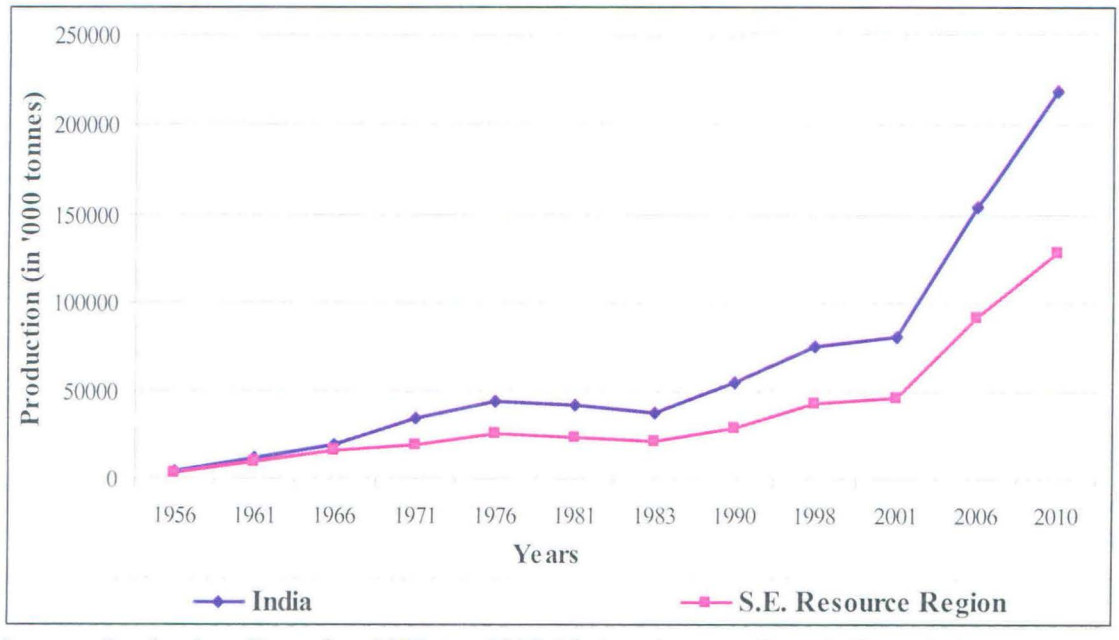
Table: 2.18 Production of Iron Ore in the South East Resource Region, 1966 to 2009-10 (By States / Districts)

Year	Chattisgarh		Jharkhand		Orissa			INDIA
	Bastar	Durg	Singhbhum	Palamau	Keonjhar	Mayurbhanj	Sundergarh	
1966	399	3773	5371	5	5276	587	811	20065
1971	4064	3749	4879	7	5246	110	1208	34261
1976	6065	4949	6867	24	5271	297	2345	43740
1981	6449	3679	6832	47	4204	143	1988	41586
1983	5242	4030	6958	40	3432	155	1811	38089
1989-90	6939	5496	9130	39	4986	157	2417	55437
1997-98	10885	7264	12495	7	8867	139	2943	75723
2000-01	12082	7934	12398	5	10635	97	3650	80762
2005-06	17601	7149	17435	0	39210	294	10376	154436
2009-10	18284	8192	23008	0	57255	385	21634	218639

(Quantity in '000 tonnes)

Source: *Indian Minerals Yearbook*, 1966 to 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Government of India.

Fig: 2.13 Production of Iron Ore in the Mineral Belt and India, 1956 to 2010



Source: Production Data for 1971 to 2009-10 has been collected from *Indian Minerals Yearbook*, 1971 to 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India and that for 1955 to 1969 has been collected from *Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi, India.

Table: 2.19 Production of Iron Ore in the Mineral belt and India, 2000-01 to 2009-10 (By States / Shares / Growth)

Year	Chattisgarh			Jharkhand			Orissa			All India	
	Quantity	Share (%)	Growth (%)	Quantity	Share (%)	Growth (%)	Quantity	Share (%)	Growth (%)	Quantity	Growth (%)
2000-01	20.02	24.8	-	12.40	15.4	-	14.38	17.8	-	80.76	-
2001-02	18.66	21.6	-6.8	13.07	15.2	5.4	16.60	19.3	15.4	86.23	6.8
2002-03	19.78	20.0	6.0	13.70	13.8	4.9	22.08	22.3	33.0	99.07	14.9
2003-04	23.36	19.0	18.1	14.68	12.0	7.2	31.29	25.5	41.7	122.84	24.0
2004-05	23.12	15.8	-1.0	16.72	11.5	13.9	41.75	28.6	33.4	145.94	18.8
2005-06	26.08	15.8	12.8	17.98	10.9	7.5	52.15	31.6	24.9	165.23	13.2
2006-07	28.73	15.3	10.1	18.61	9.9	3.5	64.18	34.2	23.1	187.70	13.6
2007-08	31.00	14.5	7.9	20.75	9.7	11.5	69.88	32.8	8.9	213.25	13.6
2008-09	30.00	14.1	-3.2	21.33	10.0	2.8	72.63	34.1	3.9	212.96	-0.1
2009-10 (P)	26.48	12.1	-11.7	23.01	10.5	7.9	79.27	36.3	9.2	218.64	2.7

(Quantity in million tonnes); % = Percentage share of All India's total Production

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2002 to 2010.

Table: 2.20 Production of Iron Ore in the South-East Resource Region, 2000-01 to 2009-10 (By States / Districts)

State / District		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10 (P)
Chattisgarh	Quantity	20016	18660	19781	23361	23118	24750	28731	30699	29997	26476
	Share %	**24.8**	**21.6**	**20.0**	**19.0**	**15.8**	**16.0**	**15.3**	**14.9**	**14.1**	**12.1**
Bastar	Quantity	12082	12349	13402	15185	16099	17601	20307	22703	21707	18284
	%	15.0	14.3	13.5	12.4	11.0	11.4	10.8	11.0	10.2	8.4
Durg	Quantity	7934	6311	6379	8176	7019	7149	8424	7996	8290	8192
	%	9.8	7.3	6.4	6.7	4.8	4.6	4.5	3.9	3.9	3.7
Jharkhand	Quantity	12403	13068	13702	14682	16719	17435	18608	20929	21329	23008
	%	**15.4**	**15.2**	**13.8**	**12.0**	**11.5**	**11.3**	**9.9**	**10.1**	**10.0**	**10.5**
Singhbhum	Quantity	12398	13065	13702	14681	16717	17435	18608	20929	21329	23008
	%	15.4	15.2	13.8	12.0	11.5	11.3	9.9	10.1	10.0	10.5
Palamau	Quantity	5	3	-	1	2	-	-	-	-	-
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Orissa	Quantity	14382	16602	22077	31288	41750	49880	64178	68516	72627	79274
	%	**17.8**	**19.3**	**22.3**	**25.5**	**28.6**	**32.3**	**34.2**	**33.2**	**34.1**	**36.3**
Keonjhar	Quantity	10635	13027	18255	26049	33754	39210	48208	54182	56724	57255
	%	13.2	15.1	18.4	21.2	23.1	25.4	25.7	26.2	26.6	26.2
Mayurbhanj	Quantity	97	127	152	226	373	294	212	652	407	385
	%	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.3	0.2	0.2
Sundergarh	Quantity	3650	3448	3670	5013	7623	10376	15758	13682	15496	21634
	%	4.5	4.0	3.7	4.1	5.2	6.7	8.4	6.6	7.3	9.9
INDIA	Quantity	80762	86226	99072	122838	145942	154436	187696	206452	212960	218639
	%	100	100	100	100	100	100	100	100	100	100

(Quantity in '000 tonnes); % = Percentage share of All India's total Production

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2002 to 2010.

Note: **Bastar** district refers to the erstwhile district as per 1961 Census which constitutes the figures of present day Dantewada and Kanker districts as per 2001 Census for the given table. Similarly, **Durg** district comprises of the figures of present day Durg and Rajnandgaon districts as per 2001 Census for this table.

2.2.3 Bauxite:

Bauxite was explored way back in 1903 in Jharkhand (erstwhile Bihar) where the rich deposits of Ranchi and Palamau region contributed a huge chunk to the total production. The establishment of the Indian Aluminium Company took place around 1937 and production began only from 1943. It undertook geological prospecting in the western part of Ranchi district where rich deposits were discovered. The Aluminium Corporation of India was formed during 1942 which established its plant near Asansol and the bauxite supply was obtained from Lohardaga situated to the west of Ranchi. The estimated reserve of bauxite in Ranchi and Palamau districts was about 12.7 million tonnes in 1960. The production of bauxite witnessed an ever increasing trend in Ranchi district which was mostly contributed by the mines in Lohardaga and the production increased from 20 thousand tonnes of bauxite in 1951 to over 40 thousand tonnes in 1955 and soon accelerated to 1.5 lakh tonnes in 1961 and 2.9 lakh tonnes in 1965.[24] The mining of bauxite in Balaghat district of Madhya Pradesh saw the light of day in 1901 but was later closed by 1932. Mining in other parts of the Resource region, in Keonjhar in Orissa and Singhbhum in Jharkhand, began much later. During the pre-independence era till 1943, erstwhile state of Madhya Pradesh contributed almost the entire bulk of bauxite production in the country, the share of which declined after Jharkhand with its rich mines of Ranchi and Palamau came up with about one-fourth of the total share.

The recent scenario during 2009-2010 depicts that Orissa contributes the largest share of bauxite production in the country. Orissa contributes about 55% of the total bauxite resources in the country[25] and with 35% share in total production as well, it stands as the largest producer of bauxite in India as well. Chattisgarh and Jharkhand hold 5% and 4% of the total bauxite resources respectively[26] and each contributes about 12% to the total country's production. The production scenario during the last ten years depicts that during 1999-2000 Orissa used to contribute about 89% of the total production which declined considerably to only 42% share during 2001-02. The decline

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[24] Pandeya, P. (1970): *Impact of Industrialization on Urban Growth*, Central Book Depot, Allahabad, pp. 73 - 74

[25] *Indian Minerals Yearbook*, 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, Bauxite, pp. 17-1

[26] *Ibid*, pp. 17-1

in share was witnessed in Jharkhand and Chattisgarh as well where the share in production plunged from 39% to 14% and 14% to 6% respectively. Among these three states, Jharkhand houses the maximum number of bauxite mines i.e. 36 mines in 2009-10 followed by Chattisgarh 15 mines and only 4 mines in Orissa which contribute the largest production share.

Table: 2.21 Production of Bauxite in the Mineral Belt and India, 1999-00 to 2009-10 (By States / Shares)

Year	Jharkhand		Orissa		Chattisgarh		India
	Quantity	%	Quantity	%	Quantity	%	Quantity
1999-00	1253	38.7	2878	88.8	444	13.7	3240
2000-01	1296	38.4	2904	86.1	609	18.1	3373
2001-02	1216	14.0	3605	41.5	556	6.4	8689
2002-03	1161	11.9	4904	50.2	605	6.2	9777
2003-04	1518	13.9	4934	45.0	887	8.1	10956
2004-05	1492	12.5	4992	41.7	1111	9.3	11964
2005-06	1514	12.3	4871	39.5	1349	10.9	12335
2007-08	1249	5.5	4685	20.7	1793	7.9	22624
2008-09	1585	10.3	4734	30.6	1674	10.8	15460
2009-10	1669	12.0	4879	35.0	1686	12.1	13952

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

Table: 2.22 Number of Bauxite Mines in the Mineral Belt, 1999-00 to 2009-10

Year	Jharkhand	Orissa	Chattisgarh	India
1999-00	31	1	5	180
2000-01	28	2	5	174
2001-02	29	1	6	181
2002-03	27	2	6	174
2003-04	32	3	8	204
2004-05	30	3	10	191
2005-06	32	3	10	189
2008-09	34	4	14	198
2009-10	36	4	15	200

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

2.2.4 Chromite:

The state of Orissa in the Mineral belt is abounds in the resources of Chromite accounting for nothing less than 93% of the total resources of chromites in the country. Sukinda valley in Jajapur which lies within the South East Resource Region holds almost all the Chromite resources of Orissa. [27] During the last ten years, Orissa has increasingly been almost the sole producer of Chromite in the country with about 99.8% share of the total chromites production in India during 2009-10. Out of the total 23 Chromite mines in India in 2009-10, 19 mines are located in Orissa alone which is distributed in the order of Jajapur (13 mines), Keonjhar (4 mines) and Dhenkanal (2 mines).

Table: 2.23 Production and number of Chromite mines in the Mineral Belt and India, (1999-00 to 2009-10)

Year	Orissa			India	
	Quantity	%	No. of Mines	Quantity	No. of Mines
1999-00	1724	99.2	17	1738	21
2000-01	1936	99.2	16	1952	20
2001-02	1531	98.8	17	1549	20
2002-03	3047	99.4	17	3066	20
2003-04	3187	99.6	16	3199	19
2004-05	3610	99.7	16	3621	19
2005-06	3414	99.7	15	3423	17
2007-08	4863	99.8	19	4872	22
2008-09	4069	99.9	21	4073	24
2009-10	3406	99.8	19	3412	23

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

2.2.5 Copper:

The Singhbhum district forms the sole copper producing region in the Mineral belt. The initial reference to the existence of copper ore in this region dates back to 1829 by W. Jones and its further confirmation came during 1854 by J.C. Haughton.[28] The

[27] *Indian Minerals Yearbook,* 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, Chromite, pp. 23-1

[28] Dunn, J.A. (1937): "Mineral Deposits of Eastern Singhbhum and surrounding areas", *Memoirs of the Geological Survey of India,* Vol. 69, Part 1, pp. 60

copper belt in Singhbhum extends from Dhalbhum through Kharsawan and Saraikela via Rakha and Mosabani mines and terminates at Baharagora. Mining of Copper in the Singhbhum Copper belt started first at Rakha mines followed by Mosabani and Surda mines. The Singhbhum Copper Company, established in 1857, was engaged in copper mining at Saraikela till 1859 when mining operation had to be stopped due to its uneconomic nature. A yet another Hindustan (Singhbhum) Copper Company was also forced to close down at Rajdah in 1864 due to similar reasons despite the availability of good copper ores. Rajdah Mining Company started operations during 1891 at Rakha but it too failed to continue. This was followed by systematic exploration activities in this region by the Geological Survey of India during 1906-08 which brought to light the potential of the rich copper belt.[29] The Rakha mines were bought by the Cape Copper Company in 1908 and production began by 1914 but suffered a closedown by 1924.[30] It was succeeded by the Indian Copper Corporation Limited which carried out systematic and scientific development of the Copper belt. It owned mines at Mosabani, Dhobani, and Badia.

Rakha, Mosabani and Dhobani form the most significant copper producing belt in this region. The production of copper from this region was about 2,079 tonnes during the year 1911 which accelerated to 32,560 tonnes in 1921 and 153,636 tonnes in 1931. The Second World War proved to be a boon for the Indian Copper industry and the production shot up to 401,235 tonnes by 1940.[31] The expansion of the Bengal Nagpur Railway to the copper belt enhanced its significance to a great extent. Transport facility is of such a prime importance to mining in the hilly areas of eastern Singhbhum that while introduction of railways proved beneficial for the premier mines, lack of good transport facility affected the other parts of the copper belt and resulted in their non-exploitation for decades together.[32] In the post Independence era, the production of copper went up to 403,711 tonnes in 1959 and 447,882 tonnes in 1960 out of which 388,186 tonnes and 425,605 tonnes were respectively obtained during 1959 and 1960

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[29] Singh, R.D. (1982): "Development of Mining Technology during the Nineteenth century in India", *Indian Journal of History of Science*, Vol. 17, No. 2, pp. 208

[30] Brown J.C. and A.K. Dey (1955): *Mineral Wealth of India*, Oxford University Press, pp. 148

[31] Pandeya, P. (1970), *Op Cit*, pp.71

[32] Karan, P.P. (1953), *Op Cit*, pp. 237

from the Mosabani mines which emerged as the largest copper producing mine in this region as well as in India. Mosabani was distantly followed by Surda and Pathargora mines in total copper production in that order.[33] The statistics for copper production in the Mineral Belt during the last ten years depict that Singhbhum in Jharkhand and Balaghat in Madhya Pradesh are the only copper producing areas in the South East Resource Region. Jharkhand and Madhya Pradesh constitutes of 16.2% and 29% of the total copper resources of the country respectively[34] and contribute about 12% and 60% to the total copper production of India respectively during 2009-2010. While the entire copper production in Jharkhand is obtained from a single mine in East Singhbhum, a single mine in Balaghat too contributes to the entire production of Madhya Pradesh. Both these mines are operated by the Hindustan Copper Ltd. (HCL). Balaghat in Madhya Pradesh is presently the largest producer of copper not only in the Mineral belt but also in India.

Table: 2.24 Production and number of Copper mines in the Mineral Belt and India, (2006-07 to 2009-10)

Year	Madhya Pradesh			Jharkhand			India	
	Quantity	**Share (%)**	No. of Mines	Quantity	**Share (%)**	No. of Mines	Quantity	No. of Mines
2006-07	2270	69.4	1	0	0.0	0	3273	4
2007-08	2193	67.6	1	46	1.4	1	3242	4
2008-09	2073	60.1	1	328	9.5	1	3452	4
2009-10	1933	59.9	1	387	12.0	1	3227	4

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2007 to 2010

[33] *Indian Minerals Yearbook*, 1960, pp. 131

[34] *Indian Minerals Yearbook*, 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, Copper, pp. 26-1

2.2.6 Dolomite:

Extraction of dolomite in the South East Resource Region commenced around 1898 at Rourkela and Bisra from the Birmitrapur stage of Gangpur in Orissa. The steel works in Jamshedpur utilized the dolomite from Gangpur since 1918 and obtained it from the nearest large deposits owned by the company i.e. the Panposh quarries which was located on the main line of the Bengal Nagpur Railway.[35] The initial estimate of total resources of dolomite in the Birmitrapur region was undertaken by Dr. M.S. Krishnan to be about 252 million tonnes. Small deposits of dolomite existed in Sambalpur and Koraput districts of Orissa, Chaibasa in Singhbhum district and Garhwa in Palamau district of Jharkhand and in Durg and Bilaspur districts of Chattisgarh. During 1912-1933 a total of about 2.5 million tonnes of dolomite was extracted, the production of which declined since 1929 due to its substitution by Limestone in Tata Steel works which was the main consumer of dolomite during those times.

The production scenario of the post independence era depict that during the initial years i.e. 1955 to 1959, Orissa constituted almost the entire dolomite production of the country ranging from 80% to 97%. Its share started declining from 1960 onwards when erstwhile Madhya Pradesh considerable increased its share in total dolomite production. By 1969, Orissa and erstwhile Madhya Pradesh (including Chattisgarh) contributed about 48% and 37% of the total production of the country respectively. Orissa's share in production further declined to 36% during 1999-2000 and stands at mere 18% during 2009-2010. In the Mineral belt, Chattisgarh holds the maximum share in total production i.e. about 23% according to the latest figures of 2009-10 and Jharkhand contributes about 8%. The recent estimates of dolomite resources during 2010 depicts that Orissa and Chattisgarh hold about 11% of the total resources each. Chattisgarh has the maximum 21 mines while Orissa has four dolomite mines. Dolomite mining is mainly carried out by Bisra Stone Lime Co. Ltd. in Birmitrapur in Sundergarh district of Orissa, which used to supply dolomite and limestone to all the iron and steel centres in India since 1922 and presently holds four mines in Sundergarh district which contributes the entire 18% share of Orissa in total dolomite production of the country. Other major producer is the Steel Authority of India Limited (SAIL) in Bilaspur district of Chattisgarh and Garhwa in erstwhile Palamau district in Jharkhand. While Bilaspur

[35] Karan. P.P. (1953). *Op Cit.* pp. 237

holds 14 (12 in Bilaspur and 2 in Jahangir Champa) out of the 21 mines in Chattisgarh, Durg district holds the rest of the 7 mines and Sundergarh district in Orissa and Garhwa (part of erstwhile Palamau district) in Jharkhand hold four and one dolomite mines respectively.[36]

Table: 2.25 Production of Dolomite in the Mineral Belt and India, 1955 to 1969 (By States / Shares)

Year	Jharkhand		Orissa		Chattisgarh + M.P		West Bengal		India
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity
1955	0	0.0	74	80.4	18	19.6	0	0.0	92
1956	0	0.0	96	96.0	2	2.0	0	0.0	100
1957	0	0.0	138	96.5	0	0.0	0	0.0	143
1958	0	0.0	169	95.5	4	2.3	0	0.0	177
1959	1	0.3	314	92.1	19	5.6	0	0.0	341
1960	7	1.1	462	71.1	171	26.3	0	0.0	650
1961	4	0.5	485	66.5	205	28.1	6	0.8	729
1962	4	0.4	514	56.2	329	36.0	15	1.6	914
1963	9	0.8	548	50.1	466	42.6	13	1.2	1093
1964	5	1.0	309	59.3	125	24.0	19	3.6	521
1965	5	0.5	426	44.5	412	43.0	25	2.6	958
1966	9	0.9	408	39.0	456	43.6	23	2.2	1047
1967	5	0.4	458	39.2	461	39.5	17	1.5	1167
1968	0	0.0	571	45.4	462	36.7	28	2.2	1259
1969	6	0.5	611	48.1	473	37.2	32	2.5	1271

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Note: Chattisgarh includes parts of Madhya Pradesh as well.

Source: *Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi, India.

[36] *Indian Minerals Yearbook*, 2010. Indian Bureau of Mines, (Nagpur). Ministry of Mines. Govt. of India. Dolomite, pp. 32-1 to 32-4

Table: 2.26 Production of Dolomite in the Mineral Belt and India, 1999-00 to 2009-10 (By States / Shares)

Year	Jharkhand		Orissa		Chattisgarh		India
	Quantity	%	Quantity	%	Quantity	%	Quantity
1999-00	266	9.4	1012	36.0	634	22.5	2815
2000-01	285	9.6	1013	34.2	699	23.6	2964
2001-02	84	2.6	1156	36.1	855	26.7	3201
2002-03	258	7.8	959	28.8	935	28.1	3329
2003-04	292	7.6	1255	32.9	982	25.7	3820
2004-05	233	5.4	1246	28.7	1043	24.0	4339
2005-06	300	6.8	1402	31.7	1078	24.3	4428
2007-08	307	5.2	1876	32.1	1295	22.1	5852
2008-09	301	5.5	1614	29.3	1317	23.9	5504
2009-10	422	8.1	943	18.2	1206	23.3	5182

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

Table: 2.27 Number of Dolomite Mines in the Mineral Belt, 1999-00 to 2009-10

Year	Jharkhand	Orissa	Chattisgarh	India
1999-00	1	2	24	111
2000-01	1	2	18	102
2001-02	1	3	23	129
2002-03	1	1	22	104
2003-04	1	5	23	102
2004-05	1	5	17	113
2005-06	1	6	18	103
2008-09	1	5	23	120
2009-10	1	4	21	107

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

2.2.7 Kyanite:

The mining of Kyanite commenced in Lapsa Buru deposits in Kharsawan region located in the Singhbhum district in around 1924. The Indian Copper Corporation Limited extracted the mineral from the Kharsawan region and Eastern Minerals Limited used to obtain it from Ghatsila region in Singhbhum district since 1934. Small deposits were believed to exist in Dhenkanal and Bonai region in Orissa but the Singhbhum

deposits of Jharkhand supplied almost the entire Kyanite production of the country which although has been decreasing in share, with small deposits coming up in other parts of the country, still contributes more than three-fourth of the total Kyanite production in India. The production scenario for the last ten years depict that Jharkhand alone used to constitute about 94% of the total kyanite production in 1999-2000 which witnessed a decreasing trend in its shares and presently, despite holding just 6% of total Kyanite resources of the country, it contributes about 80% share in total production which is obtained from a single Kyanite mine in East Singhbhum in Jharkhand. This mine lies in the public sector under the Jharkhand State Mining Corporation Ltd. The rest of the production and mines are found in Bhandara in Maharashtra.

Table: 2.28 Production and number of Kyanite mines in the Mineral Belt and India, (1999-00 to 2009-10)

Year	Jharkhand			India	
	Quantity	**Share (%)**	No. of Mines	Quantity	No. of Mines
1999-00	5811	93.9	2	6191	3
2000-01	4077	93.0	2	4385	4
2001-02	3621	85.7	2	4225	6
2002-03	4239	79.9	2	5305	5
2003-04	5347	66.0	1	8101	7
2004-05	5444	66.3	2	8208	9
2005-06	5388	73.4	2	7341	10
2007-08	3624	71.0	1	5102	6
2008-09	3615	78.2	1	4620	5
2009-10	4419	79.6	1	5553	4

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

2.2.8 Limestone:

The initial production of limestone in the South East Resource Region was undertaken in Bisra in Orissa which by the virtue of its prime location on the Bengal Nagpur Railway emerged as the most significant limestone producing site. Ever since 1898 till 1922, this centre remained the most important limestone supplier for the entire country. The initial estimates were undertaken by Dr. M.S. Krishnan during 1937 who

indicated huge reserves of high grade limestone existent in Birmitrapur region.[37] Major production came from the mines of Bisra Stone Lime Co. Ltd at Birmitrapur which was mainly consumed by the Tata Steel plant of Jamshedpur and other major steel plants. In Jharkhand, limestone is obtained mainly from Singhbhum, Dhanbad and Ranchi districts where it exists in a parallel belt to the Damodar Coalfields and from the limestone deposits of Kaimur Plateau near Daltonganj in Palamau district. Singhbhum district used to contribute to the bulk of limestone production of Jharkhand which was mainly extracted from the belt stretching form Chaibasa to Jagannathpur and accounted for about 19% of the limestone production of the country and also the largest producer during 1956. The limestone from Chaibasa in Singhbhum district was supplied to the Jhinkpani Cement factory and steel plants of Bhillai and Bengal, while TISCO quarried its lime requirements from the thickest Rajankar mines in Singhbhum. The limestone obtained from Ranchi district is mainly consumed by the Khelari Cement Works.[38]

During 1955 to 1969, the share of Jharkhand in total limestone production increasingly declined from 17.5% to 10% and that of Chattisgarh accelerated from 14% to 18% during the same duration. Orissa contributed around 12% to the total lime production of the country during 1969. The production scenario during the last ten years depict that the share of the Resource Region has been constantly declining over the years. All the three states of Jharkhand, Orissa and Chattisgarh together contribute only 9% to the total production during 2010. Chattisgarh contributes the maximum of 7% to this figure and also holds 5% of the total resources of limestone. A major chunk of it is contributed by Durg, Raipur and Bilaspur districts. Most of the quarries, about 31 of them are situated in Chattisgarh itself out of which 17 are in Durg district.[39]

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[37] Brown J.C. and A.K. Dey (1955), *Op. Cit.*, pp. 327

[38] Pandeya, P. (1970), *Op Cit*, pp. 75

[39] *Indian Minerals Yearbook*, 2010, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India

Table: 2.29 Production of Limestone in the Mineral Belt and India, 1955 to 1969 (By States / Shares)

Year	Jharkhand		Orissa		Chattisgarh		West Bengal		India
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity
1955	1311	17.5	1119	14.9	1035	13.8	0	0.0	7485
1956	1604	19.1	1067	12.7	1062	12.7	9	0.1	8385
1957	1523	15.9	1385	14.5	1068	11.2	27	0.3	9571
1958	1805	17.1	1500	14.2	1297	12.3	6	0.1	10533
1959	1754	16.2	1556	14.3	1411	13.0	5	0.0	10847
1960	2051	16.1	1768	13.9	1990	15.6	3	0.0	12751
1961	2036	13.8	2192	14.9	2333	15.8	8	0.1	14755
1962	2231	13.2	2207	13.0	3007	17.8	32	0.2	16939
1963	2141	12.3	2334	13.5	3180	18.3	27	0.2	17347
1964	2141	12.6	2161	12.7	2731	16.0	17	0.1	17017
1965	2240	11.3	2428	12.2	3741	18.8	27	0.1	19855
1966	2177	11.1	2273	11.6	3756	19.2	20	0.1	19603
1967	2088	10.7	2126	10.9	3692	18.9	7	0.0	19571
1968	2195	10.6	2601	12.5	3735	18.0	11	0.1	20745
1969	2211	9.9	2657	11.9	3986	17.9	8	0.0	22249

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Note: Chattisgarh includes parts of Madhya Pradesh as well.

Source: *Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi, India.

Table: 2.30 Production of Limestone in the Mineral Belt and India, 2005-06 to 2009-10 (By States / Shares)

Year	Jharkhand		Orissa		Chattisgarh		India
	Quantity	%	Quantity	%	Quantity	%	Quantity
2005-06	1428	0.8	2596	1.5	14826	8.7	170378
2007-08	2037	1.1	2833	1.5	14172	7.3	193089
2008-09	1934	0.9	2978	1.3	15789	7.1	221563
2009-10	1918	0.8	2774	1.2	16488	7.2	228934

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2006 to 2010

2.2.9 Manganese ore:

The mining of manganese ore in the Resource region started as early as in 1901 in Balaghat district. Small reserves of this ore were also available in between Noamundi and Gua in Singhbhum district where exploration began by 1904. Balaghat district emerged as the largest producer of manganese ore, not only in the resource region but also in India with 530 thousand tonnes of ore production in 2009-10. It alone holds 23 mines involved in extracting manganese ores and produced about 22% of the total production of the country in 2009-10.

Apart from Balaghat, Keonjhar and Sundergarh districts in Orissa also produce a sizeable amount of manganese ore in the region. Orissa has continued to be the largest producer of manganese ore in the country for decades together. It accounted for 80% of the total ore production of the country and the Resource region contributed the entire manganese ore production of India in 1955. The Singhbhum district in Jharkhand contributed a very small proportion. The production trend has increased continuously over the decades in Orissa and Balaghat district of Madhya Pradesh. By 1965, Orissa contributed about 45% while Madhya Pradesh had a proportion of 43% in the total production of the country. Orissa underwent a gradual increase in its manganese production while its share declined continuously. As per the recent figures, Orissa contributes 25% of the total ore production, out of which Keonjhar district alone produces 13% of the country's production. Balaghat in Madhya Pradesh, which lies within the South East Resource region, produces 22% of the total production.

Table: 2.31 Production of Manganese ore in the Mineral Belt and India, 1955 to 1969 (By States / Shares)

Year	Jharkhand		Orissa		M.P. + Chattisgarh		India
	Quantity	%	Quantity	%	Quantity	%	Quantity
1955	0	0.0	74	80.4	18	19.6	92
1956	0	0.0	96	96.0	2	2.0	100
1957	0	0.0	138	96.5	0	0.0	143
1958	0	0.0	169	95.5	4	2.3	177
1959	1	0.3	314	92.1	19	5.6	341
1960	7	1.1	462	71.1	171	26.3	650
1961	4	0.5	485	66.5	205	28.1	729
1962	4	0.4	514	56.2	329	36.0	914
1963	9	0.8	548	50.1	466	42.6	1093
1964	5	1.0	309	59.3	125	24.0	521
1965	5	0.5	426	44.5	412	43.0	958
1966	35	2.2	509	31.7	322	20.1	1605
1967	11	0.7	517	32.8	297	18.9	1574
1968	24	1.5	496	32.0	261	16.8	1551
1969	22	1.7	459	35.8	184	14.4	1281

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Note: Chattisgarh includes parts of Madhya Pradesh as well.

Source: *Statistics for Iron & Steel Industry in India*, 1966 and 1970, Hindustan Steel Ltd, Ranchi, India.

Table: 2.32 Number of Manganese ore Mines in the Mineral Belt, 1999-00 to 2009-10

Year	Jharkhand	Orissa	India
1999-00	1	38	133
2000-01	2	35	115
2001-02	2	43	131
2002-03	3	42	125
2003-04	3	36	119
2004-05	2	37	118
2005-06	1	33	118
2008-09	2	43	149
2009-10	3	40	138

Source: *Indian Minerals Yearbooks*, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

Table: 2.33 Production of Manganese ore in the Mineral Belt and India, 1999-00 to 2009-10 (By States / Shares)

Year	Jharkhand		Orissa		India
	Quantity	%	Quantity	%	Quantity
1999-00	5	0.3	523	33.0	1586
2000-01	2	0.1	516	33.2	1556
2001-02	2	0.1	543	34.2	1587
2002-03	4	0.2	616	37.1	1662
2003-04	7	0.4	576	33.1	1738
2004-05	6	0.3	878	36.8	2386
2005-06	1	0.0	636	31.8	2003
2007-08	12	0.4	667	24.7	2696
2008-09	16	0.6	839	30.1	2789
2009-10	5	0.2	603	24.7	2439

(Quantity in '000 tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

2.2.10 Mica:

Mica reserves are completely concentrated in the Hazaribagh district of Jharkhand. The area in and around the Koderma Reserved Forest in Hazaribagh district is designated as the Mica belt of the Resource region which used to supply the major chunk of the total mica output of the country. The major mica mining centres in this belt are the Koderma Reserved Forest, Dhorakhola, Domchanch, Masnodih, Dhab, Gawan and Tisri.[40] While several unsuccessful attempts were made to mine mica in this region, well established extraction could start only by 1894 at Koderma, Tisri and Masnodih under F.F. Chrestian and by 1899 the Chrestian & Co operated about 110 mines out of the 170 mines in this mica field. Modernization of fine mining commenced in 1910[41] and by 1911, this belt contributed about 55% of the total mica production of India.[42] The extension of the railways, the Grand Chord and the Main Line of the East Indian Railway upto the Koderma Forest during 1916 proved to be a great boost to mica mining in this region. Koderma was the nearest railway station for the rich mica

[40] Karan, P.P. (1953), *Op Cit*, pp. 226

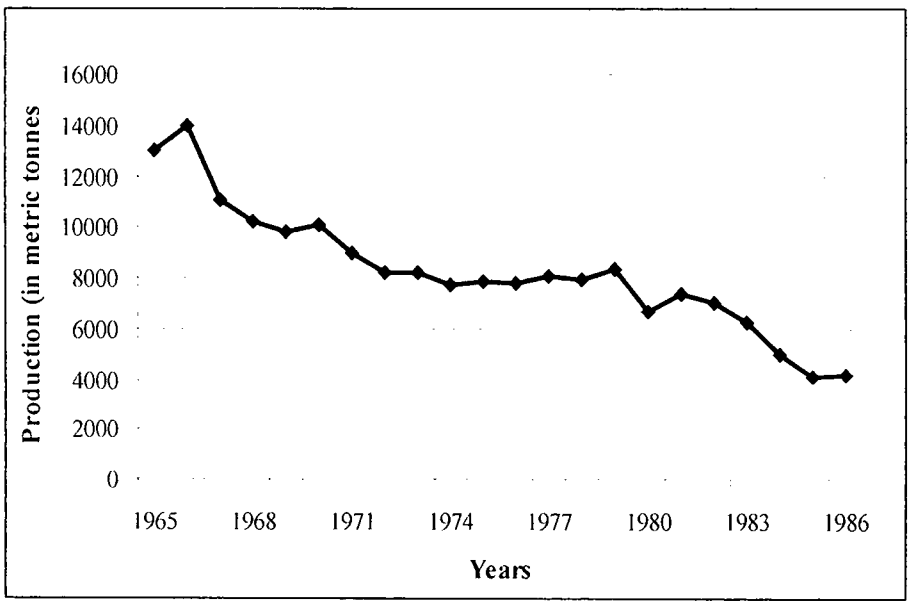
[41] Singh, R.D. (1982): "Development of Mining Technology during the Nineteenth century in India", *Indian Journal of History of Science*, Vol. 17, No. 2, pp. 211

[42] Pandeya, P. (1970). *Op Cit.* pp. 68

deposits in its hinterlands. This belt accounted for about 80% of the total Mica production of the country during 1948.[43] As a corollary, Koderma went on to become the Mica capital of the country. But transportation links within the mica belt remained a major problem due to the lack of metalled roads linking the mining centres. The production of Mica underwent constant decline in the Mineral Belt as well as in India, the major reasons cited for which are closure of mines, barren faces, poor conditions of working forces and variation in the nature of pegmatite. [44]

The mineral belt accounted for 43% of the total Mica production of the country during 1999-2000 which came down to 16% by 2000-01. The production figures witnessed continuous decline in the successive years, so much so that Mica production ceased completely after 2003-04. There were 4 mines operating till 2005-06 but further production was completely absent. Thus, the prosperous Mica capital of the country has completely lost its former grandeur.

Fig: 2.14 Production of Mica in the Mineral Belt, (1965 - 1986)



Source: Derived from Kumar, S. (1993): *Problems and Prospects of Mineral industry in India: A study of Mica Industry,* Mittal Publications, Table, pp. 43-44

[43] Karan, P.P. (1953), pp. 227-28

[44] Kumar. S. (1993): *Problems and Prospects of Mineral industry in India: A study of Mica Industry,* Mittal Publications.

Table: 2.34 Production and number of Mica mines in the Mineral Belt and India, (1999-00 to 2009-10)

Year	Jharkhand			India	
	Quantity	Share (%)	No. of Mines	Quantity	No. of Mines
1999-00	785	43.4	10	1807	37
2000-01	175	15.8	7	1111	34
2001-02	288	14.2	5	2026	33
2002-03	133	10.9	4	1217	34
2003-04	59	5.4	5	1091	33
2004-05	0	0.0	4	1276	33
2005-06	0	0.0	4	1259	32
2007-08	0	0.0	0	4578	33
2008-09	0	0.0	0	1462	35
2009-10	0	0.0	0	1213	32

(Quantity in Tonnes); % = Percentage share of All India's total Production.

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2000 to 2010

2.3 Mineral Resource Development: The Approach

The development of mineral resources in the resource abundant Mineral belt of India has been steered by the underlying approach during each phase of its evolution and development. The intention determined the approach and the approach shaped the development. An attempt to gauge the fundamental approach undertaken during the successive phases of development of the mineral resources i.e. the Colonial resource exploitation, nationalisation under independent nationalised government and privatization under the Neo-liberal set up, has been done in the present section through analysing the continuity and changes in government policy towards important minerals, mining legislation, rules for granting mining leases, licences, exploitation and prospecting of minerals, ownership pattern of mines etc.

The British imperialism lasted in India during 1858 to 1947 but its impact and colonial legacy has remained everlasting. The nationalist thinkers have severely criticized the imperialism-modernity nexus, supported by the "orientalist" or imperialist scholars, and upheld the colonialism-underdevelopment linkage. They have firmly stated that the root of poverty and economic stagnancy in India goes back to the

"damages of colonial rule" and the exploitation in the hands of foreign capital is responsible for the existent backwardness. As a result the post independent development strategy was based on the fundamental principles of "self reliance" which was averse to foreign investment and foreign trade and resulted in a closed economy till 1990; and the principle of "Statism" which believed in State control over major economic affairs[45] including mining companies. The developed countries witnessed an increase in State ownership during 1940s and 1950s and the wave of nationalization swept the developing countries including India during 1960s and 1970s and went on to increase the State control over mineral resources and mining industry. The global mining industry witnessed an unprecedented growth during the Second World War to the mid 1970s when the metal production and metal prices went up. This was followed by a period of decline in demand and prices and the global mining industry underwent a slump and declined to a new low by 1990s and this was the time when most of the privatizations were done in mining industry. This resulted in global decrease in State control over mining industry since 1990.[46]

In case of India, the end of colonialism did not mark the end of unequal exploitation of the resource rich hinterlands and ever since 1990, with increasing influence of globalization after the economic liberalization and incorporation of India into the world economy and the state being on a gradual receding note, a re-emergence of the colonial tragedy seems to have come knocking. The continuity of the flavour of colonial policies in post-colonial India have resulted in persistent backwardness of the mineral bearing resource rich regions by providing for their persistent exploitation on the lines of underdevelopment. Unlike South Africa, Zimbabwe and Namibia for instance where mining legislations have sought to "rebalance the earlier inequalities" by providing for participation of 'historically disadvantaged South Africans' (HDSA) and local partners in all mining companies to ensure "Black Economic Empowerment";[47] mining legislation in India seems to be all set to encourage privatization further by providing rules and regulations in favour of the private and multinational Corporates,

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[45] Roy, Tirthankar (2002): "Economic History and Modern India: Redefining the Link", *Journal of Economic Perspectives,* Volume 16, No. 3, pp. 109 - 110

[46] Ericsson, Magnus (2007): "Statistics and Developments: Private versus State Ownership", *Minerals & Energy - Raw Materials Report,* Vol. 21, No. 2, pp. 4 - 6

[47] *Ibid,* pp. 7

overlooking the ownership rights and participation of the indigenous tribal communities through the recent Mining and Minerals (Development and Regulation) Amendment Bill, 2011 (MMDRA).[48]

The organizations which are involved in various stages of mineral development in India is led by the premier organization of Geological Survey of India (GSI), which was set up way back in 1851, started systematic survey after 1904.[49] It was engaged in the general geological mapping of the country, collection of statistics and information regarding mineral resources and mineral occurrences and the conditions under which prospecting licenses and mining leases were to be granted.[50] It carried out the systematic investigation of all the major coalfields of the country as its initial task. Presently the organizations involved in survey and exploration are the GSI which is under the Ministry of Mines, Government of India and the Mineral Exploration Corporation Ltd (MECL) which was established in 1972 to undertake mineral exploration activities and construct the National Mineral Inventory (NMI) to account the total mineral reserves of India. The Indian Bureau of Mines (IBM) is the sole organization responsible for regulation and conservation. It is engaged in promotion and conservation of minerals, safeguard of mines environment and scientific development of major mineral resources of the country excluding coal, petroleum, natural gas, atomic and minor minerals. Companies both in public sector and private sector are involved in mining and processing. While Steel Authority of India Limited (SAIL), National Aluminium Company Limited (NALCO), National Mineral Development Corporation (NMDC) and Hindustan Copper Limited (HCL) are the major companies in the public sector; Tata Steel, Hindalco and Sterlite are the major players in the private sector. HCL was incorporated in 1967 under the Companies Act, 1956 and was established as a public sector enterprise to undertake integrated exploration and exploitation of copper deposits including the processing work which was under the NMDC. NALCO was incorporated in 1981 and it went on to become the largest integrated alumina-aluminium complex in Asia.

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[48] Karat, Brinda (2012): "Of Mines, Minerals and Tribal rights", *The Hindu*, Vol. 135, No. 116, dated: 15th May, pp. 10.

[49] *Indian Industrial Commission Report, 1916-18*, Superintendent of Government Printing, India, Calcutta, 1918, pp. 75.

[50] *Ibid*, pp. 88

2.3.1 Mining Legislation and Mineral Policy:

The initial proposal for regulation and inspection of mining operations in India came up way back in 1890 from the Secretary of State Lord Cross. Mr. James Grundy, the first Inspector of Mines, stressed on the necessity of passing mines regulation act which would lay down legal rules in the form of an Act. The first mining legislation came up in the form of the **Mines Act, 1901** which structured the safety regulations and inspection of mines. The **Government of India Act, 1935** introduced the federal form of government and regulation of mines and mineral development were assigned to Provincial Governments. The **Mines and Minerals (Development and Regulation) Act, 1948** came up as the first mining legislation in independent India and empowered the Central government to regulate mines in accordance with the **Industrial Policy Resolution, 1948.** [51]

The mining legislations in India can be broadly classified into two: those related to regulation and development and the others regarding safety and welfare. The laws relating to mining regulation and mineral development shall be chiefly discussed in the present section as they directly determine the economic aspect of the approach undertaken by the government towards mineral resource development. The main legislation concerning the regulation and development of the mineral industry was the **Mines and Minerals (Development and Regulation) Act, 1957** (henceforth referred as MMDR Act, 1957). It became operational from June, 1958 superseding the **Mines and Minerals (Development and Regulation) Act, 1948.** The MMDR Act, 1957 came up to regulate grants for mining concessions. It provided the Central government with the authority to undertake mining operations and prospecting of minerals in any such area which was not already held under any mining concession. This provision extended only to lands under the State Governments and not to private lands.[52] The **Mineral Concession Rules, 1949** was the foremost fundamental regulatory mechanism which was initiated for grant of mineral concessions in Independent India. It laid down rules and guidelines for regulation of the grants for mining leases and prospecting

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[51] Report of Indian Bureau of Mines, Chapter 1, "Journey of Indian Bureau of Mines", *Indian Bureau of Mines*, Ministry of Mines, Government of India, Nagpur (www.ibm.nic.in/reportch1.1.pdf), pp. 2 - 3

[52] Sinha, R.K. and N.L. Sharma (1970): *Mineral Economics*, Oxford & IBH Publications Co., Delhi, pp. 115

licenses for minerals except petroleum and natural gas.[53] Later, due to the repeal of Mines and Minerals (Development and Regulation) Act, 1948, the Mineral Concession Rules, 1949 ceased to remain in force and therefore **Mineral Concession Rules, 1960** was framed under the MMDR Act, 1957. The Rules laid down a much detailed and comprehensive framework of procedures for obtaining mineral concessions in government and private lands. The **Mining Leases (Modification of Term) Rules, 1956,** which was also laid down under the MMDR Act, 1957, contained provisions to resolve the issue of disparity in mining leases granted prior to 1949. It levelled all such mining leases according to the Mineral Concession Rules of 1960. The **Coal Bearing Areas (Acquisition and Development) Act, 1957** was an important legislation which came up with the objective of gaining greater control of the State or public sector over the development of coal mining industry. This act further strengthened the State by vesting power in the Central government to "acquire unworked coal bearing areas in both government and private lands and even take over areas under a license or lease provided they are not being worked."[54] Thus, coal mining under the public sector, branded as National Coal Development Corporation, received significant legislative support immediately after the independence, through such affirmative government policies and acts tilting highly in favour of State control over mineral industry.

The era of State control came to a partial halt after the Economic reforms of 1991 when the "opening" of the Indian economy and its incorporation into the world economy ushered a period of liberalization, privatization and globalization. The mineral policies were altered and transformed in lines with the new economic policies and was further supported by multiple amendments in the existent mineral legislations. The **Mines and Minerals (Development and Regulation) Amendment Act, 2010** was introduced to amend the MMDR Act, 1957. The major changes which were inserted in the Act was the clause of selection of company through "auction by competitive bidding" for granting prospecting licence or mining lease and reconnaissance permit for areas coal or lignite bearing areas. Its extension was prohibited to areas which were

[53] Report of Indian Bureau of Mines. *Op. Cit.*, pp. 11 - 12

[54] Sinha. R.K. and N.L. Sharma (1970). *Op. Cit.*, pp. 116

considered for allocation to a Government company or corporation.[55] Such a provision of auction by competitive bidding was highly in favour of the large Corporates. The **Mining and Minerals (Development and Regulation) Amendment Bill, 2011**, which is presently before the Parliamentary Standing Committee, proposes a clear and further liberalisation of the mining and minerals sector by easing out the entry of foreign and private investments in accordance to the **National Mineral Policy, 2008.**

The **National Mineral Policy** reflects the attitude of the government towards the development of its mineral resources. While the domestic mineral policy determines the nature and pattern of development of the indigenous mineral resources, the foreign mineral policy indicates the government's outlook towards foreign investment in mineral resource development. During the British Rule, India's mineral resources were essentially developed in a manner that suited the British economy. But after Independence the national government followed a "restrictive policy". In case of a newly independent country, like that of India about half a century ago, which has been released after decades of foreign domination, mineral concessions are safely not granted to foreign investors due to the obvious apprehension of the basic industries running in the hands of foreigners again. This is coupled with the need to rapidly develop the indigenous mineral resources for achieving a self reliant industrial base, leads to "restrictive policy" where foreign investment and participation is only permitted on a "minority share basis" or collaborations on mutual benefit basis.[56]

A well integrated mineral policy must begin with the complete knowledge of the existent mineral resource base or a mineral inventory of the country. The Geological Survey of India (GSI), established in 1851, was in-charge of performing such a task during the colonial period and has continued in independent India as well. The mineral development policy during the very First Five Year Plan embarked upon further expansion of the GSI and the Indian Bureau of Mines (IBM) by granting Rs. 106 lakhs and by 1955 provided an additional grant of Rs. 134 lakhs in order to accelerate the pace of mineral surveys. During the Second Five Year Plan intensive surveys and

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[55] *Indian Minerals Yearbook* 2010, Chapter 2, Mineral Policy and Legislation, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 2-14

[56] Sinha, R.K. and N.L. Sharma (1970), *Op. Cit.*, pp. 243 - 244

investigations were undertaken to build a strong mineral base for basic industrialization to begin in India.[57]

The **Industrial Policy Resolution, 1948** came as the initial guideline for the formation of mines and mineral legislation in independent India as far as grant of mineral concessions is concerned. It kept those minerals which required large investment and higher degree of technical skill under the regulation and control of the Central Government. The Policy Resolution of 1948 was succeeded by the **Industrial Policy Resolution, 1956** which was based on the socialistic pattern of the society and categorized the minerals under three heads: first category included the mining and processing of coal and lignite, copper, gold, diamond, lead, zinc, tin, mineral oil and gas and other important minerals including the atomic minerals; the second category included all the other minerals excluding those in the first category and minor minerals; and third category comprised of the minor minerals. The Resolution stated that the development of minerals included in the first category was to be under the "exclusive responsibility of the State", except the grants already bestowed upon private hands. The minerals in the second category were to be "progressively State-owned" and future initiatives towards establishment of any new undertaking were to be generally under the State although supplementary engagement of the private entrepreneurs was permitted as well. Any venture comprising the minor minerals was completely left to the private sector. The **MMDR Act, 1957** and **Coal Bearing Areas (Acquisition and Development) Act, 1957** were passed with suitable provisions to strengthen the Industrial Policy Resolution of 1956.[58] The Resolution of 1956 clearly gave the public sector an upper hand and strengthened the State control over the economically important mineral resources. However, the apparent bias in favour of the public sector regarding the minerals of first and second category did not exist as water tight compartment while granting lease or licences. As a result the share of public sector was only 11 million tonnes out of the total coal production of 55 million tonnes in India during 1960-61 and

[57] Ghosh, A. (1967): *Indian Economy: Its Nature and Problems*, The World Press Pvt. Ltd. Calcutta, pp. 151

[58] Sinha, R.K. and N.L. Sharma (1970). *Op. Cit.*, pp. 245 - 246

the rest of 44 million tonnes been contributed by private sector. Therefore, private sector continued to occupy a significantly large share in the coal industry of India.[59]

Advocates of *laissez faire* blame the post independent Indian policy of a centrally planned economy with nationalization of mining sector and system of "permits, licenses and quotas" in mining industry for restricted growth of this sector. The economic liberalization of 1991 ushered in an era of Neo-liberal policies and a wave of privatization. The **'New Mining Policy'** of 1993 finally opened up the country for foreign investment. The MMDR Act, 1957 was suitably amended to permit domestic and foreign private investment in mineral exploration and exploitation as well as to draw private capital investment in mineral and technological development. Multiple amendments were made in the MMDR Act, 1957 to mould it into a "progressive and investor friendly" one.[60]

The **National Mineral Policy, 2008,** apart from incorporating a sustainable framework for optimum utilization of mineral resources and embarking upon the need for an integrated mineral development strategy for overall economic development of the country and guided towards long-term national goals in response to the changing global economic scenario, ushered in "greater liberalization and private sector involvement" through widening the regulatory framework of the government in mineral sector by "shifting the focus from conventional areas of managing the mineral concession systems to new areas of regulating the mineral sector holistically through addressing issues of simplification, transparency and sectoral best practices" which shall be beneficial in attracting foreign and private capital investment in mineral development and technology.[61] The "dynamic" and "progressive" mineral policy can be termed as synonymous to promoting privatization and taking liberalization in the mineral sector to a whole new level. **Mines and Minerals (Development and Regulation) Amendment Act, 2010** was passed to further strengthen the provisions of National Mineral Policy, 2008. Although the policy highlights the need to incorporate provisions in the mining

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[59] Ghosh, A. (1967), *Op. Cit.*, pp. 356

[60] Sames, Carl W. (2006): "The Mineral Industry of India", *Minerals & Energy - Raw Materials Report*, Vol. 21, No. 3-4, pp. 22 - 23

[61] *Indian Minerals Yearbook* 2010, Chapter 2, Mineral Policy and Legislation, Indian Bureau of Mines, (Nagpur). Ministry of Mines, Govt. of India. pp. 2-1

legislation which shall enable such "institutional mechanisms for involvement of the local people, especially the tribal and under privileged communities, in the development of mineral resources through creation of stakeholder rights" [62] and protect their rights by creating stakeholder interests in mining operations for Project Affected Persons; as most of the mining areas are located in forested tribal belts and large scale mining activities have increasingly led to their displacement, alienation and usurpation of ownership rights; the **Mining and Minerals (Development and Regulation) Amendment Bill, 2011** sounds pro-corporate and a further onslaught for the tribal communities and indigenous owners of the land and resources. The provision for a guaranteed stake of tribal communities in mining companies, included in the previous draft of the Bill in 2010, which stated that the company "will allot free shares equal to 26 per cent through the promoters quota" has been replaced with a token allotment of "one share per member of the affected family".[63] Such pro-corporate, anti-people legislative initiatives being considered and duly undertaken by representative national government is all set to bring forth an age of pro-growth but anti-welfare in the history of Indian Mining sector.

2.3.2 Mineral Concessions: Transformation of Rules

A '**Mineral Concession**' bestows the right to prospect or mine within the acquired property and can be acquired either in terms of a 'Prospecting License' or a 'Mining Lease' for the major minerals. According to the MMDR Act, 1957 **"Prospecting Licence"** means a "licence granted for the purpose of undertaking 'prospecting operations' with a view to exploring, locating or proving mineral deposits." The Mineral Concession Rules, 1960 empowers the State Governments to grant or renew or revoke Prospecting Licences. According to Section 3 (c) of the MMDR Act, 1957 **"Mining Lease"** is defined as a "lease granted for the purpose of undertaking mining operations and includes a sub-lease granted for such purpose." The

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[62] *Indian Minerals Yearbook* 2010, Chapter 2, Mineral Policy and Legislation, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 2-2

[63] Karat, Brinda (2012), *Op. Cit.*, pp. 10.

Act defines "**mining operations**" as "any operation undertaken for the purpose of winning any mineral".[64]

The mineral bearing Resource region, which emerged into the foreground during the mid nineteenth century, was superimposed over the existent agrarian based zamindari system, where the Zamindars used to create many tenure-holders and they used to give land grants to Brahmins and to others who pleased them, either permanently or for tenure near perpetuity which became the common practice. The tenure holders were the effective landlords and the Zamindars were the overlords.[65] The *Diwani* of the three provinces of Bengal, Bihar and Orissa was granted to the East India Company in around 1765 and Permanent Settlement came into existence with the enactment of the Regulation I of 1793. In the Permanently Settled areas of Bengal and Bihar, after much uncertainty about the ownership of mining rights and royalties, the Zamindars arguably had the mineral rights and also the authority to grant mining leases. During the initial days of coal mining, the Zamindars were rather unaware of their mineral rights and thus they used to bestow "all the rights to the land from the sky to the centre of the earth" while granting land either permanently or on lease.[66] With the commencement of coal mining in these areas the coal companies squeezed in their slots parallel to the tenure-holders and obtained huge tracts of land as mining concessions, surface as well as underground leases from the Zamindars[67], who were empowered to grant coal mining leases, for 99 to 999 years. Such private ownership of mineral rights in permanently settled areas along with no prevailing mining laws or government control over mining operations resulted in large tracts of mining land being kept as

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[64] *Indian Minerals Yearbook* 2010, Chapter 3, Status of Reconnaissance Permits, Prospecting Licences and Mining Leases in India, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 3-1 and 3-4

[65] Rothermund, D. (1978): "The Coalfield – An Enclave in a Backward Region", in D. Rothermund and D.C. Wadhwa (eds.), *Zamindars, Mines and Peasants: Studies in the History of an Indian Coalfield and its Rural Hinterland"*, Manohar Publications, New Delhi, pp. 16

[66] Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account*, Part – I, Sultan Chand and Sons, New Delhi, pp. 115 - 117

[67] Rothermund, D. (1978), *Op. Cit.*, pp. 17

reserves for future exploitation and a system of sub-leasing of land to miners i.e. '*sub-infeudation*'[68] which became a common practice.

With rapid expansion of coal mining during 1890 to 1920, the turn of the century witnessed the commencement of systematic government regulations in mining industry. Detailed specifications were attached to mineral contracts and mining leases regarding the quantity and quality of coal, royalties were affixed to coal output and the conventional practice of reserving mining land for future exploitation was punished.[69] The initial rules were issued by the Department of Revenue and Agriculture (Geology and Minerals) in the year 1894 which authorised the Government of India to grant licenses for exploration and prospecting of minerals and mining leases with specific area limits duly prescribed. These rules underwent revision in 1899 and again in 1913 by the Governor General in Council when the Department of Geology and Minerals was transferred to Commerce and Industry Department. In British India and Indian States, the right to minerals was vested in the Government and to the States respectively. The grant of prospecting licenses and mining leases in case of British India were undertaken in accordance to certain set Rules and such regulation was imitated with regards to important minerals such as coal in Indian States as well where granting of lease and licenses was in accord with rules and policies of the British Government of India. However, in permanently settled areas there was no such provision of regulation and the supreme authority rested with the whims and wishes of the Zamindars. The rules for granting of mining lease or license in British India were highly in favour of the British Subjects wherein "a certificate of approval or a prospecting license or a mining lease could be granted only to a person who was a British subject or the subject of an Indian State or to a company or firm controlled by British Subjects or subjects of Indian States".[70]

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[68] Rothermund, D. (1978), *Op. Cit.*, pp. 16

[69] Papendieck, Henner (1978): " British Managing Agencies in the Indian Coalfield", in D. Rothermund and D.C. Wadhwa (eds.), *Zamindars, Mines and Peasants: Studies in the History of an Indian Coalfield and its Rural Hinterland*", Manohar Publications, New Delhi, pp. 166 - 168

[70] Ghosh, A.B. (1977), *Op. Cit.*, pp. 121 - 122

The **Government of India Act, 1935** vested the mineral rights in the Provincial Governments. The rules laid down by the Provinces replicated the 1913 rules. Although all the mineral properties belonged to the Provincial Government, the development of mines continued to remain as Central responsibility.[71] The Provincial Government was empowered to lease out mines to private individuals, companies, corporations etc. However, some private ownership was retained according to the "Grant of Mineral Concessions by Private Persons" chapter of the **Mineral Concession Rules, 1960**. The Central Government was made in charge of framing the rules for grant of mineral concessions, mineral development, conservation and safety and the enforcement was also rested in the Central Government except the grant of mineral concessions which according to the **Mineral Concession Rules, 1960** were to be concern of the State Governments. [72]

The **Mineral Concession Rules, 1949** issued guidelines for regulation of grants for mining leases and licenses and according to it prospecting licenses and mining leases could be granted to an individual only after issue of a certificate of approval from the State Government concerned, which could be issued if the State Government was satisfied regarding the position of the individual to provide for a competent prospecting agency or if the person possessed special awareness of geology or mining. The **Mineral Concession Rules, 1960** deviated from its predecessor as it removed the clause of certificate of approval from the State Government.[73] The State Governments were given the authority under the Rules to grant leases directly for major minerals, with an exception of few minerals specified in the first schedule of the **MMDR Act, 1957** for which prior approval of the Central Government was required. The specified minerals included coal, iron ore, copper ore, manganese ore, chrome ore etc. However, for minor minerals the State Governments were bestowed the authority to not only frame their own rules but also the exclusive right to grant leases as well under Section 15 of the **MMDR Act, 1957**. The State governments were given the onus of building necessary infrastructure in their respective States to invite capital investment in the mineral industry sector. While any citizen of India could acquire mineral concessions, the

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[71] Ghosh, A.B. (1977), *Op. Cit.*, pp. 123

[72] Sinha, R.K. and N.L. Sharma (1970), *Op. Cit.*, pp. 104

[73] Report of Indian Bureau of Mines, *Op. Cit.*, pp. 11 – 12 and 16

foreign nationals were not completely discouraged from holding a concession which required approval by the Central Government, provided he maintained minority shares in a public company as defined according to the **Indian Company Act, 1956** and that majority of the directors of the company were citizens of India.[74] Thus, it was not only ascertained that private entrepreneurship were to be made most welcome in the mineral industry, foreign participation too was allowed a narrow entry.

For the grant of mineral rights, the national government of India chose to follow a system of tenure rather than perpetuity which is common in United States of America and France. The tenure system has been hailed as a "progressive thinking" where the mining lease is granted for certain tenure of 20-30 years depending on the nature of mineral and there is an option for renewal of the lease for the period equal to the original tenure and that can be done any number of times. The tenure system is more of a post independence phenomenon in India because prior to 1949, most of the mineral concessions or mining leases were granted by the princely states which included not only huge acres of land but also the period was set almost near perpetuity ranging from 99 to 999 years. Such a system overlooked the aspect of extent of development of the mining areas.[75] The **Mining Leases (Modification of Term) Rules, 1956** was passed to get rid of any disparity in leases and tenure system was universalized.

The period for grant of a prospecting license is one year for mica and two years for other minerals which is again renewable. The period for a mining lease is generally for 20-30 years not exceeding thirty years and renewable accordingly. There is also a restriction on the maximum area which can be acquired for concessions, a total of not more than 50 sq. miles under prospecting license or not more than 10 sq. miles under mining leases. Such restrictions of maximum area were kept flexible for mineral development by the Central Government. There are also provisions for **Royalty** which is the share or dividend that the lessee is required to give to the lessor in the value of mineral extracted. It is payment made to the owner of the mineral rights, be it the Government or private. In case of the mining property remaining unexploited, the lessee has to pay a "**Dead Rent**" to the property owner from the second year of the mining

[74] Sinha, R.K. and N.L. Sharma (1970), *Op. Cit.*, pp. 104 – 106 and 247

[75] Sinha, R.K. and N.L. Sharma (1970), *Op. Cit.*, pp. 247 - 248

lease. The provision of dead rents were included to keep a check on the practice of keeping reserve mining properties for use when the demands and prices are high, which used to be a common practice during the colonial times. Provisions were also made to compensate the damages to land or environmental damages due to felling of trees in the form of monetary compensation and **Surface and Water Rents** which the lessee had to pay in addition to the royalty or dead rent.[76]

The Neo-liberal era witnessed the introduction of the concept of **Reconnaissance Permit** in Indian mining industry in January 2000 with an aim to provide impetus to mineral exploration at regional level as well as for comprehensive identification of mineral potential areas in the country. The Mineral Concession Rules, 1960 was suitably amended to fit in the provision of Reconnaissance Permit.[77] **Reconnaissance Permit** is a "permit granted for the purpose of undertaking 'reconnaissance operations' which means any operation undertaken for preliminary prospecting of a mineral through regional, aerial, geophysical or geochemical surveys and geological mapping, but does not include pitting, trenching, drilling or subsurface excavation."[78] The concept of Reconnaissance operations was popular in other mining countries for quite long but this provision was introduced in India only during the year 1999 under the MMDR Act, 1957 and under the Mineral Concession Rules, 1960 in the year 2000 and Mineral Conservation & Development Rules, 1988 made under the Act.[79] It is a preceding stage to actual mineral prospecting and restrictions on area and tenure were also set accordingly. A Reconnaissance Permit extending for about 10,000 sq. km. was given for tenure of three years with no possibility of renewal while a prospecting licence spanning over an area of 25 sq. km. could be granted for three years with a renewal possibility of two years and a mining lease covering 10 sq. km. was given for 20–30 years with renewal blocks of 20 years. In order to promote liberalization in mining sector, the Ministry of Mines amended the Rules accordingly in 2005 and introduced certain changes in the form of "foreign equity holdings up to 100 per cent on

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[76] Sinha, R.K. and N.L. Sharma (1970), *Op. Cit.*, pp. 106 - 108

[77] Report of Indian Bureau of Mines, *Op. Cit.*, pp. 27

[78] *Indian Minerals Yearbook* 2010, Chapter 3, Status of Reconnaissance Permits, Prospecting Licences and Mining Leases in India, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India. pp. 3-1

[79] *Ibid.*, pp. 3-1

the automatic route for exploration and mining" and "foreign equity up to 100 per cent on the automatic route for mineral processing and metallurgy".[80]

The **Mining and Minerals (Development and Regulation) Amendment Bill, 2011** intends further liberalization and privatisation of the mining sector based on the recommendations of the Hoda Committee. It is set to initiate the model of high technology reconnaissance, prospecting and exploration licences, and easy terms of conversion to mining leases in order to promote the entry of foreign companies and Foreign Direct Investment. The conditions set for allocation of mining leases have been moulded in favour of such companies along with an increase in the extent of land for mining activities. Such transformation of rules in favour of private and foreign companies indicates a possible unfavourable implication on equity, environment and balanced development.[81]

While the U.N. conventions necessarily underlined the need for "consultation" of the indigenous communities for any project or investment on their native lands,[82] the **Mining and Minerals (Development and Regulation) Amendment Bill, 2011** provides no such provisions of "consultation" for giving all types of leases and licenses for exploration and extraction of the major minerals. Only "consultation" required will be in case of granting licenses for *minor* minerals in Fifth and Sixth Schedule areas where the "gram sabha or the District council" shall be consulted. Such a provision shall stand as a violation of the constitutional rights of the tribal communities of the Fifth Schedule areas as well as against the provisions of **Panchayat Extension (to Schedule Areas) Act (PESAA), 1996** which makes the "consultation' with the Gram Sabha mandatory.[83] The transfer of tribal land to non-tribals is prohibited in the Fifth Schedule areas, which was further supported by the **Chotanagpur Tenancy Act** and **Santhal Parganas Tenancy Act** in Jharkhand, but the companies which are granted mining leases are never owned by the local tribes. The possibility of involvement of any tribal co-operative society in mining operations is also bleak as mining of *major* minerals can

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[80] Sames, Carl W. (2006), *Op. Cit.*, pp. 22 - 23

[81] Karat, Brinda (2012), *Op. Cit.*, pp. 10

[82] "U.N. adopts norms against 'land grabbing'", *The Hindu*, Vol. 135, No. 20, dated: 13th May, pp. 11.

[83] Mohanpuria, K.L. (1996): "The Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996", Government of India, No.40 of 1996.

only be done by registered companies and obtaining a lease for mining of *minor* minerals in the Fifth and Sixth Scheduled areas remain at the mercy of the State government which "may" consider these cooperatives.[84]

2.3.3 Pattern of Ownership:

The pattern of ownership of mines and mining leases have undergone a shift following the transformation in mining legislations and mineral policies over the various phases of development of mining industry in India as well as the Resource Region. During the end of the period preceding the Indian Independence, the coal industry developed the following structure of ownership of mines consisting of Captive Collieries which were mainly owned by the major consumers i.e. railways and iron and steel industries; Collieries under the control of Managing Agents who also operated other industries; and Private Collieries owned by individuals. **Captive Collieries** were those units of coal production which were owned as well as operated by the specific coal consumers. The First World War witnessed the emergence of Captive coal mines wherein coal consumers like iron and steel industries, railways, shipping firms, cement factories etc operated their own coal mines. Whether this form of ownership of coal mines was viable for a sustained development of the coal industry was discussed by the **Coalfields' Committee, 1946** which concluded that given the largest coal consumer and largest producer status of the railways, bestowing them with further power in the form of ownership of captive mines would be unfair. The **Coal Mining Committee, 1937** and **Coalfields' Committee, 1946** however recommended control of the iron and steel industries over their coking coal mines given the limited reserves of good quality coking coal.[85]

Collieries under the control of **Managing Agents** had an essential character of majority of managing agents being reputed British houses and all were member of the Indian Mining Association. The **Coal Mining Committee, 1937** criticized the system of ownership of coal mines under managing agents as being strictly profit oriented and commercial and stated: "the *coal trade in India has been rather like a race in which*

[84] Karat, Brinda (2012), *Op. Cit.*, pp. 10.

[85] Ghosh, A.B. (1977), *Op. Cit.*, pp. 100 – 103.

profit has always come in first, with safety a poor second, sound methods an 'also ran' and national welfare a 'dead horse' entered perhaps, but never likely to start." The coal mining operations and policy under the managing agents were strictly guided by their "commercial objectives" and "selfish interests" and were against "national interests". [86] Another form of ownership of coal mines was the **Privately Owned Collieries** which were characterized by small size, poor equipment, "unsound development" and "diffused ownership". Due to their technical and economic disadvantages several recommendations for amalgamation including that of Coal Committee, 1956 were presented.[87]

Table: 2.35 Ownership Pattern of Collieries, (1911 - 1921)

Provinces	Year	Total Collieries	Govt. Owned Collieries	Collieries of which Directors are:			Private Ownership	
				Europeans / Anglo-Indians	Indians	Both	Europeans / Anglo-Indians	Indians
Bengal	1911	129	-	53	6	21	7	43
	1921	202	-	65	19	18	8	65
Bihar & Orissa	1911	199	-	80	11	5	6	99
	1921	380	11	92	29	20	7	245

Based on Census of India, 1911, Table V, Part II, pp. 350 and Census of India, 1921, I, Part II, pp. 302

Source: Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 58

The pattern of ownership of collieries was recorded for just two time periods in Census of India 1911 and 1921 which depict that numerically, the privately owned collieries were highly in favour of the Indians while the collieries under major coal companies were mainly under the control and directorship of Europeans in the Bengal, Bihar and Orissa Provinces. Given the small size, unsteady development and

[86] *Ibid.*, pp. 103 - 105

[87] *Ibid.*, pp. 114

uneconomic nature of the privately owned collieries as discussed earlier, the effective ownership and control of the coal industry in the Mineral belt rested mainly with the Europeans.

The post independence era witnessed a wave on Nationalization of the coal mines. Inadequacy of capital investment to match the growing energy needs of the newly independent-industrializing country, unscientific mining practices and poor working conditions of the labours in the privately owned coal mines were such significant factors which resulted in nationalization measure for the private coal mines. The **Nationalisation** process was undertaken in two phases, the first phase in 1971-72 constituted of the coking coal mines when the **Coking Coal Mines (Emergency Provisions) Act, 1971** provisioned the takeover of coking coal mines and coke oven plants in public interest while the **Coking Coal Mines (Nationalisation) Act, 1972** stipulated the nationalization of the coking coal mines and coke oven plants under the new Central Government Undertaking **Bharat Coking Coal Limited (BCCL),** except the captive coal mines under Tata Iron & Steel Company Limited (TISCO) and Indian Iron & Steel Company Limited (IISCO); while the second phase in 1973 included the non-coking coal mines as well within its ambit under the **Coal Mines (Taking Over of Management) Act, 1973** which extended the authority of the Government of India over the management of the coking as well as non-coking coal mines in seven States of India which included the coking coal mines that were taken over in 1971; and was finally followed by the nationalisation of all these mines under the **Coal Mines (Nationalisation) Act, 1973** which became a Central legislation for coal mining in India.

The **Coal Mines (Nationalisation) Act, 1973** went on to reserve and restrict coal mining in India for public sector. But it underwent several amendments which moulded the ownership laws accordingly. An amendment to the Act in 1976 introduced two fundamental changes: "(i) captive mining by private companies engaged in production of iron and steel and (ii) sublease for coal mining to private parties in isolated small pockets not amenable to economic development and not requiring rail transport." This marked the legal narrow entry of private ownership in coal mining in India which assumed greater magnitude after the economic liberalization in 1991. Immediately after the economic reforms, the coal industry witnessed further amendment

to the Nationalization Act in the year 1993 wherein captive consumption was allowed in coal mining and it provisioned "private sector participation in coal mining as linkage for power generation, for washing of coal obtained from a mine or for other end-uses to be notified by Government from time to time in addition to existing provision for the production of iron and steel". Later during further amendments of 1996 mining of coal for production of cement was allowed as well.[88] This marked the commencement of privatization and private ownership of coal mines in India. Although the number of collieries under public sector far exceeds that of private sector, due to the still existent hold of the public sector over the major chunk of coal mining sector i.e. non-captive mines, recent years have witnessed an increasing trend in private sector ownership of coal mines. The recent pattern of ownership in case of iron ore mines is highly skewed in favour of private sector with about 285 out of total 319 iron ore mines being owned by the private sector in 2009-10.

Table: 2.36 Numbers of Collieries by Sectoral Pattern of Ownership

Sector	2002-03	2006-07	2008-09	2009-10
Public Sector	547	532	537	536
Private Sector	9	15	24	24
Total	516	547	561	560

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2003 to 2010

Table: 2.37 Number of Iron ore mines by Sector of Ownership

Sector	2006-07	2007-08	2008-09	2009-10
Public Sector	40	35	35	34
Private Sector	250	265	293	285
Total	290	300	328	319

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2007 to 2010

[88] *Indian Minerals Yearbook* 2010, Chapter 24, Coal and Lignite, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 24-23

Although the mining legislation and mineral policy in India states it clearly that the ownership of mineral resources rests with the State and the Central Government controls the major minerals like iron ore, coal, copper, bauxite while the State Government stands supreme in case of minor minerals; the mining laws and provisions of the mining mineral policies have been so bent under the impact of Neo-Liberal policies that they provide for increased privatization through granting huge majority of the mining leases to private companies. The Indian Minerals Yearbook, 2010 accounts 95% of the existing mining leases and 71% of the total land under mining leases to be in possession of the private sector as on 31st March, 2010.[89] The situation in the Mineral belt is a stark example of the rising privatization in mineral sector with 91% of the mining leases in Jharkhand and about 89% of the mining leases each in Orissa and Chattisgarh have been granted to the private sector as on 31st March, 2010.

Table: 2.38 Existing Mining Leases by Sectors of Ownership, 2010

Sector	No. of Leases	% of Leases	Area (in ha.)	% of Area
Public	521	**5 %**	148932.76	**29 %**
Central Govt.	190	2 %	76049.43	15 %
State Govt.	331	3 %	72883.33	14 %
Private	9967	**95 %**	358471.08	**71 %**
Total	10488	100 %	507403.84	100 %

Source: *Indian Minerals Yearbook*, 2010, Chapter 3, Status of Reconnaissance Permits, Prospecting Licences and Mining Leases in India, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 3-6

Note: The figures are till 31st March, 2010

[89] *Indian Minerals Yearbook* 2010, Chapter 3, Status of Reconnaissance Permits, Prospecting Licences and Mining Leases in India, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 3-6

Table: 2.39 Sector-wise Ownership of Mining Leases in the Mineral Belt, (As on 31st March, 2010)

States	Public Sector		Private Sector		Total	
	No. of Leases	Lease Area (in ha.)	No. of Leases	Lease Area (in ha.)	No. of Leases	Lease Area (in ha.)
Jharkhand	29	18186.38	301	18873.20	330	37059.58
Orissa	59	35351.48	469	41005.19	528	76356.67
Chattisgarh	36	7269.67	278	12873.87	314	20143.54
India	521	148932.76	9967	358471.08	10488	507403.84

Source: *Bulletin of Mining Leases & Prospecting Licenses, 2010,* Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 53

2.3.4 Investment Policy:

The initial pattern of investment and investment policy in the coal mining industry during the late nineteenth century and early twentieth century has been outlined by **Papendieck (1978)** through an account of the investments carried out by Andrew Yule and Company which was one of the two largest European managing agency houses in Bengal presidency owning the control of large industrial empire during this period. The five major coal companies which were under the management of Andrew Yule and Company were Katras-Jherriah, Seebpore, Bengal Nagpore, Minto and Adjai in the order of their profits earned. The investment figures indicating investments as share, expressed in percentages, of the gross profits earned for these five major Coal mining establishments in Bengal within the Coal Department of Andrew Yule and Co., obtained from **Papendieck (1978)**, have been considered to sketch out as to what extent reinvestments of parts of the profits in the coal mining industry were carried out to facilitate the growth of this industry which shall comprise a major indication of the investment scenario in the coal industry during the colonial times.

The Katras-Jherriah Coal Company, which earned the maximum profits, depicted the lowest reinvestment of an average of about 8% of its profits during 1894 to 1918. Adjai Coal Company invested about 12% of its profit during 1895 to 1918 while the Minto Coal Company went on to reinvest about 14% of its profit during 1908 to 1918. The two major companies of Seebpore and Bengal-Nagpore in terms of the

profits earned reinvested an average of about 23% and 28% of their profits during the period of 1900-1918 and 1896-1912 respectively. The scenario of such meagre reinvestments by the coal mining giants during the crucial period of rapid expansion of the coal mining industry in the Mineral belt and India i.e. roughly during 1890-1920, speaks volumes about the reinvestment climate during the colonial period. However, the reasons for such small investments remain vague. **Papendieck (1978)** clarifies that accumulation of hidden reserves was not the factor behind it, neither there was any investment into "modernization or opening up of a new shaft" nor any investment into "underground transport" or "ventilation" etc which could have possibly occupied a section of the profits rather the "investments" were mainly in the form of expenditure for "new works" or in other words simply "preparation of new coal faces". He suggests that the capital drawn out of the coal industry of the Mineral Belt and India were probably utilized in the "international involvement" of the managing agency house and quite clearly the profits were not reinvested into the indigenous mining industry of the Mineral Belt. The growth of the coal mining industry at its prime stage was rather "extensive" instead of being "intensive" in nature which led to stagnation during the inter-War years and there was nothing resembling an investment policy. The demand-based nature of mining industry under the system of Managing agency prohibited the emergence of any major local entrepreneur and such a colonial legacy refused to die out even during the post-independence period wherein the Indian entrepreneurs who succeeded the British Capitalists invariably belonged to the relatively developed pockets of India and were rarely of indigenous origin which took the form of "internal colonialism".[90]

The wave of nationalization of coal mines in the post-independence period made investments in coal mining essentially a State or public sector issue. However, private participation and foreign and private investment gradually made a narrow entry into the investment policy and the economic liberalization of 1990s made the gates wide open. The revised National mineral Policy of 1994 permitted private investment both domestic as well as foreign for exploration and exploitation of thirteen minerals

[90] Papendieck, Henner (1978): "British Managing Agencies in the Indian Coalfield" in Rothermund, Dietmar and D.C. Wadhwa (ed.). *Zamindars, Mines and Peasants*, Manohar Publications, New Delhi, pp. 215 – 224 and Rothermund, Dietmar and D.C. Wadhwa eds.(1978). *Zamindars, Mines and Peasants*, Manohar Publications, New Delhi, pp. 226

including iron ore, copper, manganese and chrome ore. The same year witnessed an amendment to the MMDR Act, 1957 which was moulded accordingly to accommodate the mineral policy of private investment. In the year 1999, the foreign investment policy was further liberalized to encourage Foreign Direct Investment (FDI) in the mining sector by introducing an "automatic approval" route for investments involving foreign equity participation upto 50% in mining projects, and upto 74% in services incidental to mining. The Foreign Direct Investment (FDI) policy in the mining sector has been gradually liberalized during the past few years with FDI in the mining sector being fully opened upto 100% through the automatic route for all non-atomic and non-fuel minerals. In order to promote liberalization in mining sector, the amendments to the Rules in 2005 introduced "foreign equity holdings up to 100 per cent on the automatic route for exploration and mining" and "foreign equity up to 100 per cent on the automatic route for mineral processing and metallurgy".[91] The **Coal Mines (Nationalisation) Bill, 2000** was brought in to amend the **Coal Mines (Nationalisation) Act, 1973** in order to create a trouble-free legal space for private investment in coal mines as well. Certain investment incentives were also provided to such investors. In view of the declining growth rate of the Indian Economy during 2011-12, there has been an intense attempt to accelerate investments from the private sector. In this context **Special Purpose Vehicle (SPV)** has been proposed to accelerate investments mainly in the mineral sector and infrastructure.[92] It is geared to take care of the bureaucratic delays and ease out approvals and clearances to be obtained from government agencies.

2.4 Infrastructure Linkages:

In a Mineral Resource Region, development of a transport network is the most significant form of infrastructure which is required to convey the heavy mineral resources. The advent and expansion of railway network in India and especially in the Mineral belt had crucial impact on the indigenous economy. The pattern of railway development determined to a great extent the pattern of exploitation and utilization of the mineral resources as well as the development of the Resource region.

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[91] Sames, Carl W. (2006), *Op. Cit.*, pp. 22 - 23

[92] "Special Purpose Vehicle mooted to accelerate investments in infrastructure, Mineral sector", *The Hindu*, dated 16th May, 2012, Vol. 135, No. 117, pp.1

2.4.1 Development of the Railways:

The establishment of railways which was the "veritable dynamo" of the Industrial revolution in the developed countries like U.S.A., Russia, Germany etc failed to replicate the experience in India which became the only country to possess great railway networks yet remain "unindustrialized"[93]. The pattern of railway development in India and in the Mineral belt should be viewed essentially in the backdrop of India's colonial dependence upon Britain and the motive with which it was introduced which directed the pattern and process of railway development in the resource rich hinterlands.

The motivation and pressure to establish railways in India came from London in 1840s. The main objective which formed the core of such motivation was to mesh together the metropolitan economy of Britain and that of the colonised India, based on the fundamentals of dependency. The introduction of railways in a colony like India was resultant of an increased pressure from the Industrial Revolution to find overseas market and cheap supply of raw materials for the budding industries of Britain.[94] The development of railways in India was not directed towards promoting indigenous industrial development, as was the case of Germany and Japan, but was strictly controlled by the political and commercial interests of the British. The rail network was laid to open up the vast interiors of India to form a ready market for British manufactured goods and to extract and export the rich resources of the hinterlands to form the cheap raw material to feed the British industries. The benefits were supposed to flow into the "satellite" colony through the attainment of political and commercial aspirations of the metropolitan country.[95]

The impact of such an extractive network of transport infrastructure was immense upon the indigenous economy which crippled its growth during the successive decades. The direct economic impact was the disintegration of the traditional industrial

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[93] Thorner, Daniel (1955): "The Pattern of Railway Development in India". *The Far Eastern Quarterly*, Vol. 14. No. 2. pp. 201

[94] *Ibid.*, pp. 201 - 202

[95] Dubey. V. (1965): "Railway" in Singh. B.D. ed. *Economic History of India: 1857-1956*. Allied Publishers. Bombay. pp. 328 - 329

base[96] of India. The cheap, factory made British manufactured goods flooded the Indian markets, the imports of which were augmented to an unprecedented degree by the extension of the rail network, and ushered the decline of the indigenous cottage industrial goods and handicrafts which failed bitterly in competition with the price. The artisans were rendered jobless. The same railway network facilitated the exports of cheap raw materials, foodstuffs and industrial crops to the metropolitan economy through the ports which formed the destination points of the extractive railway lines. Instead of providing impetus to the indigenous economy, the railways stimulated the British industries.

The provisions of the Railway rates policy stand as strong evidence of the extractive and exploitative character of the transport network. The rates of freight movement were designed in such a way that they were profitable for the British economy far more than they benefited the indigenous economy.[97] The rate structure favoured the import of manufactured goods from Britain and export of raw materials from the hinterlands of India. The exports sent by rails from the resource hinterlands to the ports to be sent to Britain were charged with lower rates same as the imports from England to the vast Indian markets. This went on to deepen the resource rich country's economic dependence on the metropolitan economy despite possessing all the necessary requirements to attain 'self sustaining economy' status.[98] Such a pattern of trade proved fatal for the development of the indigenous industry. The rate structure was designed highly against the local industries which had to pay more to the railways for transporting their raw materials and distributing their finished goods in their own markets as compared to the imported goods.[99] The railways formed the prime "instrument" for fostering such a dependent development or rather "underdevelopment".

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[96] The traditional industrial base of India and the Mineral Belt in particular and its subsequent decline due to the introduction of railways has been dealt in greater details in the chapter three – Pattern and Process of Industrial Development, of the present study.

[97] Mehta, N.B. (1927): *Indian Railways: Rates and Regulations*, P.S. King & Son Ltd, London, Chapters IV and V.

[98] Thorner, Daniel (1955), *Op. Cit.*, pp. 208

[99] Dubey, V. (1965), *Op. Cit.*, pp. 337

The development of railways in the nineteenth century was essentially a "British show" which was controlled by London-based companies. The structure of the Railway administration was completely under the control of British with the officers as well as top personnel being essentially British and virtually no Indians holding any significant posts. The companies neither were interested in training the local Indians for holding any higher positions in the Railways nor were they technically trained. The materials needed for expansion and maintenance of the network were obtained from England even if they were available locally. Such "buy British" policy of the Railway administration impeded the Indian industrial development. Thus, the colonial India possessed one of the largest railway systems in Asia with no indigenous component attached to it. The approach of the companies and the British Government was responsible for the limited impact that introduction of the railways had on the economic advancement of the country which was unlike the case in developed countries.[100]

The main reason for the "disruptive effect" of the railways on the Indian economic structure was the nature of railway organization and foreign orientation of the Indian economy which led to the "wasteful use of her limited resources". The companies which operated the railway system were initially based in London and were completely oriented towards the British needs. Industrial development of India was never among any of their priorities. The "dependency" which was managed by "external power" led to the destruction of more occupational opportunities than they opened.[101]

The beginning of the twentieth century ushered a new era for the railway development in India. The flaws in the existing Railway system were exposed during the First World War when it failed to cater to the increased commercial traffic and faced a subsequent decline. The Government of India implemented in 1924 the **Acworth Report of the Indian Railway Committee, 1920** and EIR was placed under state ownership and management. This report favoured the management of the railways by Indian companies.[102] The State control witnessed a gradual increase in Indians holding responsible positions and the exclusive "buy British" policy was partially substituted by

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[100] Thorner, Daniel (1955), *Op. Cit.*, pp. 208

[101] *Ibid.*, pp. 214

[102] Dubey, V. (1965), *Op. Cit.*, pp. 339-40

"made in India" items for railway expansion and maintenance.[103] The Great Depression of 1929-30 pronounced a decline in traffic coupled with rising competition from road transport. The Second World War was a strenuous phase for the development of the Indian railways with tremendous increase in traffic and increase in industrial production in India. The capacity of the railways proved insufficient to cater to the increased needs. The Indian independence witnessed the **Regrouping of Indian Railways** and reorganization on a geographical basis. The Railway Board, in 1950, organized the railroads into six zones. The **Eastern Railway zone** which covered most of the Mineral Belt was established in 1952, out of which the **South Eastern Railway** was carved out in 1955.[104]

The development of the Railways proceeded in the post-independence era under the planned national economy. The expansion of the railways was integrated with the National Plan and Indian Railways became an essential component of the Indian economy. The demands for the railway transport only multiplied with the growing economy. The First Five Year plan emphasized on the "rehabilitation and renewal" of the equipments which were strained during the Second World War. Indigenous production of railway locomotives began in the Mineral Belt with the establishment of **Chittaranjan Locomotive Works** (CLW) at Chittaranjan near Asansol in 1950 and production in the **Tata Locomotive Plant** was developed. The emphasis during the Second Five Year plan witnessed a marked shift towards ambitious expansion of rolling stock and line capacity in order to meet the rising demands of the newly industrializing country.[105]

2.4.2 Pattern of Railway Growth in the Mineral Belt:

The extension of the railways to the Mineral belt during the colonial period was directed by the basic objective of obtaining regular supplies of coal at the Calcutta Port to feed the steam vessels which carried out the foreign trade. Coal, which was discovered at Raniganj in the Bengal Province, was transported by rail to Calcutta. The network which primarily served the Mineral belt was the East Indian Railway (EIR)

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[103] Thorner, Daniel (1955), *Op. Cit.*, pp. 211

[104] Dubey, V. (1965), *Op. Cit.*, pp. 342-345

[105] *Ibid.*, pp. 346

which was extended to the coal mines to obtain the rich resources. The advent of the Railways provided a great boost to coal mining in the Resource region. Prior to the advent of railways, there was little demand for coal for industrial purposes together with the inefficiency of the traditional transport system to transfer coal from the mineral belt. The railways itself consumed a major chunk of the coal produced and subsequently became the largest consumer of domestic coal produced.[106] New ventures for extraction of mica, manganese and other minerals were launched.[107]

The construction and expansion of railways is a major factor determining the growth of the towns and if the town is already an important trading centre; railways generally boost the trade and consequently lead to the growth of the town. But in the Mineral Belt, the pattern of expansion of the Railways diverted the old channels of trade, left aside some flourishing trade centres from its route which subsequently led to the decay of these prosperous trading centres[108] especially in the Bengal Province. Katwa was an important trade centre and a river port where steamers used to visit it the year round, but owing to the silting up of the Bhagirathi and the opening of the East Indian Railway its commercial importance declined considerably. [109] A similar experience was noted in case of Kalna town as well which was formerly the port which served the District, suffered owing to the competition with the East Indian Railway, and its population declined. [110]

The commencement of the East Indian Railway line in 1854 was extended to the coal-bearing areas of the Damodar basin.[111] The pattern of construction, expansion and growth of the railway network in the South East Resource region, ever since its introduction, has been oriented towards linking the rich coal mining centres and opening up of new mining centres of coal, iron ore and other industrially useful minerals. The extension of the railway network during the subsequent decades of the nineteenth

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[106] Gadgil, D. R. (1971): The Industrial Evolution of India in recent times: 1860-1939, Oxford University Press, Delhi, pp. 58

[107] Thorner, Daniel (1955), *Op. Cit.*, pp. 213

[108] Gadgil, D. R. (1971): *Op. Cit.*, pp. 145-147

[109] The Imperial Gazetteer of India, 1908, vol. XV, p. 190.

[110] The Imperial Gazetteer of India, 1908, vol. XIV, p. 316.

[111] Gadgil, D. R. (1971): *Op. Cit.*, pp. 58

century coincided with the growth of the coal industry.[112] Majority of the railway stations were mining centres, essentially coal mines during the initial period. During 1909, the railway stations were concentrated in the coalfields of Bengal Province. The BNR connected Durg, Raipur, and Bilaspur of the Central Province with the coalfields of the Mineral Belt. By 1931, the railway network had expanded and connected the coal mining centres of Bihar and Orissa Province. The coal mines Giridih, Daltonganj, Palamau in the western parts of the Bihar Province and Talcher in Orissa were connected as well. The establishment of the iron and steel plant during the first half of the twentieth century provided a great boost to coal and iron ore mining in the region. The most important iron ore mine Gorumahisani in the district of Singhbhum and other iron mines in northern parts of Orissa were connected to the steel plant. An extension line from Bilaspur connected the Umaria and Sohagpur coalfields in the Central Provinces. The copper mines of Balaghat and other mining centres in the Mineral belt were largely well connected in a network which was directed primarily towards mineral extraction during the colonial period. The lack of extension of railway lines to the other backward areas of the Resource region explains the extractive character of the railway development in the region.

By the Indian Independence in 1947, the East Indian Railway (EIR) became the chief system of the country which served the Bengal-Bihar Coalfields of the Mineral Belt and connected it to the Calcutta Port. The Bengal-Nagpur Railway (BNR) provided an alternative link for the Mineral Belt to Calcutta.[113] The most crucial aspect of the development of railways during the Second Five Year Plan, which also characterized the growth of railway network in the Mineral Belt, was that the expansion of capacity remained concentrated to lines related to the expansion of iron and steel and coal production. The movement of coal and raw materials to the new steel plants in the Mineral belt comprised of a huge chunk of the total volume of freight traffic in India.[114]

The expansion of railway network was quite limited during the later decades i.e. from 1931-1961 and only small section were extended from the existing railway

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[112] *Ibid.*, pp. 79

[113] Thorner, Daniel (1955). *Op. Cit.*, pp. 211

[114] Dubey, V. (1965). *Op. Cit.*, pp. 346 - 347

network. By 1987, the iron ore mines of Dalli-Rajhara and Bailadila (Kirandul) in Bastar in Chattisgarh (erstwhile part of Madhya Pradesh) were connected. The present pattern of railway network, as recent as of 2010, depict that the expansion of the railway lines have been essentially concentrated along the existing network. Only minor segments have been extended from set pattern of railway network. The pattern of railway development and its spatial extension has essentially followed the pattern that was set during the colonial period and any major extension of railway routes to the rest of the backward region has not taken place even over a century after the introduction and rapid extension of railways in this region. Huge tracts of the Resource region are still devoid of railway connection which pronounces the regional backwardness of the area. The approach of the colonial and national governments towards the railway development in the region has remained highly in favour of linking only the mineral bearing areas and mining centres with the manufacturing centres in order to exploit and utilize the mineral resources of the region but have failed to extend the benefits of its existent rich resources and their exploitation to the rest of the Resource region which has remained perennially backward.

2.4.3 Pattern of Road Network in the Mineral Belt:

The pattern of growth and expansion of road network has essentially followed the same route as of the railways in the Mineral Belt. A portion of the Grand Trunk road traversed the north-eastern portion of the region. During 1872 and 1909 the network of roads just like the railways was limited and originated or ended at the port town of Calcutta. This essentially marks the extractive nature of the road network which was again meant to transfer goods to and from the Calcutta port to be used in an alien economy rather than the indigenous economy. The expansion of the major road network and the national highways followed a similar pattern as of the railways in the subsequent decades as well.

The pattern of transport infrastructure development resulted in further accentuation of the enclave by restricting the linkages to the mining-industrial centres while the rest of the Resource region remained perennially deprived. The infrastructure laid was not directed towards indigenous development of the region but primarily and essentially towards extraction of its rich mineral wealth.

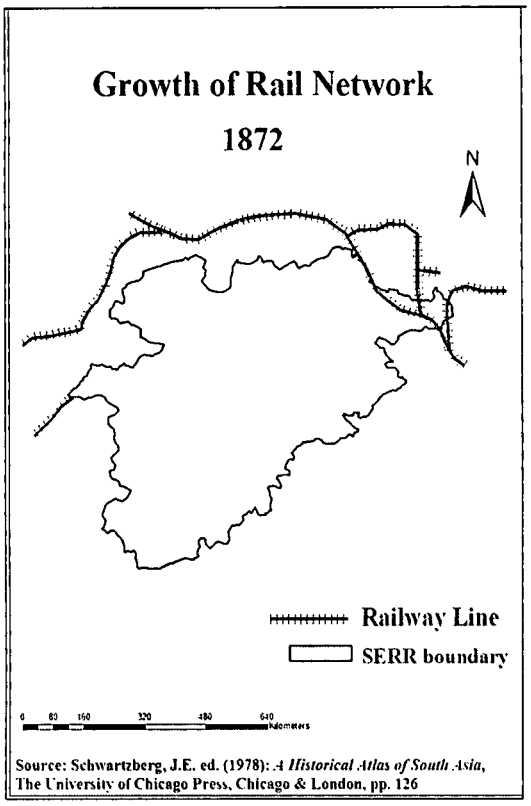


Fig: 2.15.

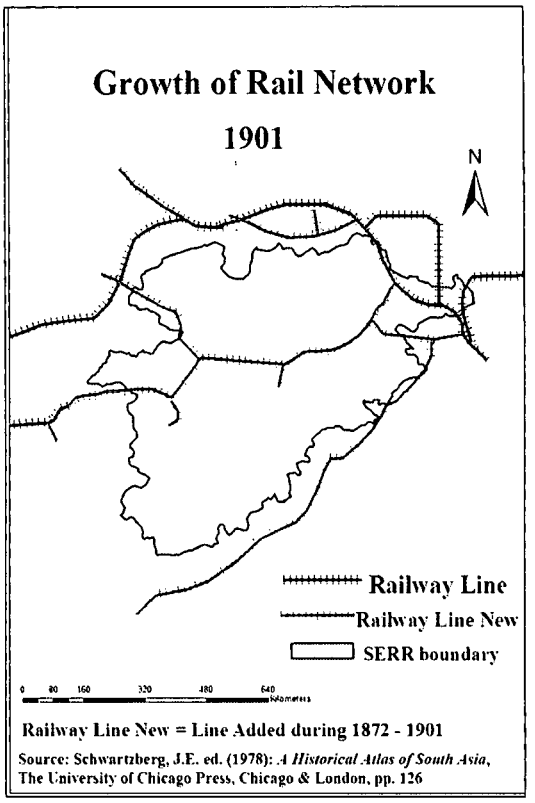


Fig: 2.16.

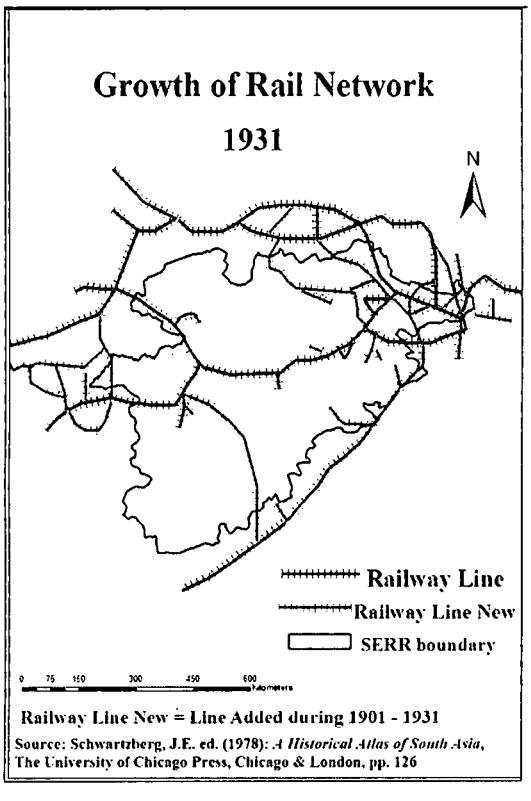


Fig: 2.17.

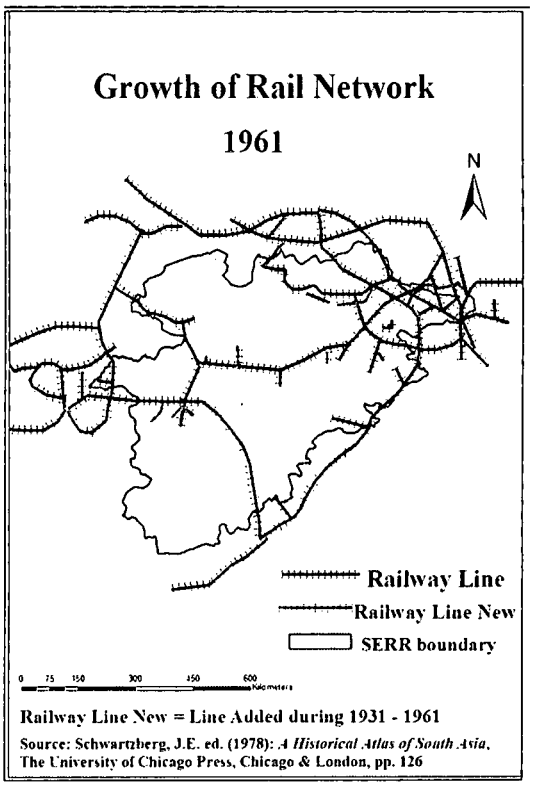
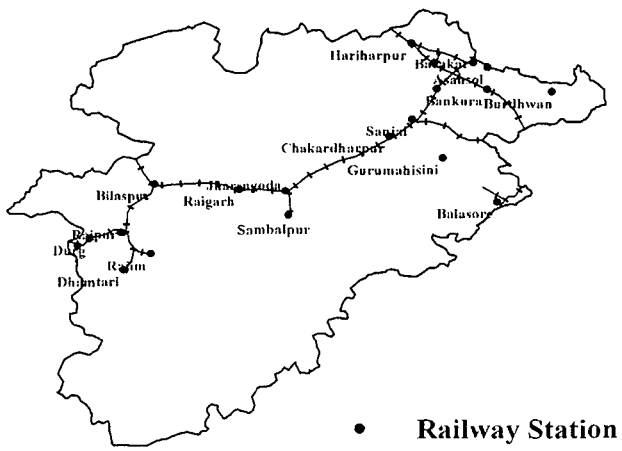


Fig: 2.18.

Fig: 2.19

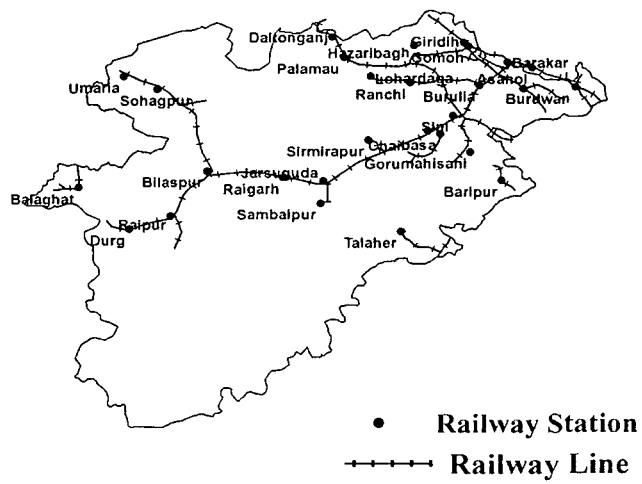
Railway Network 1909



Source: Imperial Gazetteer Atlas of India, 1909

Fig: 2.20

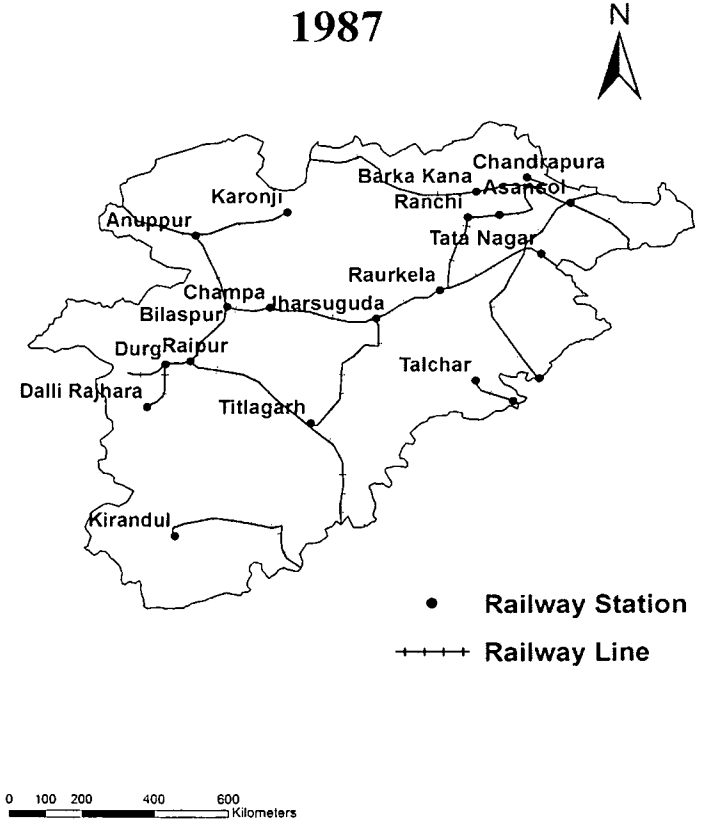
Railway Network 1931



Source: Imperial Gazetteer Atlas of India, 1931

Fig: 2.21

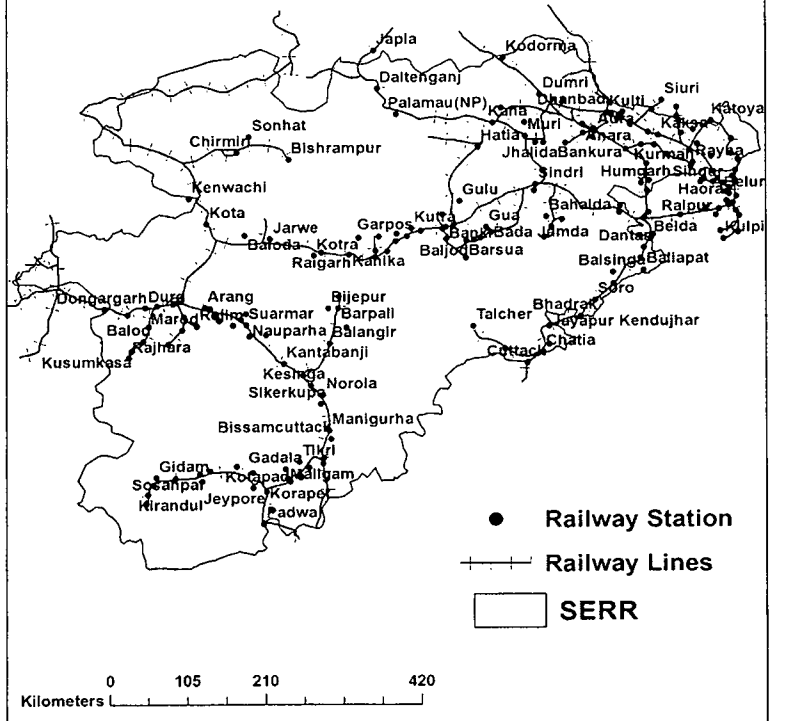
Railway Network 1987



Source: A Social and Economic Atlas of India, Oxford University Press, Delhi, 1987, pp.115

Fig: 2.22

RAILWAY NETWORK 2010



Indian Railways, Ministry of Railways (Railway Board), Government of India, www.indianrailways.gov.in

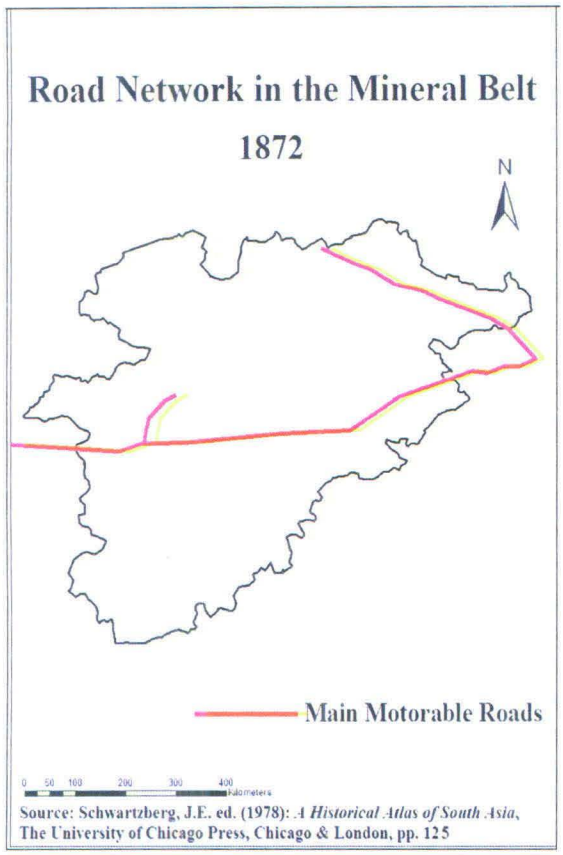


Fig: 2.23.

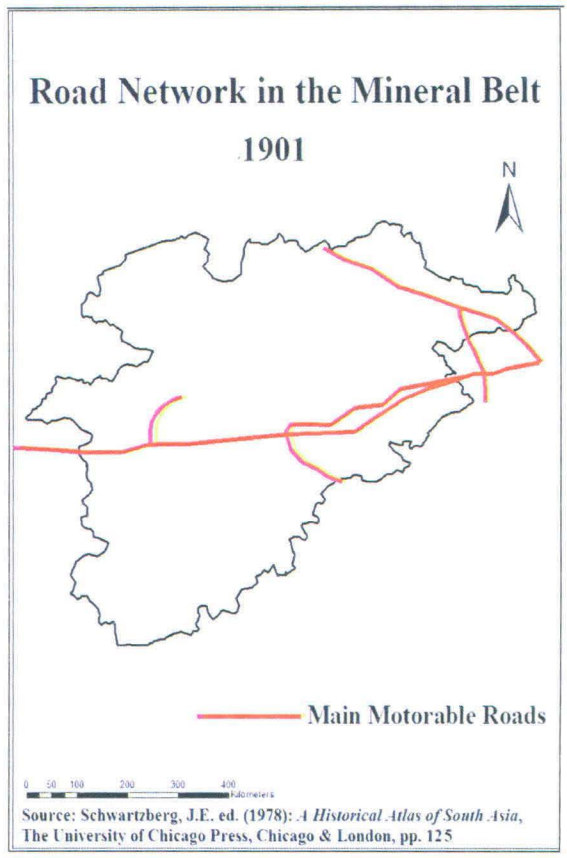


Fig: 2.24.

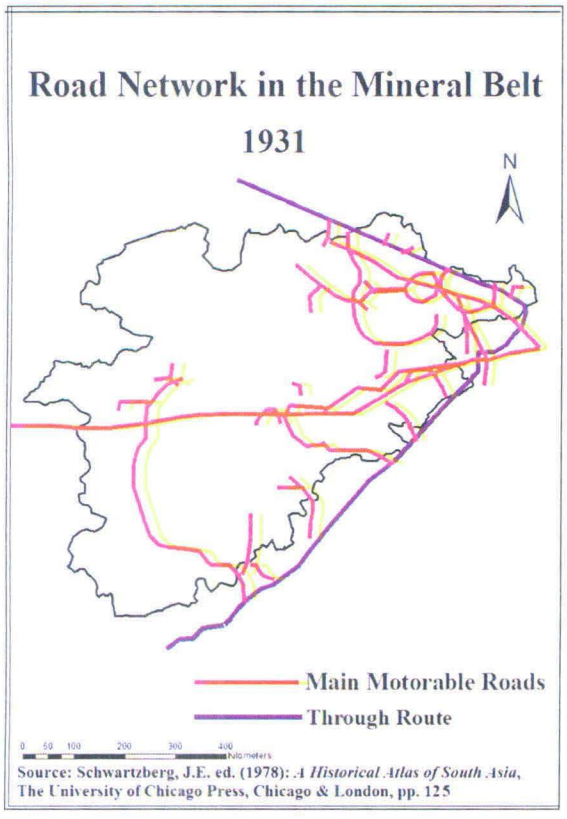


Fig: 2.25.

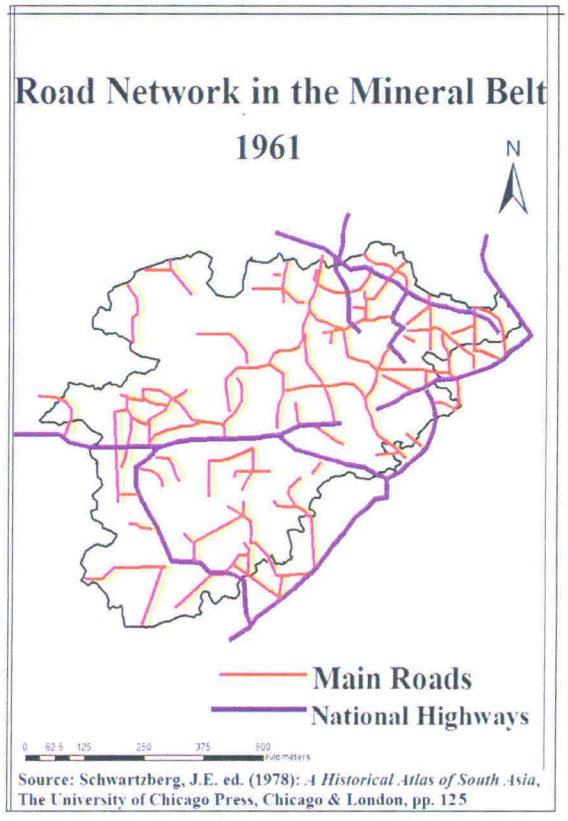
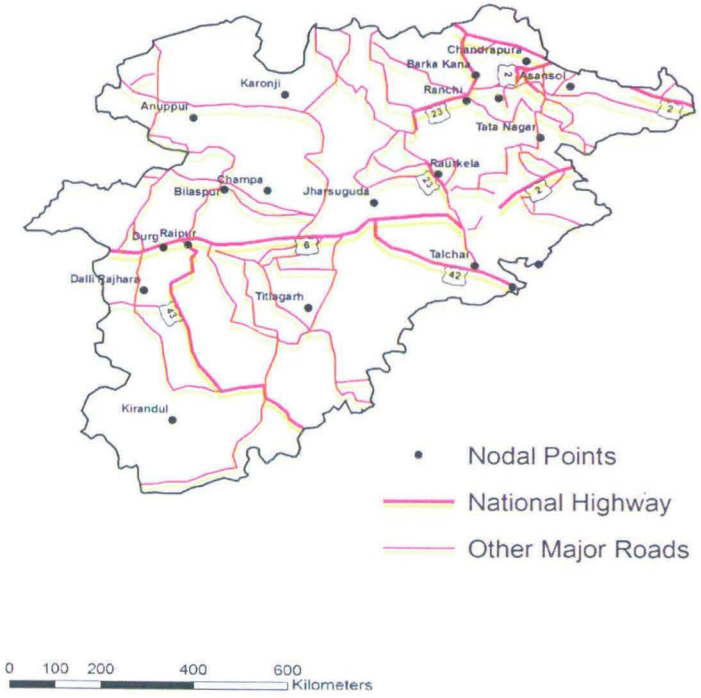


Fig: 2.26.

Fig: 2.27

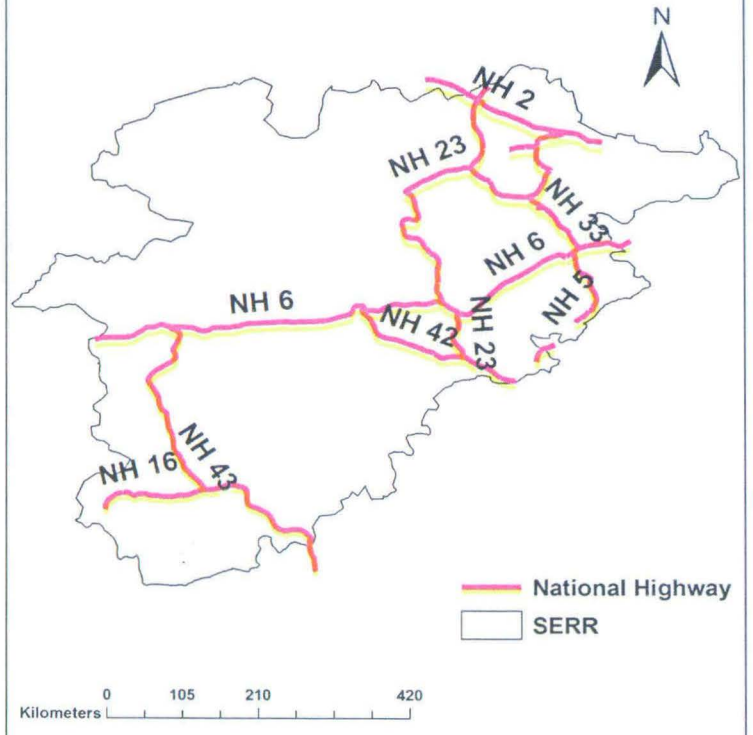
Road Network 1987



Source: A Social and Economic Atlas of India, Oxford University Press, Delhi, 1987, pp. 111

Fig: 2.28

NATIONAL HIGHWAYS IN THE MINERAL BELT 2010



Ministry of Road Transport, National Highway Authority of India
Government of India

2.5 Conclusion:

1. The South East Resource region of India is considered to be the prime mineral belt of India. It accounts for about 84% of the total coal reserves of the country. The three major states of the Mineral Belt i.e. Jharkhand, Orissa and Chattisgarh together constitutes about 70% of the total coal reserves of the country. The Resource region abounds in a wide array of other mineral resources as well. As per the recent estimations of 2010, it accounts for about 77% of the total Iron ore (Hematite), 61% of the Bauxite deposit, 93% of the Chromite, 19% of the total copper ore, 11% of the dolomite, 44% of the Manganese ore and 6% of the total Kyanite resources of the country. The mineral resource base of this region is undoubtedly the richest in the country.

2. The opening up of the Resource region was completely based on coal mining as coal was the very first mineral to be explored and exploited in this region. The coal mining industry in this region, by the very virtue of being controlled and operated by foreign hands during the colonial times, responded according to the external world events to an extent that acceleration or retardation of coal production, opening or closing down of coal mines was determined to a great degree by the external demand-supply situation. In the absence of any impetus from an indigenous iron ore industry till the turn of the next century, coal mining was mainly geared towards development of the railways which itself was constructed for extracting the mineral resources from the resource hinterlands. During the planned development of the National economy the coal industry witnessed rapid and tremendous development. The extent to which the development of these enormous coal reserves was directed towards indigenous development was greatly determined by the approach undertaken to develop them in different phases.

3. The rules for granting of mining lease or license in British India were highly in favour of the British Subjects wherein "a certificate of approval or a prospecting license or a mining lease could be granted only to a person who was a British subject or the subject of an Indian State or to a company or firm controlled by British Subjects or subjects of Indian States. After Independence the national government followed a "restrictive policy". Mineral concessions were safely not

granted to foreign investors, but the need to rapidly develop the indigenous mineral resources for achieving a self reliant industrial base, led to such "restrictive policy" where foreign investment and participation were only permitted on a "minority share basis" or collaborations on mutual benefit basis. While any citizen of India could acquire mineral concessions, the foreign nationals were not completely discouraged from holding a concession and foreign participation too was allowed a narrow entry. Coal mining was essentially kept under the public sector and government policies and legislations tilted highly in favour of State control over mineral industry. The era of State control came to a grinding halt after the Economic reforms of 1991 and the mineral policies were altered and transformed in lines with the new economic policies. Multiple amendments in the existent mineral legislations were carried out highly in favour of the large Corporates and eased out the entry of foreign and private entrepreneurs which marked a clear and further liberalisation of the mining and minerals sector. A re-emergence of the colonial tragedy seems to have come knocking with the mining legislation in India being all set to encourage privatization further by providing rules and regulations in favour of the private and multinational Corporates, continuously overlooking the ownership rights and participation of the indigenous inhabitants i.e. the tribal communities.

4. The colonial pattern of ownership of coal mines depict that the collieries under major coal companies were mainly under the control and directorship of Europeans and the privately owned collieries were highly in favour of the Indians. But given the small size, unsteady development and uneconomic nature of the privately owned collieries, the effective ownership and control of the coal industry in the Mineral belt rested mainly with the Europeans. The post independence era witnessed a wave on Nationalization of the coal mines. The Coal Mines (Nationalisation) Act, 1973 went on to reserve and restrict coal mining in India for public sector, but it later underwent several amendments which moulded the ownership laws to mark the legal narrow entry of private ownership in coal mining which assumed greater magnitude after the economic liberalization wherein private sector participation was allowed in coal mining through captive consumption. Although the number of collieries under public sector far exceeds that of private sector, due to the ongoing hold of the public sector over the major chunk of coal mining sector i.e. non-captive mines, recent years have witnessed an increasing trend in private sector ownership

of coal mines. The recent pattern of ownership in case of iron ore mines is highly skewed in favour of private sector. The rising privatization in mineral sector is apparent with 95% of the existing mining leases and 71% of the total land under mining leases to be in possession of the private sector and the situation in the Mineral belt being a stark example with 91% of the mining leases in Jharkhand and about 89% of the mining leases each in Orissa and Chattisgarh been granted to the private sector.

5. The growth of the coal mining industry at its prime stage was rather "extensive" instead of being "intensive" in nature and its demand-based nature led to frequent stagnations. There was nothing resembling an investment policy and as a result of which there was meagre reinvestment and large fraction of profits were not reinvested into the indigenous mining industry by the coal mining giants during the crucial period of rapid expansion of the coal mining industry in the Mineral belt i.e. during 1890-1920. The system of Managing agency prohibited the emergence of any major local entrepreneur and such a colonial legacy refused to die out and continued in the form of "internal colonialism" even during the post-independence period. The wave of nationalization of coal mines in the post-independence period made investments in coal mining essentially a State or public sector issue. However, foreign and private investment gradually made a narrow entry into the investment policy and the economic liberalization of 1990s made the gates wide open. The Foreign Direct Investment (FDI) policy in the mining sector has been gradually liberalized during the past few years with FDI in the mining sector being fully opened upto 100% through the automatic route for all non-atomic and non-fuel minerals.

6. The South East Resource Region boasts of its immense mineral wealth, parts of which have been extensively mined and the huge enticing reserves of remaining resources call for a sustainable approach geared towards indigenous development. The long exploitative history of the Mineral Belt and with such undying legacy and "negative heritage"[115] haunting its evolution, coupled with the present scenario of

[115] Rothermund, Dietmar and D.C. Wadhwa eds.(1978). *Op. Cit.*, pp. 227

ever-increasing strides of privatization and intensifying control of profit oriented private, both domestic and foreign, entrepreneurs over its rich mineral base, there is an urgency to make necessary legal provisions to steer the utilization of the rich mineral resources towards the indigenous regional development and in turn national development as well as to protect the ownership rights, interests and welfare of the indigenous people.

7. The development of railways in India was not directed towards promoting indigenous industrial development, as was the case in the developed countries, but was strictly controlled by the political and commercial interests of the British. The rail network was laid to open up the vast interiors of India to form a ready market for British manufactured goods and to extract and export the rich resources of the hinterlands in the form of cheap raw materials to feed the British industries.

8. The rates of freight movement were designed in such a way that they were profitable for the British economy far more than they benefited the indigenous economy The rate structure favoured the import of manufactured goods from Britain and export of raw materials from the hinterlands of India. The exports sent by rails from the resource hinterlands to the ports to be sent to Britain were charged with lower rates same as the imports from England to the vast Indian markets. This went on to deepen the resource rich country's economic dependence on the metropolitan economy. Such a pattern of trade proved fatal for the development of the indigenous industry. The railways formed the prime "instrument" for fostering such a dependent development or rather "underdevelopment".

9. The structure of the Railway administration was completely under the control of British with the officers as well as top personnel being essentially British and virtually no Indians holding any significant posts. The companies neither were interested in training the local Indians for holding any higher positions in the Railways nor were they technically trained. The materials needed for expansion and maintenance of the network were obtained from England even if they were available locally. The main reason for the "disruptive effect" of the railways on the Indian economic structure was the nature of railway organization and foreign orientation of the Indian economy which led to the "wasteful use of her limited resources".

10. The pattern of expansion and growth of the railway network in the South East Resource region, ever since its introduction, has been oriented towards linking the rich coal mining centres and opening up of new mining centres of coal, iron ore and other industrially useful minerals. The lack of extension of railway lines to the other backward areas of the Resource region explains the extractive character of the railway development in the region. The most crucial aspect of the development of railways during the post-independence period which also characterized the growth of railway network in the Mineral Belt was that the expansion of capacity remained concentrated to lines related to the expansion of iron and steel and coal production.

11. The expansion of the railway lines has been essentially concentrated along the existing network in the Resource Region. Only minor segments have been extended from set pattern of railway network. The pattern of railway development and its spatial extension has essentially followed the pattern that was set during the colonial period and any major extension of railway routes to the rest of the backward region has not taken place even over a century after the introduction and rapid extension of railways in this region. Huge tracts of the Resource region are still devoid of railway connection which pronounces the regional backwardness of the area. The approach of the colonial and national governments towards the railway development in the region has remained highly in favour of linking only the mineral bearing areas and mining centres with the manufacturing centres in order to exploit and utilize the mineral resources of the region but have failed to extend the benefits of its existent rich resources and their exploitation to the rest of the Resource region which has remained perennially backward

Chapter 3:

Pattern and Process of Industrial Development

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A rich mineral resource base is a boon for any region which steers its industrial advancement. The industrialization of India, as per the Imperialists, is said to have begun by the mid nineteenth century under the British Rule in the country but the Nationalists argue that India was industrially much advanced and the level of industrialization was much higher during the period preceding the advent of British Imperialism. In this regard the **Indian Industrial Commission Report, 1916-18** states that "At a time when the west of Europe, the birthplace of the modem industrial system, was inhabited by uncivilised tribes, India was famous for the wealth of her rulers and for the high artistic skill of her craftsmen. And, even at a much later period, when merchant adventurers from the West made their first appearance in India, the industrial development of this country was, at any rate, not inferior to that, of the more advanced European nations."[1]

The commencement of the British rule in India ushered in an era of "de-industrialization" and decline of the traditional industrial base of the country which gave way to the rise of 'modern' industrial form, geared towards the demands of an alien economy. The South East Resource Region of India experienced a similar process wherein the modest home-based cottage industries deteriorated while exploration and exploitation of coal, iron ore and other mineral resources at a commercial level, launched the factory based modern industry. The pattern of industrial development which set in ever since in this region based on the rich mineral resource base had far reaching consequences on the overall regional structure of the Resource Region. The basic premise of this present study is to analyse the nature and pattern of industrial development in the Resource Region during the colonial period and its continuity and change during the successive decades of post-independence and neo-liberal era. Based on the extent of government control over the mineral based raw materials, the nature of government's participation in the industrialization process in the region has been

[1] *Report of the Indian Industrial Commission, 1916-18*. Superintendent of Government Printing, India. Calcutta. 1918. pp. 1. Para 1

assessed. In this context the consumption pattern, productivity, level of technology and characteristics of the labour employed in the leading industries of the region has also been evaluated.

3.1 Traditional Industrial Base and its decline:

The traditional industries in the South East Resource Region during the beginning of the nineteenth century and even earlier were primarily based on the indigenous natural resources ranging from forest based industries to small scale mineral based. The Mineral Belt being extremely rich in natural vegetation and a wide variety of forest products obtained by the native people, the traditional industries were essentially based on these forest produces. Silk and *Lac* or Shellac industry were the most prosperous among the forest based industries in the Resource Region while small scale metal works and iron smelting were also carried out at local level.

Silk industry was well developed in this region with various eminent centres for silk weaving. The principal manufacture of Bankura District in West Bengal was silk. Bishnupur town, the ancient capital of the District under its native chiefs, housed a large weaving population and was noted for the prettily embroidered silk scarfs, plain and flowered sarees or dress pieces, a purple dyed cloth called *dhupchaya,* and other silk cloths which vied in quality and fineness with those of Murshidabad. A cloth called *Khutni,* a mixture of silk and cotton was also largely manufactured. *Tasar* silk cloths were woven at the village of Barjora.[2] The District manufactured sufficient enough to meet the local demand, and a considerable surplus was also left over for exportation to other Districts and to Calcutta. The chief articles of export constituted of cotton, and silk cloth and silk cocoons. The exports were considerably more valuable than the imports, and thus coin was consequently accumulated in the District.[3] Silk *sarees* and *dhutis* were largely manufactured at Memari and Radhakantpur in Burdwan and Katwa Subdivisions of Burdwan District. Weavers were numerous throughout the district and besides meeting local demands also supplied cloth to other parts of the country.[4]

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[2] Hunter, W.W. (1877): A *Statistical Account of Bengal,* District of Bardwan, Bankura and Birbhum, Vol. IV, Trubner & Co., London, pp. 276

[3] Hunter, W.W. (1885): *The Imperial Gazetteer of India,* Vol. II, Trubner & Co., London, pp. 85

[4] Hunter, W.W. (1877), *Op. Cit.*, pp. 133

Initially there were a few weavers of tasar-silk cloth in Saraikala in Singhbhum district[5] and later on tasar-silk cocoons formed its principal exports and the value of the silk export was estimated to amount to £10,000 in the year 1871.[6] A small quantity of silk cloth was also woven mainly for export at Raghunathpur, Sinhbazar and Gopinathpur in erstwhile Manbhum district.[7] In Bilaspur district of Chattisgarh, weaving constituted the only important local industry. In 1870, it employed about 6000 looms, turning out at least 600,000 cloths, of the value of £60,000.[8] A little *tasar* silk was spun and woven in Arang, Rajim and Nawapara in Raipur District with the cocoons being brought from Phuljhar. But the quality of the cloth was poorer than in Bilaspur.[9] Some *tasar* silk is reported to be produced in the village of Seoni in Bemetara tahsil in Durg District.[10] The manufactures of Sambalpur District in Orissa included *tasar* silk cloth of an even texture and unfading lustre which constituted its principal exports.[11] The silk weaving industry however declined greatly on account of the competition from cheaper English goods which caused the weaving manufacture to fall off with little demand for native-made cloth.

Lac manufacture or shellac industry was yet another form of forest based industry in the region. Ranchi was a convenient centre for both collection of stick-lac and the manufacture of the commercial products known as shell-lac and lac-dye, a factory of which was in operation close to the cantonment of Doranda under the name of the Ranchi Lac Company. A special variety of shell-lac very pure in quality was usually produced in this company. Large supplies of stick-lac were obtained from Lohardaga in Ranchi District, Raipur and Sambalpur in the Central Provinces.[12] In Manbhum District about five lac factories were recorded to be operational during mid

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[5] Hunter, W.W. (1877): A *Statistical Account of Bengal*, Singhbhum district, Tributary States of Chotanagpur & Manbhum, Vol. XVII, Trubner & Co., London, pp. 105

[6] Hunter, W.W. (1887): *The Imperial Gazetteer of India*, Vol. XII, Trubner & Co., London, pp. 539

[7] Hunter, W.W. (1877): A *Statistical Account of Bengal*, Singhbhum district, Tributary States of Chotanagpur & Manbhum, Vol. XVII, Trubner & Co., London, pp. 352

[8] Hunter, W.W. (1885): *The Imperial Gazetteer of India*, Vol. II, Trubner & Co., London, pp. 451

[9] Nelson, A. E. (1909): *Central Provinces District Gazetteer*, Raipur District, Volume A, pp. 176

[10] Nelson, A. E. (1910): *Central Provinces District Gazetteer*, Durg District, Volume A, pp. 103 - 104

[11] Hunter, W.W. (1887): *The Imperial Gazetteer of India*, Vol. XII, Trubner & Co., London, pp. 183-84

[12] Hunter, W.W. (1877): A *Statistical Account of Bengal*, Districts of Hazaribagh and Lohardaga, Vol. XVI, Trubner & Co., London, pp. 417 and 420

nineteenth century.[13] Lac dye and Shellac were also manufactured in Bankura District[14] while lac formed the principal export of Bankura District[15], Hazaribagh District (amounting to £43,200 in the year 1863)[16], and Stick-lac that of Sambalpur District.[17] Lac was produced essentially for export in Palamau District.[18]

Cotton weaving and manufacture of generally coarse cotton cloth was a traditional industry which met the demands of local consumption and exporting the surplus. Bankura District was principal cotton weaving centre which also exported cotton cloth. There were about 6685 cotton weavers out of the total 14,234 male adult artisans in Bankura District according to the Census of 1872.[19] Nearly every village contained weavers of coarse cotton cloth in Sambalpur District which also exported the surplus.[20] The chief manufactures of Singhbhum District constituted of coarse cotton cloth.[21] Ranchi district in Jharkhand was known for the manufacture of coarse cloth.[22] The weaving of cotton cloth by handloom was carried all over the District of Manbhum as a domestic industry and the cloths with a red and blue border was manufactured for sale. None of it was however exported and manufacturing was done only on a small scale.[23] Inferior variety of coarse cloth was also manufactured in erstwhile Lohardaga District in which was well known for a strong variety of cotton cloth called *dosuti* which was woven in the District and the supply of which was unable to meet its great

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[13] Hunter, W.W. (1877): A *Statistical Account of Bengal,* Singhbhum district, Tributary States of Chotanagpur & Manbhum, Vol. XVII, Trubner & Co., London, pp. 352

[14] Hunter, W.W. (1877): A *Statistical Account of Bengal,* District of Bardwan, Bankura and Birbhum, Vol. IV, Trubner & Co., London, pp. 276

[15] Hunter, W.W. (1885): *The Imperial Gazetteer of India,* Vol. II, Trubner & Co., London, pp. 85

[16] Hunter, W.W. (1885): *The Imperial Gazetteer of India,* Vol. V, Trubner & Co., London, pp. 378

[17] Hunter, W.W. (1887): *The Imperial Gazetteer of India,* Vol. XII, Trubner & Co., London, pp. 183-84

[18] *The Imperial Gazetteer of India, 1908,* Vol. XIX, Oxford Clarendon Press, London, pp. 342

[19] Hunter, W.W. (1877): A *Statistical Account of Bengal,* District of Bardwan, Bankura and Birbhum, Vol. IV, Trubner & Co., London, pp. 276 - 277

[20] Hunter, W.W. (1887): *The Imperial Gazetteer of India,* Vol. XII, Trubner & Co., London, pp. 183-84

[21] Hunter, W.W. (1877): A *Statistical Account of Bengal,* Singhbhum district, Tributary States of Chotanagpur & Manbhum, Vol. XVII, Trubner & Co., London, pp. 105

[22] *Bengal District Gazetteers,* Ranchi, 1917. pp. 134

[23] Hunter, W.W. (1877): A *Statistical Account of Bengal,* Singhbhum district, Tributary States of Chotanagpur & Manbhum, Vol. XVII. Trubner & Co., London, pp. 351 - 352

demand. [24] Artisans did no more than supply the local demand for cotton cloth in Palamau District.[25] Burdwan District housed about 24557 cotton weavers out of the total 52,506 male adult artisans according to the Census of 1872.[26] Coarse country cloth was woven in several of the larger villages in Durg District, the principal centres of which were Nawagarh, Drug, Dhamda, Patau, Balod, Deokar, Bemetara, Arjunda, Arkar and Bhednl. Checked cloths were produced in Nawagarh in Durg District.[27] Most of the larger villages in Raipur District contained a colony of weavers who produced coarse country cloth. The principal centres were Arang, Saragaon, Kharora and Kunara in Raipur tahsil, Rajim and Pachera in Mahasamund tahsil, Dhamtari and Kura in Dhamtari tahsil, and Baloda, Simga and Nawapara in Baloda Bazar tahsil. The indigenous industries of weaving and dyeing cloth suffered and appear to be on the decline. The weaving class took to labour and begging. The cotton industry suffered a great decline in prosperity between 1891 and 1901 with the number of persons engaged in it falling by nearly a third in Raipur District.[28]

Metal Work existed as an important traditional industry in the resource rich Mineral Belt. Indigenous process was employed in the manufacture of copper, brass and bell metal utensils. Brass cooking utensils formed one of the chief manufactures of Singhbhum District[29] which was also famous for its copper enterprise.[30] In Sambalpur District the *Kanwars* manufactured vessels of brass and bell metal and the *Sonars* made rude ornaments of gold and silver.[31] Brass Work was carried out in Dignagar, Banpas, Dainhat, Diwanganj and Jabai in Burdwan District. A special variety of pottery was made in the Kalna Subdivision of this district. The gold and silver work carried out consisted of personal ornaments and occasionally plates and drinking cups etc. at an

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[24] Hunter, W.W. (1877): A *Statistical Account of Bengal,* Districts of Hazaribagh and Lohardaga, Vol. XVI, Trubner & Co., London, pp. 415 - 416

[25] *The Imperial Gazetteer of India, 1908,* Vol. XIX, Oxford Clarendon Press, London, pp. 342

[26] Hunter, W.W. (1877): A *Statistical Account of Bengal,* District of Bardwan, Bankura and Birbhum, Vol. IV, Trubner & Co., London, pp. 134

[27] Nelson, A. E. (1910): *Central Provinces District Gazetteer*, Durg District, Volume A, pp. 103 - 104

[28] Nelson, A. E. (1909): *Central Provinces District Gazetteer*, Raipur District, Volume A, pp. 176

[29] Hunter, W.W. (1877): A *Statistical Account of Bengal,* Singhbhum district, Tributary States of Chotanagpur & Manbhum, Vol. XVII, Trubner & Co., London, pp. 105

[30] *Bengal District Gazetteers*, Singhbhum 1910, pp. 140-144

[31] Hunter, W.W. (1887): *The Imperial Gazetteer of India,* Vol. XII, Trubner & Co., London, pp. 183-84

essentially domestic level in the Burdwan District. There were about 3767 ornament makers out of the total 52,506 male adult artisans in Burdwan District according to the Census of 1872.[32] Artisans did no more than supply the local demand for brass utensils, silver and lac ornaments of the rudest kind in Palamau District.[33] Inferior variety of brass work was also carried out in Lohardaga.[34] Ornaments and vessels of brass and bell-metal are made in Drug, Nawagarh and Dhamda in Durg District. The best quality of metal is known as *phulkans*, and vessels of this are sold by weight.[35] Ornaments and vessels of bell metal, a mixture of copper and tin, were made at Nawapara and Raipur District. The Kasars of Raipur and Nawapara made vessels from an amalgam of bell-metal and brass known as *bharat*. Drinking vessels and plates were made of bell metal. Brass-work was turned out at Raipur, Dhamtari and Nawapara, but the industry suffered since the opening of the railway from the competition of other manufacturing centres in India.[36]

Iron smelting by native techniques was operational throughout the Mineral Belt in the form of small scale traditional industry. Tandwa in Hazaribagh district in Jharkhand was known as an important iron smelting centre way back in 1863 wherein about twelve small furnaces were operated with a per day pig iron output of about 264 pounds.[37] Auranga and Hutar coalfields in Jharkhand had about 54 native furnaces for iron ore smelting.[38] Rude country guns made of steel and iron and the manufacture of iron ploughs and a rude kind of axe was carried out for local consumption at Palamau District.[39] A small quantity of iron ore was smelted and used in the manufacture of

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[32] Hunter, W.W. (1877): A *Statistical Account of Bengal*, District of Bardwan, Bankura and Birbhum, Vol. IV, Trubner & Co., London, pp. 133 - 134

[33] *The Imperial Gazetteer of India, 1908*, Vol. XIX, Oxford Clarendon Press, London, pp. 342

[34] Hunter, W.W. (1877): A *Statistical Account of Bengal*, Districts of Hazaribagh and Lohardaga, Vol. XVI, Trubner & Co., London, pp. 415

[35] Nelson, A. E. (1910): *Central Provinces District Gazetteer*, Durg District, Volume A, pp. 103 - 104

[36] Nelson, A. E. (1909): *Central Provinces District Gazetteer*, Raipur District, Volume A, pp. 176-177

[37] Hunter, W.W. (1877): A *Statistical Account of Bengal*, Districts of Hazaribagh and Lohardaga, Vol. XVI, Trubner & Co., London, pp. 158

[38] Hall, V.D. (1880): "On the Auranga and Hutar Coalfields and Iron Ore of Palamau and Toree", *Memoirs of the Geological Survey of India*, Vol. XV, pp. 120-123

[39] *The Imperial Gazetteer of India, 1908*, Vol. XIX, Oxford Clarendon Press, London, pp. 342

agricultural implements in Deori zamindari in Raipur District.[40] The hills of the Dondi-Lohara, Khujji and Gandai zamindaris in Durg District contained deposits of iron-ore which was smelted in small quantities by indigenous methods and was used for the manufacture of agricultural implements.[41]

Among other industries, stone bowls and crucibles were manufactured at Nawagarh from the deposits of red sandstone at Durg District;[42] soapstone platters were made at Singhbhum District;[43] tableware made of a kind of soap-stone carved at Bishnupur by the local stone-cutters of Bankura District in West Bengal[44]; blankets and tat cloths made for pack-bullock backs at Palamau District;[45] rough blankets, mats, baskets, rope and rude pottery-utensils were made in Lohardaga District[46] (Ranchi); sugar was refined for home consumption and raw sugar kept for export in Bankura District [47] etc. apart from local level pottery, brick and tile making, oil, rice and paper mills, bangle making, rope making etc were carried out throughout the length and breadth of the Resource Region.

These local industries formed the traditional industrial base of the Resource Region which utilized the indigenous available resources and were geared mainly towards domestic demands and local consumption while exporting the surplus and most importantly employed the native population and existed as quite a stable and self-sustainable industrial base for the region. **Gadgil (1971)** noted that till the first half of the nineteenth century, the system of internal transport and communication was extremely substandard and good roads were almost non-existent in most parts of the country. This resulted in a state of "insularity" for the Indian artisans as it protected them from outside competition, the absence of which negated the probability of

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[40] Nelson, A. E. (1909): *Central Provinces District Gazetteer*, Raipur District, Volume A, pp. 176-177

[41] Nelson, A. E. (1910): *Central Provinces District Gazetteer*, Durg District, Volume A, pp. 103- 104

[42] Nelson, A. E. (1910): *Central Provinces District Gazetteer*, Durg District, Volume A, pp. 103- 104

[43] Hunter, W.W. (1887): *The Imperial Gazetteer of India*, Vol. XII, Trubner & Co., London, pp. 539

[44] Hunter, W.W. (1885): *The Imperial Gazetteer of India*, Vol. II, Trubner & Co., London, pp. 85

[45] *The Imperial Gazetteer of India, 1908*, Vol. XIX, Oxford Clarendon Press, London, pp. 342

[46] Hunter, W.W. (1877): A *Statistical Account of Bengal*, Districts of Hazaribagh and Lohardaga, Vol. XVI, Trubner & Co., London, pp. 415 - 416

[47] Hunter, W.W. (1877): A *Statistical Account of Bengal*, District of Bardwan, Bankura and Birbhum, Vol. IV, Trubner & Co., London, pp. 276

localization of industry.[48] Although most of the industries, with exception of weaving industry especially silk in this region, had limited scope and extent, they were "best organized" with "high water-mark of excellence" and were extremely reputed for their quality all over the world. The advent of the British Imperialism marked an "economic transition" which was mainly due to the opening up of vast tracts of the hinterlands through means of modern and advanced transport viz. railways and roads. The introduction of western modes of manufacture and import of foreign goods disorientated the traditional industrial base and brought about significant decline of these native industries.[49]

The factors which have been put forward for the decline of these native industries revolve around three major issues underlined by **Gadgil (1971)**: abolition of native Indian courts, establishment of a foreign rule and competition from cheap factory made foreign goods. The abolishment of native courts resulted in a sudden drop of demand as most of these cottage industry goods such as silks and muslins, metal utensils, artistic furnishing, carpets, jewellery etc. served as luxury goods either in the native courts or for the rich in the capital towns. Therefore, the decline of traditional handicraft industry was noted in those areas where the courts were abolished and quite rapidly became extinct in the British territory. However, even in those areas where the courts continued to exist, gradual decline of the industry was evident. The establishment of an alien rule imposed new forms, patterns and tastes which became the dominant demand as the Indian nobles too imitated the European fashion. The import of the cheap machine made European goods posed a stiff competition for the home based hand-made goods of the traditional Indian industry. This resulted in the complete decay of this sector. The indigenous iron smelting industry was localized in certain parts of Chotanagpur and Central Provinces due to easy availability of the raw materials. The decline of this industry, however, occurred due to other reasons like increased price of charcoal due to reservation of the forests by the British and supply of wood to railway

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[48] The case of weaving and production of artistic wares in towns are exceptions to this condition. Weaving was especially localized in certain centres which became well known for their specialized work. (D.R. Gadgil: 1971, pp. 11)

[49] Gadgil, D.R. (1971): *The Industrial Evolution of India in Recent Times (1860 – 1939)*, Oxford University Press, Delhi, pp. 2 – 11 and 33.

expansion as well as competition from imported pig iron. Thus the entire traditional industrial base collapsed in the Resource Region as well as in the country.[50]

3.2 Rise of the 'Modern' Industry and De-industrialization:

The growth of the organized industry brought about a transition from home-based production to large scale factory based manufacture. Being superimposed on the existent regional structure, impact of the emergence of the modern industrial sector on the development pattern was extensive. The characterizing features associated with the rise of the modern industrial system in India differed fundamentally from that of its European counterpart. While industrial revolution in England was characterized by invention of machinery and rapid exploitation of its indigenous mineral resource base, the rise of modern industry in the Resource Region and India was initially based on imported industrial machinery and railway rolling stock coupled with slow exploitation of the local mineral resources. However, later on India stood at an advantageous position with the rich mineral resource base forming the raw material for the industries which England basically had to import as well as the vast domestic market which created internal demand.[51]

The major factor which hindered the rapid industrial development of India in general and the Resource Region in particular during the initial stage was essentially political. The **Indian Industrial Commission Report, 1916-18** opined that the policy undertaken by the East India Company and later on by the British Indian Government was in a way responsible because main objective of the East India Company was to trade which was based on profit motives rather than seeking a sustainable development route for the hinterland. Unlike England which was a politically free country, India was restricted from expanding its trade relations based on its own interests. [52] Therefore, in spite of huge reserves of important industrial minerals, an indigenous industrial establishment was conspicuous by its absence till the dawn of the twentieth century which witnessed the rise of large scale modern industry. Till then coal mining industry was the only considerably modern industry which was centralized in few areas in

[50] Gadgil, D.R. (1971), *Op. Cit.*, pp. 38 - 46

[51] Broughton, G.M. (1924): *Labour in Indian Industries*, Oxford University Press, London, pp. 1-7

[52] Broughton, G.M. (1924), *Op. Cit.*, pp. 21 - 25

Bengal and Central Provinces, with the Bengal Coalfields remaining as the most important.

The emergence of large scale industries during the end of the nineteenth century and their consistent growth ever since does not, however, indicate industrialization or modernization. **Bagchi (1975)** has extensively debated the issue stating that the denial of the rights of the Indians to establish indigenous industries under State sponsorship rule and resultant impediment for the Indian entrepreneurs during the colonial effectively "de-industrialised" the country. He analysed the share of labour force engaged in secondary activities, which was relatively larger prior to the rise of modern industry. The destruction of the traditional industrial base and emergence of the modern industry marked a significant decline in the ratio of the industrial working force to the total working force and destroyed the traditional skills of millions of people to be replaced by none and the capitalist colonialism only ushered in "de-industrialisation with very little modernisation". The compelled "de-skilling" of the native artisans and limited formation and diffusion of modern skills along with "meagre" development of the modern industry which again was geared towards exploitation rather than indigenous development not only hindered the industrialization process but somewhat reversed it in contrast to the erstwhile existent process.[53]

Bagchi (1977) while dealing with capitalist development and de-industrialization embarks upon the contrasting situations that surfaced in the developed world and the Third world when the traditional industrial base collapsed. He noted that Capitalist growth had exactly opposite effects on advanced capitalist countries and on the colonies and semi-colonial countries dominated by the West Europeans. It led to the displacement of vast numbers of artisans in the Third World countries like India, which although may seem similar to the displacement of artisans and small commodity producers in Western Europe, it however goes deeper than the mere superficial connotation. While in Western Europe the displacement was soon compensated by rapid growth of factory industry, the growth of factory was on a mere minuscule scale in the Third World. With the collapse of the traditional industry in India and other Third

[53] Bagchi, A.K. (1975): "Some Characteristics of Industrial Growth in India", *Economic and Political Weekly*, Vol. 10, No. 5/7, pp. 157- 158

World countries, the artisans not only lost their trades but they also lost their traditional skills. While the loss of skills was compensated in the Western Europe through instilling new skills in the factory workers coupled with providing elementary education to everybody sponsored by the State or public authorities, nothing of that sort happened on such a scale in the Third World where the number of persons acquiring factory skills remained extremely small. In case of India, the reason mainly was that the really skilled occupations in factories were controlled by Europeans and were kept away from the natives. Neither did they become any more literate than before because of the meagre educational facilities which were again restricted to the upper classes only. Such a system generated a "new type of dependence on the foreigners". Industrialization in colonised countries like that of India was not based on large scale use of machinery and advanced technology like that in the developed capitalist countries which later posed a serious problem with the introduction of the "import substituting industrialization". The control of the working methods and processes in the factory enterprises were almost completely in the hands of Europeans in the form of management and their immediate supportive structure. Such a method of control was superimposed on the colonial economy and resulted in the transformation of the increased degree of control of the workers by the management to an increased degree of dependence of the Third World enterprises on the techniques of production, management etc of the advanced capitalist countries.[54]

The de-industrialization scenario and the British perception towards it were recorded in the phenomenal work of **R.C. Dutt (1904)** as: "Endeavours were made, which were fatally successful, to repress Indian manufactures and to extend British manufactures"[55] and "Select Committees tried to find out how British manufactures could find a sale in India, and not how Indian manufactures could be revived. Long before 1858, when the East India Company's rule ended, India had ceased to be a great manufacturing country"[56].

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[54] Bagchi, A.K. (1977): "Choice of Techniques and technological Development in Underdeveloped Countries". Occasional Paper No. 13, *Centre for Studies in Social Sciences*, pp. 16 - 17

[55] Dutt, R. C. (1904): *India in the Victorian Age: An Economic History of the People*, Trubner & Co. Ltd., London. Preface. pp. vii

[56] *Ibid.*, pp. viii

The coal mining industry acquired the form of *mining enclave* in the backward Resource region, the development of which remained completely insulated from its surroundings. The advent of the railways provided an impetus to the growth of the coal mining industry and further accentuated the enclave character as the pattern of railway expansion was geared towards transporting the coal exploited from the isolated mines directly towards the Calcutta port for export to the metropolitan economy. There was, therefore, no interface of the mineral resources with the surrounding region. The coal obtained was either meant for export or for consumption by the expanding railways and such a form of industrial development did not benefit the regional economic structure. The utilization of the local coal resources was not done for the regional industrial development as the traditional iron smelters of the region used charcoal and not the local coal due to technological shortcomings and a large scale, organized, indigenous iron and steel industry was absent during the entire end of nineteenth century. With the decline of the indigenous iron industry in the Resource Region, a new "extractive" industry developed which was "imposed" over the regional structure and was "concentrated in a major coalfield", marginally employing the native populace unlike its indigenous counterpart which was "decentralized", involved the local workers and was geared towards indigenous demand. Therefore the apparent industrial development in the region took place in "isolated enclave" form which somewhat set the trend for future development of industries in the region which were "similarly isolated".[57] Such mining enclaves were not geared to provide growth impetus to their hinterlands and somewhat had far from a positive impact on its surrounding by distorting the economy and stagnating the growth condition so much so that the enclaves existed as "islands of economic development" in a backward region as experienced in colonial Latin America as well.[58]

The coal mining enclaves developed as "secondary or derivative enclaves" which provided for the demands of the primary enclaves which in turn served the metropolitan economy directly. The coal obtained from the mining enclaves in the

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[57] Rothermund Dietmar (1978): "The Coalfield – An Enclave in a Backward Region" in Dietmar Rothermund and D.C. Wadhwa (ed.), *Zamindars, Mines and Peasants*, Manohar Publications, New Delhi, pp. 2

[58] Odell, P.R. and Preston, David A. (1973): *Economies and Societies in Latin America: A Geographical Interpretation*, Wiley-InterScience Publication, London, pp. 151 - 154

Resource region were used for railways, jute and tea industries within the country, which formed the primary enclaves. Any prospect for indigenous entrepreneurship in such industry was extremely bleak which together with employment of distant migrant labour from outside the region further intensified the isolation and enclave character. Therefore, the native population existed in a "marginal co-existence" with the mining enclave without any remarkable structural change which even continued after the Indian Independence[59] and continues till date wherein islands of development and modernization co-exist among the persistently stagnating periphery. The urban enclave, which surfaced under the impact of colonial rule in this region, was under such entrepreneurial control to the likes of British Managing Agency who were the least interested in bringing about an integrated development in the region. Their motives were purely extractive. The only linkage which existed between the developed urban-industrial centres and their peripheries was the "coolie linkage" and such a pattern persistently survived during the succeeding decades.[60]

3.3 Development of the Leading Industries in the Mineral Belt:

With the emergence of modern industrial structure in the South East Resource Region, two major industries acquired the status of leading industries in the Mineral Belt. Coal industry and iron and steel industry formed the core of the industrial structure in the Resource Region. Other mineral based industries like copper and cement industry too witnessed an early start in this region. Over the successive decades, the Mineral Belt acquired the status of a distinct industrial region constituting the **Chotanagpur Industrial Region** which is a major industrial region extending over Jharkhand, northern Orissa and western West Bengal; and the two minor industrial regions of Durg-Raipur and Bilaspur-Korba both in Chattisgarh. The availability of both coal and iron ore in great proximity in the Chotanagpur Industrial Region gave it a proxy name of being the *"Ruhr of India"*. Although a wide array of industries have come up in this region like heavy engineering, machine tools, fertilizers, cement, paper, locomotives,

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[59] Rothermund Dietmar (1978), *Op. Cit.*, pp. 3 - 4

[60] Papendieck, Henner (1978): "British Managing Agencies in the Indian Coalfield" in Rothermund, Dietmar and D.C. Wadhwa (ed.), *Zamindars, Mines and Peasants*, Manohar Publications, New Delhi, pp. 226

heavy electrical etc; the two premier industries of coal and iron and steel still remain fundamentally the most important and basic industries of the region. Therefore, the discussion in this section shall remain limited to the growth and development of these two industries in the region, from ever since their inception.

3.3.1 Coal Industry:

The sequential development and growth in terms of production of coal in the Mineral Belt and India as a whole during the colonial period and post-independence period has been dealt in great details in the second chapter of the present study. Therefore, this section shall give only a brief account of the growth of the coal industry and shall engage in detailed accounting of the degree of development of the coal industry in terms of productivity, consumption, trade, employment characteristics and level of technology employed in the coal industry during its sequential growth.

3.3.1.1 Growth of the Coal industry:

The inception of coal mining in 1774 and its development during the successive decades was hesitantly done and was completely unplanned. During the nineteenth century, the Raniganj Coalfield was the most important producer of coal in India and despite the indifference shown by the powerful vested interests of the colonial administration, coal industry in Raniganj made considerable progress ever since. The beginning of the coal industry can be traced back to 1820 but the initial progress was very slow and dependence on imported coal was very high. The advent of the railways in the Mineral Belt in 1854 provided great impetus to the coal industry and further extension of the East Indian Railway led to the opening and enormous growth of the Jharia coalfield so much so that the period of 1906-08 witnessed a "coal rush". With the increase in domestic production imports of coal decreased and importance of imported coal ceased in importance by 1879 in the Resource region with Raniganj coal being extensively utilized for domestic consumption. Opening of the new fields in the coal belt provided a boost to domestic production. While the Raniganj field played the prime role in the development of the coal industry during the nineteenth century, Jharia field

was the major contributor during the twentieth century. The two fields together decided the fate of the coal industry during the initial phase of the industrial development.[61]

The "coal rush" of 1906-08 was succeeded by a decline immediately preceding the First World War. The War instilled new life into the coal industry of the Mineral Belt by increasing the demand for coal. During the period of 1914-1919, witnessed a tremendous rise in production which went up to 21 million tons during 1918, 83% of which was supplied by the Jharia and Raniganj coalfields. The period of 1920-1926 marked the period of decline from war-time prosperity due to the reduction in export trade in coal and adverse balance of trade. The impact of an external demand based, foreign controlled coal industry in the Mineral Belt was severely felt during the slump period when the colonial rulers with their selfish interests did almost nothing for the sustainable growth of the coal industry like development of a sound structure, sound mining methods and proper utilization of the rich mineral resources. The remedies suggested by the Coalfields Committee, 1920 were not applied till 1946. The successive decades of 1926-36 was equally bad for the coal industry withy an exception of 1927-30 when increase in production was witnessed. During the great economic depression of the 1930s, the Mineral Belt witnessed "slaughter mining" in the two major coalfields of Jharia and Raniganj, while the price of coal decreased steadily making coal mining extremely uneconomic, the proportion of superior coal extracted went on rising. The period of 1937-1942 was the period of recovery and growth, with production of coal reaching its maximum high during the year 1937, which was a result of increasing internal demand and growth in the export trade. Although the coal industry was able to recover from the slump phase, the recovery was quite insignificant. The apparent increase in the number of mines was, however, an indication of detrimental development because of the indiscriminate growth of small coal mines. The following period of 1942-46 witnessed war-time controls and in 1943 coal production declined. Apart from scarcity of labour and wagon supply due to war demands, one of the important factors for the decline was ill-equipped mines. So, the technological

[61] Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account*, Part – I, Sultan Chand and Sons, New Delhi, pp. 45-46 and 58 - 60

development which was severely looked through during the entire colonial period greatly affected the steady growth of the coal industry in the Mineral Belt.[62]

The coal industry in the Mineral belt was characterized by transport inefficiency, erratic demand, fluctuating prices, low levels of reinvestment of profits and sheer neglect of the colonial government towards technological development and building up of a stable industrial base in the country. The Resource Region had every potential of becoming a strong industrial region which is evident from the increasing output of coal despite low technology and investments. But the pattern of industrial development which emerged during the colonial times in the mineral rich Resource region failed to provide impetus to the coal industry. The specifications of the nature of coal industry and its degree of development achieved during the colonial period and their pattern of continuity and change during the successive phases of the economy has been dealt in the different sub-sections.

During the planned development of the country, development of coal was considered under the category of mineral resource development and was not considered uniquely till the Fourth Five Year Plan. The coal production increased rapidly with the Mineral belt providing for almost the entire coal requirements of the country. Systematic and detailed investigation of the coal resources together with conservation measures gained importance under the First Five year plan by the end of which the coal production rose to 39.9 million tonnes out of which 37 million tonnes was produced in the Mineral Belt. Some of the collieries in Central India were capable of higher production but for the limitations of transport facility. The Second Five Year plan embarked upon increasing the coal production in order to meet the ambitious industrial targets of the plan. While the existing working mines were capable of higher degree of exploitation to meet the production targets, new areas were opened up to increase the coal production. As against the set target of 60 million tonnes during the Second Five Year plan, a total production of about 55 million tonnes was achieved. The shortcomings were lack of experienced technical personnel for establishing an organization in the public sector, lack of technical equipments and the problem of transport facility especially for the new mines which were opened up in virgin areas.

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[62] *Ibid.*, pp. 62-70

The lack of technically trained personnel and equipments which were inherited colonial legacy in the coal industry posed as a major obstacle for the expansion of the Geological Survey of India and Indian Bureau of Mines.

The Third Five year plan continued with the same note of opening up of large number of new mines in order to meet the target of 97 million tonnes. The target of the Third Plan was revised from 97 million tonnes to 80 million tonnes. However, they were still quite ambitious for a Coal industry which had just began to expand and develop under the national government. As a result the public sector failed to achieve its targets and private sector was already restricted from expansion. The continues efforts towards expanding the transport facility and generation of thermal power to provide for further development of the coal industry led to an increased growth rate in coal production during 1962-63. Although there was a marked rise in the total output, the proportion of inferior grades of coal was much higher. There was a marked scaling down of demand by the railways on the note of increased *dieselisation.*. This resulted in a higher supply than demand with shortage of superior grades of coal. The production witnessed a temporary slump which regained by 1965-66 due to rise in demand from the iron and steel industries and cement industries which were on an ascending route of their production. The most remarkable feature of the increased production was that private sector contributed about 80% of the total production during 1965-66 and this proportion was maintained during the successive years.[63]

With the development of the iron and steel industry, the requirement for systematic and scientific development of the coal reserves especially the coking coal gained importance. While the output gradually increased with periodic fluctuations, the targeted proportion of total coal production expected from the private sector continued to remain high. The most significant event that followed in the history of the Indian Coal industry was the Nationalisation of the Coal mines. The Coal Mines (Nationalisation) Act, 1973 went on to further reserve and restrict coal mining in India for public sector. In the wake of the Oil crisis of 1970s, Coal substituted the petroleum-based fuel and subsequently its demand rose to new heights. The production of coal witnessed rapid increase and with new techniques and standardization introduced, the

[63] Prasad A.R. (1986): *Coal Industry of India.* Ashish Publishing House, New Delhi, pp. 140-141

coal industry experienced rapid development. The prospective increase in coal production during the Fifth Five Year Plan was to be met mostly by the contribution of the public sector. The production of coal reached a record high of 99.7 million tonnes during 1975-76 out of which about 88 million tonnes was contributed by the Mineral Belt. With increased focus of the government towards improving the coal producing techniques, a significant improvement in productivity, railway transport, input supplies and use of machinery was noted which resulted in substantial increase in production.

The further reorganization of the coal industry in 1975 to meet the increasing demands of coal resulted in combining all the public sector organizations under one controlling agency of **Coal India Limited (CIL)** with its four subsidiaries. The **Bharat Coking Coal Limited (BCCL)** served the coalfields of Jharkhand and West Bengal with its headquarters at Dhanbad, the **Eastern Coalfields Limited (ECL)** constituted mainly the coalfields of Raniganj in West Bengal and few in Jharkhand, the **Central Coalfields Limited (CCL)** included mainly the coal mines of Jharkhand, Madhya Pradesh and Uttar Pradesh with its headquarters at Ranchi and the **Western Coalfields Limited (WCL)** constituted of the coal mines of Madhya Pradesh (including Chattisgarh), Orissa and Maharashtra. Later on, two more subsidiaries viz. **Northern Coalfields Ltd. (NCL)** with headquarters at Singrauli (Madhya Pradesh) and **South Eastern Coalfields Ltd. (SECL)** with headquarters at Bilaspur (now in the state of Chattisgarh) were carved out in 1985 out of the then CCL and WCL respectively for proper management of the projected increase in production and investment planned. Further, considering the prospects of Orissa Coalfields in Eighth and Ninth plan, **Mahanadi Coalfields Ltd. (MCL)** with headquarters at Sambalpur (Orissa) was carved out of SECL in 1992 to manage all the collieries in the State of Orissa. Thus CIL has now 8 subsidiaries out of which CMPDIL is an engineering, design and exploration company for preparing perspective plans etc. and the rest of the seven are coal producing companies.[64] Out of the seven subsidiaries, BCCL, ECL, CCL, SECL, MCL constitute majority of the coal mines in the Mineral belt in public sector.

The company-wise production of coal in the Mineral Belt and India during 1975-80 depicts that the Mineral Belt contributed more than 60% of the total coal

[64] *Coal Directory of India, 2010-11* Part-I, Coal Statistics, Ministry of Coal, Government of India, pp. 1.5

production of India. The public sector companies BCCL, ECL and CCL, which roughly cover the majority of the coal mines of the Mineral belt, together produced about 60% of the total country's production. The coalfields of Jharkhand and West Bengal together constituted about 59% of the total coal production of India during 1979-80, out of which about 40% was contributed by the coalfields of Jharkhand alone. The Jharkhand section of BCCL, which included the Jharia and its adjoining coal mines, produced the major chunk of it, about 17.8% of the coal output of India followed by the West Bengal section of the ECL, which mainly comprised of the Raniganj coalfields, with about 17.1% and Jharkhand section of the CCL, during 1979-80 i.e. before its bifurcation, which covered mainly the East Bokaro, West Bokaro, North Karanpura, South Karanpura, Ramgarh and Giridih coal mines produced 16.8% of the total production. The all-India sector-wise production during 1979-80 clearly indicates that coal production was almost completely with the public sector, with about 98% of the total coal production being undertaken completely in the public sector companies. The captive mines of TISCO were the only private sector coal production accounting for 2% of the total production. The scenario is exactly the same in case of the Mineral Belt as well as the captive collieries of TISCO lie entirely within the South East resource region.

With the liberalization of the Indian economy and industrial sector during 1991, private players were introduced into the industrial sector. However, in case of the coal industry, the government policies have been quite successful in retaining the major coalfields and the majority of the coal production in the public sector. But, the public sector share in the total coal production in the country has been gradually declined during the past two decades. The 8 subsidiaries of the CIL, the sole authority of the coal industry in public sector, together produced about 88% of the total coal production during 1993-94 which has gone down to about 85% during 2006-07. After including the production of SCCL (Singareni coalfields), wherein the stake is shared between the Central Government and the State Government of Andhra Pradesh, the production share reach about 93% during 2006-07 which is still a decline from the 98% during 1979-80 and 99% during 1993-94.

Table: 3.1 Production of Coal in the Mineral Belt and India (Company-wise), 1975-76 to 1979-80

Coal Companies	1975-76		1976-77		1977-78		1978-79		1979-80	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
BCCL	20.09	20.17	20.58	20.37	20.22	20.02	19.73	19.35	20.08	19.31
ECL	26.19	26.29	26.47	26.20	25.23	24.98	22.05	21.62	20.52	19.73
CCL	20.69	20.77	20.73	20.52	21.20	20.99	23.43	22.98	24.13	23.21
WCL	21.46	21.55	21.04	20.82	21.69	21.47	24.23	23.76	26.13	25.13
NECL	0.55	0.55	0.67	0.66	0.62	0.61	0.62	0.61	0.56	0.54
CIL (Total)	**88.98**	**89.33**	**89.49**	**88.57**	**88.96**	**88.07**	**90.06**	**88.32**	**91.42**	**87.92**
Singareni	7.36	7.44	8.30	8.21	8.91	8.82	9.01	8.84	9.40	9.04
Others	3.22	3.23	3.25	3.32	3.13	3.11	2.90	2.84	3.16	3.04
Grand Total	**99.60**	**100.00**	**101.04**	**100.00**	**101.00**	**100.00**	**101.97**	**100.00**	**103.98**	**100.00**

Note: Production Quantity in million tonnes
Coking Coal Limited (BCCL),
Eastern Coalfields Limited (ECL),
Central Coalfields Limited (CCL),
Western Coalfields Limited (WCL),
North Eastern Coalfields Limited (NECL),
Coal India Limited (CIL)
Others (D.V.C, TISCO, IISCO, J&K)

Source: *Coal Statistics*, 1981, Government of India, Vol. 2/81, pp. 2

Table: 3.2 Production of Coal in the Mineral Belt and India, (Coalfield / Company-wise), 1979-80

Coalfield / Company	Production	Share (%)
West Bengal Coalfields	**18.56**	**17.9**
BCCL	0.49	0.5
ECL	17.80	17.1
IISCO	0.27	0.3
Bihar (Jharkhand) Coalfields	**42.59**	**41.0**
BCCL	15.59	17.8
ECL	2.72	2.6
CCL	17.43	16.8
DVC	0.16	0.2
IISCO	0.62	0.6
TISCO	2.07	2.0
Outlying Coalfields	**42.83**	**41.2**
CCL	6.60	6.4
WCL	26.13	25.1
NECL	0.66	0.6
Singareni	9.40	9.0
J&K	0.04	0.0
Total: All Coalfields	**103.98**	**100.0**

Note: Production in million tonnes

Source: *Coal Statistics, 1981*, Government of India, Vol. 2/81, pp.9

Table: 3.3 Production of Coal in the Mineral Belt and India, (Sector / Company-wise), 1979-80

Sector	Production	Share (%)
Public	**101.91**	**98.0**
CIL	91.42	87.9
Singareni	9.40	9.0
J&K	0.04	0.0
D.V.C.	0.16	0.2
IISCO	0.89	0.9
Private	**2.07**	**2.0**
TISCO	2.07	2.0
Total	**103.98**	**100.0**

Note: Production in million tonnes

Source: *Coal Statistics, 1981*, Government of India, Vol. 2/81, pp.9

Table: 3.4 Production of Coal in the Mineral Belt and India, (Company-wise), 1993-94 to 2006-07

Coal Companies	1993-94	1995-96	1997-98	1999-00	2001-02	2003-04	2005-06	2006-07
ECL	22.61	29.75	32.50	20.66	28.55	28.00	31.11	21.11
BCCL	29.04	27.81	30.92	19.86	25.25	22.68	23.31	16.58
CCL	33.51	35.00	32.18	32.17	33.81	37.33	40.51	23.52
NCL	31.41	35.20	37.12	25.99	42.46	47.03	51.52	37.53
WCL	26.50	29.01	32.52	23.76	37.01	39.53	43.20	30.79
SECL	47.53	53.17	56.63	41.53	64.12	71.01	83.02	62.47
MCL	24.30	32.70	42.17	30.89	47.81	60.05	69.60	57.33
NECL	1.20	1.00	0.75	0.64	0.64	0.73	1.10	0.74
CIL (Total)	**216.10**	**237.27**	**260.55**	**179.83**	**279.65**	**306.36**	**343.37**	**250.07**
SCCL	25.21	26.77	28.94	21.23	30.81	33.85	36.14	26.10
Captive	4.73	6.08	6.31	7.12	12.18	15.51	27.51	18.98
Grand Total	**246.04**	**270.12**	**295.80**	**208.18**	**322.64**	**355.72**	**407.02**	**295.15**

Note: Production in million tonnes

Source: *Coal Statistics, Annual Report, 1999-2000 and 2006-07,* Annexure VII and 7B respectively, Ministry of Mines, Government of India

Table: 3.5 Company-wise share of the total Coal Production in the Mineral Belt and India, 1993-94 to 2006-07

Coal Companies	1993-94	1995-96	1997-98	1999-00	2001-02	2003-04	2005-06	2006-07
ECL	9.19	11.01	10.99	9.92	8.85	7.87	7.64	7.15
BCCL	11.80	10.30	10.45	9.54	7.83	6.38	5.73	5.62
CCL	13.62	12.96	10.88	15.45	10.48	10.49	9.95	7.97
NCL	12.77	13.03	12.55	12.48	13.16	13.22	12.66	12.72
WCL	10.77	10.74	10.99	11.41	11.47	11.11	10.61	10.43
SECL	19.32	19.68	19.14	19.95	19.87	19.96	20.40	21.17
MCL	9.88	12.11	14.26	14.84	14.82	16.88	17.10	19.42
NECL	0.49	0.37	0.25	0.31	0.20	0.21	0.27	0.25
CIL (Total)	**87.83**	**87.84**	**88.08**	**86.38**	**86.68**	**86.12**	**84.36**	**84.73**
SCCL	10.25	9.91	9.78	10.20	9.55	9.52	8.88	8.84
Captive	1.92	2.25	2.13	3.42	3.78	4.36	6.76	6.43
Grand Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Based on: *Coal Statistics, Annual Report, 1999-2000 and 2006-07,* Annexure VII and 7B respectively, Ministry of Mines, Government of India,

3.3.1.2 Consumption and Productivity:

The pattern of coal consumption indicates the level of development of the domestic economy, while productivity is an indicator of degree of development of the industry concerned. Coal consumption has been dealt under aggregate consumption and allocations to different categories of consumers. The aggregate consumption can be derived from the production, exports and imports. The given table 3.6 indicates the aggregate consumption of coal in India during the pre-independence colonial era. From 1878 to 1890 the imports and domestic production both increased simultaneously. During this period, the imports were high, as the **Review of the Accounts of the Trade and Navigation of India, 1874-75** stated that consumption of imported coal was high in Bombay and Burma Provinces. The increasing demand for coal from the mills in Bombay and their distance from the major collieries of India, which were mainly concentrated in the Bengal Province, and the effective distance being further increased by lack of transport network forced the imports of coal to be high. In Bengal Province, where all the major coal production was concentrated, there was considerable consumption of the native coal by the East Indian Railway, steamers and local industries. From 1891-95 imports were on a general decreasing trend and, with few exception years, and exports were on a rise. The domestic production increased gradually so as to replace the imports and also successfully captured foreign markets. During 1896-1900, the imports and exports were almost balanced and the aggregate consumption was roughly equal to the domestic production. This was achieved by improvement in transport facility which was stated in the **Review of the Trade of India, 1889-90** in the following words: "The extinction of the import trade in coal is, however, only a question of time and of greater facility and cheapness of transport in India".[65]

The turn of the century marked tremendous increase in the production of coal and the domestic production was greater than domestic consumption, with the difference being sent to foreign markets. The most significant incident for the coal industry during this period was the emergence of the domestic iron and steel industry in the Mineral belt itself, which was so far being conspicuous by its absence. The prospect of a steady demand from the domestic steel industry provided a boost to the production

[65] Ghosh, A.B. (1977). *Op. Cit.*, pp. 72-74

scenario. The development of the regional economy in terms of increased industrial activity resulted in increased domestic production of coal. The coal industry claimed for protection in the year 1925, which was denied by the majority Report of the Tariff Board on grounds of low level of imports and that the coal industry had benefited quite considerably from the protection granted to steel.[66]

During the period 1922-24, the Mineral Belt witnessed over-production from the Bihar (Jharkhand) fields which happened due to numerical rise in collieries which were mainly small collieries.[67] This became a notable trend of the inter-war period when period of accelerated demand led to large increase in number of small mines which consequently declined during the slump periods.[68] During the great economic depression of the 1930s, the Mineral Belt witnessed "slaughter mining" wherein the price of coal decreased steadily making coal mining extremely uneconomic but the proportion of superior coal extracted went on rising. In view of such over production, the government of India introduced a coal *rationing* scheme in the year 1943 according to which targets were fixed.[69] Such delay in introduction of rationing concept and the rampant *slaughter mining* speaks volume of the negligence of the British Government towards sustainable development of indigenous coal industry. The amount of coal wasted during the periods of over production and amount of superior quality coal wasted during *slaughter mining* was hardly a matter of concern for the Government till quite late. This thought was expressed in the **Coalfields' Committee Report, 1946** in the following words: "In India little thought had been given to the proper utilization of coal resources, and looking on these years of overproduction of the higher grades of coal it may be said that we used our washing assets in an unscientific manner".[70]

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[66] Gadgil, D.R. (1971), *Op. Cit.*, pp. 277

[67] Ghosh, A.B. (1977), *Op. Cit.*, pp. 75

[68] Gadgil, D.R. (1971), *Op. Cit.*, pp. 278-279

[69] Ghosh, A.B. (1977), *Op. Cit.*, pp. 76

[70] *Mahindra Report, 1946*, Chapter III, Section 14 as cited in Ghosh, A.B. (1977), *Op. Cit.*, pp. 76

Table: 3.6 Productions, Export, Import and Consumption of Coal, (1878 to 1947)

Years	Prod.	Approximate Consumption	Production as % of Consumption	Export		Import	
				Quantity	*(%)	Quantity	*(%)
1878-80	9.9	15.50	63.89	.005	0.51	5.6	56.57
1881-85	12.3	19.10	64.40	N.A.	N.A.	6.8	55.28
1886-90	17.6	25.40	69.29	0.2	1.14	8.0	45.45
1891-95	27.6	34.30	80.47	0.4	1.45	7.1	25.72
1896-00	47.5	47.70	99.58	3.1	6.53	3.3	6.95
1901-05	76.3	72.70	104.95	5.7	7.47	2.1	2.75
1906-10	115.2	110.80	103.97	7.8	6.77	3.4	2.95
1911-15	154.4	151.00	102.25	7.7	6.67	4.3	2.78
1916-20	200.0	194.20	102.99	6.2	3.10	0.4	0.20
1921-25	200.1	206.00	97.14	1.9	0.95	7.8	3.90
1926-30	225.7	221.80	101.76	6.1	2.70	2.2	0.97
1931-35	213.5	210.30	101.52	3.9	1.83	0.7	0.33
1936-40	266.3	254.40	104.68	12.4	4.65	0.5	0.19
1941-45	278.4	273.24	101.89	5.2	1.86	0.04	0.01
1946	297.4	292.18	101.79	5.3	1.78	0.08	0.03
1947	301.4	296.90	101.51	4.5	1.49	0.002	0.007

Note: Quantity in lakh tonnes; * % = Share (%) of the Production

Based on: *Statistics of British India*, Vol I, Commercial Statistics (1918); *Coal Committee Report* 1925; *Review of Trade of India*; *Indian Coal Statistics*, 1947 and 1948, Table 8 and 8A and Derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Table: 5.7, pp. 94 and Statistical Appendix, Table: III and IIIA, pp. 285-287

The approximate consumption[71] of coal, which although a crude measure of consumption, during the entire colonial period depicts that the domestic utilisation of coal both domestic as well as imported had remained on an increasing note except

[71] Approximate Consumption = (Production + Imports) – Exports; it is a crude measure of consumption and the methodology has been adopted from Johnson, W.A. (1967): *The Steel Industry of India*. Oxford University Press, Bombay.

during 1931-35 when the Great Depression resulted in decline of approximate consumption of coal in India. The domestic production of coal as a percentage of total domestic consumption was only 64% during 1878-80 which rose to about cent percent by the end of the nineteenth century. By the turn of the next century, the production of coal exceeded the domestic approximate consumption and a small quantity was exported as well except during 1921-25 when the production fell below the consumption. This clearly indicates that the domestic coal production was mostly consumed within the country and was not directly exported to the metropolitan country but the exploitation was in an indirect form as the coal mines formed the derivative or secondary enclaves which served the primary enclaves such as cotton and jute mills and tea gardens which were directly exploited by the British imperialism for use in the metropolitan economy.

The analysis of ***Consumer-wise Consumption*** gives the scenario of the nature of the domestic market. The share of coal consumed by various industries is an indication of the level of economic development acquired by the country. The category wise consumption of coal given in the following table depicts that other than the collieries' own consumption, wastage and other miscellaneous consumptions; about half of the coal available for domestic consumption was initially taken up by the Railways and jute, cotton, paper mills and tea gardens which were the primary enclaves of the imperialistic rule wherein the output were largely and directly consumed by the alien economy. During the initial years of domestic coal consumption, a huge chunk was used in these mills which served as the primary enclaves for the Metropolitan economy and the Mineral Belt was used as a secondary or derivative enclave to serve the primary enclaves. Thus, what apparently seemed as domestic consumption in case of coal obtained from the mineral belt actually served the Metropolitan economy in an indirect manner. With the establishment of the Iron and Steel industries and their increased production later during the century to meet the War demands of the British economy, a substantial section of coal began to be consumed by the iron and steel industries as well. The coal consumption pattern of the iron and steel industry depicts a crest during the War period of 1940. Railways have been the largest consumer taking up about one third of the coal supply available for consumption, followed by the Iron works and Brass foundries.

Table: 3.7 Consumption of Coal in India, 1915 to 1945

Consumers	1915	1920	1925	1930	1935	1940	1945
Railways	31.4	37.5	31.1	32.0	31.9	31.6	36.6
Bunker Coal, Admiralty, Inland Steamers, Port Trusts	9.9	18.0	9.7	10.2	7.6	5.8	11.2
Iron & Steel, Brass foundries	8.1	8.4	24.3	23.8	24.4	32.6	18.9
Cotton, Jute, Paper mills and Tea Gardens	13.2	15.2	10.7	10.7	11.1	11.9	9.7
Brick kilns, Potteries, Cement Works etc	7.2	2.4	2.3	4.6	3.5	4.5	6.2
Collieries and Wastage	10.3	13.9	12.9	10.1	5.3	5.5	8.3
Other industrial & domestic	19.9	4.6	9.9	9.5	16.2	8.1	9.1

Note: Figures are in percentages (%) of the aggregate consumption.

Source: Based on *Indian Coal Statistics* (Annual); *Report on the Production and Consumption of Coal in India* (Annual); *Statistics of British India,* Vol. I, Commercial Statistics and Derived and Computed from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Statistical Appendix, Table: IV, pp. 288

The Railway consumption of coal was of strategic importance as it was supposed that it largely decided the coal prices which were discriminated against the Indian Coal-mine owners. Railways were not only the largest consumer but also a very large producer of coal. The eleven collieries owned by the Railways produced about 12% of the total output of coal in 1945-46. Therefore, it had tremendous power to dominate the coal industry and trade. The inter-War slump in coal prices making coal production quite uneconomic was believed to be due to the coal purchase policy of the Railways.[72]

The pattern of coal consumption has witnessed a significant transformation in the post-independence era. Till the beginning of the Second Five year Plan, Railways maintained its status of being the largest consumer of Indian coal almost a third of it. The increased dieselisation and electrification of the Indian Railways led to a decline in

[72] Ghosh, A.B. (1977), *Op. Cit.*, pp. 79-81

its consumption of coal while on the other hand opening up of new steel industries in the public sector, a majority of which were located in the Mineral belt due to the advantageous proximity of coal and iron ore mines, demand from iron and steel industry as well as power houses generating electricity increased rapidly. The consumption pattern during 1979-80 depict that power houses became the largest consumer of coal, consuming about 28% of the total coal consumption in India followed by Iron and steel industries which consumed about 20% and railways consumed only 10% of the coal.

Table: 3.8 Consumer-wise Consumption of Coal in India, 1979-80

Consumers	Consumption	Share (%)
Steel Plant and Washery	19.85	19
Railways	11.36	11
Electricity*	30.03	28
Cement	3.67	3
Cotton	1.99	2
Jute	0.14	0
Paper	1.54	1
Brick	0.54	1
Coal for Soft coke	3.38	3
Others**	32.74	31
Total	**105.44**	**100**
Export	0.09	
Grand Total	**105.53**	

Note: Consumption in million tonnes; * (excluding middling)

** Others include collieries' consumption and road despatch which are not included but excluding export

Share in percentages (%) of the total consumption excluding exports.

Source: *Coal Statistics, 1981*, Government of India, Vol. 2/81, pp.25

The consumer-wise consumption pattern during the last two decades illustrate that the coal consumption by Power Houses has increased tremendously from 28% during 1979-80 to 68% during 1995-96 to as high as 79% during 2005-06 and reduced to 72% during 2006-07. The recent decades too witnessed a change in the consumption pattern with the coal consumption share of Iron and steel industries decreasing from 20% during 1979-80 to 10% during 1995-96 to as low as 4% during 2006-07. The share of the other industries using coal has increased like chemical, paper, textile industries

and brick kilns and other industries put together which amounted to about 20% of the total coal consumption in India.

Table: 3.9 Consumer-wise Consumption of Coal in India, 1995-2007

Consumers	1995-96	1997-98	1999-2000	2001-02	2003-04	2005-06	2006-07
Steel Plant and Washery	9.75	5.95	6.90	6.22	5.35	4.69	4.03
Railways	0.10	0.01	0.00	0.00	0.00	0.00	0.00
Power Houses	**68.07**	**53.64**	**73.33**	**74.51**	**75.06**	**78.79**	**72.01**
Cement	4.06	2.55	3.25	3.64	3.86	3.77	3.64
Brick kilns, Textiles, Chemicals, Paper and other industries	15.02	12.46	14.54	14.09	13.89	11.91	19.30
Coal for Soft coke	0.12	0.01	0.00	0.00	0.00	0.00	0.00
Fertilizer plants	1.60	1.17	1.09	0.98	1.47	0.57	0.77
Colliery Consumption	1.25	0.77	0.86	0.55	0.38	0.27	0.25
Total Off take	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: *Coal Statistics, Annual Report, 1999-2000 and 2006-07,* Annexure XI and 7F respectively, Ministry of Mines, Government of India,

The analysis of **per capita annual consumption** and **Production of Coal per Man Year Employed** or the **Labour Productivity** of the coal industry gives a clear picture of the degree of development of the coal industry. It also indicates the level of technology used or extent of mechanization in the Coal industry wherein higher labour productivity would indicate higher level of technology used and higher degree of mechanization in the Coal industry and vice versa.

The figures for production, employment and productivity in the coal industry during the pre-independence years depict that except during the period of 1919 to 1930 the productivity of coal i.e. the quantity of coal produced by each employee per year decreased in proportion to the increase of employment and from 1936 it even declined considerably. The slight increase in the coal productivity during 1919-1926 was not an indication of improvement in output per man year instead because the rate of decline in

total output was relatively less than the rate of decrease in employment. During 1926 to 1930 the total production increased while employment decreased. The resultant was a rise in the output per man year. But such rise in productivity did not indicate improvement in efficiency but happened due to the indiscriminate exploitation of the coal resources in order to maintain the total income of the proprietor by raising the output amidst falling prices of coal. The scenario of low productivity of coal is evident for the entire colonial period, the major factors of which were lack of suitable training of the labour employed, outdated methods of mining which in totality indicate towards inadequate mechanization.[73]

Table: 3.10 Productivity and Employment in the Coal industry in India, (1901 to 1946)

Year	Total Production of Coal (in million tonnes)	Average number of persons daily employed (in thousands)	Quantity of coal produced by each person employed (in tonnes)
1901	6.64	95	82*
1913	16.21 (+9.57)	145 (+52)	112 (+36)
1919	22.63 (+6.42)	204 (+40)	111 (-1)
1926	21.00 (-1.63)	186 (-9)	113 (+1)
1930	23.80 (+2.8)	184 (-2)	129 (+14)
1936	22.61 (-1.19)	182 (-2)	124 (-4)
1942	29.43 (+6.82)	246 (+35)	120 (-3)
1946	29.77 (+0.34)	367 (+49)	81 (-33)

Note: Brackets indicate percentage over the preceding year; * Average for 1901-05

Source: Based on *Statistics of British India,* Vol. I, Commercial Statistics, 1918 (Eighth Issue), Table 29, pp. 88; *Coalfields' Committee Report*, 1946; *Report on the Production and Consumption of Coal in India; Indian Coal Statistics;* Report of the *Indian Coal Committee*, 1925, Appendix I ; Employment and productivity data is derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Table 7.1 and Statistical Appendix, Table: VI and VIII, pp. 292 and 297-98 while Production data is Derived from Table: 2.7, 2.8 and 2.9 of the present study

[73] *Ibid.*, pp. 140-141

The per capita consumption of coal in India has been extremely low throughout the pre-independence years. When compared with other foreign countries the contrast makes the underdevelopment scenario evident. Even during the end of the colonial period, the per capita consumption of coal stood at 0.07 tonnes as compared to about 4 tonnes for U.K. and Belgium, 3.3 tonnes for U.S.A and about 2 tonnes per head for Germany and France. This reveals the pathetic underdevelopment situation of Indian economy despite increased coal production. The per capita consumption of coal almost doubled during 1908-1946 but was not sufficient to meet the standards of the other developed countries.

The underdeveloped condition of the Indian economy during the colonial period is further revealed by the extremely low productivity of the coal industry, i.e. production of coal per person employed per year which is termed as output per man year. The productivity of the Indian Coal industry stood at mere 82 tonnes per person employed during 1901-05 which was way lower as compared to the 281 tonnes for U.K. and about 543 tonnes for U.S.A. during the same period. During the end of the colonial rule in India around 1941-45, the productivity reached only 101 tonnes from 82 tonnes, which is when U.S.A. made tremendous progress to reach to a figure of 1239 tonnes from 543 tonnes. The scenario of low productivity despite increase in production and in turn comparatively low production despite opening up of huge existent rich reserves of coal in the Mineral belt points towards low levels of technology used and low technological development in the coal industry in India, which shall be discussed in details in the next sub-section on technological development in the Coal industry.

Table: 3.11 Coal Production per person employed and Consumption of Coal per head of population, (1901 to 1946)

Year	Quantity Produced Per Person Employed	Consumption per head of the Population
1901 - 1905	82	-
1906 - 1910	100	0.04
1911 - 1915	110	0.05
1916 - 1920	106	0.06
1921 - 1925	100	0.06
1926 - 1930	124	0.07
1931 - 1935	125	0.06
1936 - 1940	124	0.07
1941 - 1946	101	0.07

Note: Quantity in tonnes; Figures are Quinquennial Averages

Source: Based on *Report on the Production and Consumption of Coal in India; Indian Coal Statistics;* and Derived and Computed from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Statistical Appendix, Table: VI, pp. 292

Table: 3.12 Consumption of Coal per head of the Population in India and Other Countries, (1901 to 1939)

Year	India	U.S.A	U.K.	Germany	France	Belgium
1901-05	-	3.67	3.93	1.69	1.15	2.82
1906-10	0.04	4.43	4.04	2.00	1.34	3.10
1911-15	0.05	4.66	4.01	2.06	1.50	3.28
1916-20	0.06	5.04	N.A.	N.A.	N.A.	N.A.
1921-25	0.06	4.31	3.48	1.66	1.61	3.54
1926-30	0.07	4.19	3.52	1.79	2.05	4.26
1931-35	0.06	2.76	3.45	1.42	1.76	3.29
1936-39	0.07*	3.32	3.85	1.78	1.66	3.61

Note: Consumption in Tonnes; *Average for 5 years ending 1940

Source: Based on Indian *Coal Statistics;* and Derived and Computed from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Statistical Appendix, Table: VI A, pp. 293

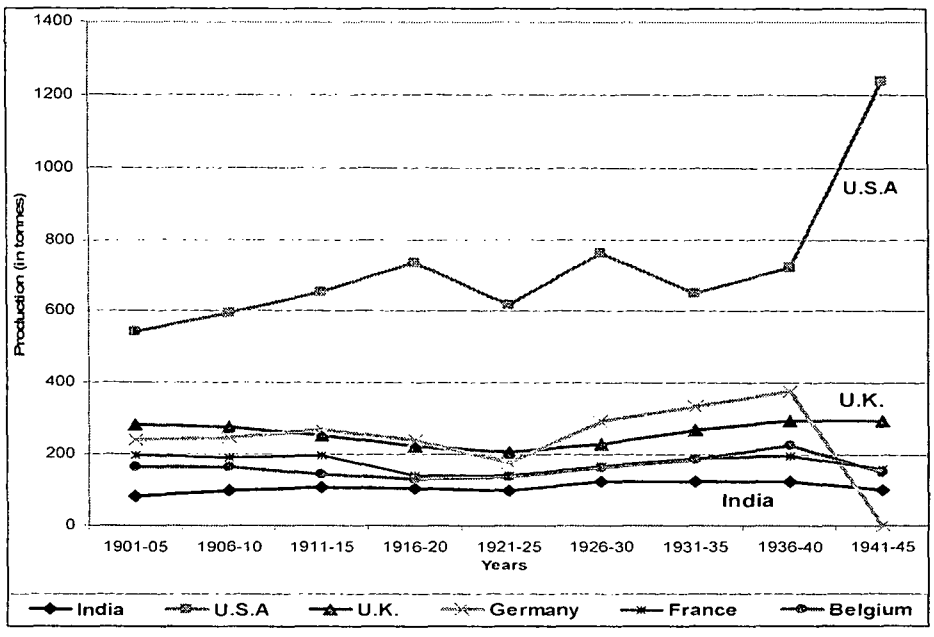
Table: 3.13 Production of Coal per Person Employed in India and Other Countries, (1901 to 1945)

Year	India	U.S.A	U.K.	Germany	France	Belgium
1901-05	82	543	281	240	196	165
1906-10	100	596	275	247	192	163
1911-15	110	653	253	268	198	145
1916-20	106	736	222	240	141	131
1921-25	100	617	207	176	141	137
1926-30	124	761	231	291	168	165
1931-35	125	652	269	335	192	187
1936-40	124	723	296	378	197	228
1941-45	101*	1239	296	N.A.	160	150

Note: Production in Tonnes; * Average for 6 years ending 1946

Source: Based on *Indian Coal Statistics* and Derived and Computed from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, Statistical Appendix, Table: VI B, pp. 294

Fig: 3.1. Productivity in Coal Industry in India and Other Countries of the World, (1901 to 1945)



Source: Based on Table: 3.13 of the present study

The Labour Productivity increased only slightly during the early post independence era. It reached only 113 tonnes per man employed per year during 1956 but the intense stress on increasing coal production during the Second Five Year Plan led to increased productivity as well. The tremendous increase in labour productivity does not necessarily indicate technological development but occurred due to increase in total production which was attained by opening up of new mines as has been mentioned earlier in the growth of the coal industry. While the existing working mines were capable of higher degree of exploitation to meet the production targets, new areas were opened up to increase the coal production. The production target still fell short 5 million tonnes during the end of the Second Five Year Plan due to lack of experienced technical personnel and lack of technical equipments. Therefore, the increase in productivity was merely due to increase in total coal production which rose from 40 to 56 million tonnes during 1956-61 as a result of new mines being opened up and not because of any improvement in technology. The successive decade too witnessed a similar trend with production increasing due to new mines and productivity depicting an apparent rise as e result. The simultaneous trend in the output per man shift has also shown a subsequent increase while dipping during 1971-75.

Table: 3.14 Productivity of Coal mines in India, 1951 to 1975

Year	Coal Production	Output per man-year	Output per man-shift
1951	35.0	97.45	0.35
1956	39.9	113.78	0.39
1961	55.7	136.40	-
1966	70.4	165.69	0.56
1971	75.6	191.49	0.67
1975	104.6	188.91	0.64

(Production in million tonnes, productivity in tonnes)

Source: Production data from 1961 to 1975 has been obtained from *Indian Minerals Yearbook*, Indian Bureau of Mines (Nagpur), Ministry of Mines, Govt. of India, 1966 to 1975 and that for 1951 – 1956 from Dewan, H.R. (1958): *Mineral Production in India*, Ministry of Steel, Mines & Fuel, Indian Bureau of Mines, Nagpur; Productivity figures are derived from *Coal Directory of India*, Part-I, Coal Statistics, Ministry of Coal, Government of India for the respective years.

The backwardness of the labour productivity scenario in India can be gauged by making a comparison with that of the other coal producing countries. During the entire colonial period the labour productivity had been extremely low as compared to U.S.A, U.K. and Germany moderately lower than France and Belgium. The post-independence comparison of labour productivity in Indian coal industry with the same countries depict that while U.S.A was successful in making tremendous progress in its productivity, U.K. and Germany also progressed with 477 and 453 tonnes of production per man employed during 1975. Considerable progress has been noted in case of France and Belgium as well accounting for 302 and 364 tonnes of production per man employed. But in case of India, the progress has been rather gradual and slow so as to reach only 189 tonnes. The most notable aspect in this case is while France and Belgium were only slightly better than India during the colonial times, both these countries made tremendous progress from 1945 onwards and their productivity figures shot up in a very short span of time. India remained far behind in terms of progress in labour productivity in the coal industry. The blame goes directly to lack of technological development in the industry which had crippled the industry ever since the colonial times and the attitude towards this crucial aspect continued even three decades after independence.

It was not until the Sixth Plan when technological development found a significant mention in the development of the Coal industry but, even then focus remained on opening up of new open-cast mines. As a result of which, while productivity of Open-cast mines improved tremendously ever since the Sixth Plan i.e. after 1981, the productivity of Under Ground mines which was even better than that of the Open-cast mines till 1961, deteriorated and made a very slow progress during the successive decades reaching a mere 350 tonnes per man employed per year during 2007 from 150 tonnes during 1951. During 2007, about 14% of the total coal production in India was obtained from underground mines while the rest of 86% was obtained from open-cast mines. As far as the average daily employment scenario is concerned, about 49% were employed underground while 21% were employed in open-cast workings.[74]

[74] Annual Report. 2007. Director General of Mines Safety (DGMS). Government of India. pp 40

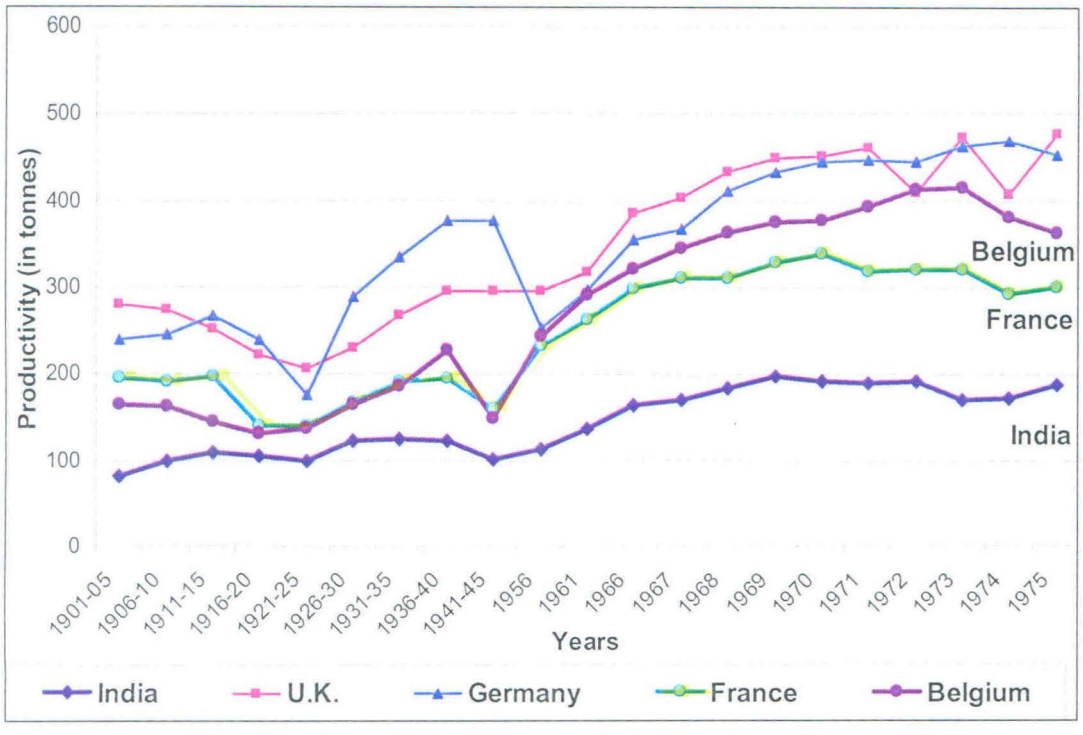
Table: 3.15 Production of Coal per man employed per year in India and Other Countries, (1956 to 1975)

Year	India	U.S.A	U.K.	Germany	France	Belgium
1956	114	1842	297	254	234	244
1961	136	2278	317	299	264	292
1966	166	3407	385	356	300	321
1967	172	3652	403	368	311	345
1968	186	3733	434	412	311	363
1969	199	3818	450	433	330	376
1970	193	3829	451	446	340	377
1971	191	3592	461	447	320	394
1972	192	3716	409	446	321	414
1973	171	3633	472	463	322	416
1974	173	2900	407	468	295	382
1975	189	2541	477	453	302	364

Note: Production in Tonnes;

Source: *Statistics of Mines in India*, Vol. I, Coal, 1972, 1973 and 1975, Director General of Mines Safety, Dhanbad, pp. 190, 230 and 287; Ghosh, A.B. (1977): *Coal Industry in India,* Sultan Chand and Sons, New Delhi, pp. 294

Fig: 3.2. Labour Productivity in Coal Industry in India and Other Countries, (1901 to 1975)



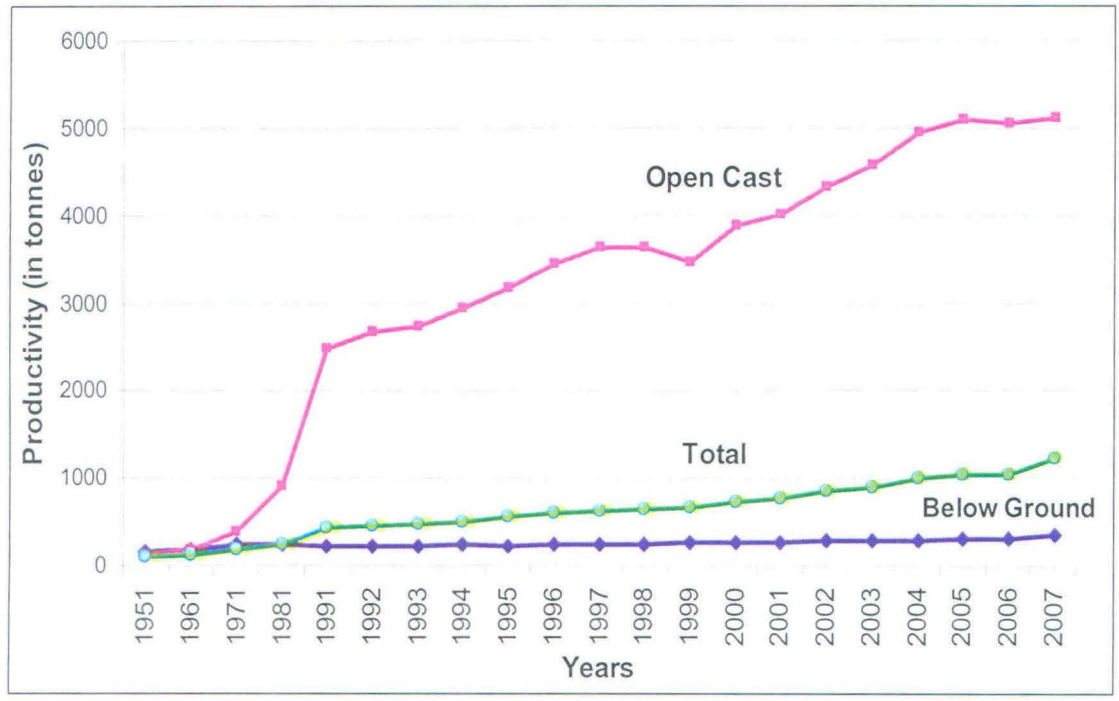
Source: Based on Table: 3.13 and 3.15 of the present study

Table: 3.16 Production, Employment and Labour Productivity in India by type of Coal Mines (1951 to 2007)

Year	Below Ground			Open Cast			Total		
	Employment	Output	Productivity	Employment	Output	Productivity	Employment	Output	Productivity
1951	178	30199	170	36	4784	133	352	34983	99
1961	230	44887	195	60	10822	180	411	55709	136
1971	228	58552	257	43	17090	397	382	75642	198
1981	302	76205	252	55	51120	929	513	127325	248
1991	316	70731	224	67	167206	2496	554	237757	429
1992	312	71062	228	67	178879	2670	552	249941	453
1993	308	73672	239	68	186935	2749	546	260607	477
1994	293	70644	241	67	196878	2938	524	267522	511
1995	287	68512	239	68	216074	3178	513	284586	555
1996	281	70127	250	68	233970	3441	506	304097	601
1997	279	69062	248	68	247619	3641	503	316681	630
1998	270	68571	254	69	251324	3642	491	319895	652
1999	258	68101	264	71	247088	3480	476	315189	662
2000	249	66225	266	69	268092	3885	458	334317	730
2001	239	64134	268	69	277379	4020	438	341513	780
2002	225	65330	290	69	297982	4319	423	363312	859
2003	216	63632	295	69	315556	4573	417	379188	909
2004	211	61921	293	70	347347	4962	405	407268	1006
2005	205	64087	313	70	356758	5097	399	420845	1055
2006	204	63000	309	71	359000	5056	400	422000	1055
2007	184	64466	350	77	394584	5124	372	459050	1234

Source: Annual Report, 2007, Director General of Mines Safety (DGMS), pp. 11

Fig: 3.3. Labour Productivity in India by types of Coal Mines (1951 to 2007)



Source: Based on Table: 3.16 of the present study

Table: 3.17 Trend of Output per Man-Shift (OMS) in Coal mines in Coal India Limited (CIL), 2001-02 to 2010-11

Year	Open-cast	Underground	Overall
2001-02	6.08	0.64	2.45
2002-03	6.30	0.69	2.67
2003-04	6.67	0.68	2.82
2004-05	7.18	0.69	3.05
2005-06	7.51	0.71	3.26
2006-07	8.00	0.71	3.54
2007-08	8.60	0.73	3.79
2008-09	8.95	0.76	4.09
2009-10	9.48	0.78	4.48
2010-11	10.06	0.77	4.74

(In tonnes)

Source: *Coal Directory of India,* Part-I, Coal Statistics, 2010-11, Ministry of Coal, Government of India, Table: 3.20, pp. 3.27

The Labour productivity is also measured in output in terms of raw coal raised in tonnes per man per shift which is known as Output per Man-Shift (OMS). The OMS for the coal mines in the public sector under CIL for the last decade depicts that while the OMS has been relatively much higher for Open-cast mines that in case of underground mines have been comparatively very low. The most notable aspect is that the OMS for Open-cast mines have also improved tremendously from 6 tonnes of coal per man-shift during 2001-02 to 10 tonnes during 2010-11. On the other hand, the OMS for underground mines has not only remained extremely low but has also not improved even during the last decade. The improvement is rather negligible from 0.64 tonnes of coal per man-shift during 2001-02 to a mere 0.77 tonnes during 2010-11. The overall OMS performance depicts significant improvement from 2.45 to 4.74 tonnes of coal per man shift but owes to completely to the improvement in productivity in the open-cast mines. The company-wise OMS in the coal mines of the Mineral Belt depicts a similar improvement in overall productivity during 1981-2011.

Table: 3.18 Output per Man-Shift (OMS) in Coal mines in the Mineral Belt and India (Company-wise), 1981-82 to 2010-11

Year	ECL	BCCL	CCL	CIL
1981-82	0.52	0.67	1.16	0.77
1983-84	0.50	0.59	1.30	0.81
1985-86	0.56	0.61	0.98	0.92
1987-88	0.69	0.68	1.09	1.08
1989-90	0.61	0.76	1.20	1.21
1991-92	0.62	0.78	1.47	1.40
1993-94	0.59	0.90	1.61	1.52
1995-96	0.78	0.95	1.60	1.75
1997-98	0.80	1.07	1.69	1.93
1999-00	0.74	1.04	1.74	1.99
2008-09	1.33	1.22	3.27	4.09
2009-10	1.46	1.85	3.66	4.48
2010-11	1.60	2.09	3.91	4.74

(In tonnes)

Source: *Coal Statistics, Annual Report, 1999-2000,* Annexure XI, Ministry of Mines, Government of India; and *Coal Directory of India,* Part-I, Coal Statistics, 2010-11, Ministry of Coal, Government of India; Table: 3.21, pp. 3.28 for figures of 2008-09 to 2010-11.

Table: 3.19 Productivity of Coal mines in the Mineral Belt, (State / District-wise), 2006

State / District	Output per man-year			Output per man-shift (OMS)		
	Below Ground	Open Cast	Overall	Below Ground	Open Cast	Overall
Jharkhand	**203**	**2656**	**697**	**0.67**	**8.07**	**2.22**
Dhanbad	205	1942	390	0.68	5.84	1.25
Giridih	-	793	424	-	2.64	1.39
Hazaribagh	200	2405	673	0.66	7.60	2.15
Palamau	0	1294	507	0.00	4.02	1.61
Ranchi	276	4848	1703	0.91	13.32	4.91
Bokaro	172	1288	612	0.56	4.06	1.97
Chatra	235	25291	5793	0.74	75.64	17.59
Latehar	-	5644	4241	-	19.86	15.04
Orissa	**452**	**10384**	**4155**	**1.46**	**29.43**	**12.41**
Angul	280	10273	4336	0.92	28.98	12.79
Sambalpur	-	9124	4135	-	29.99	13.63
Sundergarh	-	8285	6557	-	23.54	18.67
Jharsuguda	547	11262	3648	1.75	31.91	11.10
Chattisgarh	**480**	**11592**	**2215**	**1.46**	**35.11**	**6.71**
Bilaspur	445	-	356	1.30	-	1.04
Raigarh	476	18109	3192	1.54	60.14	10.38
Surguja	427	2258	627	1.31	7.27	1.94
Korea	531	9173	441	1.58	26.73	1.32
Korba	462	14598	5002	1.39	42.86	14.83
Madhya Pradesh	**504**	**5976**	**1114**	**1.57**	**18.45**	**3.47**
Shahdol	475	3270	571	1.52	10.22	1.81
Sidhi	-	8063	4027	-	24.39	12.34
Umaria	463	3437	381	1.35	8.66	1.11
West Bengal	**218**	**3180**	**340**	**0.69**	**9.76**	**1.07**
Bankura	281	-	202	0.84	-	0.60
Burdwan	218	3180	350	0.69	9.76	1.10
Purulia	181	-	115	0.63	-	0.40
All India	**313**	**5080**	**1074**	**1.00**	**15.41**	**3.37**

(In tonnes)

Source: *Coal Directory of India*, Part-I, Coal Statistics, 2006, Ministry of Coal, Government of India.

A glance at the output per man year and OMS of the coal mines by district and state in the Mineral belt for 2006 brings out the significant aspect of increased productivity. It illustrates that labour productivity both in terms of output per man year and OMS has been extremely high for open-cast mining especially in Orissa and Chattisgarh and in Chatra district of Jharkhand, but simultaneous improvement in case of underground mines is lacking. The highest productivity for underground mines has been noted in Madhya Pradesh. The high labour productivity in open-cast mines does not necessarily indicate qualitative development of the coal industry together with the region in which it is situated. Although, higher productivity in open-cast mines have resulted in tremendous rise in total output of coal in the country and in the Mineral belt, but all that glitters is not gold. The intense focus on open-cast mines and sheer neglect of the underground mines is geared towards increasing the production and ushering a quantitative development for the coal industry which is highly unsustainable for future coal mining as well as destructive for the environment as well as the indigenous populace which face extensive displacement due to expansion of open-cast mining, which although is beyond the scope of this study, shall be discussed briefly in the next section.

The main factor behind the progress or stagnancy in productivity relates to level of technological use which shall be dealt in details in the next sub section but the productivity scenario is itself a major indicator of the level of technology used in any industry. The higher productivity in open-cast mines indicated higher level of technology and greater degree of mechanization in such mines while the opposite is indicative for the underground mines.

3.3.1.3 Technological Development:

With the disintegration of the traditional industrial base in India, the artisans not only lost their trades but they also lost their traditional skills. While the loss of skills was compensated in other countries of Western Europe including Britain through instilling new skills in the factory workers coupled with providing elementary education to everybody sponsored by the State or public authorities, nothing of that sort happened on such a scale in India where the number of persons acquiring factory skills remained extremely small. In case of India, the reason mainly was that the really skilled

occupations in factories were controlled by Europeans and were kept away from the natives. Neither did they become any more literate than before because of the meagre educational facilities which were again restricted to the upper classes only. Such a system generated a "new type of dependence on the foreigners". Industrialization in India was not based on large scale use of machinery and advanced technology like that in the developed capitalist countries which later posed a serious problem with the introduction of the "import substituting industrialization". The control of the working methods and processes in the factory enterprises were almost completely in the hands of Europeans in the form of management and their immediate supportive structure. Such a method of control was superimposed on the colonial economy of India and resulted in the transformation of the increased degree of control of the workers by the management to an increased degree of dependence of the industrial enterprises of India on the techniques of production of the Europeans.[75] In case of the coal industry in the Mineral Belt, the pattern of ownership and control of the working of the coal mines was highly tilted in favour of the British Managing Agency system. The structure of control was superimposed over the existent Zamindari system in the Resource Region.

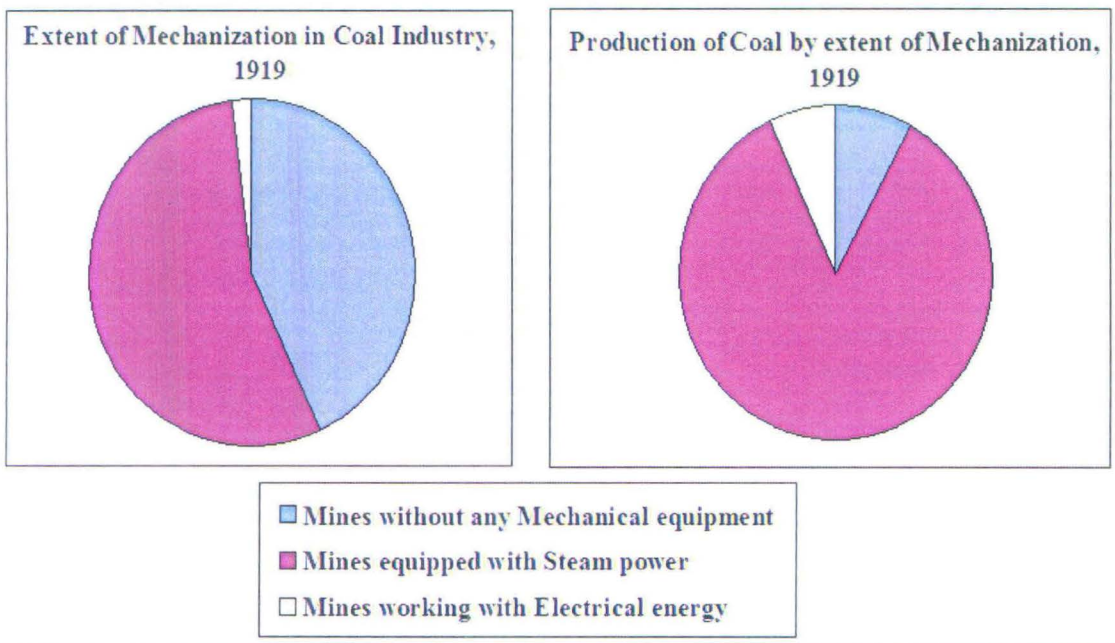
During the period 1890-1920 no significant technological change took place in Indian Coal mining with the only exception of a small number of mines being operated with deep shafts. About 43% of all the mines which were being worked during the year 1919 were without any mechanical equipment, 55% of the mines were equipped with steam power and only 2% were worked with electrical energy. The impact of mechanization on production can be gauged by the production figures in the respective mines. The 55% mines which were equipped with steam power accounted for 85% of the production while the 2% mines which were worked with electric power produced about 7% of the total coal output. On the other hand, the 43% non-mechanized mines accounted for a mere 8% of the production. Only 4 mines, 2 each in Raniganj and Jharia were equipped with cutting machines during 1919 while all the other mines had very little technical equipments.[76] During this period there was no significant tendency towards mechanization, neither any concentration of production in larger units nor any

[75] Bagchi, A.K. (1977): *Op. Cit.*, pp. 16 - 17

[76] "Relevant Statistical Information" (1919), *Report of the Coalfields Committee*, Calcutta, 1920, pp. 200 as cited in Papendieck, Henner (1978), *Op. Cit.*, pp. 189

effort towards rationalisation. The investments were kept too low at the cost of wasteful production. Modernization of coal mines was conspicuous by its absence. The management of the mines was almost completely in the hands of small number of Europeans and labour management was normally delegated to the contractors and thus did not form a part of the management of the mine. The tendency of not incorporating the labour management into the mines operations continued all through 1890-1920.[77] The growth of the Coal industry in the region was "extensive" in nature instead of being "intensive". Neither did the technological development or extent of use of technology undergo any significant changes, nor did the units of production became any larger or economic but rather they shrunk considerably in size making coal operations more and more uneconomic. Thus, such a "peculiar type of growth" was characterized by lack of 'modernising features of capitalist industrialization' under the system of colonial capital organization.[78]

Fig: 3.4. Extent of Mechanization and Coal Production, 1919



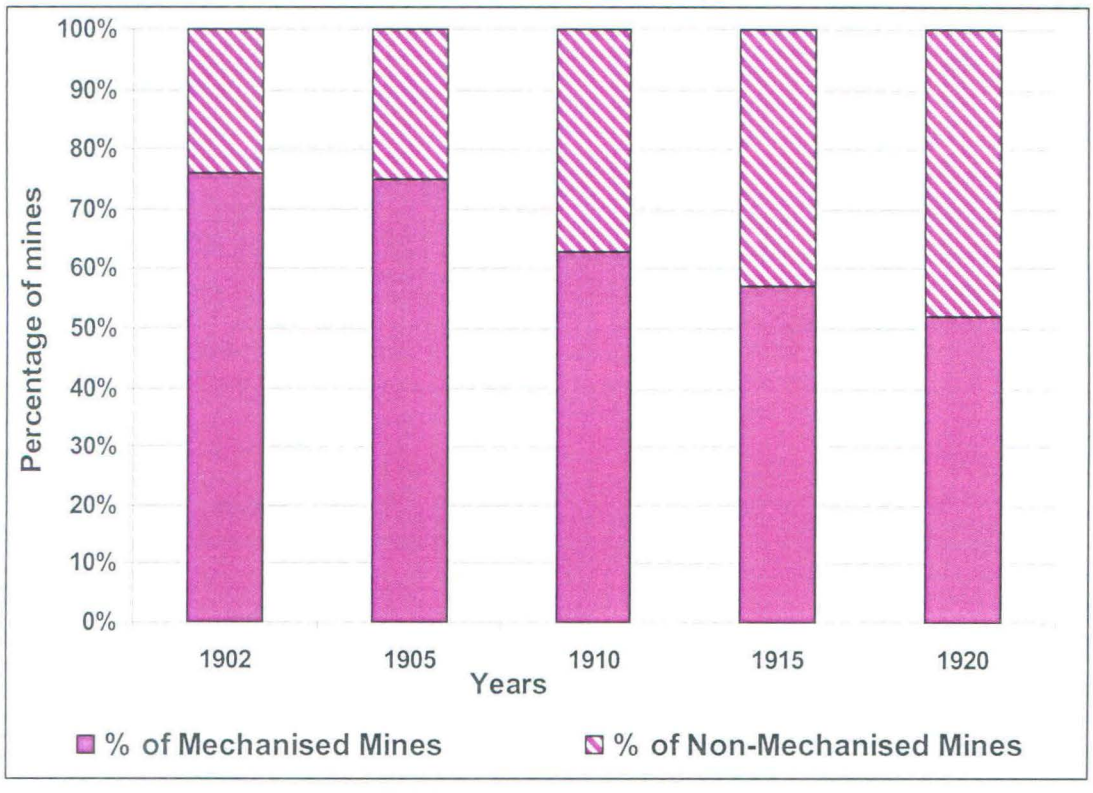
Source: Based on Relevant Statistical Information" (1919), *Report of the Coalfields Committee*, Calcutta, 1920, pp. 200; derived from Papendieck, Henner (1978): "British Managing Agencies in the Indian Coalfield" in Rothermund, Dietmar and D.C. Wadhwa (ed.), *Zamindars, Mines and Peasants,* Manohar Publications, New Delhi, pp. 189

[77] Papendieck, Henner (1978), *Op. Cit.*, pp. 189

[78] *Ibid.*, pp. 222

The extent of mechanization in the coal industry can be gauged through the degree to which mechanical power or equipments were utilised in coal mining, proportion of mines which were electrified or used electric power, proportion of mines which used coal cutting machines to cut coal instead of manual cutters etc. The percentage of coal mines which utilised any form of mechanical power during 1902 to 1920 depict that the proportion of mechanized mines decreased during this time period. After 1905, there has been rapid increase in the total number of coal mines, most of which were possibly small mines. But the number of mines using mechanical power increased only gradually which led to the consequential decline in the proportion of mechanised mines from 76% during 1902 to 52% during 1920. A tendency of reduced mechanization is evident during this period.

Fig: 3.5. Proportion of Mechanised Coal Mines in India, 1902 – 1920



Source: The *Annual Reports of the Chief Inspector of Mines* (1902-1920)

Derived from: Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 191

Table: 3.20 Extent of Mechanization in Coal Industry in India 1902 to 1920

Year	Total No. of Mines	No. of Mines with Mechanical Power	% of Mechanised Mines
1902	305	233	76 %
1905	280	211	75 %
1910	433	273	63 %
1915	583	334	57 %
1920	714	366	52 %

Source: The *Annual Reports of the Chief Inspector of Mines* (1902-1920)

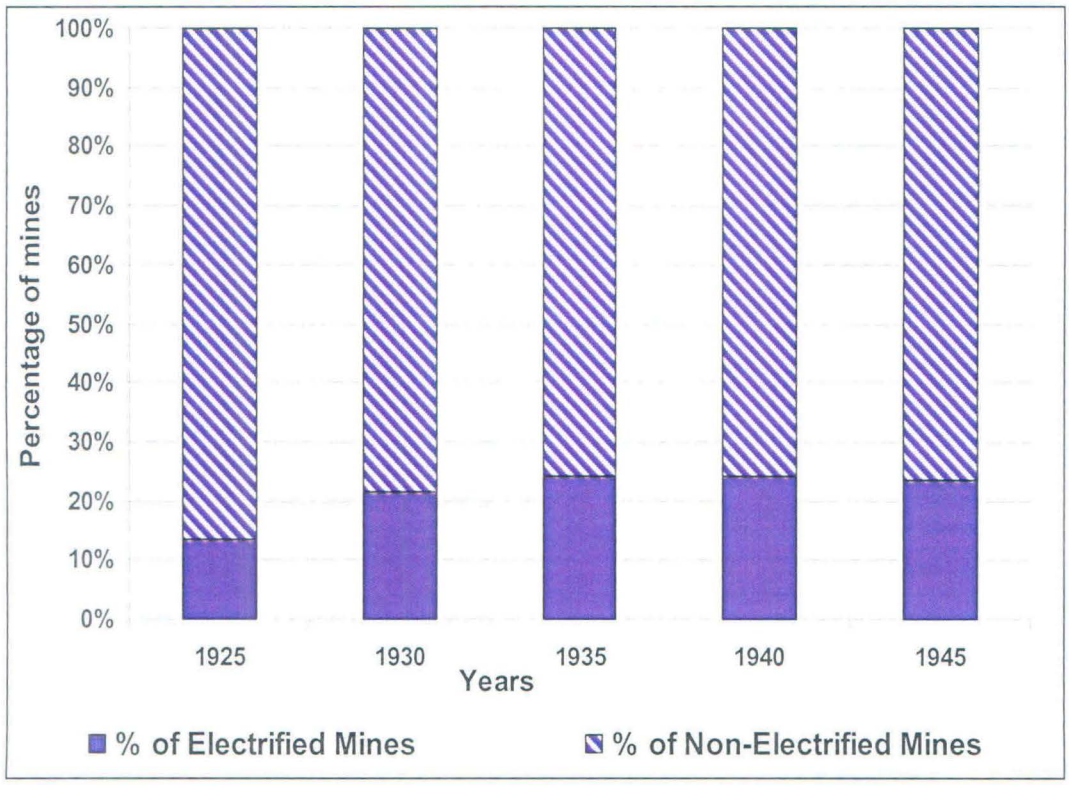
Derived from: Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 191

Table: 3.21 Extent of Electrification of Coal Mines in India 1925 to 1945

Year	Total No. of Working Mines	No. of Mines using Electric Power	% of Electrified Mines
1925	810	108	13.3 %
1930	549	119	21.7 %
1935	494	120	24.3 %
1940	613	151	24.6 %
1945	973	159	16.3 %

Source: Derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account*, Part – I, Sultan Chand and Sons, New Delhi, pp. 152, Table: 7.3

Fig: 3.6. Proportion of Electrified Coal Mines in India, 1925 - 1945



Source: Derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, pp. 152, Table: 7.3

The extent of electrification of coal mines during 1925 to 1945 indicates that the proportion of electrified coal mines was not only extremely low ranging between 13 to 25% but also declined after 1940 due to rapid increase in the total number of coal mines. Even during 1945, which was around the end of colonial rule in India, a mere 16% of coal mines were electrified which produced about 64% of the total coal output which indicates the existence of large number of small mines. The small number of electric safety lamps used during 1925-45 wherein the total number of safety lamps used was only 46.3 thousands as compared to the underground labourers which numbered about 152 thousands in 1945, also depict the low degree of mechanization prevalent during the colonial times in the Indian coal industry.[79] The survey conducted by **S.R. Deshpande** illustrated that the ventilation for underground mines was also not adequate and that the mines of the Central Provinces were worse off with only 15 ventilators installed compared to that of Jharia which had comparatively better

[79] Ghosh, A.B. (1977), *Op. Cit.*, pp. 151-152

ventilation with about 83 mechanical ventilators installed during 1944 and Raniganj which had about 45 ventilators installed during the same year.[80] Coal cutting machines were introduced in India during the year 1910 in the large collieries. Since then till as late as 1945 only 7-11% of the coal mines had used coal cutting machines. Such low degree of mechanization in terms of coal cutting machines was essentially because of scarcity of trained personnel in handling of mechanical coal cutters as well as due to availability of cheap labour to carry out manual coal cutting.[81]

Table: 3.22 Use of Coal cutting machines in the Coal Mines in India, 1925 to 1945

Year	Total No. of Working Mines	No. of Mines using Coal cutting machines	% of Mines using Coal cutting machines
1925	810	-	-
1930	549	62	11.3 %
1935	494	36	7.29 %
1940	613	69	11.26 %
1945	973	76	7.81 %

Source: Derived from Ghosh, A.B. (1977): *Coal Industry in India: An Historical and Analytical Account,* Part – I, Sultan Chand and Sons, New Delhi, pp. 155, Table: 7.7

The lack of technological development which had plagued the Coal industry in India during the colonial period continued to hover around even during the initial phases of the post-independence era. The main emphasis remained on "extensive" development of the coal industry through opening up of new mines in order to increase the total production which was very much in continuance with the colonial process of industrial development wherein the focus was only and only on increasing the total coal output in order to meet the growing demands of the metropolitan economy either for its industrialising process or for War demands. The Five year Plans had set production targets for each year as well as for each quinquennium and in order to meet the production target the focus was entirely on the quantitative "growth" of the Coal

[80] Deshpande, S.R. (1946): *Report of an enquiry into conditions of labour in the Coal mining industry in India,* pp. 43

[81] Ghosh, A.B. (1977), *Op. Cit.*, pp. 154 and 156

industry by increasing the total production. The qualitative "development" in terms of increasing the level of technology used and productivity of the coal mines remained a neglected subject even three decades after the independence. The colonial legacy of "extensive" development of the industry continued to exist during the initial planned years with entire focus on increasing the total production of coal in India in order to meet the demands of the newly-independent-industrializing country and to feed its basic industries especially the iron and steel industries which had become one of the largest consumers of the total coal produced. Increasing requirements from the Railways and for electricity generation further enlarged the coal demands in the country. In order to meet the rising demands, new mines were opened up instead of focussing on improving the productivity in the existing mines.

The **Reports of the Indian Coalfield's Committee, 1946** and **Working Party on the Coal Industry, 1951** reported that the productive efficiency of the coal mining industry had remained quite low. The **Working Party on the Coal Industry, 1951** recommended "*mechanization*" as an urgent necessity because the only real means of securing quick and sustainable development of the industry on a planned basis to augment coal production was to improve its capacity to do so through attaining higher degree of mechanization. It suggested a programme of rationalization cum mechanization to be introduced in the bigger collieries to attain productive efficiency.[82]

It was during the Sixth Plan when technological development and rationalization found a significant mention in the development of the Coal industry. The need for introducing new mining technologies in order to achieve increased production was recognized during the Sixth Plan. The provisions of the Plan were targeted towards introducing an appropriate transformation in the production mix from different categories of mines. But, even then focus remained on opening up of large number of new open-cast mines. In case of underground mines, "phased mechanization" was proposed constituting of Board and Pillars (B&P) and progressive expansion of Long Wall (LW) methods of mining. [83]

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[82] Ghosh, Alak (1967), *Op. Cit.*, pp. 354 and 359

[83] Prasad A.R. (1986), *Op. Cit.*, pp. 158-59

The use of obsolete methods and equipments in the private coal mines of the Indian coal industry was noted as one of the factors for Nationalisation of the coal sector wherein all the coal mines, with an exception of the captive coal mines of TISCO, were immediately brought under the public sector under the Nationalisation Act of 1971 and 1974. The Nationalisation of the coal industry ushered in an era of increased production through an intense focus on open-cast mines. The "open-cast mining drive" witnessed a greater degree of mechanization of the open-cast mines as a result of which while productivity in open-cast mines improved tremendously ever since the Sixth Plan i.e. after 1981, the productivity of underground mines which was even better than that of the open-cast mines till 1961, deteriorated and made a very slow progress during the successive decades due to their sheer neglect.

The "open-cast drive", which explains the rapid increase in total coal production of CIL during the last two decades, is evident by the fact that during 2007, about 14% of the total coal production in India was obtained from underground mines while the rest of 86% was obtained from open-cast mines. As far as the average daily employment scenario is concerned, about 49% were employed underground while 21% were employed in open-cast workings.[84] The recent production status form open-cast and underground mines during 2009-10 in each company depicts that about 89% of the coal is produced from open-cast mines in India which has a high growth rate of 9% while only 11% of the coal is produced from underground mines which is experiencing a negative growth. The scenario for the public sector mines including CIL and other public sector companies is worse with 90% and 89% of the production being obtained from open-cast mines with growth rates of 8% and 9% respectively, while on the other hand the underground mines contribute only 10% and 11% of the total output with growth being -1.6% and -1.4% respectively. The private sector demonstrates a better growth rate for both open-cast as well as underground mines with about 13% growth rate each. This illustrates the sad state of affairs in the coal industry where drive for extensive development in order to attain higher production has led to a retarded a growth condition especially in case of the underground mines.

[84] Annual Report, 2007, Director General of Mines Safety (DGMS), Government of India, pp 40

Table: 3.23 Proportion of coal production from Open-cast and Under-Ground mines, 2009-10

Companies	Open-Cast		Under Ground	
	Share (%)	Growth (%)	Share (%)	Growth (%)
ECL	72.61	10.54	27.39	-1.88
BCCL	85.82	10.43	14.18	-5.59
CCL	96.88	9.44	3.12	-5.58
NCL	100.00	6.32	-	-
WCL	78.96	4.42	21.04	-4.88
SECL	83.49	7.89	16.51	1.5
MCL	97.88	8.16	2.12	2.51
NEC	100.00	15.46	-	-
CIL	**89.97**	**7.85**	**10.03**	**-1.59**
Other Public	88.52	8.82	11.48	-1.40
Private	**93.86**	**12.54**	**6.14**	**12.96**
All India	**89.00**	**9.16**	**11.00**	**-0.76**

Source: *Coal Directory of India,* Part-I, Coal Statistics, 2010-11, Ministry of Coal, Government of India, pp. 3.24, Table: 3.17

The high degree of mechanization attained in the open-cast mines and sheer neglect of the underground mines explains the case further. Out of the 90 % of the total coal produced from open cast mines in 2010-11, about 98.5% of it is obtained from the mechanised mines while the rest from manual mines. The persistent emphasis of the public sector on open cast mining has led to focussed mechanization of the open-cast mines as a result of which about 99.9% of the coal in CIL is obtained from mechanised mines during 2010-11. Such a scenario was not replicated in the underground mines where out of the 10.3% of output that is obtained from underground mines, 15% of it is still extracted through conventional Board and Pillar (B&P). The situation is worse in CCL and ECL where 1005 and 41% of the underground coal is still obtained from conventional B&P. The extent of progress in mechanised Long Wall (LW) is not satisfactory either, with only 2% of the underground coal being obtained through this technology. As a result the productivity in terms of OMS has suffered in the underground mines and has failed to improve even during the entire last decade.

Table: 3.24 Proportion of coal production from Under-ground mines by Technology, 2010-11

Technology / Company	Conven. B & P	Mecha. B & P	Conven. LW	Mecha. LW	Other methods	% Total *
ECL	41.2	49.2	0.0	0.4	9.2	23.9
BCCL	5.8	88.7	-	4.7	0.8	12.7
CCL	100.0	-	-	-	-	2.7
NCL	-	-	-	-	-	0.0
WCL	5.5	92.2	-	-	2.4	19.9
SECL	1.8	94.5	-	1.0	2.6	14.9
MCL	-	96.4	-	-	3.6	2.2
NEC	-	-	-	-	-	0.2
CIL	**13.3**	**82.2**	**0.0**	**0.9**	**3.6**	**9.3**
Other Public	14.3	77.4	0.0	2.0	19.3	10.7
Private	**20.6**	**79.4**	**0.0**	-	-	**6.1**
All India	**14.7**	**77.5**	**0.0**	**1.9**	**5.9**	**10.3**

Note: Figures in % share of the total production from under ground mines;

* % of the coal production from under ground mines

Conven. – Conventional; Mecha. – Mechanised; B & P – Board & Pillar; LW – Long Wall

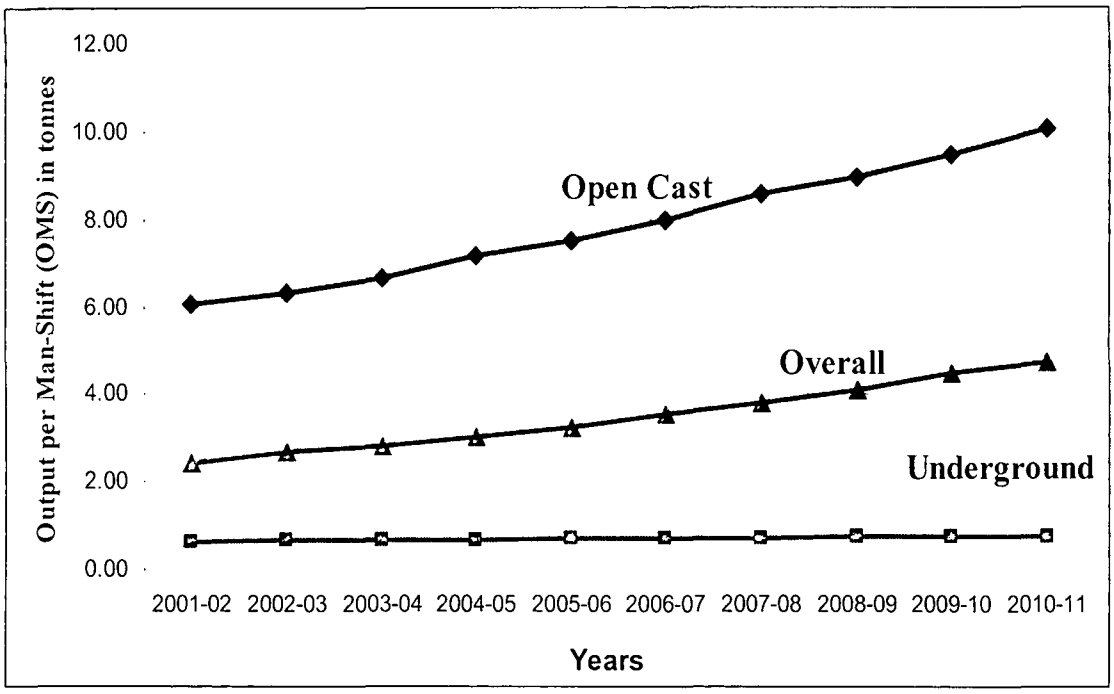
Source: *Coal Directory of India,* Part-I, Coal Statistics, 2010-11, Ministry of Coal, Government of India, Table: 3.18, pp. 3.25

Table: 3.25 Proportion of coal production from Open-cast mines by Technology, 2010-11

Technology / Company	Mechanised OC	Manual OC	% Total *
ECL	100	-	76.1
BCCL	100	-	87.3
CCL	99.1	0.9	97.3
NCL	100	-	100
WCL	100	-	80.1
SECL	100	-	85.1
MCL	100	-	97.8
NEC	100	-	99.8
CIL	**99.9**	**0.1**	**90.7**
Other Public	99.9	0.1	89.3
Private	**84.4**	**15.6**	**93.9**
All India	**98.5**	**1.5**	**89.7**

* % of the coal production from open-cast mines; Note: Figures in % share of the total production from Open Cast; Source: *Coal Directory of India,* Part-I, Coal Statistics, 2010-11, Ministry of Coal, Government of India, Table: 3.18, pp. 3.25

Fig: 3.7. Trend of Output per Man-Shift (OMS) in Coal mines in Coal India Limited (CIL), 2001-02 to 2010-11



Source: *Coal Directory of India,* Part-I, Coal Statistics, 2010-11, Ministry of Coal, Government of India, Table: 3.20, pp. 3.27

This reflects the technological lag which has continued to cripple the Coal Industry in India even decades after the end of the colonial rule in India. The same legacy continued in case of the Mineral belt as well which is the prime coal producing region in India. The continuous development of Coal industry has been based almost entirely on open-cast mining wherein open-cast mining contributes the majority share of total coal production and high degree of mechanization has been attained for open-cast mines. While most of the developed countries have opted for underground mining, India continues to harp on its open-cast mining due to its favourable economics, safety, larger coal recovery, greater potential for large sized production units and lower gestation period. But it also requires the coal seams to be present at a lesser depth which makes such mining less sustainable for future as the coal resources near the surface are only limited and therefore a serious breakthrough along with technological advancement in underground mining is necessary.

Open-cast mining also results in a number of adverse effects on the environment by completely eliminating the existing vegetation, destroying the genetic soil profile, displacing or destroying wildlife and habitat, degrading air quality and the most important aspect is it alters the current land use pattern, and to some extent permanently changes the general topography of the mining area. It leads to an increased dust production with the whole area getting covered with fine coal dust which causes epidemic respiratory suffering. The open-cast mining need to be re-filled with sand once the coal is extracted but in order to cut costs, many mines are not re-filled which results in gas accumulation, underground explosions, underground fires and caving in of whole areas. The worst sufferer in this case has been the old Jharia mines wherein large-scale underground fire has been burning under the surface of Jharia since years causing a threat to the local inhabitants.

Open-cast mining requires huge area of land which again has an adverse impact on extent of area under agricultural use and forests. The environmental degradation aspect due to open-cast mining is beyond the scope of the present study but it's a major reason why conversion of open-cast mining to underground mining through technological development is required. As far as mining machinery development is concerned, India lags far behind the advanced countries. The cost of technology and technical personnel is high in India which is another reason why emphasis on underground mining has remained lacking which requires greater technological development. The underground mines in India employ more workers in relation to its production share and the productivity and technological advancement has remained crippled. The factor for such neglect of underground mining has been both social and technological in case of India, while the need to provide employment opportunity to the huge population in the Mineral belt and India has been the essential social factor against mechanization of underground mines, the high cost situation of the better technology required in such mines has convincingly deterred the progress. [85]

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[85] Sharma, N.K. (2000): " Coal Mining Industry in India-Past, Present, Future", in A.K. Ghose and B.B. Dhar (eds.). *Mining Challenges of the 21st century*. APH Publishing, New Delhi, pp. 179 and Bose A.N. (2000): " Challenges for the Indian Mining in 21st century", in A.K. Ghose and B.B. Dhar (eds.), *Mining Challenges of the 21st century*. APH Publishing, New Delhi, pp. 67-68

3.3.1.4 Employment Characteristics:

As early as in the year 1890, about 25,000 labourers were employed in the coal mines of Bengal. Prior to this period, the system of recruitment and control of labour was of semi-feudal in nature. About one fourth of the workers in the Raniganj Coalfield held leases issued by the zamindari departments of the coal companies with the sole condition of work in the mines and this used to constitute the permanent workforce of the coal mines. During 1890 to 1919 the total number of workers in the coal mines of Bengal rose from 25,000 to 175,000. The industrial census of 1921 recorded the workers employed in coal mines of Bengal, Bihar & Orissa to be about 150,030. Out of the total of 82,619 workers employed in Manbhum, only 0.5% were employed in managerial positions, 2% as technical personnel and supervisors, 2% as administrative and clerical staff, 39.5% were skilled labourers while a huge chunk of 56% were unskilled labourers.[86] It was estimated in 1917 that about 15% of the miners in Jharia coal mines were "settled" while 75% worked in gangs migrating to Jharia for a number of weeks or months and the rest 10% came from neighbouring villages either on a daily basis or whenever it suited them. In case of Raniganj coal mines, about 50% were labelled as "settled" owing to the old established nature of the pioneer companies with large zamindari-departments, and out of the remaining 50% about 90% of them came to the coalfields in gangs like in Jharia and 10% came irregularly from the surrounding villages.[87]

The major characteristics of the labour force in the coal mines of the Resource Region remained almost the same during the entire pre-independence era. The main source of labour supply was essentially the adjacent areas to the coal-bearing provinces of Bengal and erstwhile parts of Bihar (now Jharkhand). In the Jharia coalfield, about 80% of the labour employed was locally derived from Manbhum, Hazaribagh, Gaya and Monghyr districts. The outside labour belonged mainly to Raipur and Bilaspur in Central Provinces, eastern and central parts of United Provinces, parts of Orissa and Bengal Province. The Census of India, 1921 gives an account of the sources of skilled as well as unskilled labour migrating from different parts of the country as well as abroad to the Bengal Province during 1921. About 30-40% of the unskilled and skilled

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[86] Papendieck, Henner (1978), *Op. Cit.*, pp. 186-187

[87] Census of India, 1921, Vol. I. India. Part 1, pp. 249-250

labour was derived from the home province, with 23-28% of them belonging to the home district. Nearly 70-60% of the unskilled and skilled labour was derived from other provinces. While the majority of the skilled workers from outside Bengal Province essentially belonged to the United Province followed by South Bihar and North Bihar and that of the unskilled labour force was sourced from Chotanagpur followed by United Province and South Bihar. Only a minor proportion of the labour was obtained from Madras province obviously due to the distance factor and a negligible share of workers from abroad within which skilled labour out numbered the unskilled category.

The composition of the labour force was quite "heterogeneous" in nature constituting aboriginals, semi-aboriginals and non-aboriginals. The Census Report of 1921 records about a lakh of workers in the coalfields of Bihar among which about 25% were aboriginals and 7% were semi-aboriginals. The most notable characteristic of the pattern in which the local workforce was employed in the coalfields of the Mineral Belt was that the non-aboriginal workers who were drawn mainly from Bihar, Central Provinces and United Provinces were preferred for the more skilled operations like operating coal cutting machines, use of explosives and were known as C.P. miners (labours who used compressed pellets or country powder or gun powder for blasting). They were preferred over the local aboriginal miners, mainly Santhals, who were mainly loading coolies, earth cutters, pick miners etc. While the 90% of the manual coal cutters were Santhals and Bauris (semi-aboriginal tribes), most of the reputed C.P. miners were Bilaspuris (obtained from Bilaspur in Central Provinces). As the non-aboriginal C.P. miners were labelled as more "assiduous" and "regular", the introduction of more modern methods of mining and increased systematisation of working hours gave this type of workers an upper hand over the aboriginal labour.[88]

[88] Ghosh, A.B. (1977), *Op. Cit.*, pp. 130-131

Table: 3.26 Supply of Skilled and Unskilled Workers employed in Bengal Province, 1921

Workers		Skilled		Unskilled	
		Numbers	%	Numbers	%
Born in the Province	Enumerated Districts	51,151	28.1	135,669	23.1
	Adjoining Districts	13,429	7.3	21,725	3.7
	Other Districts	6,560	3.5	16,945	2.9
Born in Other Provinces	North Bihar	27,120	14.9	36,099	6.1
	South Bihar	24,779	13.6	63,977	10.9
	Chotanagpur	2,427	1.3	122,942	20.8
	Orissa	12,534	6.9	51,766	8.8
	United Provinces	35,991	19.8	68,154	11.5
	Madras	4,180	2.3	13,294	2.3
	Other Parts of India	3,225	1.8	57,585	9.8
Born Outside India	Not in India	588	0.8	842	0.1
Total		181,974		588,448	

Source: Based on Census of India, 1921, Bengal, Vol. V, Part II, Industrial Statistics, Table XXII, Parts IV and V; derived from Broughton, G.M. (1924): *Labour in Indian Industries*, Oxford University Press, London, pp. 72

A considerable proportion of the workforce for coal industry in erstwhile Bihar (Jharkhand), Orissa, Bengal and Madhya Pradesh (including Chattisgarh) was traditionally obtained from the eastern parts of the United Province (roughly the present Uttar Pradesh). They were called *Gorakhpuri Labour* and were mostly unskilled. During the War the coal mines experienced a serious shortage of unskilled workers. The ***Gorakhpur Labour Organization*** **(GLO)** was formed in 1942 as a recruiting organization to supply unskilled labour from eastern parts of Uttar Pradesh to the mining areas in the Resource region. The new organization was to ensure a regular supply of miners particularly from Gorakhpur in Eastern Uttar Pradesh of the *Gorakhpuri Labours*. The establishment of the **Coalfield Recruitment Organization (CRO)** in 1947 specially for the purpose of recruiting long-distance labour strengthened the enclave character of the resource region. Independence did not bring about any

structural changes in the mining enclave wherein regarding labour recruitment the independent India witnessed the implementation of the CRO scheme more effectively, thus, reconfirming the enclave structure of the region.[89] This is a typical characteristic of an enclave economy which, however, normally depend on local labour but in most cases the skill and quantity of labourers in the immediate proximity of the enclave is insufficient to meet the demands of the enclave economy, which requires labour recruitment from outside the enclave. The local labour is used only for casual and temporary work. Such recruitment of distant or foreign labour further accentuates the isolation of the enclave from its hinterland.[90]

3.3.2 Iron and Steel Industry:

The colonial economic history of India reflects a distorted image of economic development of the country and the Mineral belt in particular wherein despite rich reserves of mineral resources, the process of industrialization made a late start. This is to be understood in the context of the industrialization process of the metropolitan country England and its constant quest for markets in the colonies which restricted the development of indigenous industries in India on modern lines for a considerable length of time and at the same time destroyed the traditional industrial base of the country. The political and economic environment that India had acquired under British regime failed to provide a congenial climate for the establishment of the most basic industry of iron and steel. With such a given background, the progress of iron and steel industry in India was quite "chequered".[91] The history of iron and steel making in India dates back to ancient times wherein iron ore used to be smelted in crude furnaces and the evidences of which range from the iron pillar near Delhi to steel being supplied for famous Damascus blades and *Wootz* swords.[92] The indigenous iron and steel manufacture essentially remained a "cottage craft". While technologically the state of iron and steel making in India was almost at comparable standards with that of Europe till the eighteenth century, the crucial parting of ways happened in the middle of the nineteenth

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[89] Rothermund Dietmar (1978), *Op. Cit.*, pp. 13

[90] *Ibid.*, pp. 3

[91] Bisht, R.S. and M.P.N. Namboodripad (1965): "Iron and Steel Industry", in Singh, B.D. ed, *Economic History of India: 1857-1956*, (Bombay: Allied Publishers), pp. 201

[92] Pillai, P.P. (1923): "Iron and Steel production in India", *Economica*, No. 7, pp. 55

century when a series of discoveries such as that of Bessemer Converter in 1856 and basic open-hearth process in 1878 revolutionised the iron and steel making processes in the West, transforming the small scale craft into a large-scale industry based on modern scientific lines. While such epoch-making events were taking place in Europe the art of iron and steel making did not progress in India. Most of the existing furnaces disappeared during the nineteenth century after the advent of the British imperialism in India.[93] The entry of cheap imported goods produced in factories by modern methods due to the technological advancement in Europe eroded away the indigenous industry. The construction of railways enabled the imported iron and steel to penetrate the inaccessible areas in India and together with the collapse of Maratha and Sikh power during the first half of the nineteenth century the demand for indigenous iron and steel declined.[94] The early attempts to introduce European processes of manufacturing into the country faced odd ends and the commencement of a formal iron and steel industry in modern India was marked by several failed attempts during the eighteenth and first half of the nineteenth century.

3.3.2.1 Growth of the industry:

The pioneer work in establishing an iron industry in India was undertaken by J.M. Heath who established an ironworks at Porto Novo (South Arcot) in 1830 under a grant from the East India Company, but insufficient funds and uneconomic methods of production through wasteful use of charcoal marked an end to this project.[95] The first successful attempt at producing pig iron in the Mineral Belt on modern lines was the establishment of the iron and steel works at Barakar during 1875 by the Bengal Iron and Steel Co. which was later reorganized in 1919 as the Bengal Iron Company.[96] The first significant effort at manufacturing iron and steel using coke as a fuel at Kulti in 1875 proved a success and pig iron was produced at Kulti Works until it was amalgamated with the Indian Iron and Steel Co. Ltd during 1936. By 1900 the making of pig iron had reached a stable footing but steel production on modern lines was carried out only at

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[93] Nanavati, S.K. (1967): "From mines to the workshops", *Tata Steel Diamond Jubilee- 1907 – 1967*, Tata Iron and Steel Company, pp. 28

[94] Johnson, W.A. (1967): *The Steel Industry of India*. Oxford University Press, Bombay, pp. 8

[95] Pillai, P.P. (1923), *Op. Cit.*, pp. 56

[96] Bisht, R.S. and M.P.N. Namboodripad (1965): *Op. Cit.*, pp. 201

Ishapur Ordnance Depot in 1892 and the Jamalpur Works of the East India Company in 1898. But at both these places the production was on a small scale and had to be abandoned due to heavy losses incurred. The feasibility of steel making in India was emphasized by General R.H.Mohan in 1899 when he declared that "the time had come to establish an iron and steel industry in India" on a considerable scale.[97]

The first steel plant which scripted the history of iron and steel industry in modern India was Tata Iron and Steel Company (TISCO) which was established at Sakchi (later named as Jamshedpur) in erstwhile Bihar by the pioneer Indian entrepreneur Jamshedji Tata. TISCO was founded in 1907 with Indian capital and by 1911 pig iron was produced followed by steel ingots the next year. Prior to Tata Steel India produced practically no steel and only 40,000 tonnes of pig iron per year. The significance of Tata Steel was not in the quantity of steel production, which was quite negligible initially in relation to world scenario, but more so in symbolically placing the country on the world steel map which came as a breakthrough for the economically backward countries of the world.[98]

For most part of the first half of the twentieth century, the history of TISCO reflects the history of iron and steel industry in not only the Mineral Belt but also in the country. For the establishment of a modern iron and steel industry the capital was obtained entirely from Indian investors, which refuted the myth that scarcity of domestic savings was the single biggest obstacle to India's industrial growth. Machinery and technical personnel were however obtained from America and Germany. The clerical and unskilled labour force was easily available locally. About 130 thousand tonnes of pig iron, 31 thousand tonnes of ingot and 19 thousand tonnes of saleable steel was produced during 1912-13. As soon as the steel plant obtained full production, the First World War broke out which came as a boon for the industry as there was a sudden increase in demand for steel products and the total production shot up during 1913-14 to 1918-19. The post-war economic depression was aggravated by the dumping of cheap foreign steel in the Indian market at prices below cost. The prices of steel imports fell from 1921 onwards due to which TISCO was on a verge of collapse by 1923. There was

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[97] Nanavati, S.K. (1967): *Op. Cit.*, pp. 28

[98] *Ibid.*, pp. 34

a marked decline in the total production of all products during 1921-22 to 1922-23. Stability was attained after the raising of protective tariffs by the Government in 1924. It was also the period when the Great Extensions Programme was implemented towards mechanization and as a consequence the output increased from 1925 onwards. Continued inflow of foreign steel necessitated further tariff barrier in 1927. Although the protection granted by the British Government was "half-heated" this time the "tariff wall" allowed TISCO to extend its control over the home market. The production of steel accelerated till 1929 when the Wall Street crashed and ushered in the phase of Great Depression.[99]

While on one hand the government purchase through the Railway Board rescued the IISCO from closure during its crisis situation, the company-managed railways held an "unfair attitude" towards TISCO as it was purely an Indian firm and bought most of their requirements from London market instead of buying Indian rails from TISCO which had remained dependent on Government purchase of rails ever since its formation. During the Great Depression, the railways curtailed its expenditure and rail orders were reduced which led to heavy fall in demands from railways which led TISCO to a severe crisis phase.[100] The production of pig iron fell drastically in TISCO which is evident from the production figures wherein the production declined from 818 thousand tonnes in 1931-32 to 683 thousand tonnes in 1932-33. Production of steel ingot and saleable steel declined as well during the depression phase. Even during the bleak years, TISCO went for modernization and diversification of the plant which resulted in increased production and along with it TISCO supplied 72% of the home market in 1932-33 in contrast to a mere 30% during 1927-28. It was also successful in building its export market with Japan being its major consumer of pig iron. Even during the bleak years of Depression, TISCO exported a substantial amount of pig iron. From 1935 onwards TISCO witnessed a period of boom and the production increased considerably while supplying 73% of the steel consumed in India. [101]

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[99] Sen, S.K. (1975): *The House of Tata: 1839-1939*. Progressive Publishers, Calcutta, pp. 49-51

[100] *Ibid.*, pp. 45-46 and 57- 58

[101] *Ibid., Op. Cit.*, pp. 58 - 62

The production of saleable steel in TISCO as a percentage of the approximate domestic consumption gives a vivid picture of the significance and contribution of this steel plant to the growing industrial demands in the country during the nascent years of modern industrial development. Before 1920-21, the share of TISCO's production in the total steel consumed in India was quite negligible and most of the steel consumed was imported on a large scale. The contribution of TISCO picked up from 1920-21 onwards when the production of saleable steel gained momentum in the steel plant. During the bleak years of Great Depression, more than half of the total steel consumed in India was contributed by TISCO. When the Second World War was about to begin, the production of steel in TISCO had increased tremendously and about three-fourths of the total steel consumed in India was contributed by TISCO alone during 1938-39.

During the Second World War, the production rose tremendously from 1939-1943, not due to addition of plants or equipments but by over utilization of existing capacity. The War gave a temporary fillip to the industry but with the end of the War the steel production declined considerably and the industry faced a temporary crisis due to the intensive use of the plant and machinery during the War period. Lack of financial resources resulted in heavy backlogs in replacements and modernization and thus by 1948-49 the production of steel had touched a low figure. Improvement in production figures was noted from 1949 onwards due to minor renovations was gradually brought in the major units.

Table: 3.27 Productions of Pig Iron, Steel Ingot and Saleable Steel in TISCO, 1911-12 to 1947-48

Year	Pig Iron	Steel	
		Ingot	Saleable
1911-12	37	3	1
1912-13	130	31	19
1913-14	157	79	50
1914-15	164	98	68
1915-16	160	125	92
1916-17	149	141	101
1917-18	191	184	126
1918-19	161	141	104
1919-20	223	173	124
1920-21	258	174	124
1921-22	274	185	128
1922-23	246	159	117
1923-24	450	239	166
1924-25	562	376	252
1925-26	582	479	325
1926-27	623	539	380
1927-28	654	610	436
1928-29	505	402	293
1929-30	753	590	432
1930-31	725	635	450
1931-32	818	612	463
1932-33	683	600	438
1933-34	856	733	544
1934-35	906	847	620
1935-36	914	894	672
1936-37	840	865	691
1937-38	936	913	685
1938-39	1036	962	726
1939-40	1158	1034	789
1940-41	1199	1101	847
1941-42	1257	1099	852
1942-43	1124	1017	740
1943-44	1166	1109	844
1944-45	874	969	759
1945-46	1022	1030	758
1946-47	1092	1045	765
1947-48	971	915	675

Production in ('000 tonnes); Source: Based on *Statistics for Iron and Steel Industry in India*, Hindustan Steel Limited (HSL), Ranchi, 1974, pp.8 and derived from Srinivasan, N.R. (1982): Iron and Steel Industry of India, *Tata Iron and Steel Company*, Jamshedpur, Table: 1-1

Table: 3.28 Production, Imports, Exports and Consumption of Saleable Steel in TISCO, 1911-12 to 1938-39

Year	Production	Imports	Exports	Approx. Consumption	Production as % of Consumption*
1911-12	1	779	1	779	0.1
1912-13	19	922	2	939	2.0
1913-14	50	1215	1	1264	4.0
1920-21	124	770	1	893	13.9
1921-22	128	703	1	830	15.4
1922-23	117	892	1	1008	11.6
1923-24	166	872	1	1037	16.0
1924-25	252	921	2	1171	21.5
1925-26	325	915	1	1239	26.2
1926-27	380	877	1	1256	30.3
1927-28	436	1258	1	1693	25.8
1928-29	293	1165	1	1457	20.1
1929-30	432	968	1	1399	30.9
1930-31	450	608	3	1055	42.7
1931-32	463	369	15	817	56.7
1932-33	438	324	30	732	59.8
1933-34	544	323	47	820	66.3
1934-35	620	367	1	986	62.9
1935-36	672	446	2	1116	60.2
1936-37	691	360	3	1048	65.9
1937-38	685	365	26	1024	66.9
1938-39	726	264	24	966	75.2

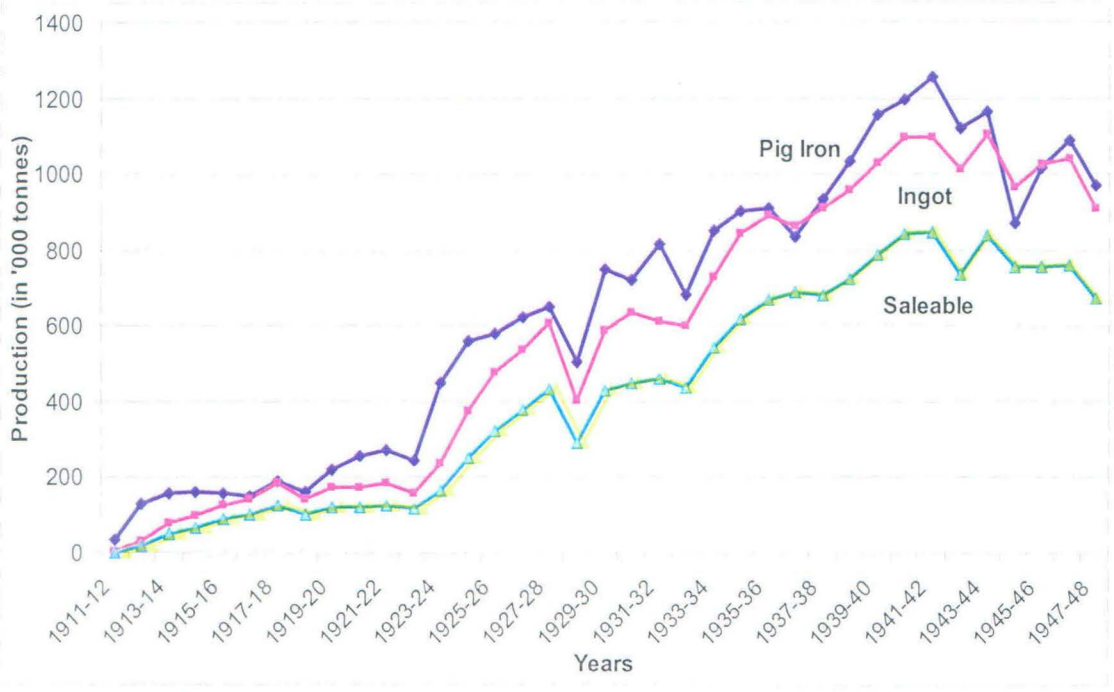
Production in ('000 tonnes)

Note: Approximate Consumption = (Production + Imports) – Exports;

* TISCO's production as a percentage of consumption

Source: Derived from Johnson, W.A. (1967): *The Steel Industry of India*, Oxford University Press, Bombay, Table: 1, pp. 14-15

Fig: 3.8. Growth of Pig Iron, Steel Ingot and Saleable Steel Production in TISCO, 1911-12 to 1947-48



Source: Based on Table: 3.27 of the present study

The **Indian Iron and Steel Company (IISCO),** which was formed in 1918, was virtually a British concern with about 71% of the shares were with the British and only 11% of them were purchased by Indians. The Burnpur works of IISCO manufactured pig iron primarily for export purpose to England and Japan. But the Great Depression resulted in a decline of pig iron prices and subsequently the output declined as well. The factory faced threat of closure when Railway Board came to its rescue and Government purchase helped the IISCO to survive. The company purchased the **Bengal Iron Co.** in 1936 and the management of IISCO formed the **Steel Corporation of Bengal (SCOB)** in the same year. However, the production of steel in SCOB began by 1939. [102] The IISCO and SCOB were later amalgamated in 1953 on the recommendations of the Tariff Commission. The merger of the IISCO and SCOB was brought about through the Ordinance known as **"Iron and Steel Companies Amalgamation Ordinance", 1952.** By World War II Indian imports of steel were replaced by output from SCOB's newly built Burnpur plant. India's achievement of virtual self-sufficiency in steel and relatively low cost incurred in production evidenced India's comparative advantage capacity in steel production.

[102] *Ibid.*, pp. 56-57

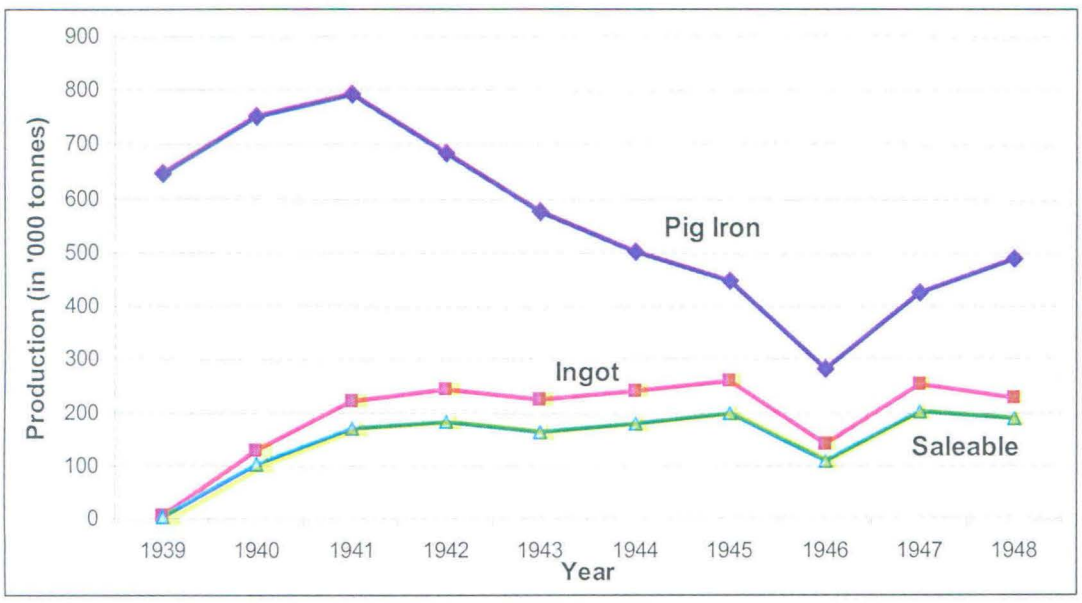
Table: 3.29. Production of Pig Iron, Steel Ingot and Saleable Steel in IISCO, 1939 - 1948

Year	Pig Iron	Steel	
		Ingot	Saleable
1939	646	7	3
1940	753	129	104
1941	795	222	170
1942	684	245	184
1943	576	223	163
1944	502	239	180
1945	450	261	200
1946	283	142	110
1947	426	253	202
1948	491	227	188

Production in ('000 tonnes)

Source: Based on *Statistics for Iron and Steel Industry in India*, Hindustan Steel Limited (HSL), Ranchi, 1974, pp.9 and derived from Srinivasan, N.R. (1982): Iron and Steel Industry of India, *Tata Iron and Steel Company*, Jamshedpur, Table: 1-2

Fig: 3.9. Growth of Pig Iron, Steel Ingot and Saleable Steel Production in IISCO, 1939 to 1948



Source: Based on Table: 3.29 of the present study

India's Five Year Plans have emphasized programmes of industrial development with the most significant programme being the ambitious expansion of India's steel industry. In the year 1953, the Government of India negotiated with the German firm Krupp & Demag for the construction of a steel plant in the public sector. The Indo-German unit was decided to be located at **Raurkela** in Orissa with a capacity of 10lakh tons of ingots. Subsequently, the Government decided to set up two more steel plants in the public sector. An agreement with the Government of USSR was reached in 1955 for establishing a steel plant at **Bhilai** in Chattisgarh (erstwhile Madhya Pradesh). In 1956, a third steel plant was put up at **Durgapur** in West Bengal in collaboration with a consortium of British steel producer viz. the Indian Steel Construction Company Ltd (ISCON London). A proposal from the Birlas, a leading industrial house of India, came up during 1954 for setting up of a steel plant but the Government turned down the proposal in accordance with the Industrial Policy Resolution. From 1950-51 onwards, steel expansion plans were worked out in the existing private sector plants. The First Five Year plan included a programme of expansion and modernization of the IISCO. The Second Five year Plan further envisaged its expansion. An expansion and modernization programme was undertaken by TISCO as well in 1951 itself. All the three new steel plants came into existence almost simultaneously and began producing pig iron by 1959-61. The production trend of steel during this period was more or less consistent with a marked gradual increase.[103] India's fourth public sector steel plant at Bokaro in Jharkhand (erstwhile Bihar) was a "magnificent obsession" of the nation as a first step towards self reliance. It engaged maximum possible use of indigenous consultancy, design, equipment and construction skills. India accepted the Soviet offer of aid for establishing Bokaro Steel Plant, the construction of which started in 1966 and the first blast furnace was commissioned in 1969 and in actuality the commissioning came only by 1972 and the production could begin by 1972-73.[104]

There has been tremendous increase in the production of steel during 1948-49 to 1972-73. But the industry continuously failed to cope up with the planned requirements. The industry acquired the tremendous momentum only during the Second

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[103] Bisht. R.S. and M.P.N. Namboodripad (1965): *Op. Cit.*, pp. 211-212

[104] Sidhu. S.S. (1983): *The Steel Industry in India- Problems and Perspectives*, Vikas Publishing House. New Delhi. pp. 15-16

Five Year Plan period which witnessed the establishment of three major units in the public sector in addition to the already functioning integrated mills viz. TISCO and IISCO. The Second Plan had established ambitious targets for the steel industry which were more than three times of the actual steel production of India. Both the public and private sector were to participate in the growth of the industry. The actual production has however moved up at a lower rate of growth in general as compared to the increase in total capacity of the steel industry. The lack of adequate trained manpower, both technical and managerial is a problem which has persistently confronted the steel industry contributing to the tardy growth. Again, deteriorating quality of inputs like coal and iron ore and bottlenecks in transport facilities continued to hinder the growth.[105]

The production of steel ingot and saleable steel grew with an accelerated pace during the end of the 1950s. The relative production and growth both were greater in case of TISCO as compared to IISCO. The growth in both these companies were simultaneous but the parting of ways came up during the mid 1960s since when TISCO gained tremendous momentum in production and grew with a much higher speed while IISCO stagnated and deteriorated in its quantum of production and gained a negative speed in growth. The three new steel plants which came up during 1960 grew with tremendous speed and especially Bhilai steel plant whose total production and pace of growth surpassed the oldest steel plant of TISCO during 1969-70. All the new steel plants increased their production with remarkable speed till 1965-66 when the parting of ways arrived and while Bhilai accelerated its production further, Raurkela and Durgapur faced a stagnation and even decline in production during the successive years. The trend of production in these two steel plants has been fluctuating ever since but there was no looking back for Bhilai Steel Plant. By 1972-73, Bhilai Steel Plant was the largest steel producer in the Mineral Belt both in case of steel ingot and saleable steel closely followed by TISCO. Raurkela, Durgapur and IISCO were ranked in their total production in that order which was much lower in comparison with Bhilai and TISCO. The absolute production levels are bound to vary according to their respective capacities of steel production and Bhilai and TISCO have larger capacity of steel production than the rest of the three but the growth rates are surely comparable.

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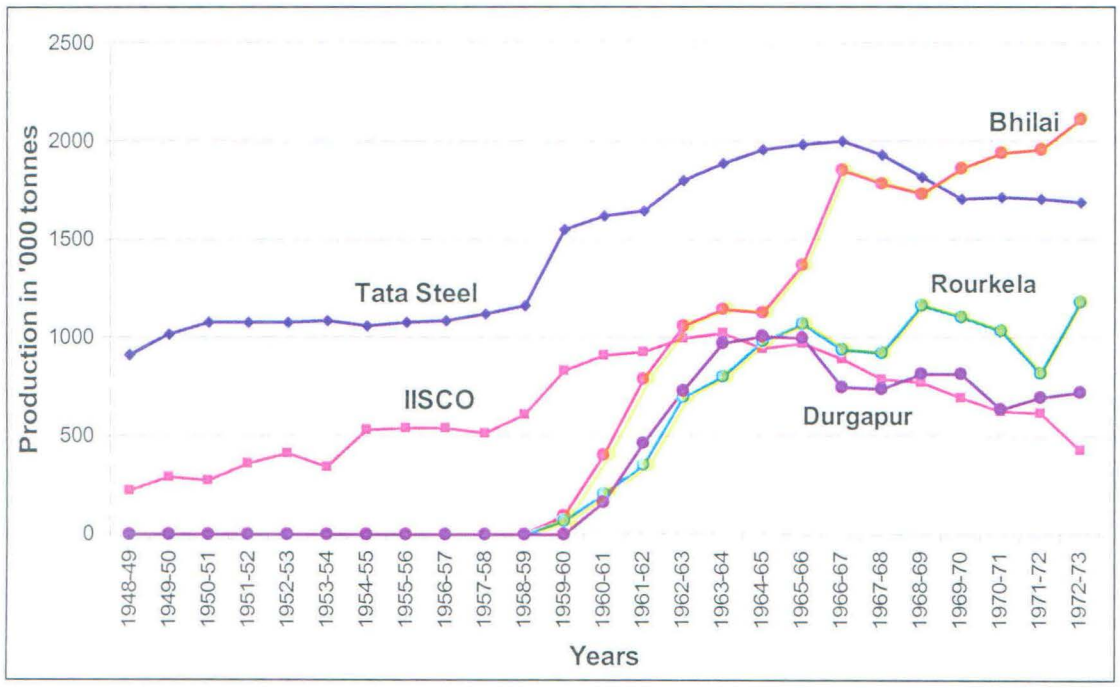
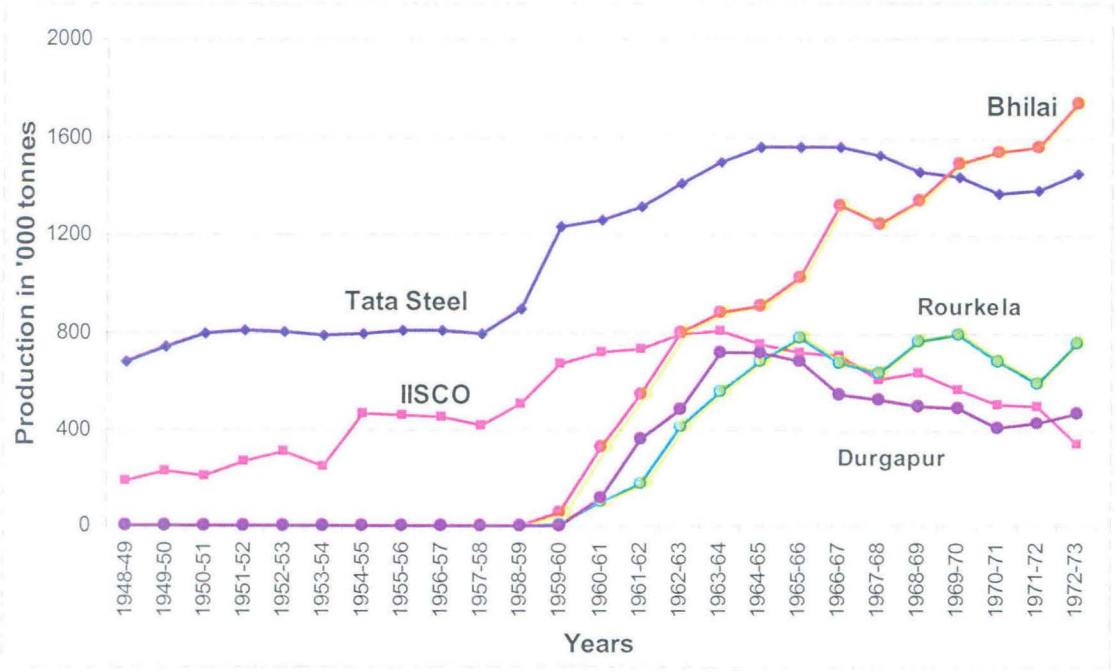
[105] *Productivity Trends in Iron and Steel Industry in India*. 1974, National Productivity Council, New Delhi. pp. 71 -72

Fig: 3.10. Producer-wise Growth of Steel Ingot Production in the Mineral Belt, 1948-1949 to 1972-73



Based on: Table: 3.30 of the present study

Fig: 3.11. Producer-wise Growth of Saleable Steel Production in the Mineral Belt, 1948-1949 to 1972-73



Based on: Table: 3.32 of the present study

Table: 3.30. Producer-wise Steel Ingot Production in the Mineral Belt, 1948-49 to 1972-73

Year	Tata Steel	IISCO	Bhilai	Rourkela	Durgapur	Total
1948-49	918	227	0	0	0	1145
1949-50	1021	290	0	0	0	1311
1950-51	1078	273	0	0	0	1351
1951-52	1074	359	0	0	0	1433
1952-53	1078	416	0	0	0	1494
1953-54	1084	347	0	0	0	1431
1954-55	1057	537	0	0	0	1594
1955-56	1076	540	0	0	0	1616
1956-57	1088	541	0	0	0	1629
1957-58	1122	516	0	0	0	1638
1958-59	1166	610	0	0	0	1776
1959-60	1555	840	92	66	0	2553
1960-61	1622	914	402	206	168	3312
1961-62	1643	934	789	354	462	4182
1962-63	1799	1002	1060	700	731	5292
1963-64	1892	1027	1144	800	972	5835
1964-65	1956	950	1131	979	1006	6022
1965-66	1979	970	1371	1065	1001	6386
1966-67	2001	897	1852	943	754	6447
1967-68	1933	791	1785	924	738	6171
1968-69	1816	777	1735	1162	823	6313
1969-70	1708	700	1859	1104	818	6189
1970-71	1716	627	1940	1038	634	5955
1971-72	1708	617	1953	823	700	5801
1972-73	1690	431	2108	1177	723	6129

Production in ('000 tonnes)

Source: Based on *Statistics for Iron and Steel Industry in India*, Hindustan Steel Limited (HSL), Ranchi, 1974, pp.7-10; Annual Reports of HSL, Tata Steel and IISCO for 1972-73; Derived from Srinivasan, N.R. (1982): Iron and Steel Industry of India, *Tata Iron and Steel Company*, Jamshedpur, Table: 3-1, pp. 97 and Table: 4-3, pp. 163

Table: 3.31. Producer-wise Share (%) in total Steel Ingot Production in the Mineral Belt, 1948-1949 to 1972-73

Year	Tata Steel	IISCO	Bhilai	Rourkela	Durgapur
1948-49	80.2	19.8	0.0	0.0	0.0
1949-50	77.9	22.1	0.0	0.0	0.0
1950-51	79.8	20.2	0.0	0.0	0.0
1951-52	74.9	25.1	0.0	0.0	0.0
1952-53	72.2	27.8	0.0	0.0	0.0
1953-54	75.8	24.2	0.0	0.0	0.0
1954-55	66.3	33.7	0.0	0.0	0.0
1955-56	66.6	33.4	0.0	0.0	0.0
1956-57	66.8	33.2	0.0	0.0	0.0
1957-58	68.5	31.5	0.0	0.0	0.0
1958-59	65.7	34.3	0.0	0.0	0.0
1959-60	60.9	32.9	3.6	2.6	0.0
1960-61	49.0	27.6	12.1	6.2	5.1
1961-62	39.3	22.3	18.9	8.5	11.0
1962-63	34.0	18.9	20.0	13.2	13.8
1963-64	32.4	17.6	19.6	13.7	16.7
1964-65	32.5	15.8	18.8	16.3	16.7
1965-66	31.0	15.2	21.5	16.7	15.7
1966-67	31.0	13.9	28.7	14.6	11.7
1967-68	31.3	12.8	28.9	15.0	12.0
1968-69	28.8	12.3	27.5	18.4	13.0
1969-70	27.6	11.3	30.0	17.8	13.2
1970-71	28.8	10.5	32.6	17.4	10.6
1971-72	29.4	10.6	33.7	14.2	12.1
1972-73	27.6	7.0	34.4	19.2	11.8

Source: Computed from Table 3.30 of the present study

During the time of Indian independence, TISCO used to produce about 80% of the total steel ingot in the Mineral Belt and IISCO used to contribute the rest of the 20%. By the end of the First Five Year Plan, TISCO produced about two-thirds of the steel ingot and the share of IISCO increased to one-third. By the end of the Second Five Year Plan, about 60% was contributed by TISCO, 33% by IISCO and the rest by the new steel plants in the Mineral Belt. By 1972-73, Bhilai steel plant contributed the largest share with 34% while TISCO constituted about 28% of the total production.

Table: 3.32 Producer-wise Saleable Steel Production in the Mineral Belt, 1948-1949 to 1972-73

Year	Tata Steel	IISCO	Bhilai	Rourkela	Durgapur	Total
1948-49	682	188	0	0	0	870
1949-50	739	228	0	0	0	967
1950-51	796	207	0	0	0	1003
1951-52	812	267	0	0	0	1079
1952-53	803	307	0	0	0	1110
1953-54	793	250	0	0	0	1043
1954-55	796	468	0	0	0	1264
1955-56	812	460	0	0	0	1272
1956-57	812	451	0	0	0	1263
1957-58	799	419	0	0	0	1218
1958-59	899	506	0	0	0	1405
1959-60	1237	672	56	7	0	1972
1960-61	1263	722	332	104	118	2539
1961-62	1318	737	551	182	362	3150
1962-63	1413	795	803	421	486	3918
1963-64	1507	810	884	566	721	4488
1964-65	1568	755	916	689	721	4649
1965-66	1568	723	1028	782	684	4785
1966-67	1568	709	1328	683	550	4838
1967-68	1534	613	1252	640	527	4566
1968-69	1465	640	1345	773	500	4723
1969-70	1440	568	1495	796	494	4793
1970-71	1375	508	1549	684	413	4529
1971-72	1387	500	1568	597	432	4484
1972-73	1458	347	1746	765	477	4793

Production in ('000 tonnes)

Source: *Statistics for Iron and Steel Industry in India*, Hindustan Steel Limited (HSL), Ranchi, 1974, pp.7-10; Annual Reports of HSL, Tata Steel and IISCO for 1972-73; Derived from Srinivasan, N.R. (1982): Iron and Steel Industry of India, *Tata Iron and Steel Company*, Jamshedpur, Table: 3-1, pp. 97 and Table: 4-3, pp. 163

Table: 3.33 Producer-wise Share (%) in total Saleable Steel Production in the Mineral Belt, 1948-1949 to 1972-73

Year	Tata Steel	IISCO	Bhilai	Rourkela	Durgapur
1948-49	78.4	21.6	0.0	0.0	0.0
1949-50	76.4	23.6	0.0	0.0	0.0
1950-51	79.4	20.6	0.0	0.0	0.0
1951-52	75.3	24.7	0.0	0.0	0.0
1952-53	72.3	27.7	0.0	0.0	0.0
1953-54	76.0	24.0	0.0	0.0	0.0
1954-55	63.0	37.0	0.0	0.0	0.0
1955-56	63.8	36.2	0.0	0.0	0.0
1956-57	64.3	35.7	0.0	0.0	0.0
1957-58	65.6	34.4	0.0	0.0	0.0
1958-59	64.0	36.0	0.0	0.0	0.0
1959-60	62.7	34.1	2.8	0.4	0.0
1960-61	49.7	28.4	13.1	4.1	4.6
1961-62	41.8	23.4	17.5	5.8	11.5
1962-63	36.1	20.3	20.5	10.7	12.4
1963-64	33.6	18.0	19.7	12.6	16.1
1964-65	33.7	16.2	19.7	14.8	15.5
1965-66	32.8	15.1	21.5	16.3	14.3
1966-67	32.4	14.7	27.4	14.1	11.4
1967-68	33.6	13.4	27.4	14.0	11.5
1968-69	31.0	13.6	28.5	16.4	10.6
1969-70	30.0	11.9	31.2	16.6	10.3
1970-71	30.4	11.2	34.2	15.1	9.1
1971-72	30.9	11.2	35.0	13.3	9.6
1972-73	30.4	7.2	36.4	16.0	10.0

Source: Computed from Table 3.32 of the present study

During 1948-49, TISCO used to produce about 78% of the total saleable steel in the Mineral Belt and IISCO used to contribute the rest of the 22%. By the end of the First Five Year Plan, TISCO produced about 64% of the saleable steel and the share of IISCO increased to 36%. By the end of the Second Plan, about 50% was contributed by TISCO, 28% by IISCO and the rest by the new steel plants in the Mineral Belt. By 1972-73, Bhilai steel plant contributed the largest share with 36% while TISCO constituted about 30% of the total production of saleable steel in the region.

The steel industries grew at a rapid pace during the Second and Third Five Year Plans because of the government policy of import substitution in steel industry and heavy industry as well as the requirements of a heavy industrialization programmes. Government's constant concern towards reducing the dependence on steel imports coupled with rapidly increasing demand during this phase to build the industrial base in the country kept the graph of steel industry growth ascending. But as the process of import substitution was almost completed by the mid-sixties, the rate of growth of steel output decreased significantly since then. The iron and steel industry faced a phase of stagnation during the seventies. There was no augmentation in production capacity of the steel industry although the installed capacity was expected to increase from 8.0 million tonnes of ingot steel in 1968-69 to 12.0 million tonnes by the end of the fourth plan period. The commencement of production in Bokaro Steel Plant got delayed and expansion programmes of Bhilai and IISCO also did not come through as expected. Therefore, production of steel did not demonstrate any significant rise during the mid-sixties to mid seventies.

The situation, however, apparently improved during the successive years with steel output in 1975-76 reached a new record of 7.25 million tonnes of ingot steel and 5.71 million tonnes of saleable steel representing an increase of 16 per cent over 1974-75, with 94.2 per cent achievement of the target and 77.6 per cent of the capacity utilized in ingot steel. The country seemed to become self-sufficient in steel and also emerged as an exporter of steel. But all that glittered was not gold for the steel industry as the recessionary tendency which was witnessed in the economy, especially after 1974-75 onwards, along with persistent low level of investment had led to a depression in domestic demand. The government went on to abandon the distribution controls on all varieties of steel with the exception of plates and forging steel during 1975, but was not successful in augmenting the demand. With the increase in total steel output after production began in Bokaro Steel Plant along with the existing steel plants attaining higher capacity utilization during 1977-78, the lack of significant rise in domestic consumption posed a problem of existing stocks. A special committee was set up to investigate the scope of increasing steel consumption including "taking steel to the rural masses" but there were limitations everywhere.[106]

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[106] Nagaraj. K. (1977): "Iron and Steel", *Social Scientist*, Vol. 5, No. 6/7, pp. 147-156

The producer-wise finished steel production in the Mineral Belt during the two decades of sixties and seventies depicts that Bhilai Steel Plant increasingly became the largest producer of steel with accelerated growth during 1962-1980 while Raurkela Steel Plant emerged as the second largest producer of finished steel during 1972-1980. Tata Steel which obtained the third rank in total finished steel production in the Mineral Belt experienced a decline in the total production. Durgapur Steel Plant was yet another plant to experience a decline in production but the worst was the case of IISCO which became the lowest producer of steel in the Mineral Belt.

Table: 3.34 Producer-wise Finished Steel Production in the Mineral Belt, 1959-1960 to 1980-81

Producers	1959-60 to 1961-62	1962-63 to 1971-72	1972-73 to 1980-81
Bhilai	378	8398	11664
Rourkela	208	6618	8650
Durgapur	83	3852	3765
Bokaro	-	-	3924
Tata Steel	2589	10734	8518
IISCO	1413	5456	2965
Total	4671	35058	39486

Production in '000 tonnes

Source: Based on Sales Statistics, HSL, 1958-67, 1969-70 to 1974-75; Sales Statistics, SAIL, 1975-76 to 1980-81; Statistics for Iron and Steel Industry in India, HSL, Ranchi, 1966 and 1974; Tata Steel, Annual Report, 1957-58 to 1963-64, 1970-71 to 1974-75 and 1980-81; and Derived from Srinivasan, N.R. (1982): Iron and Steel Industry of India, *Tata Iron and Steel Company*, Jamshedpur, Table: 6-1, pp. 236

The production scenario of pig iron, crude steel or steel ingot and finished steel in the Mineral Belt during the last few years depict that the production of pig iron has considerably been reduced according to the demands with Bokaro Steel plant producing the maximum share of pig iron in the region during 2010-11, distantly followed by Bhilai Steel Plant. The production trend of pig iron has been extremely fluctuating. The production of crude steel or steel ingot has increased considerably in the Resource Region again following the demand trend with Tata Steel producing the maximum quantity during 2010-11 followed by Bhilai Steel Plant. In both these steel plants, the production of crude steel has witnessed an increasing trend which has been the case with the rest of the steel plants as well except IISCO which has been on a

downward trend. The production of finished steel has is dominated by Tata Steel during the recent year 2010-11 which has experienced an increased production during the last few years. Bhilai and Bokaro are the next largest producers of finished steel in the Mineral belt. Durgapur and IISCO are the lowest producers of finished steel with a fluctuating trend in their production during the last few years.

Table: 3.35 Producer-wise Pig Iron Production in the Mineral Belt, 2007-08 to 2010-11

Steel Plants	2007-08	2008-09	2009-10	2010-11
Bhilai Steel Plant	136	61	114	58
Durgapur Steel Plant	57	20	42	21
Rourkela Steel Plant	26	1	16	15
Bokaro Steel Plant	98	78	111	143
IISCO Steel Plant	93	99	36	21

Production in '000 tonnes; Source: Annual Report, 2011-12, Ministry of Steel, Government of India, 2012, Annexure VII, pp.132

Table: 3.36 Producer-wise Crude Steel (Ingot) Production in the Mineral Belt, 2007-08 to 2010-11

Steel Plants	2007-08	2008-09	2009-10	2010-11
Public Sector				
Bhillai Steel Plant	5055	5183	5108	5329
Durgapur Steel Plant	1914	1886	1966	1961
Rourkela Steel Plant	2093	2083	2128	2160
Bokaro Steel Plant	4127	3577	3599	3592
IISCO Steel Plant	458	417	400	411
Private				
Tata Steel	5014	5646	6564	6855

Production in '000 tonnes

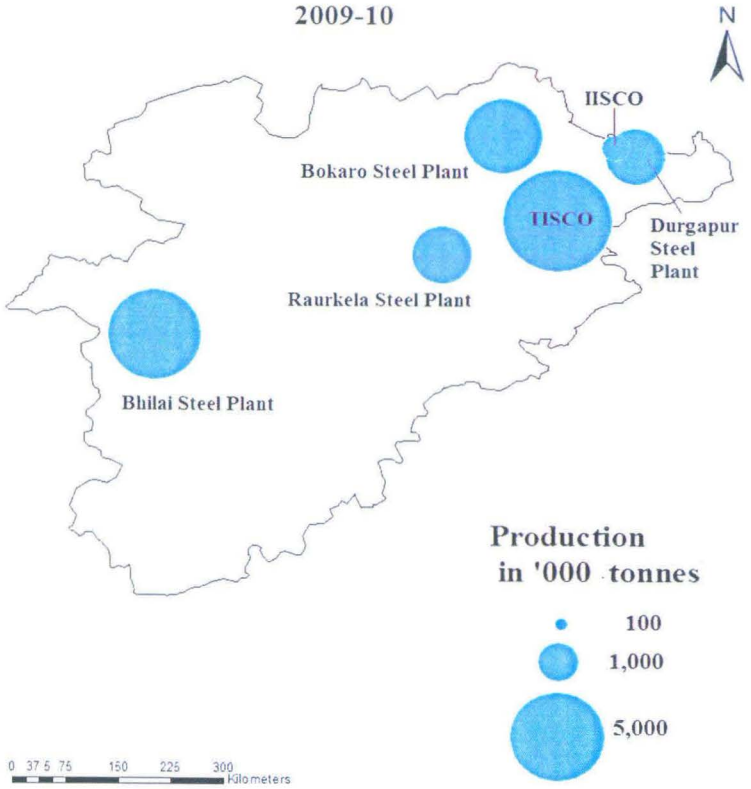
Source: *Annual Report, 2011-12*, Ministry of Steel, Government of India, 2012, Annexure V, pp.130 and Production Statistics, *104th Annual Report, 2010-11,* Tata Steel, pp. 125

Fig: 3.12

Production of Crude Steel

in the Mineral Belt by Location of Steel Plants

2009-10



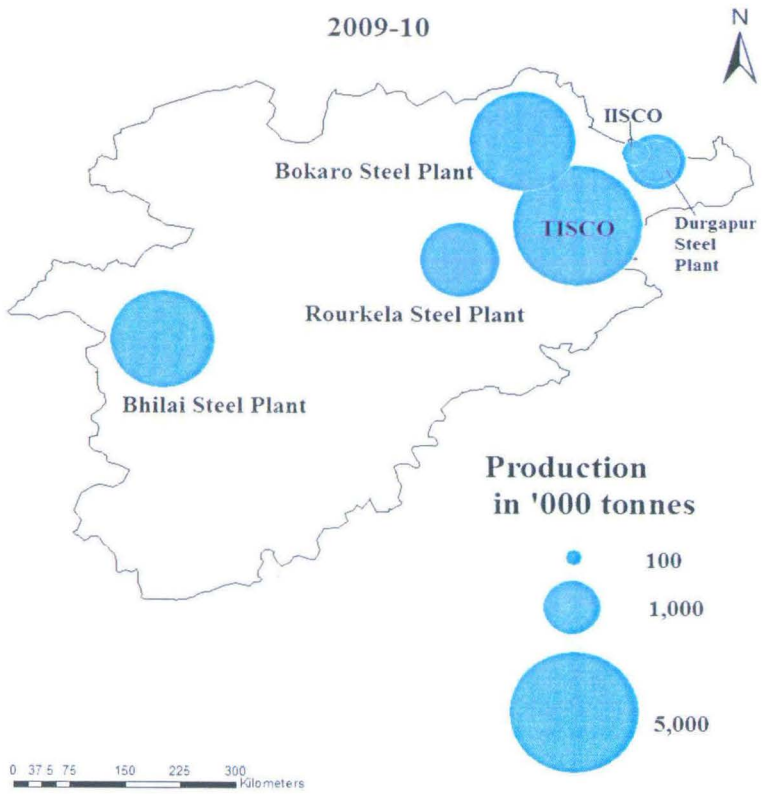
Source: Based on Table: 3.36 in the present study

Fig: 3.13

Production of Finished Steel

in the Mineral Belt by Location of Steel Plants

2009-10



Source: Based on Table: 3.37 in the present study

Table: 3.37 Producer-wise Finished Steel Production in the Mineral Belt, 2007-08 to 2010-11

Steel Plants	2007-08	2008-09	2009-10	2010-11
Public Sector				
Bhillai Steel Plant	3603	3604	3356	3574
Durgapur Steel Plant	685	671	666	673
Rourkela Steel Plant	2059	1944	1963	1994
Bokaro Steel Plant	3592	3274	3382	3344
IISCO Steel Plant	316	318	220	328
Private				
Tata Steel Ltd	4472	4543	5019	5157

Production in '000 tonnes

Source: *Annual Report, 2011-12*, Ministry of Steel, Government of India, 2012, Annexure VIII, pp.133

An era of "**privatization**" dawned in the iron and steel industry in the Mineral belt with the economic liberalization of 1990-91. This resulted in steel giant Tata Steel dominating the horizon of steel production in the region. **Tata Steel**, along with **Arcelor Mittal** and Korean steel giant **POSCO** have been pumping money into the mines and establishing steel plants in the private sector in Orissa to exploit the mineral resources with a pure profit maximization motive. Orissa has become a major hub in the Resource region where mushrooming of steel plants in the private sector has become a rampant practice. Private investments in steel and iron ore mining has been increasing in Orissa as the state is endowed with large reserves of iron ore and has convenient access to the sea through the port of Paradeep. Orissa has signed around 45 memoranda of understanding (MoU) for setting up steel capacities aggregating 60 million tonnes. Leading the Corporate Houses is the Korean steel giant POSCO which is setting up a 12-mtpa steel plant near Paradeep in Jagatsinghpur in Orissa. The project will have an integrated steel plant and will also develop infrastructure and iron ore mines. POSCO is also investing in a dedicated railway line from the steel plant to Paradeep port, an ideal point to ship out processed (carbon) steel to its main market, China. Other players who are setting up steel capacities in Orissa include **Tata Steel, Jindal Stainless, Jindal Steel & Power, Bhushan Steel, Uttam Galva, Visa Steel and Welspun**, among

others. The two large steel projects in the private sector which are under construction and consideration in the Resource Region are **POSCO in Orissa** and **Mittal Steel in Jharkhand.** Tatas are planning to set up a 12-million tonne per annum (mtpa) greenfield project in Jharkhand, a 6-mtpa plant in Orissa and another 5-mtpa capacity unit in Chattisgarh. Mittal Steel has announced a 12-mtpa Greenfield steel project in Jharkhand and a 12-mtpa Greenfield steel plant in Orissa

Table: 3.38 Iron ore mines by Sectoral Pattern of Ownership

Sector	2006-07	2007-08	2008-09	2009-10
Public Sector	40	35	35	34
Private Sector	250	265	293	285
Total	290	300	328	319

Source: *Indian Minerals Yearbook*s, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, 2007 to 2010

With about 89% of the iron ore mines being owned by the private sector during 2009-10, this seems to be a new beginning of an era of private control not only over the economically most important mineral resource i.e. iron ore but also its utilization in the most basic industries i.e. steel plants. The increased privatization of the iron ore mines and iron and steel industries stands together as a threat to the regional economy and its resource base because the resources are exploited by the domestic Corporates and multinational corporations strictly with profit motives and is also to be exported directly to foreign lands instead of being utilized for indigenous development in cases like that of POSCO wherein the processed (carbon) steel is to be shipped out to its main market China. This sounds as a re-emergence of the colonial pattern of resource exploitation in the region wherein the indigenous resources were utilised for the development of an alien economy instead of the regional or local economy.

3.3.2.2 Productivity and Technological development:

The technological characteristics of the first ever large scale steel plant of TISCO over the entire colonial period is quite interesting to note as it always made timely up gradation of its technology and capacity which was a major factor behind the tremendous growth of the industry during the pre-independence period. The First World

War increased the demands of steel and in order to attain increased production, expansion, mechanization and diversification of capacity of the existing steel plant was necessary.

The **Extensions Programme** was launched in 1917 which was characterized by the introduction of the new Duplex process, additional blast furnaces, installation of wide strip mills etc. The Duplex process and wide strip mill which were used for steel making in U.S.A were replicated in TISCO which proved extremely advantageous for its production figures. The **Great Extensions Programme** was implemented which led to the modernization of the steel mill by the end of 1924. The most commendable aspect of TISCO's management was that it continued with the modernization programme and went for diversification even during the bleak years of the Great Depression which helped it to sail through and make huge profits during the high demand years of the Second World War. During 1929 a third Duplex furnace was started and two new roughing and finishing sheet mills were added by 1933. The extensions of the Galvanizing plant were completed. The TISCO launched another programme of modernization wherein a new blast furnace was erected and coke oven plant was rebuilt during the second half of the 1930s. Thus, technological developments in steel –making and expansion programmes constituting of modern steel making units were undertaken at appropriate times in TISCO which led to the phenomenal growth of the industry during the entire colonial period as well as beyond.

The process of extensions was more rapid as compared to training of Indians for technical positions. Such a problem faced by the TISCO reflected the educational backwardness and lack of formation of new skills after the de-industrialization and "de-skilling" of the artisans with the erosion of the traditional industrial base of the country. The **Jamshedpur Technical Institute** was established in 1921 for training Indian students. The institute was reorganized in 1931 and post graduate training was introduced along with providing for training of students as skilled workers for the company.

When the Second World War broke out, there was an increased demand for steel in Indian Railways for which the plant was accordingly modified and Triplex process was employed. The demands for diversification made on a narrow technological base

brought forth a great variety of innovative responses which were strengthened and put on an organised basis by establishing a **Research and Control Laboratory**. During the War years, effort was made to extract the maximum out of the existing facilities without considering maintenance which resulted in considerable wear and tear of the machinery in the TISCO.

Immediately after the independence, modernization and expansion programmes, of the steel works, rehabilitation of the plant facilities which were overworked during the War years was undertaken. The **Two Million Ton Project (TMP)** was introduced to raise the capacity of the TISCO plant during the Second Five year Plan in 1956. The main features of this project were mechanization of the iron mines under TISCO, installation of modern blast furnaces and construction of high-lift blooming mill. The modifications and modernizations were undertaken to conform to the country's overall economic and financial policies. The decision was made towards expansion of capacity of the existing plant instead of creating a whole new plant to increase the capacity. This was unlike the policy adopted by the Government towards the Coal industry during the same period of time. This was done in order to achieve the increased targets of production without employing additional labour. Several technological steps were taken to get the best out of the existing plant.[107]

Open-cast mechanised mining method was employed at the Noamundi and Joda mine. Various problems which were faced in mechanised mining of iron ore were undeveloped engineering industry, lack of skilled personnel and lack of foreign exchange. Obtaining spare parts for the machines was a major problem faced by the industry due to lack of a developed engineering industry in India and thus most of them were imported. This was not only a pressure on finances but also resulted in an uneven flow of spares and delayed repairs. Efforts were made towards indigenous development and procurement of spare parts for mining equipments.[108] The enlightened emphasis on mechanical equipment paid large production and economic dividends later in the shape

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[107] Nanavati, S.K. (1967): *Op. Cit.*, pp. 38-42

[108] Nanavati, S.K. and S. Chander (1967): *Tata Steel Diamond Jubilee- 1907 – 1967*, Tata Iron and Steel Company, Jamshedpur, pp. 50 – 51

of increases in man-hour output at each stage of development. [109] The Company, however, continued to rely on foreign collaboration for consultancy services for the expansions in production including the TMP.

The First Five Year Plan included the modernisation and expansion programme of the TISCO and an expansion of the IISCO as well. These plans were further modified in 1955. The **Modernisation and Expansion Programme (MEP)** of the TISCO started with the year 1951-52 and included replacements and improvements for the old plant. The Second Five Year Plan came up with a bold expansion plan in steel capacity. Out of the total six million tonnes of proposed target, one million each was to be obtained from the new steel plants of Durgapur, Bhilai and Raurkela and IISCO all located within the Mineral Belt. The rest of the two million tonnes of ingot was to be obtained from the TISCO which accordingly dovetailed its modernisation and expansion into the larger two-million tonne programme early in 1956. The Government considered that the expansion of Tata Steel and IISCO was necessary in the national interest and agreed to increase the prices suitably to facilitate the implementation of these additional expansion programmes partly out of their internal savings.[110]

The most important index of labour efficiency is the output per unit of labour. The physical productivity of labour is measured in terms of tonnes of ingots, saleable or finished steel produced per unit of labour. The labour productivity in TISCO during 1912-13 to 1966-67 depict that during the initial phases the output was lower in comparison to the labour employed, but large number of workers were retrenched during the Great Depression phase but the total production had maintained an increasing trend due to modernization programmes. The resultant labour productivity figures were overwhelming during 1935-36 to 1939-40.

During the successive years, the productivity witnessed a decreasing trend during the Second World War and the First Five Year Plan despite high production figures. The reason being an increasing number of labours being employed during these

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[109] *Tata Steel Diamond Jubilee- 1907 -- 1967*, Tata Iron and Steel Company, Jamshedpur, pp. 136

[110] Mody, R.H. and S.S. Vaze (1967): "The Steel Market", *Tata Steel Diamond Jubilee- 1907 1967*, Tata Iron and Steel Company, Jamshedpur. pp. 180 and 186

phases coupled with lack of modernization of machines and equipments. During the War years, effort was made to extract the maximum out of the existing facilities without considering maintenance which resulted in considerable wear and tear of the machinery in the TISCO. Immediately after the independence, modernization and expansion programmes, of the steel works, rehabilitation of the plant facilities which were overworked during the War years was undertaken. This resulted in an all time high labour productivity in TISCO during 1956-57 to 1966-67 i.e. the Second and Third Five Year Plans when the production targets set were quite ambitious. The output of finished steel was very high as compared to the labour employment scenario which depicts a decrease from the earlier phase. Some of the problems faced by India's public sector steel mills have resulted from their almost singular concentration on achieving output records than focussing on the technological development and productivity of the plants.

Table: 3.39. Production, Employment and Labour Productivity in TISCO, 1912-13 to 1966-67

Phase	Output of Finished Steel ('000 tonnes)	Daily Employment (no.)	Output per man (Labour Productivity) (tonnes)
1912-13 to 1917-18	74.8	9479	7.89
1918-19 to 1923-24	125	22665	5.52
1924-25 to 1934-35	414.5	20179	20.54
1935-36 to 1939-40	701.4	19309	36.32
1940-41 to 1947-48	767.8	21795	35.23
1948-49 to 1955-56	766.8	22902	33.48
1956-57 to 1966-67	1268.4	20988	60.44

Source: *Tata Steel Diamond Jubilee: 1907-1967*, Tata Iron and Steel Company, 1967, pp. 139

The physical productivity of labour during 1961-62 to 1969-70 in various steel plants in the Mineral Belt depict that Bhilai continued to top among all the steel mills during the entire phase, followed by TISCO, Rourkela, Durgapur and IISCO. The tendency is, in general, similar for both index of measurement of saleable and ingot production. However, no clear inference could be drawn from these ratios, because of the annually fluctuating character of the indices for all the mills. In particular the productivity in IISCO has declined sharply over the eight year period whereas that of TISCO has been on the increase with year to year fluctuation up to 1967-68 and

indicates a declining tendency for the subsequent years. In context of labour productivity estimates, the following comments can be made:

- The desirable level of labour productivity, 100 tonnes of ingot per worker, which has been repeatedly emphasized in the context of manpower planning in steel mills, has never been achieved in the Indian Steel mills during the entire sixties.

- To some extent economies of size could be the main reason for high labour productivity in Bhilai and TISCO. It has been pointed out that the optimum ingot tonnes per year at full capacity of 2.5 million tonnes, 1.6 million tonnes and 1.8 million tonnes for Bhilai, Durgapur and Raurkela respectively should be 125.0, 111.5 and 114.5 tonnes. This implies that direct and straight forward comparison of labour productivity estimates could lead to biased results.[111]

- Even at this level of productivity, evidences indicate that Indian steel mills sacrificed quality to achieve output.[112] Attainment of record output and hence a record labour productivity, would not simultaneously, lead to an increase in mill's efficiency unless quality standards are strictly observed.[113]

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[111] *Productivity Trends in Iron and Steel Industry in India*, 1974, National Productivity Council, New Delhi, pp. 57

[112] Johnson, W.A. (1967), *Op. Cit.*, pp. 87-90 and 153-164

[113] *Productivity Trends in Iron and Steel Industry in India*, 1974, *Op. Cit.*, pp. 57

Table: 3.40 Labour Productivity in the Steel Industry in the Mineral Belt, 1961-1962 to 1969-70

Year	TISCO		IISCO		Bhilai		Durgapur		Rourkela	
	In	Sa	In	Sa	In	Sa	In	Sa	In	Sa
1961-62	N.A.	N.A.	N.A.	N.A.	77	53	80	63	45	24
1962-63	62	48	7	55	63	47	58	39	55	33
1963-64	64	51	70	55	66	51	72	54	58	41
1964-65	68	55	65	52	60	49	68	49	68	48
1965-66	64	54	68	35	57	42	60	41	64	47
1966-67	70	55	44	35	75	54	45	33	52	38
1967-68	67	53	39	31	70	49	40	29	48	33
1968-69	62	50	39	32	68	53	41	25	56	37
1969-70	59	49	35	28	72	58	41	24	53	38

Note: Steel Output per Worker in tonnes; In – Ingot Steel; Sa – Saleable Steel

Source: *Productivity Trends in Iron & Steel Industry in India, 1974*, National Productivity Council, New Delhi, pp. 56

The labour productivity trends in all the steel plants in the Mineral belt have depicted an overall decrease during 1970-71 to 1980-81 as compared to the earlier decade. Although yearly fluctuations continue to be a characteristic of the productivity trend in the steel plants, the general output of steel ingot and saleable steel has shown a declining trend over the period. Bhilai continues to depict a higher labour productivity trend followed by TISCO, Raurkela, Bokaro and Durgapur. The economies of size could again be a valid reason which favours the Bhilai and TISCO plants. The downward trend in productivity is an indicator of lack of technological development in the steel plants which is required to achieve higher levels of productivity and efficiency in production.

Table: 3.41 Labour Productivity in the Steel Industry in the Mineral Belt, 1970-71 to 1980-81

Year	Tata Steel		Rourkela		Bhilai		Durgapur		Bokaro	
	Ingot	Saleable	Ingot	Saleable	Ingot	Saleable	Ingot	Saleable	Ingot	Saleable
1970-71	60	48	50	33	74	59	31	20	-	-
1971-72	54	44	39	29	69	55	31	19	-	-
1972-73	53	45	55	35	72	60	33	22	-	-
1973-74	47	39	47	32	63	56	34	17	-	-
1974-75	52	44	47	36	65	55	35	22	-	-
1975-76	54	47	53	43	71	59	44	33	24	11
1976-77	59	48	61	48	74	65	48	40	59	49
1977-78	59	48	56	47	76	62	48	38	52	45
1978-79	55	45	51	41	70	59	41	34	59	46
1979-80	52	42	49	41	66	53	38	26	64	38
1980-81	54	45	45	38	63	56	32	26	39	36

(in tonnes)

Source: Based on Operational Statistics, Bhilai; Annual Statistics, Rourkela, Tata Steel, Durgapur and Bokaro – respective years ; and Derived from Srinivasan, N.R. (1982): Iron and Steel Industry of India, *Tata Iron and Steel Company*, Jamshedpur, Table: 6-18, pp. 262

3.3.2.3 Employment Characteristics:

The establishment of a modern iron and steel industry of TISCO required capital investment, modern machinery and technical personnel. The capital was obtained entirely from Indian investors but for machinery and technical personnel it had to rely on American and European experts. While the technical personnel were obtained from America, the crew of the steel works and their superintendent came from Germany. They were the covenanted employees which reflect the foreign dependence of the industry. The clerical and unskilled labour force was easily available locally amongst the Parsis and Bengalis.[114]

During 1909-10 the umber of covenanted employees was only 31 which rose to 121 by 1914-15. The strike of the covenanted employees in 1920 forced the management to consider the issue of "Indianisation" of the technical personnel. Tatas seemed to realize the danger of dependence on imported experts and appointment of foreign technical personnel which was a heavy financial burden on the company as well. The extensions programmes required larger number of experts which directed the company to establish a technical institute to train Indian students. The company used to recruit foremen from the railway workshops and other industries and supply of skilled mechanics was ample as well but the major hindrance was filling up of the "technical positions" by Indians. The process of extensions was more rapid as compared to training of Indians for technical positions. Such a problem faced by the TISCO reflected the educational backwardness[115] and lack of formation of new skills after the de-industrialization and "de-skilling" of the artisans with the erosion of the traditional industrial base of the country. There were frequent suggestions and demands for establishing a technical institute for training of Indian students, to which the company finally caved in and established the **Jamshedpur Technical Institute in 1921**. The Government refused to offer any technical assistance for the institute. This reflects the attitude of the colonial government towards the skill formation of the Indians. The institute was reorganized in 1931 and post graduate training was introduced along with providing for training of students as skilled workers for the company. During the Depression phase, about four thousand workers were retrenched in order to reduce the

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[114] Sen, S.K. (1975), *Op. Cit.*, pp. 38

[115] *Ibid.*, pp. 66 - 67

expenditure. There was a substantial reduction of expenditure on covenanted employees as well during 1929-1933 and their positions were filled by Indians who gradually replaced the covenanted employees who numbered only 64 during 1934. The issue of Indianisation of technical personnel was taken up seriously by the nationalists and the Jamshedpur Labour Association. But the expertise of the covenanted employees was irreplaceable with lack of suitable skill among Indians and as a result even after the independence the National Government relied heavily on foreign experts when steel mills were built in Durgapur, Bhilai and Raurkela.[116]

Table: 3.42 Covenanted Employees in TISCO

Years	Number of Covenanted Employees
1909-10	31
1914-15	121
1926	161
1927	157
1928	147
1929	133
1930	122
1931	109
1931	85
1933	70
1934	64

Derived from: Sen, S.K. (1975): *The House of Tata: 1839-1939*, Progressive Publishers, Calcutta, pp. 68

The supply of other forms of skilled and unskilled labour was plentiful and TISCO never complained about labour shortage. The decay of the handicraft industry throughout the nineteenth century resulted in the tendency of artisans and peasants migrating towards the growing commercial and manufacturing centres. The railways accelerated the labour mobility. The steel city of Jamshedpur attracted workers not only from the neighbouring villages of Manbhum and Singhbhum, but also from Sambalpur in Orissa, Noakhali in Bengal and from Bombay, Madras, Punjab, United Provinces, Central Provinces and North-West Provinces. The distance of some of these regions from Jamshedpur was more than a thousand miles. The Santhals who were the

[116] *Ibid.*, pp. 59 and 68

aboriginals were mostly employed in construction from 1907-08 onwards and also in mines and quarries of the company. The "*Bombay Khalasies*" were employed mainly in iron and steel works for buildings and blast furnaces. The company employed labour contractors to recruit labour from Manbhum, Singhbhum and Mayurbhanj and from Sambalpur in Orissa. The demand for cheap unskilled labour rose with increased demand and production of steel. The tribal labour was mostly employed as unskilled labourers for their tremendous "power of endurance". Among the labour force in TISCO, the proportion of white-collar employees rose along with the progress of the company. The Bengalis, Parsis and South Indians formed a large section of these employees. But the Great Depression witnessed a substantial reduction in their number as well. [117]

During the post-independence period, when the three new steel plants were under construction, Hindustan Steel had to employ large labour force. A political pressure worked on the management for absorbing the entire construction labour force in the plant operation. The manpower recruitment in all categories, i.e. technical, skilled, unskilled, administrative etc followed its own course rather than any set guideline. It has been arguably noted that the steel plants often employed labour intensive techniques in raw materials handling and thus keeping the employment levels high in the public sector units in particular. However, this argument has been challenged on the grounds that the raw materials used in the plants could only be handled mechanically. Contract labour was used at loading points and as no contractor uses more labour than necessary to save costs, the argument of excess labour employment remains unjustified. India has a major issue with unemployment levels which direct the public sector units to employ labour in large numbers to keep down the unemployment levels. This was true for public sector steel plants as well where political and other imperatives have not permitted the public sector units to indulge in ruthless retrenchment which is an option for units in other countries as well as in private sector units in India such as TISCO which has retrenched large number of labour employed during the Great Depression and bleak years. The Hindustan Steel Ltd which managed the public sector plants was seriously concerned with surplus labour but negotiations with labour could not reach any rationalisation of employment levels. In such situations

[117] *Ibid.*, pp. 91 – 93 and 96

of over-employment a labour productivity comparison with other countries stands less meaningful.[118]

3.4 Government Policy and efforts towards Industrialization

During the ostensible process of "Industrial Revolution" in India, which apparently came up with the rise of the modern industry, the policy of ***laissez faire*** was prevalent. The absence of rapid exploitation of the indigenous mineral resources like coal and iron ore which had to be imported initially, coupled with lack of advanced technical knowledge hindered the development of industries and resulted in a myth that India was more "suited to the production of raw materials rather than to manufacture" and the doctrine of *laissez faire*, which aimed at extracting the indigenous mineral wealth as raw material for the metropolitan industries and use the Indian market for the British manufactures, strengthened it further. The Government's focus was thus restricted to improving transport infrastructure in order to facilitate such flow of trade. Such conditions were unsatisfactory and when combined with decline of the traditional industry resulted in a negative attitude towards State interference in industrial and commercial development.[119] The recommendations of the **Famine Commission, 1880** towards dealing with unemployment, **Industrial Surveys** of **1890** carried out thoroughly during 1908-1909 in different Provinces and finally the **Indian Industrial Commission Report, 1916-18** resulted in partial reversal of such opinion towards State control. The **Industrial Commission Report** quite comprehensively expressed the "demand for complete industrialization on western lines aided and guided by the State". It further recommended the establishment of **Provincial Departments of Industries** in order to promote the existing industries and endorse the growth of new industries. A **Central Department of Industries** was also set up following the recommendations to establish co-operation among the Provincial Departments. With the acceptance of the policy of State intervention, the **Report of the Indian Fiscal Commission, 1922** came up with policy recommendations of providing "discriminating protection" to promote the budding industries in the country.[120]

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[118] Sidhu, S.S. (1983), *Op. Cit.*, pp. 64

[119] *Report of the Indian Industrial Commission, 1916-18*, Superintendent of Government Printing, India, Calcutta, 1918, pp. 1 - 2

[120] Broughton, G.M. (1924), *Op. Cit.*, pp. 7-8

3.4.1 Participation of the Government in the Coal Industry:

The development of the coal industry during the entire colonial period was marked by unscientific methods of mining and a general intensive development of coal industry did not take place. With the Indian independence there was an urgent need for the State to promote basic industrialization. The role of the State was all the more crucial in ushering industrial development because it was unlikely for the private sector to invest the required amount for development of the coal industry. It was not only viable but also necessary for the State to participate in the industrialization process all by itself. In accordance with the requirements, the **First Industrial Policy Resolution, 1948** was brought in which defined the future spheres of public and private enterprises in the Coal industry. According to the industrial policy, the State was allotted exclusive right to set up new establishments in the Coal industry sector. It affirmed the State participation in the industrialization process and provided the framework within which the process of development and extension of public sector enterprises was to be undertaken in the Coal industry. A limited role was assigned to the private sector in the coal industry in accordance with the national interests. The **Industrial Policy Resolution, 1956** listed coal mining under "Schedule A" industries, in which the State would have almost a monopoly or exclusive right to establish new production units with the exception of the allowing a small window to the private sector in national interests. For enhancing the production to meet the ambitious production target during the Second Five year plan, the **National Coal Development Corporation limited (NCDC)** was established in 1956 to open up new mines in the public sector and to devise and operate schemes for production of coal. Out of the target of additional 22 million tonnes of coal to be produced during the Second Five year plan, 12 million tonnes was to be contributed by the public sector through both existing mines and also by opening up new mines while the rest of 10 million tonnes was to be produced by the private sector out of their existing mines. Thus, while State participation in the development of coal industry was overwhelming, the private sector too was given a share with limited opportunities to expand through new mines.

The development of the coal industry during the Third Five Year Plan continued under the **Industrial Policy Resolution, 1956** whose restrictive policy towards the private sector resulted in an overall non-achievement of the targets of the Third Plan.

While the public sector failed to achieve its targets, the private sector which was already restricted from expansion failed to substitute. During the Annual Plans, the demand for coal kept fluctuating but the notable characteristic was the proportion of the private sector in the total coal production which varied between 73-80% during 1965-68. The fluctuating demands and the resultant production fluctuations led to the establishment of the **Fuel Policy Committee, 1970** which was to gauge the demand-supply imbalance and recommend a national fuel policy.[121]

The most significant event that followed in the history of the Indian Coal industry was the Nationalisation of the Coal mines. The **Nationalisation** process was undertaken in two phases, the first phase in 1971-72 constituted of the coking coal mines when the **Coking Coal Mines (Emergency Provisions) Act, 1971** provisioned the takeover of coking coal mines and coke oven plants in public interest while the **Coking Coal Mines (Nationalisation) Act, 1972** stipulated the nationalization of the coking coal mines and coke oven plants under the new Central Government Undertaking **Bharat Coking Coal Limited (BCCL),** except the captive coal mines under Tata Iron & Steel Company Limited (TISCO) and Indian Iron & Steel Company Limited (IISCO); while the second phase in 1973 included the non-coking coal mines as well within its ambit under the **Coal Mines (Taking Over of Management) Act, 1973** which extended the authority of the Government of India over the management of the coking as well as non-coking coal mines in seven States of India which included the coking coal mines that were taken over in 1971; and was finally followed by the nationalisation of all these mines under the **Coal Mines (Nationalisation) Act, 1973** which became a Central legislation for coal mining in India.

The **Coal Mines (Nationalisation) Act, 1973** went on to reserve and restrict coal mining in India for public sector. The **Coal Mines Authority Limited (CMAL)** was incorporated in 1973 and the **National Coal Development Corporation (NCDC)** was converted into a wholly owned subsidiary of the CMAL. Public ownership of the coal industry was split into three companies: CMAL, BCCL and Singareni collieries (jointly owned by Government of India and the State of Andhra Pradesh). The Oil Crisis of 1970s resulted in intensive focus of the Government policy towards the development

[121] Prasad A.R. (1986). *Op. Cit.*, pp. 144

of coal industry. It led to separating out Coal resources from the other mineral resources for better planning purpose. Reorganization of coal mines, introduction of new methods and techniques in the development of new mines and standardisation of plant and equipments were undertaken to meet the increased demand for coal. The concerted efforts by the government and coal producing organizations, improved management and industrial relations, introduction of standardised plants and equipments and rationalizes pattern of movement of coal in consultation with the Railways introduced a new era in the development of the Coal Industry.[122]

A further **Reorganization of the Coal industry** was undertaken by the Government of India in 1975 when the public sector organizations were combined into a single public sector corporation, the **Coal India Limited (CIL).** All the divisions of CMA, the NCDC and BCCL were converted into four registered companies: ECL, CCL, WCL and BCCL. The CIL became the sole control agency of Coal industry in India with the responsibility of management, production, research etc for development of the Coal Industry. Later on, two more subsidiaries viz. NCL and SECL were carved out in 1985 out of the then CCL and WCL respectively for proper management of the projected increase in production and investment planned. Further, considering the prospects of Orissa Coalfields in Eighth and Ninth plan, MCL was carved out of SECL in 1992 to manage all the collieries in the State of Orissa. Thus CIL has now 8 subsidiaries out of which seven are coal producing companies.[123]

During the 1990s the mining industry witnessed a kind of reversal and re-emergence of the pre-nationalisation period which was characterised by slow default of the industry, a loan from international credit institution i.e. World Bank, which was to be utilised in financing the re-structuring of the Coal industry along with major shifts in the composition of the work-force. With India attaining economic liberalization during the 1990s, the regime under the neo-liberal policies ushered in an era of **'formal privatisation'** which moved in a direction opposite to the scheme of 'nationalisation'. Immediately after the economic reforms, the coal industry witnessed introduction of

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[122] *Ibid.*, pp. 145-146 and 148

[123] *Coal Directory of India, 2010-11* Part-I, Coal Statistics, Ministry of Coal, Government of India, pp. 1.5

further amendment to the **Coal Mines Nationalization Act** in the year 1993-94, which was suitably amended to allow the foreign companies to hold a 51 percent stake in Indian coal mines and captive consumption was allowed in coal mining which provisioned "private sector participation in coal mining as linkage for power generation, for washing of coal obtained from a mine or for other end-uses to be notified by Government from time to time in addition to existing provision for the production of iron and steel". Later during further amendments of 1996 mining of coal for production of cement was allowed as well.[124]

This marked the commencement of privatization and private ownership of coal mines in India. Although the number of collieries under public sector far exceeds that of private sector, due to the still existent hold of the public sector over the major chunk of coal mining sector i.e. non-captive mines, recent years have witnessed an increasing trend in private sector ownership of coal mines. The **Coal Mines (Nationalisation) Bill, 2000** was brought in to amend the Coal Mines (Nationalisation) Act, 1973 in order to create a trouble-free legal space for private investment in coal mines. This was a clear indication for the Indian Coal mining sector which is all set to become a big international business yet again, which apparently seems to be a re-emergence of the colonial pattern of industrial development policy.

3.4.2 Government Policy towards Iron and Steel industry:

The development of steel industries in the Mineral belt in particular and the country in general was guided according to the participation and approach of the Government towards the process of industrialization as the Government policies had direct impact on the nature and pattern of industrial development during each phase of the industrial evolution and growth. A review of the government policies towards the iron and steel industries in the Mineral Belt has been attempted in this section which shall begin from the establishment of the first large scale iron and steel industry in the region i.e. TISCO.

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[124] *Indian Minerals Yearbook* 2010, Chapter 24, Coal and Lignite, Indian Bureau of Mines, (Nagpur), Ministry of Mines, Govt. of India, pp. 24-23

Although the TISCO was established by an Indian entrepreneur entirely based on domestic capital, the tariff and trade policies of the British Government had a direct consequence on the growth of the industry. India being a colonial country had no option but to accept the tariff policy imposed on her by the ruling class. During the First World War, the Government relied heavily on TISCO which supplied rails and steel materials for defence purposes at controlled prices even when the open market prices were higher and the company had to face a comparative loss of Rs 60 million as they were restricted from selling them at open market prices. The Tatas had approached the Government for a "running contract" for the supply of steel manufactures at fixed prices and a division of market claiming their "legitimate territory" of Bengal, Bihar, Orissa, Central Provinces and Delhi. But the Government instead raised the bogey of "monopoly" and out rightly rejected the proposals. [125]

A shift in the Government policy was noted after the First World War. The **Indian Fiscal Commission** was appointed in 1921 to examine the tariff policy which recommended a policy of "discriminating protection". A resolution was passed in 1923 which directed the fiscal policy towards fostering industries. The **Indian Tariff Board** was set up which examined the claims of industries for protection. With the reduction in prices of steel imports and cheap continental steel flooding the Indian market, posing a threat of absolute collapse for the nascent steel industry of TISCO during the end of the First World War, the very first need of an effective protection policy on behalf of the Government was felt. The Government which had been benefited during the War by the indigenous steel industry when foreign supplies were cut off and with England lagging behind the other world giants viz. Germany and France in steel production due to the aftermath of the War, granted protection for the steel industry and passed the **Steel Industry Protection Act, 1924** which raised the protective tariffs and rescued the steel industry. The Tariff board recommended supplementary protection in the form of bounties in the wake of falling prices of the continental steel. However, the Government granted a bounty of Rs 60 lakhs maximum against the Rs 90 lakhs recommended by the Tariff Board. The continuous flow of foreign steel into Indian markets was alarming and a further protection was sought by TISCO in 1926 to which the Tariff Board responded and the **Steel Industry Protection Act, 1927** was enacted. But the British

[125] Sen, S.K. (1975), *Op. Cit.*, pp. 44-45

Government withdrew the bounties, lowered the duties on imports and offered a "preferential treatment to British manufactures", branding the British steel as "standard", in the new Act. Such a biased policy in favour of British manufactures was highly criticized by the Nationalists for whom the TISCO had attained a symbol of national importance. Although the protection was "half-heated" the "tariff wall" allowed TISCO to extend its control over the home market.[126]

The Great Depression of 1931 witnessed the end of Britain's' free-trade policy and by the mid 1930s *laissez faire* was completely dead. During the bleak years of Depression, TISCO received the stimulus of protection. As the protection period of 1927 ended by 1934, further enquiry by the Tariff Board was made which, in view of maintained level of performance by the TISCO during the bleak years, gave a "calculated" recommendation in favour of the British manufacturer and levied an excise duty on Indian production. The **"imperial preference"** given to the British manufacturer by free entry of British structural and levy of excise duty on Indian steel ingots which were imposed to provide an advantageous position for British steel industry which was attempting to capture the Indian market, was highly criticized by the Nationalists. Faced by a united opposition, a revenue duty of 10% was levied on British structural. The **Steel Industry (Protection) Act, 1934** removed the import duties on rails and fishplates but preferential duty for British galvanized sheets was retained and in return the free entry of Indian pig iron in the British market was allowed. The Second World War came in 1939 which proved to be a turning point and the era of Protection ended in 1941.[127]

The Second World War not only marked the end of the era of Protection but also the commencement of a new epoch of Controls. Even during the First World War TISCO had supplied rails and steel materials for defence purposes at controlled prices even when the open market prices were higher and the company had to face a comparative loss. With the outbreak of the Second World War in 1939, informal control began on the price of steel. The prices for supplies to Government were fixed for TISCO and were agreed upon by SCOB as well which went into production in 1942.

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[126] *Ibid.*, pp. 47 - 50

[127] *Ibid.*, pp. 60-62

These War contract rates were substantially lower than the rates applicable to supplies of steel for civilian uses. Statutory control on the prices of steel was first imposed by the **Iron and Steel (Control of Production and Distribution) Order, 1941** which was issued under the **Defence of India Rules**, promulgated at the outbreak of the Second World War, which vested the Government with powers to regulate by executive orders, the production, distribution and prices etc. The **Iron and Steel Controller** was empowered to fix prices for all categories of steel sold by the integrated steel plants. When the **Defence of India Act and Rules** lapsed in 1946, control continued to be exercised by promulgating the **Essential Supplies (Temporary Powers) Ordinance, 1946** which was converted into an Act in November 1946. As the Act ceased to exist by January 1955, central control over the essential commodities including iron and steel was continued by enacting the **Essential Commodities Act, 1955**. The Constitution of India was amended accordingly to accommodate this Act.[128]

In 1945 the Government of India set up a panel to prepare a plan for the development of the iron and steel industry. The panel recommended the setting up of plants for creating additional steel capacity. In order to examine the technical feasibility, the Government appointed foreign engineering concerns Koppers Company of West Germany, Arthur G. Mckee & Sons of the United States and the International Construction Company of the United Kingdom as Consultants. The Government of India, however, could not consider the implementation of the suggestions primarily due to lack of funds. The **Industrial Policy Statement** was issued by the government of India in April, 1945 which urged the need for industrialization, envisaged Central Control and declared mixed economy as the goal.[129]

With the Indian independence in 1947, the national Government was expected to be reoriented towards the development of a self-generating economy. The industrial policy was clearly defined in accordance to such expectations. The **Industrial Policy Resolution, 1948** categorized the steel industry in the list of basic and strategic industries and the responsibility for its future development was taken up completely by

[128] Mody, R.H. and S.S. Vaze (1967): "The Steel Market", *Tata Steel Diamond Jubilee- 1907 – 1967*, Tata Iron and Steel Company, Jamshedpur, pp. 176

[129] Srinivasan, N.R. (1982): Iron and Steel Industry of India, Tata Iron and Steel Company, Jamshedpur, pp. 67-68

the State. [130] The necessity of State participation in industry was stressed upon and the extent of Government responsibility and the limits of private enterprise were set. The Government decided that the responsibility for the establishment of new undertakings in respect of coal, iron and steel to be vested with the Government. The units which were already in private sector were not to be taken over immediately and were subjected to review after ten years. In rapid industrialization of the country, the participation of foreign expertise and the need for training Indian personnel were also realised. The **Industries (Development & Regulation) Act, 1951** was enacted for the regulation, control and development of industries. The main objective of the Act was to make it compulsory for industrial enterprises to obtain an industrial license before setting up a new enterprise or going in for substantial expansion of capacity of an existing unit and also the registration of existing industrial undertakings in the **Schedule of Industries**. Industry was made a Central subject rather than a State subject. Emphasis was on State initiative in enlarging the public sector and controlling the private sector.

The same policy was echoed further in the **Industrial Policy Resolution, 1956**. The emphasis was on accelerating the pace of industrialization. It classified the industries into three categories according to the role of the State in each one of them. Industries under **Schedule A** were to be developed in future under the exclusive responsibility of the State which included the iron and steel industry, heavy castings and forging of iron and steel, heavy plant and machinery required for iron and steel and other industries.[131]

India's balanced regional development policy discouraged private sector development in many locations based on regional dispersal criteria and due to restrictions on private sector entry into industry based on the government's policy resolutions. The industrial licensing was strictly followed in India to maintain the regional balance. Although the Second Industrial Policy Resolution increased the number of industries reserved to the public sector, it was more conciliatory to private enterprise. The threat of nationalization of the private sector steel plants did not appear in any of the industrial resolutions and expansion of the existing private sector units in

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[130] Bisht, R.S. and M.P.N. Namboodripad (1965), *Op. Cit.*, pp. 209

[131] Srinivasan, N.R. (1982), *Op. Cit.*, pp. 68-69

steel industry was given explicit approval. Although the government was not opposed to the growth of the private sector, it was strongly opposed to the development of concentrations of economic power in this sector which explains why steel industry was strategically placed in the public sector monopoly category while circumscribing the activities of the private sector in the industry.[132]

The Indian Steel industry was for quite a long time almost completely State regulated. Not only were the prices fixed but also in order to make price control effective, a system of consumers' allocation or rationing was in operation. The prices of Indian steel were controlled at two levels through the **"retention prices"** paid to the producers and the selling prices to consumers. According to the "retention price" system the government had fixed a retention price at which the then two main steel producers TISCO and IISCO supplied steel. The difference between selling price and the "retention price" went to the **Steel Equalization Fund**, out of which payments were made for subsidizing the imports of steel and for financing the renovation and modernization programmes of the steel producers.[133]

During the first half of the 1960s the progressive relaxing of various types of control over industry was discussed to be preferable and during September 1962 the Government of India took the first step towards attempting decontrol by appointing a committee known as the **Raj Committee** under the Chairmanship of Dr. K.N. Raj to examine the entire system of controls over steel. The Raj Committee presented its report in 1963 in which it highlighted the defects in the system of Controls and the pricing system. The main recommendations were towards **Progressive Decontrol** and to set up a **Joint Plant Committee (JPC)** for steel plants with the **Iron and Steel Controller** as the Chairman which was to look after the planning, production, and setting rolling programmes in the light of broad priorities indicated by the Government and the JPC should also be responsible for fixing producers' prices for steel.[134] By 1964, the Government of India introduced **Partial Decontrol** under which the statutory control over the prices and distribution of all but a few categories of steel were abolished. The

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[132] Johnson, W.A. (1967), *Op. Cit.*, pp. 66-68

[133] Ghosh, Alak (1967), *Op. Cit.*, pp. 364

[134] Mody, R.H. and S.S. Vaze (1967), *Op. Cit.*, pp. 194 and 196

decontrolled categories constituted about two-thirds of the total production of steel. It also decided to discontinue the operation of the Steel Equalization Fund for new transactions. The decision concerning the Fund meant that there would be no longer any distinction between sale prices and retention prices.[135] The **Joint Plant Committee (JPC)** was set up, according to the recommendation, which was supposed to take over the functions previously performed by the Iron & Steel Controller in regard to planning and distribution of indents. The Iron & steel Controller was the Chairman of the Committee which included a representative from each of the main steel plants and a representative of the Railway Ministry. The Committee was also in-charge of fixing prices for the decontrolled categories. A **Steel Priority Committee** was set up under the chairmanship of the Secretary of the Steel Ministry to indicate to the Joint Plant Committee priority allocations. By April 1967, the Government began to decontrol more steel categories and finally by 1st May, 1967 all the controls over steel were lifted which meant **Total Decontrol.**[136]

An important characteristic about nationalization was that at times when private undertakings were on the verge of bankruptcy or liquidation, they were baled out through schemes of nationalization comprising of attractive compensation. The case of IISCO is a classic example wherein the capacity utilization was steadily decreasing because of obsolete machinery and equipment and the lack of sufficient resources to replace them resulted in the company running into losses. In July 1972 the government took over the management of the company, and a plant rehabilitation programme was implemented and by July 1976 the government took over the company[137] adding one of the oldest private sector steel plants into the public sector. However, the situation of IISCO did not improve drastically and it remained and still remains one of the lowest contributors of steel in the Mineral Belt and India.

When economic liberalization came up in the industrial sector in India during 1990-91, TISCO was the first steel core sector to be completely freed from the licensing regime and the pricing and distribution controls. The **New Industrial Policy** adopted by the Government of India under the neo-liberal policies went on to open up the iron and

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[135] Ghosh, Alak (1967): *Op. Cit.*, pp. 364

[136] Mody, R.H. and S.S. Vaze (1967). *Op. Cit.*, pp. 194 and 196

[137] Nagaraj, K. (1977): "Iron and Steel". *Social Scientist*. Vol. 5, No. 6/7, pp. 145

steel sector for private investment by removing it from the list of industries reserved for monopolistic public sector investment. It was further exempted from compulsory licensing and imports of foreign technology and foreign direct investment were freely permitted up to certain limits under an automatic route. Along with the other initiatives taken by the Government under the neo-liberal scheme of policies, this opening up of the steel industry gave an impetus for entry, participation and growth of the private sector in the steel industry. Modernization and expansion of the existing units were allowed even earlier but under the liberalization policy a large number of new or Greenfield steel plants came up in different parts of the country, along with expansion of the existing ones, based on modern, cost effective and high-tech technologies.

The **National Steel Policy, 2005** of the Government of India defines the Indian Government's vision for the future of the steel industry. With the central goal being essentially concentrated in increasing the production and capacity of the industry, the creation of an industry with 110 million tonnes of capacity and 100 million tonnes of production by 2019-20 forms the central objective. Many government initiatives have been aimed at increasing investment in the steel industry through allowing **Private Ownership** and **Foreign Investment** and **Deregulation of Pricing and Distribution of Iron and Steel**. Steel industry was the first major industry to have pricing and distribution controls removed. Revised foreign investment rules for steel and other high priority industries have increased capital inflow, and ownership of crude steel operations is now split approximately evenly between private and public entities. Although profitable publicly owned companies, which include Rashtriya Ispat Nigam Limited (RINL) and Steel Authority of India Limited (SAIL), appear unlikely to be privatised for political reasons, the Indian Government has sought to improve their performance by granting some of them ***'Navratna'*** status, which affords them greater autonomy in investment, joint venture and commercial decisions.

This marked the dawn of "**privatization**" in the iron and steel industry with steel giant Tata Steel been dominating the Indian horizon. **Tata Steel**, along with **Arcelor Mittal** and Korean steel giant **POSCO** have been pumping money into the mines and establishing steel plants in the private sector in Orissa to exploit the mineral resources with a pure profit maximization motive. Leading the Corporate Houses is the Korean steel giant POSCO which will have an integrated steel plant and will also develop

infrastructure and iron ore mines. POSCO is also investing in a dedicated railway line from the steel plant to Paradeep port, an ideal point to ship out processed (carbon) steel to its main market, China. This sounds as a re-emergence of the colonial pattern of resource exploitation in the region wherein the indigenous resources were utilised for the development of an alien economy instead of the regional or local economy. Other players who are setting up steel capacities in Orissa include Tata Steel, Jindal Stainless, Jindal Steel & Power, Bhushan Steel, Uttam Galva, Visa Steel and Welspun, among others. The two large steel projects in the private sector which are under construction and consideration in the Resource Region are POSCO in Orissa and Mittal Steel in Jharkhand.

The Mineral Belt holds a comparative advantage for iron and steel industry with huge reserves of high quality iron ore and low cost labour which contribute significantly to the cost competitiveness of producing steel due to which the intense focus of the private sector Corporates and multinational corporations have increasingly been in the Resource Region particularly the state of Orissa where abundant natural resources and a large coastline make it an attractive target for the investors in the Indian iron and steel industry. It contains 25 per cent of India's iron ore reserves and 20 per cent of India's coal reserves. Consequently, Orissa is receiving an unprecedented inflow of investment. The increased privatization of the most basic industry in the Mineral Belt, which aims at utilizing the rich mineral wealth of the region not towards indigenous development but towards achieving profit for the Corporate Houses, has far reaching consequences on the regional development scenario. This has accentuated the ***enclave*** **character** in the Mineral Belt which has continued to serve as a resource-supply region amidst persistent regional backwardness in its indigenous territory. The nature of mineral and industrial development processes that the region has undergone during different phases of its evolution has been reviewed in the present study so far. The contemporary ramifications emerging out of such development processes have far reaching impact on the indigenous pattern of development and regional existence. In its later half, the present study has engaged in analysing the ramifications, particularly under the present scenario of rampant privatization and corporate control of resources and industries in the region.

3.5 Conclusions:

A review of the foregoing chapter shows that:

1. The South East Resource Region had a prosperous traditional industrial base till the first half of the nineteenth century. The indigenous iron industry, metal works, silk and cotton weaving industries were the local industries, which formed the traditional industrial base of the Resource Region, stood essentially on the rich natural resources available locally. They were geared mainly towards domestic demands and local consumption while exporting the surplus and most importantly employed the native population. With the advent of British imperialism in India the traditional industrial base either faced a decline or was devastated due to various reasons ranging from lack of demand to competition from cheap imported factory goods.

2. The artisans involved in these cottage and handicraft industries lost their traditional skills without being replaced by new factory skills which was the case in developed countries where the loss of skills was compensated through instilling new skills in the factory workers coupled with providing elementary education to everybody. In the Resource region and in India the number of persons acquiring factory skills remained extremely small because the really skilled occupations in factories were controlled by Europeans and were kept away from the natives. Such a system generated a new type of dependence on the foreigners for technical personnel which continued to haunt the industrial development in the region during the successive decades.

3. With the decline of the indigenous industry in the Resource Region, a new extractive industry developed. The Resource region acquired the character of a secondary or derivate enclave which was geared towards the demands of an alien economy or the primary enclaves which served the metropolitan economy. It marginally employed the native populace unlike its indigenous counterpart and was highly centralized mainly in the mining centres. The apparent industrial development in the region took place in an "isolated enclave" form, the development of which remained completely insulated from its surroundings.

4. The **growth of the Coal industry** in the region was "extensive" in nature instead of being "intensive". The industry being external demand driven, the motive was to extract maximum output and no emphasis was given to proper utilization of the coal resources. The *slaughter mining* engaged in over production and resulted in wastage of superior quality coal indicating the negligence of the British Government towards sustainable development of the coal industry. The pattern of industrial development which emerged during the colonial times, continued into the post-independence era when in order to meet the ambitious production targets of the Five Year Plans, focus was intensified on "extensive" development of the coal industry through opening up of new mines based on minimum technology instead of intensifying development of the existing mines through proper mechanization.

5. The **pattern of coal consumption** during the colonial period depicts that the indigenous coal produced was mostly consumed within the country and was not directly exported to the metropolitan country but the exploitation was in an indirect form as the coal mines formed the derivative or secondary enclaves which served the primary enclaves such as cotton and jute mills and tea gardens which were major consumers of the domestic coal and were directly exploited by the British imperialism for use in the metropolitan economy. Railways remained the largest consumer of the domestic coal produced which was again directed towards extracting the mineral resources of the hinterland. Thus, it formed a vicious circle, wherein the end product invariably reached the metropolitan economy. The pattern of coal consumption witnessed a significant transformation in the post-independence era with power houses becoming the largest consumer of coal followed by Iron and steel industries.

6. The **technological development** was severely neglected during the entire colonial period which greatly affected the steady growth of the coal industry. While industrial revolution in England was characterized by invention of machinery and rapid exploitation of its indigenous mineral resource base, the rise of modern industry in the Resource Region and India was based on imported industrial machinery coupled with slow exploitation of the local mineral resources. There was no emphasis on modernization of the large mines, while small non-mechanised

mines multiplied with every spurt in demand. The lack of technically trained personnel and equipments and the attitude towards technological development which had crippled the industry during the colonial times continued even three decades after independence when the main emphasis remained on opening up of new mines based on minimum technology instead of mechanizing the existing mines which were capable of higher production. Nationalisation of the coal industry ushered in the "open-cast mining drive" wherein greater degree of mechanization was achieved for the open-cast mines while the underground mines which required higher levels of technology faced continuous neglect at the cost of future sustainability.

7. The scenario of **low productivity of coal** is evident for the entire colonial period, the major factors of which were lack of suitable training of the labour employed, outdated methods of mining and inadequate mechanization The low productivity despite increase in production and comparatively low production despite opening up of huge reserves of coal in the Mineral belt points towards low levels of technology used in the coal industry. India remained far behind in terms of progress in labour productivity as compared to the coal industries of other countries. While productivity of Open-cast mines improved tremendously after nationalization of the coal mines, the productivity of Under Ground mines deteriorated and made slow progress during the successive decades.

8. The adjacent Provinces of the coal mining areas essentially remained the main source of **labour supply** for the coal industry. The pattern in which the local workforce was employed was such that the non-aboriginal workers drawn from outside the mining centres were preferred for the more skilled operations. The local aboriginal miners, mainly Santhals, were engaged as unskilled and casual labour. A considerable proportion of the unskilled workforce was also obtained from Gorakhpur or eastern parts of the United Province. Such recruitment of long-distance labour strengthened the enclave character of the resource region. Independence did not bring about any structural changes in the mining enclave wherein employment of local aboriginal labour continued for casual and temporary work while recruitment of unskilled *Gorakhpuri* labour was done more effectively

which reconfirmed the enclave structure and further accentuated the isolation of the enclave from its hinterland.

9. The **participation of the government in development of the coal industry** during the entire colonial period was marked by reckless mining and lack of intensive development. The policies of the National Government affirmed exclusive State participation in the industrialization process which was allotted exclusive right to set up new establishments in the Coal industry sector while assigning limited role to the private sector. This was further supported by Nationalisation of the Coal mines Reorganization of the Coal industry. But the economic liberalization of the 1990s and the neo-liberal regime witnessed a kind of reversal of policies which ushered in an era of 'formal privatisation'. The foreign companies were allowed to hold a 51 percent stake in Indian coal mines and captive consumption was allowed in coal mining which provisioned "private sector participation in coal mining.

10. The industrialization process of England and its constant quest for markets in the colonies restricted the development of indigenous industries in India on modern lines for a considerable length of time. Despite rich reserves of mineral resources, the **process of industrialization** made a late start in the Mineral Belt due to failure of the British regime to provide a congenial climate for the establishment of the most basic industry of iron and steel. The establishment of TISCO came up due to the initiative of Indian entrepreneur, based on indigenous capital which refuted the myth that scarcity of domestic savings was the single biggest obstacle to India's industrial growth.

11. The **technical dependence** imposed on the colonised country by the British imperialism by arresting the skill formation became evident when TISCO had to persistently depend on foreign countries for machinery and technical personnel. While it always made timely up gradation of its technology and capacity which was a major factor behind the tremendous growth of the industry during the pre-independence period, the process of extensions was more rapid as compared to training of Indians for technical positions. Such a problem faced by the TISCO reflected the educational backwardness and lack of formation of new skills in the region as well as in India. The issue of "Indianisation" of the technical personnel

was considered by TISCO which resulted in establishing a technical institute to train Indian students. But the refusal of the Government to offer any technical assistance for the institute reflects the attitude of the imperial government towards skill-formation in India. The lack of adequate trained manpower, both technical and managerial remained a problem which persistently confronted the steel industry during the post-independence era when the National Government relied heavily on foreign experts for establishment of new steel plants in public sector and dependence on foreign collaboration became a necessity for consultancy services for expansion of TISCO. Some of the problems faced by India's public sector steel mills have resulted from their almost singular concentration on achieving output records than focussing on the technological development and productivity of the plants.

12. The desirable **level of labour productivity**, which has been repeatedly emphasized in the context of manpower planning in steel mills, remained unachieved in the Indian Steel mills which sacrificed quality to achieve output. Attainment of record output could not simultaneously lead to an increase in mill's efficiency rather the labour productivity trends in all steel plants in the Mineral belt depicted an overall decrease which is an indicator of persistent lack of efficiency in production.

13. The **participation of the imperial government in industrialization** process in the Mineral Belt was negligible. The policy of *laissez faire* was prevalent which aimed at extracting the indigenous mineral wealth as raw material for the metropolitan industries and use the Indian market for the British manufactures. Government's focus was restricted to improving transport infrastructure in order to facilitate such flow of trade. TISCO was established by an Indian entrepreneur entirely based on domestic capital and the tariff and trade policies of the British Government which were imposed on the domestic steel industry essentially contained an element of "preferential treatment to British manufactures" to provide an advantageous position for British steel industry to capture the Indian market. The **"imperial preference"** coupled with "half-heated" protection policies towards the domestic steel industry and control over the prices of steel resulted in a retarded development of the steel industry.

14. The central control over iron and steel continued during the post-independence era wherein the steel industry was almost completely State regulated and State had an exclusive right in enlarging the public sector and controlling the private sector. The price control and rationing over steel were gradually lifted and New Industrial Policy adopted by the Government of India under the economic liberalization went on to open up the iron and steel sector for private ownership and foreign and private investment. It was further exempted from compulsory licensing and imports of foreign technology were freely permitted along with deregulation of pricing and distribution of Iron and Steel. Ownership of crude steel operations is now split approximately evenly between private and public entities.

15. With the economic liberalization, an era of "**privatization"** dawned in the iron and steel industry. The increased control of the Corporates over the iron ore mines and augmented establishment of steel plants in the private sector has become a threat to the regional economy and its resource base because the minerals are exploited strictly with profit motives and to be exported directly to foreign lands instead of being utilized for indigenous development as in case of POSCO wherein the steel processed in Orissa is to be shipped out to its main market China. This sounds as a re-emergence of the colonial pattern of resource exploitation in the region wherein the indigenous resources were utilised for the development of an alien economy instead of the regional or local economy. The increased privatization of the most basic industry in the Mineral Belt, which aims at utilizing the rich mineral wealth of the region not towards indigenous development but towards achieving profit for the Corporate Houses, has accentuated the ***enclave*** **character** in the Mineral Belt which has been persistently serving as a resource-supply region amidst constant regional backwardness in its indigenous territory.

Chapter: 4

Characteristics of Urbanization

Chapter: 4

Characteristics of Urbanization

The process and pattern of urbanization in the developing countries deviates from the western experiences. There is an extensive debate and plethora of viewpoints regarding the urbanization process in the developing countries. The Marxian interpretation of urbanization pays more attention to the ways in which urbanization processes are embedded in specific historical modes of production. **Harvey (1973, 1982); Casetells (1971); Pickvance (1978) and Gorden (1978)** have studied the nature and pattern of urban growth. The Marxian approach postulates that push factors play important role in the process of urbanization in the developing countries.

Davis (1954) observed in the context of south and South-East Asian countries that there is a process of "*Over-Urbanization*"[1], which was later supported by **Mc Gee (1967)** as "*Pseudo Urbanization*" and **Breese (1969)** as "*Subsistence Urbanization*". **T.G. Mc Gee** argued that the process of urbanization might be more accurately labelled as "*Pseudo Urbanization*" as in some third world countries, city growth is not to be equated with urbanization. The marked absence of sectoral diversification along with redistribution of population from rural to urban areas raises questions regarding the possibilities of economic growth and the inevitability of urban revolution.[2]

In context of India, the theory of "*Over-Urbanization*" was first challenged by **Sovani (1960)** who observed that the argument regarding the economic burden of rapid urbanization hampering economic growth in underdeveloped areas through misallocation of scarce capital resources may not be correct.[3] **Raza and Kundu (1982)** observed a causal relationship between growth of large cities, population and industrial

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[1] Davis, K. and Hertz Golden (1954): "Urbanization and the development of pre-industrial areas", *Economic Development and Cultural Change*, Vol. 3, pp.16

[2] Mc Gee, T.G. (1971): *The Urbanization process in the Third World: Explorations in search of a theory*. Bell & Sons Ltd., London, pp. 25

[3] Sovani, N.V. (1960): *Urbanization and Urban India*, Asia Publishing House, New York, pp. 9

workforce[4]. However, the regional pattern of growth of economy and urban population do not confirm to this generalization as in case of Orissa and Madhya Pradesh.[5]

The *resource-rich-yet-backward* hinterland of Jharkhand, Orissa and Chattisgarh has elicited little research interest. Existing literature on cities of Jharkhand (formerly a part of Bihar) have been scanty unlike that of Calcutta. **Misra (1959)** identified the localisation of socio-economic factors in Jamshedpur. **Pandey (1970)** in course of explanation of history of Chotanagpur region also outlined various factors operative on account of industrial growth and their impact on the growth of population on the cites of the region. He has also taken into account the regional distribution of the urban population and explained their variation on account of industrial parameters. **Ram (1974)** has analysed from the demographic point of view the urbanization process, the nature and pattern of urban growth in the erstwhile Bihar during 1951-71. Quite a substantial research has been done regarding the industrial development, mining displacement - marginalisation and tribal situation in Jharkhand in the recent **years (Sengupta: 1980; Corbridge: 1988; Mathew: 1996; Corbridge: 2000; Rao: 2003; Maharatna and Chikte: 2004; Firdos: 2005** etc) but urbanization and urban development sprouting from resource utilization per se as prime research subject have remained quite a less treaded path for this region in the last few decades.

The most significant preliminary works done by both **Pattnaik (1956) and Jena (1956)** regarding the urban development in Orissa are of particular interest to show the immediate post independence urban growth in Orissa. **Daspattanayak (1987)** found that the backward districts of Orissa have registered high urban growth in the small towns. On the other hand, the developed ones have greater number of large and medium towns and these are growing at a significantly higher rate compared to the smaller towns. Besides that, he found the pattern of urbanization in the spate of Orissa shows a negative correlation with the pattern of industrialization and economic growth. **Pati (1993)** have tried to uncover the colonial roots of underdevelopment of Orissa taking into account the overall regional development including the urban.

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[4] Raza, Moonis and Kundu, A. (1982): *Indian Economy: the regional dimension*. New Delhi.

[5] Kundu, A. and Sharma, R.K. (1983): "Industrialization, Urbanization and Economic Development", *Urban India*. Vol. 3. No.1. pp. 52 - 53

4.1 Colonial Pattern of Urbanization:

The process and pattern of urbanization in developing countries like India has been regarded as a vestige of its colonial past. **Munshi (1975)** spelled out the aftershocks of colonization on India's urbanization process with a special emphasis on Bengal Province and explained that this region underwent a process of underdevelopment, deindustrialization and de-urbanization within the Colonial framework during the crucial phase of the nineteenth century when the rest of the advanced world witnessed a technological revolution. This resulted in an irrecoverable "lag of a century" which is responsible for the present backwardness.

The imported manufactured goods cast peril over indigenous manufacturing and old urban centres which were dependent on domestic handicrafts and traditional cottage industries underwent deterioration and urban decay. The "old manufacturing towns and centres that were laid waste"[6] witnessed out-migration of population and resulted in de-urbanization due to such deindustrialization processes.

The colonial cities acted as 'nerve centres' for colonial exploitation.[7] They were neither "consumer cities" nor "producer cities"[8] but rather "intermediaries between the metropolitan economy and the Colonial hinterland"[9]. Such colonial towns hampered the growth potentials of its rich hinterlands as can be witnessed in case of the present Resource Region. The railway network which traversed the mining enclave served the purpose of the foreign economy instead of creating growth impulse in the region. The Colonial towns stood as "isolated foci of modernization in a backward region".[10]

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[6] Dutt, R.P. (1970): *India Today*, Manisha Granthalaya, pp. 129.

[7] Kundu, Abanti (1983): "Urbanization in India: A Contrast with Western Experience", *Social Scientist*, Vol. 11, No. 4, pp. 40

[8] Mc Gee, T.G. (1967): *The Southeast Asian City*, G Bell and Sons.

[9] Kundu, Abanti (1983). *Op. Cit.*, pp. 41

[10] *Ibid.*, pp. 41

4.2 Post –Independence Pattern of Urbanization:

The post independence pattern of urbanization in India was rather a continuation of the colonial pattern. While the Class I cities witnessed unprecedented growth, the medium sized towns declined and small urban centres reflected complete stagnation. The "territorial industrial complexes" surfaced in the "older economic regions" which witnessed huge concentration of heavy industries like the Calcutta-Durgapur-Ranchi complex where heavy engineering goods and chemical industries were located during 1951-61, the post independence era of industrialization in India. This was done in the initial years of the planned development to locate the major public sector industrial projects as development nuclei in backward regions.

The urban centres which contained large scale industrial projects like Jamshedpur, Durg, Bhilai Nagar, Raurkela, Bokaro Steel City, and Ranchi experienced rapid unprecedented growth. Such "polarisation" led to the emergence of isolated urban-industrial islands which were surrounded by stagnating hinterlands. New planned industrial townships came up like Durgapur, Durg-Bhilainagar, Raurkela, Chittaranjan etc but they failed to generate any multiplier effect over the surrounding backward region. [11]

This gave birth to an intra regional dichotomy and dualism which further engraved the regional backwardness situation in the Resource Region. The rapid urbanization that was expected as a result of industrial growth remained concentrated in certain pockets only which became the core urban areas amidst its backward rural periphery.

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[11] *Ibid.*, pp. 43 - 46

4.3 Characteristics of Urbanization in the S.E. Resource Region:

The resource regions of the developed countries have a history of rapid urban development. They were also the regions to urbanize first and in most of these countries the largest town aggregates developed around the coal and iron belts.[12] The coal towns of Pennsylvania, West Virginia and Kentucky, iron mining-exporting town of Minnesota, iron industry in Middlesbrough (U.K.), and nine cities in Ruhr and Saar region (Germany) experienced rapid urbanization and urban development by the virtue of their situation, i.e. being located in proximity to the mineral resource regions.

In the S. E. Resource region of India, however, the impact of utilization of indigenous mineral resources was quite in contrary to the developed countries and rather characteristically similar to the typified scenario in most resource regions of the developing countries. Whether the indigenous resource extraction provided any boost to urbanization in this region, is a hypothesis to be verified.

4.3.1 Degree of Urbanization:

The degree of urbanization is an indicator of the relative number of people residing in urban areas. It also reflects the level of development of the given region as urbanization and economic development are supposed to go hand in hand.[13] There are a number of indices used to measure the degree of urbanization.

4.3.1.1 Levels of Urbanization:

The Level of Urbanization is the most commonly used index for measuring degree of urbanization. It gives the proportion of Urban Population to the Total Population expressed in terms of percentage. It is represented by-

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[12] Gadgil, D.R. (1971): *The Industrial Evolution of India in Recent Times: 1860 – 1939*, Oxford University Press, Delhi, pp. 155.

[13] Berry, J.L. Brian (1962): "Some Relations of Urbanization and Basic Patterns of Economic Development", in Forrest R Pitts (ed.), *Urban Systems and Economic Development*, Oregon, pp. 15.

Levels of Urbanization (% Urban) = Urban Population * 100
Total Population

The Levels of Urbanization have been computed at district level from 1901- 2001 for the Resource region. The computed figures indicate that:

- The degree of urbanization has been very low in the entire region as compared to the corresponding national average during the entire span of the study period. At the beginning of the period there were 6 districts with no urban population. By 1961 each and every district in the region was urbanised although at varying levels.

- During the pre-independence era, the 2.00 – 4.99 % urbanization remained as the median and modal class with maximum number of districts lying in this category. By 1961 it shifted to 5.00 – 9.99 % urbanization and by 2001 it moved up further to 10.00 – 19.99 % urbanization. This shows that there has been a very gradual increase in levels of urbanization for the region in general.

- Owing to such a gradual increase in the degree of urbanization in all the districts, only four of them were able to record higher degree of urbanization as compared to the national average at the close of the century – Dhanbad (47%), Singhbhum (36%), Sundergarh (34%) and Durg (29%).

- The first to develop was district Singhbhum, which from 1921 onwards has been recording the highest level of urbanization in the region. This can be attributed to the establishment of the Tata Iron and Steel Company (TISCO) at Jamshedpur.

- But Singhbhum finished as the second and was overtaken by district Dhanbad ever since 1961, mainly due to the spurt in coal mining activities in Dhanbad and Jharia coalfields after the opening up of Iron and Steel industries in its surrounding areas of Burnpur, Hirapur, Kulti, Durgapur etc. As a result of this Dhanbad recorded the highest degree of urbanization (47.1% in 2001) at the close of the century.

- The high degree of urbanization in Sundergarh and Durg are also primarily as a result of mining- industrial activities which started much later in the century but high degree of urbanization was noted only since last few decades.

- The urbanization scenario in the later decades reflects a distinct core-periphery pattern emerging for levels of urbanization. Highest levels of urbanization being recorded in the **Dhanbad-Singhbhum-Sundergarh-Ranchi** core followed by **Durg-Raipur-Bilaspur** core. Both of these are mining-industrial regions where heavy industries have been located.

- Such cores are surrounded by peripheral districts like Palamau (5.4%), Bankura (7.4%), Kalahandi (7%), Mayurbahnj (7%), Bastar (8%) etc which have been suffering from utter stagnation in case of urban development. The steep gradient in level of urbanization amongst adjacent districts has been most noticeable.

Table: 4.1 Distribution of districts by Levels of Urbanization (1901 - 2001)

% Urban Population	Number of districts										
	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
30.00 and above	-	-	-	-	-	-	-	1	3	3	3
20.00 to 29.99	-	-	-	-	-	-	2	2	3	3	6
10.00 to 19.99	-	-	-	1	1	2	3	7	6	7	10
5.00 to 9.99	-	1	3	2	5	8	10	8	12	12	6
2.00 to 4.99	10	9	10	12	12	10	8	6	-	-	-
0.01 to 1.99	8	7	7	5	5	4	2	1	1	-	-
0	7	8	5	5	2	1	-	-	-	-	-

Source: Based on the computation in Table: 4.2

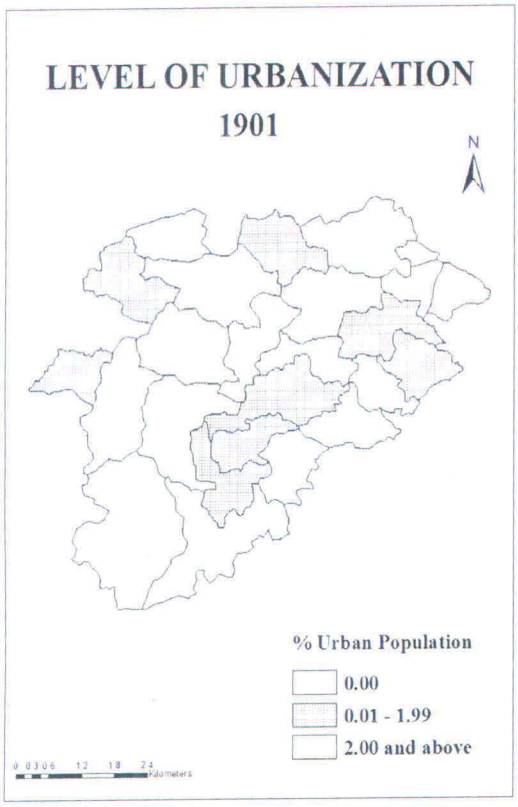


Fig: 4. 1.

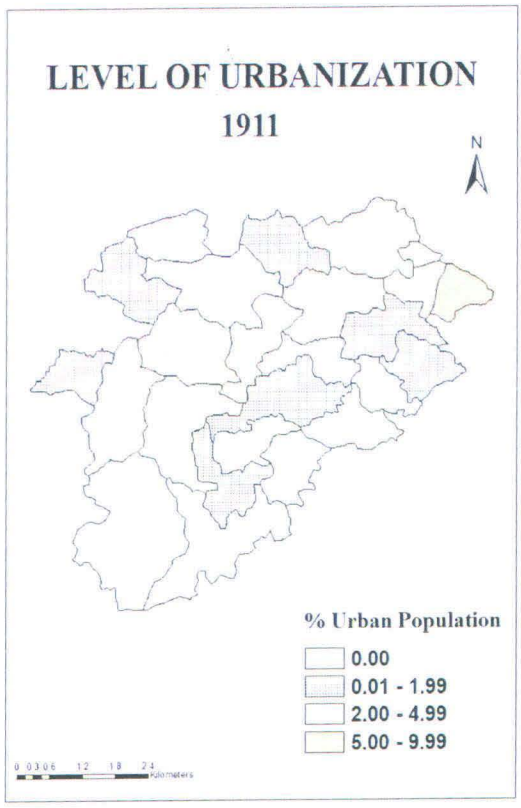


Fig: 4. 2.

Source: Fig. 4.1 to 4.11 - Based on the computation in Table: 4.2

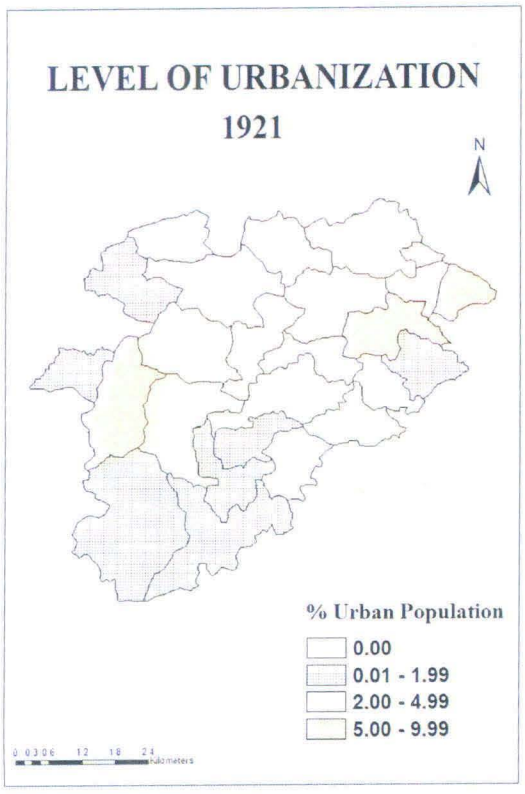


Fig: 4. 3.

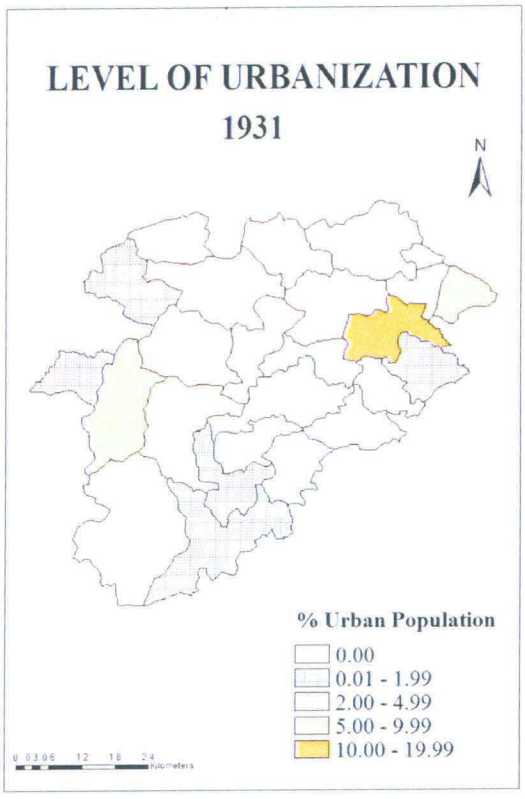


Fig: 4. 4.

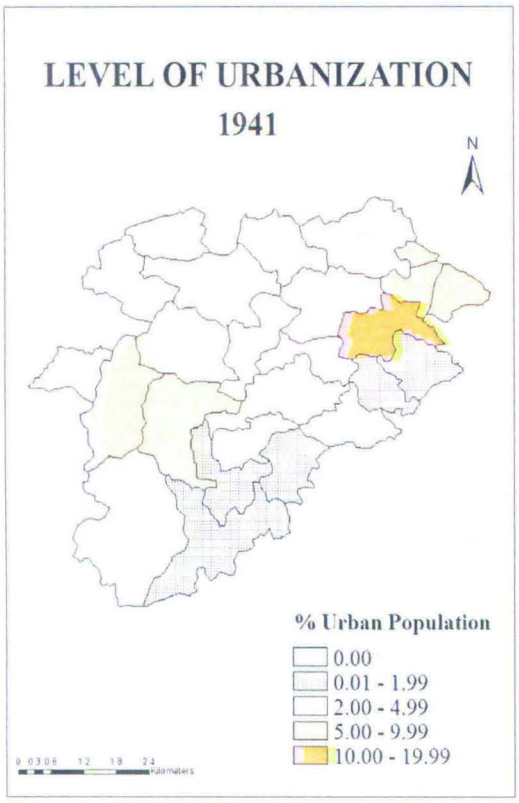


Fig: 4. 5.

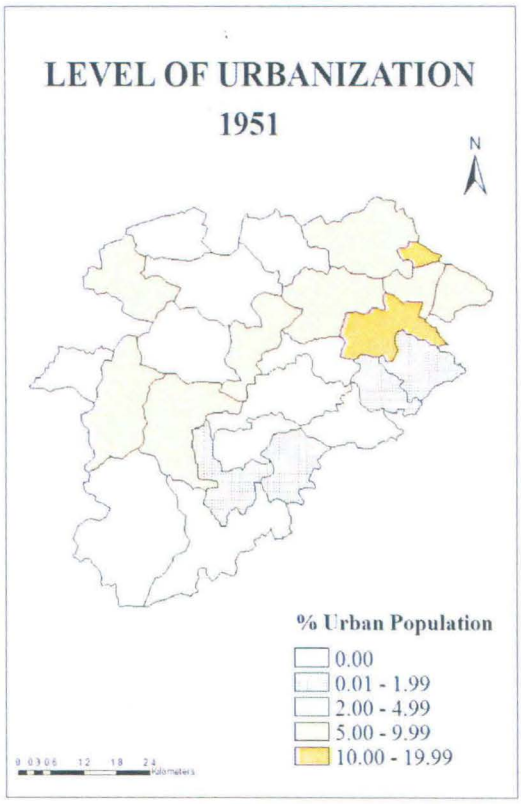


Fig: 4. 6.

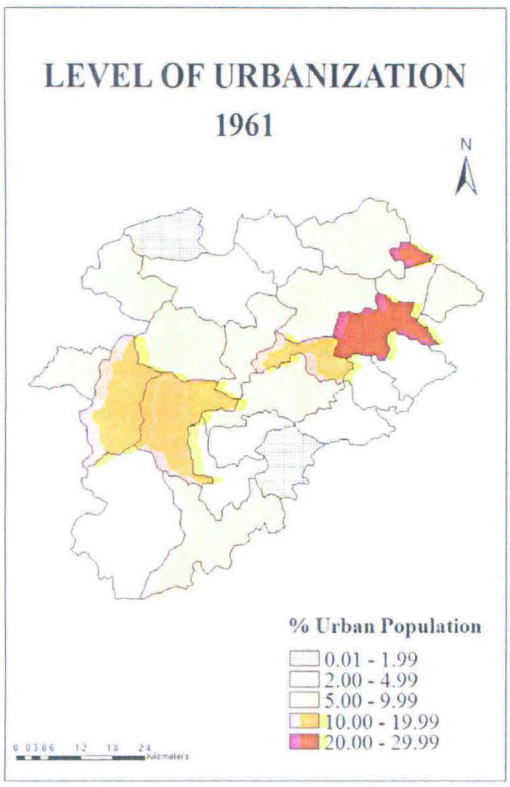


Fig: 4. 7.

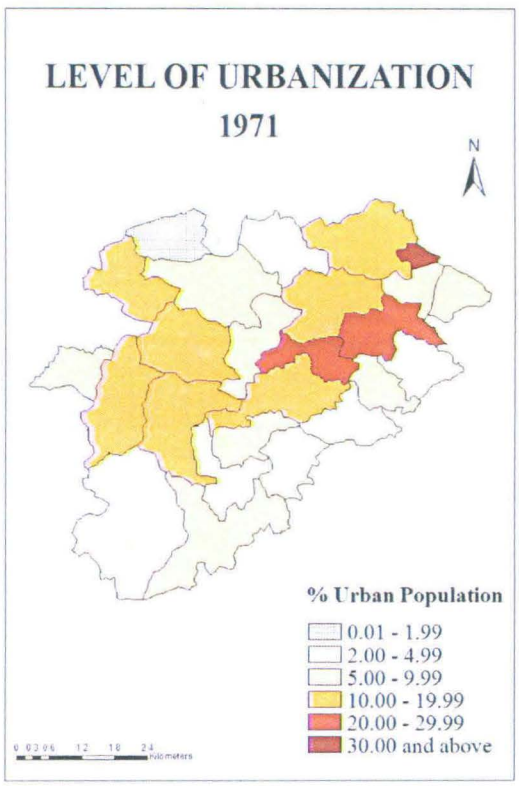
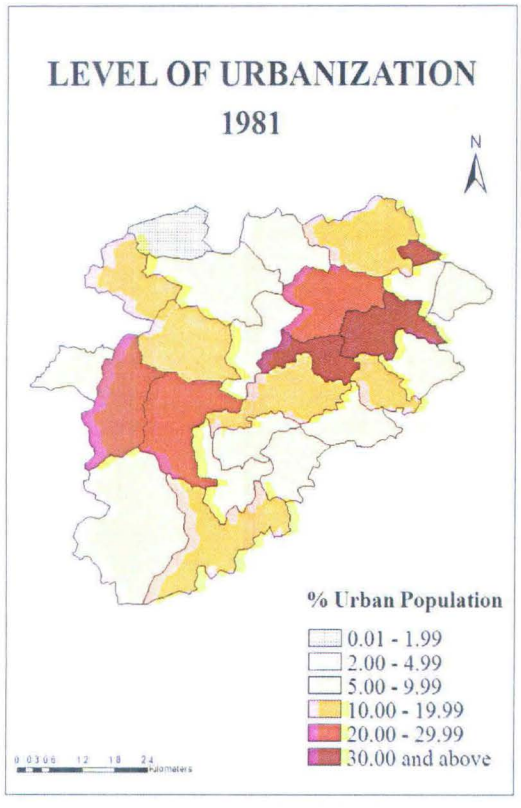


Fig: 4. 8.



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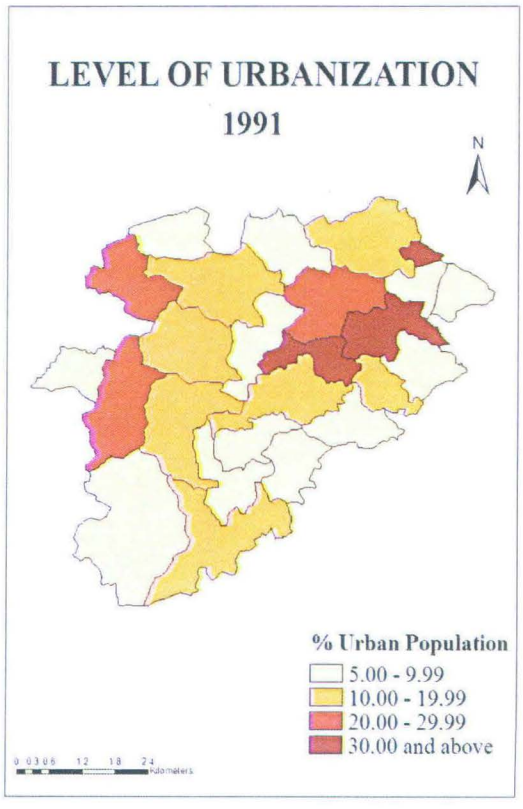

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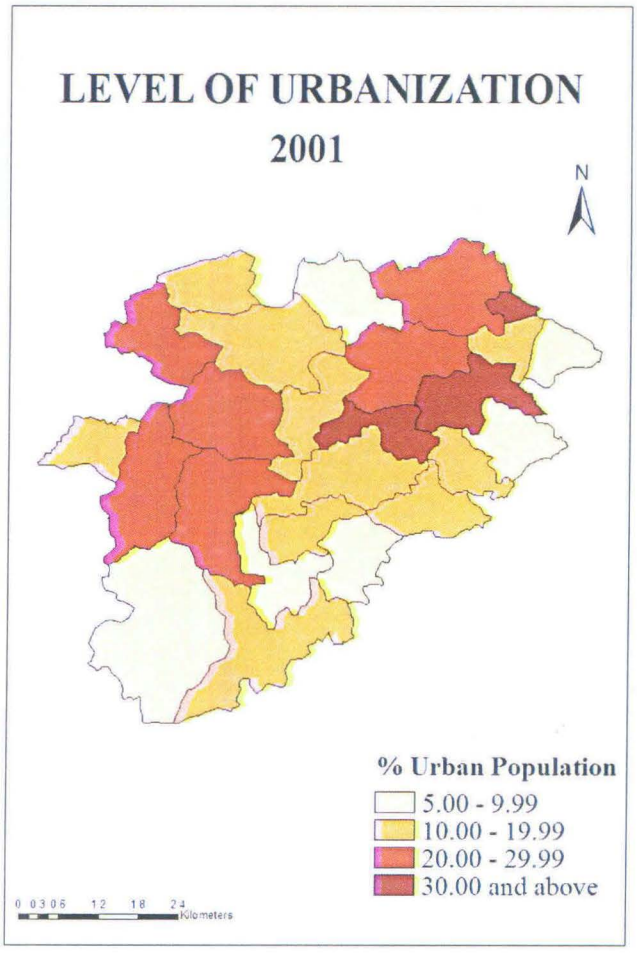


Fig: 4. 11.

Table: 4.2

Levels of Urbanization in the

South East Resource Region of India (1901 - 2001)

State / District	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
JHARKHAND											
PALAMAU	1.5	1.7	2.7	2.9	2.5	3.8	4.7	4.7	5.6	5.4	5.4
HAZARIBAGH	3	2.9	3.5	3.3	3.4	6.9	8.4	12.9	14.7	16.9	20.3
RANCHI	3.2	3.4	3.9	4.1	4.6	6.7	9.5	13.7	20.9	22.3	24.4
DHANBAD	0	0	2.6	3.1	9	10.9	25	43.5	50.6	51.3	47.1
SINGHBHUM	1.1	1.7	8.2	10.3	15.9	19.5	21.5	26.2	32.1	33.3	35.5
ORISSA											
SAMBALPUR	1.6	1.9	2.5	2.7	3.3	4	7.6	12	15.5	17.2	18.4
SUNDARGARH	0	0	0	0	0	2.8	17.9	23.3	30.6	33.4	34.4
KEONJHAR	0	0	0	0	1.7	1.6	4.3	7	11.3	12.5	13.6
MAYURBHANJ	0.9	0.8	0.8	0.7	0.8	0.9	2.4	2.8	5.7	6.2	7
DHENKANAL	2.2	2.1	2.2	2.2	2.9	3.3	4.6	4	7.8	9.9	11.4
PHULBANI	0	0	0	0	1.3	1.2	1.2	3.1	5.3	5.9	6.1
BOLANGIR	2	2	1.6	2.3	3.4	4.4	4.6	6.9	9.1	9.6	10.3
KALAHANDI	0.9	1	1.1	1	1.4	1.4	2.8	4.9	6	6.5	7
KORAPUT	0	0	1.2	1.1	1.8	4.3	5.1	8.2	11.3	11.2	11.5
CHATTISGARH											
BASTAR	2.1	0	0.8	2.3	2.1	2	2.3	3.7	6.1	7.1	8
DURG	2.7	3.9	5.4	5.7	6.5	5.3	12.5	16.1	24.4	27.9	28.8
RAIPUR	3.3	3.9	4.4	4.7	6.2	7.7	11.4	12.4	25.4	19.7	24.2
BILASPUR	3	2.7	3.4	3.3	4.1	3.9	8.3	10.8	13.8	17	23.1
RAIGARH	2.8	2.4	2.6	3.3	4.1	6	5.8	5.9	8.4	9.5	10.1
SURGUJA	0	0	0	0	4.1	2.6	4.2	6.7	8.7	12.1	12.2
WEST BENGAL											
BANKURA	4.8	5	6	6	7.1	7.2	7.3	7.5	7.6	8.3	7.4
PURULIA	3.4	3.5	4.1	4.1	5.6	6.7	6.8	8.3	9	9.4	10.1
MADHYA PRAD.											
SIDHI	0	0	0	0	0	0	0.9	1.2	2	6.5	14.3
SHAHDOL	1.3	1.3	1.2	1.5	2.3	8.4	7	11.8	17.8	21.1	23
BALAGHAT	1.6	1.6	1.4	1.7	2.9	5	5.7	7	8.7	9.5	12.9
INDIA	**10.9**	**10.3**	**11.2**	**12**	**13.9**	**17.3**	**18**	**19.9**	**23.3**	**25.7**	**27.8**

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.1.2 Ratio of Urban-Rural Population:

The Ratio of Urban-Rural population[14] is indicative of the number of urban inhabitants for each rural person in the region.

$$\textbf{Urban – Rural ratio} = \frac{\text{Urban Population}}{\text{Rural Population}}$$

The following table gives the Urban –Rural population ratios at district level for the region from 1901-2001. It reflects that –

- The Urban-Rural ratios have been very low for the entire region during the pre-independence period. The highest ratio was obtained by district Singhbhum (0.19) followed by Dhanbad (0.10) in 1941. The progress in this case has been extremely gradual for the rest of the region.

- During the immediate decades of the post Independence period there was rapid progress in Urban-Rural ratios, most noticeable being the case of Dhanbad (0.12 in 1951 to 0.33 in 1961), Sundergarh (0.03 in 1951 to 0.22 in 1961) followed by Durg, Raipur and Bilaspur in that order.

- Commendable progress was noted in the following decade 1961-71, especially in case of Dhanbad (increase by 0.44 points); Singhbhum (0.09 points); Sundergarh (0.08 points); Ranchi, Hazaribagh, Sambalpur and Shahdol (0.06 points each).

- The districts which successfully maintained their progress during 1971-81 were Ranchi, Dhanbad, Singhbhum, Sundergarh, Durg and Raipur. The ascending phase however lasted till 1981 after which the tremendous pace slowed down considerably. The worst hit being districts Dhanbad and Raipur which experienced a decline during 1981-2001. But in spite of the slump Dhanbad ultimately finished at

[14] The methodology has been adopted from Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)". Unpublished Dissertation. Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 211

the first position by the close of the century followed by Singhbhum which finished as the second. Raipur and Bilaspur are the only two districts which reflected rapid progress in Urban-Rural ratio during the recent decades.

Table: 4.3

Ratio of Urban – Rural Population

in the South East Resource Region of India (1901 - 2001)

State / District	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
JHARKHAND											
PALAMAU	0.02	0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.06	0.06
HAZARIBAGH	0.03	0.03	0.04	0.03	0.04	0.07	0.09	0.15	0.17	0.2	0.25
RANCHI	0.03	0.03	0.04	0.04	0.05	0.07	0.1	0.16	0.26	0.29	0.32
DHANBAD	-	-	0.03	0.03	0.1	0.12	0.33	0.77	1.03	1.05	0.89
SINGHBHUM	0.01	0.02	0.09	0.11	0.19	0.24	0.27	0.36	0.47	0.5	0.55
ORISSA											
SAMBALPUR	0.02	0.02	0.03	0.03	0.03	0.04	0.08	0.14	0.18	0.21	0.23
SUNDARGARH	-	-	-	-	-	0.03	0.22	0.3	0.44	0.5	0.52
KEONJHAR	-	-	-	-	0.02	0.02	0.04	0.08	0.13	0.14	0.16
MAYURBHANJ	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.06	0.07	0.08
DHENKANAL	0.02	0.02	0.02	0.02	0.03	0.03	0.05	0.04	0.08	0.11	0.13
PHULBANI	-	-	-	-	0.01	0.01	0.01	0.03	0.06	0.06	0.06
BOLANGIR	0.02	0.02	0.02	0.02	0.04	0.05	0.05	0.07	0.1	0.11	0.12
KALAHANDI	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.05	0.06	0.07	0.08
KORAPUT	-	-	0.01	0.01	0.02	0.04	0.05	0.09	0.13	0.13	0.13
CHATTISGARH											
BASTAR	0.02	-	0.01	0.02	0.02	0.02	0.02	0.04	0.06	0.08	0.09
DURG	0.03	0.04	0.06	0.06	0.07	0.06	0.14	0.19	0.32	0.39	0.41
RAIPUR	0.03	0.04	0.05	0.05	0.07	0.08	0.13	0.14	0.34	0.25	0.32
BILASPUR	0.03	0.03	0.04	0.03	0.04	0.04	0.09	0.12	0.16	0.2	0.3
RAIGARH	0.03	0.02	0.03	0.03	0.04	0.06	0.06	0.06	0.09	0.1	0.11
SURGUJA	-	-	-	-	0.04	0.03	0.04	0.07	0.1	0.14	0.14
WEST BENGAL											
BANKURA	0.05	0.05	0.06	0.06	0.08	0.08	0.08	0.08	0.08	0.09	0.08
PURULIA	0.04	0.04	0.04	0.04	0.06	0.07	0.07	0.09	0.1	0.1	0.11
MADHYA PRADESH											
SIDHI	-	-	-	-	-	-	0.01	0.01	0.02	0.07	0.17
SHAHDOL	0.01	0.01	0.01	0.01	0.02	0.09	0.07	0.13	0.22	0.27	0.3
BALAGHAT	0.02	0.02	0.01	0.02	0.03	0.05	0.06	0.07	0.1	0.1	0.15

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.1.3 Arriaga's Mean City Population:

The Arriaga's Index of Degree of Urbanization formulated by **Arriaga (1970)** is yet another measure which is a product of the urban proportion of the population and the average size of the urban centres in terms of population. Arriaga's Degree of Urbanization is computed by obtaining the average of the size of cities where the population resides. The statistical concept of this index is the expected value of the size of the cities. The index[15] is expressed as –

$$\textbf{Arriaga's Index of Degree of Urbanization (U)} = \sum_{i=1}^{N} Ci \,\hat{}\, 2 / P$$

Where, Ci is the population of the i th city
N is the total number of cities,
P is the total population of the region for which U is being calculated.

An attempt has been made in the present study to obtain the degree of Urbanization expressed in the form of mean city population size at district level for the Resource Region for 1901 -2001. This shall provide further information regarding the mean size of the urban centres. The computed figures depict that:

- During the Pre-independence era, there has been only one district, i.e. Singhbhum which recorded a mean city (MC) population size over 10,000 and that too only by 1941. At the very start of the century in 1901, there were 3 districts which recorded the highest MC population of over 500 persons: Bankura, Raipur and Ranchi in that order. Bankura and Raipur were the only two districts to cross the 1000 mark during the following decade of 1911.

- The 1921 decade witnessed the phenomenal rise of district Singhbhum which rose from 134 persons as MC population in 1911 to a thumping 3769 persons as the

[15] The methodology has been based on Goldstein, S. and D.F. Sly ed. (1975): *The Measurement of Urbanization and Projection,* Ordina Editions, pp. 71 and has been adopted from Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 213

average city size in 1921. This can be accounted to the establishment of Tata Iron and Steel factory at Jamshedpur in district Singhbhum. The successive decades scripted the unprecedented growth of district Singhbhum only from 6565 persons in 1931 to 16983 persons in 1941 as the mean city size, followed distantly by Bankura, Ranchi and Raipur which recorded just over 2000 persons as the MC population.

- During the post independence era, while Singhbhum crossed the 30,000 mark quickly in 1951 itself, Ranchi and Raipur could only surpass the 5,000 mark. The stagnation of district Bankura is distinctly noticeable which took about 4 decades to cross the 5,000 mark.

- By 1961, all the districts recorded urban population. Apart from Singhbhum, Sundergarh and Raipur also emerged as the districts with over 10,000 persons as MC population. District Sundergarh experienced phenomenal growth from 225 persons in 1951 to a whopping 11,711 persons as mean city size in 1961. This was mainly because of the establishment of the Raurkela Industrial Township in this district. Apart from Ranchi, Dhanbad and Durg also crossed the 5,000 mark by 1961. Durg rose from 870 to 6,648 as mean city size owing to the establishment of the steel town of Bhilai Nagar.

- District Singhbhum recorded over 50,000 as the mean city size in 1971 and by 1981 Ranchi and Raipur too joined the 50, 000 club closely followed by Sundergarh and Durg. By 2001, while all these five districts recorded over 50,000 as the MC population; districts Ranchi, Singhbhum and Raipur surpassed the 1 lakh MC population mark. Inspite of the early growth of Singhbhum district, Ranchi witnessed enormous growth in the later decades and recorded the maximum 161275 persons as the mean city size by 2001.

The above analysis draws towards the following conclusions:-

- The constant increase in the MC population in the region has remained confined to only a few districts which had an initial comparative advantage of either an early start or the virtue of being mining-industrial districts.

- There are only select few districts which have been recording higher degree of urbanization almost throughout the study period. While Singhbhum, Raipur and Ranchi enjoyed an early start advantage, Dhanbad, Sundergarh and Durg came up in the later decades owing either to establishment of major industrial projects or enhanced mining activities. These districts form the distinct urban core.

- The rest of the region has remained peripheral and quite insignificant in terms of their progress in mean city size. The low degree of urbanization in this periphery during the initial phases was however followed by a constant but gradual increase. Rapid increase was noted only in the core region. Certain districts started off with high mean city size but later on faced a steep decline like in case of district Bankura.

- A majority of the districts (15 out of 25 districts in the Resource Region) still have MC population of below 10,000 which indicates that urban development has failed to trickle down in the rest of the region. The immense progress achieved by the core urban regions as early as during the colonial period and also later on in the post independence era had little effect on the rest of the region.

Table: 4.4 Distribution of districts by Mean City Population (1901 - 2001)

Mean City Population Size	Number of districts										
	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
50000 and above	-	-	-	-	-	-	-	1	3	5	5
10000 to 49999	-	-	-	-	1	1	3	5	5	4	5
5000 to 9999	-	-	-	1	-	2	3	2	1	4	9
2000 to 4999	-	-	1	-	3	2	3	4	10	10	5
1000 to 1999	-	2	3	3	3	4	3	7	4	2	1
500 to 999	3	2	4	5	3	6	7	4	1	-	-
200 to 499	4	4	4	3	6	4	4	1	1	-	-
1 to 199	10	9	8	8	7	5	2	1	-	-	-
No Urban Population	8	8	5	5	2	1	-	-	-	-	-

Source: Based on the computation in Table: 4.5

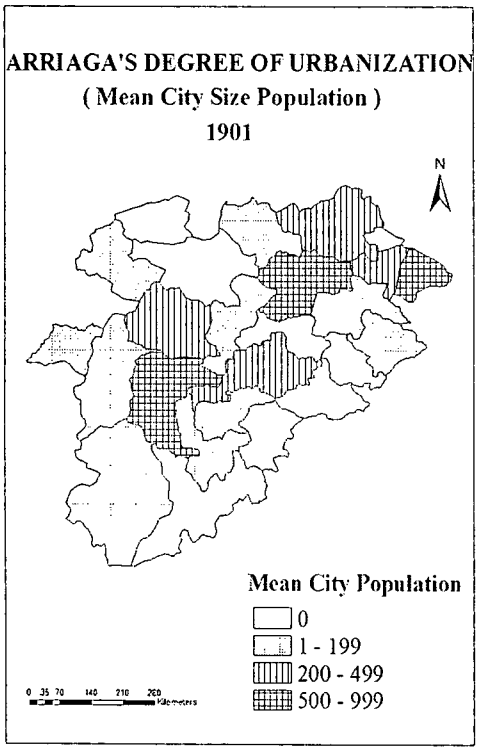
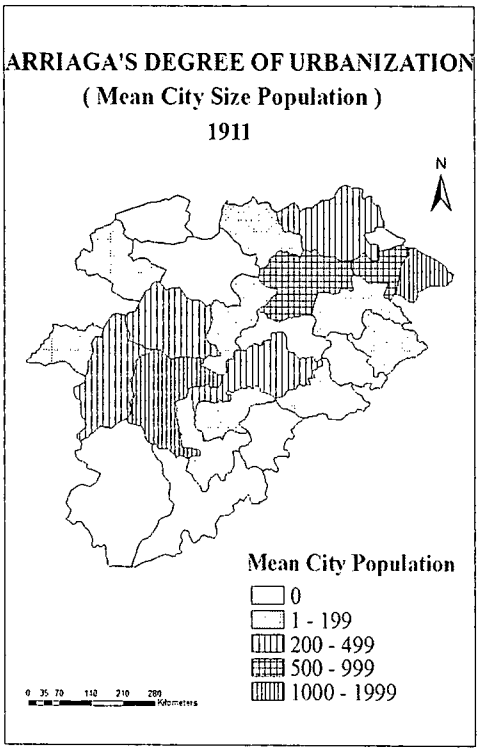


Fig: 4. 12.



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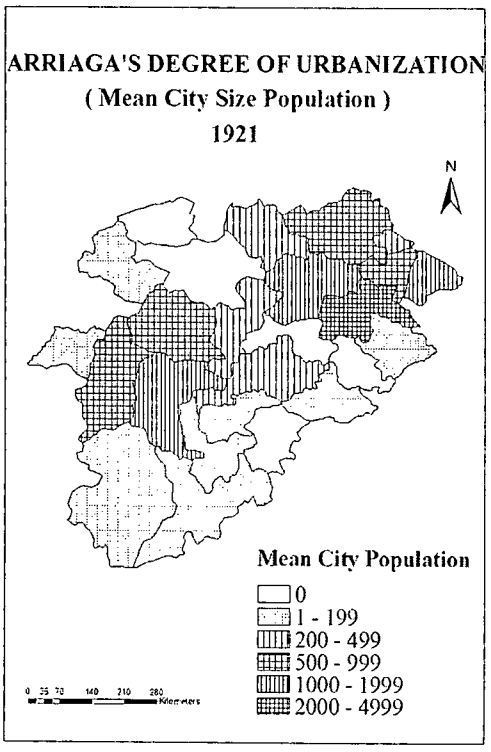


Fig: 4. 14.

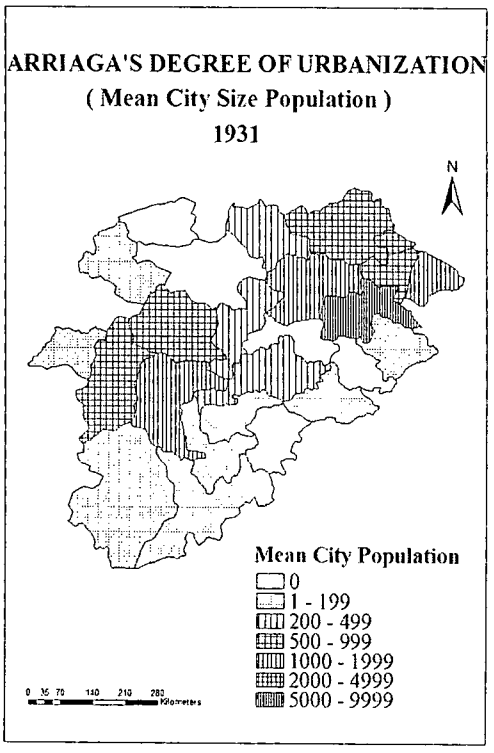


Fig: 4. 15.

Source: Fig. 4.12 to 4.22 - Based on the computation in Table: 4.5

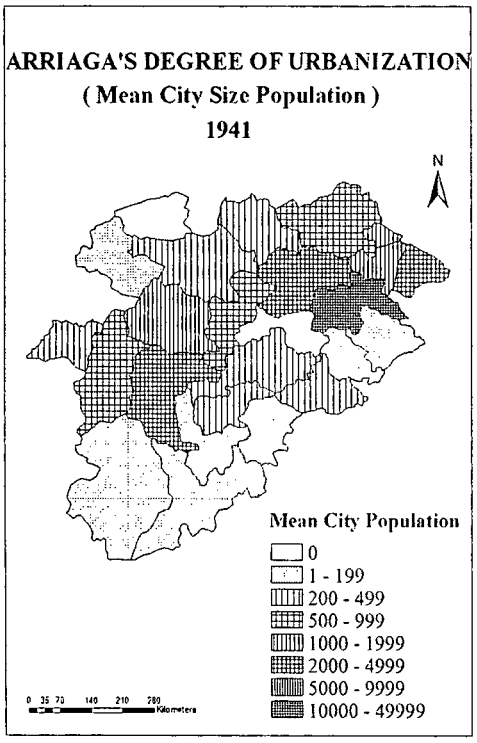
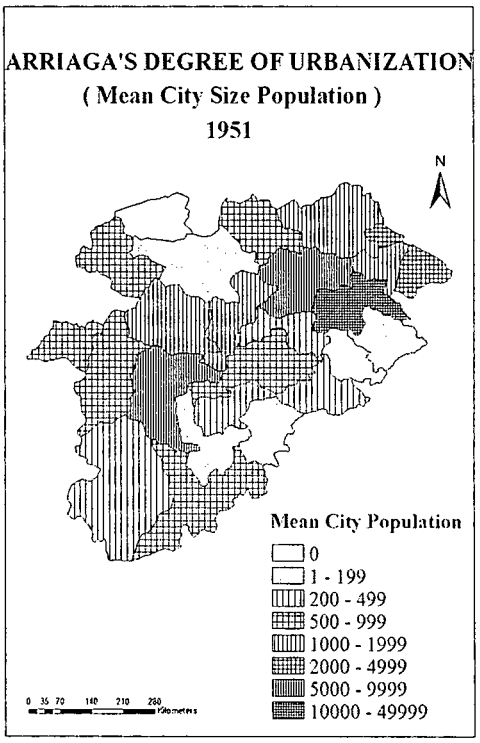


Fig: 4. 16.



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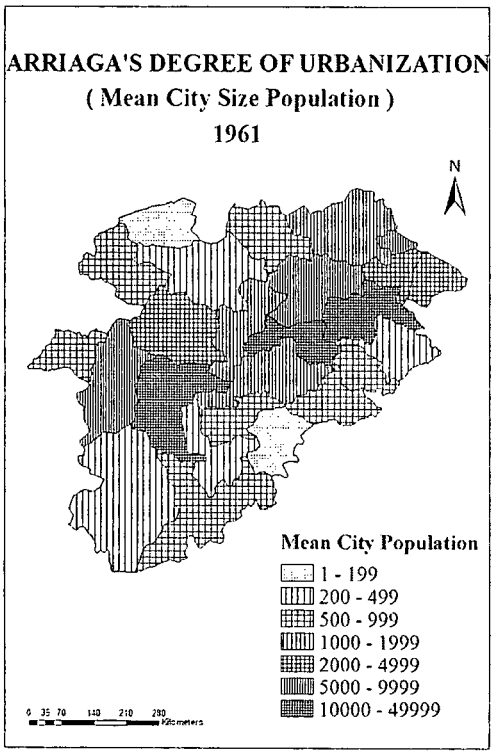


Fig: 4. 18.

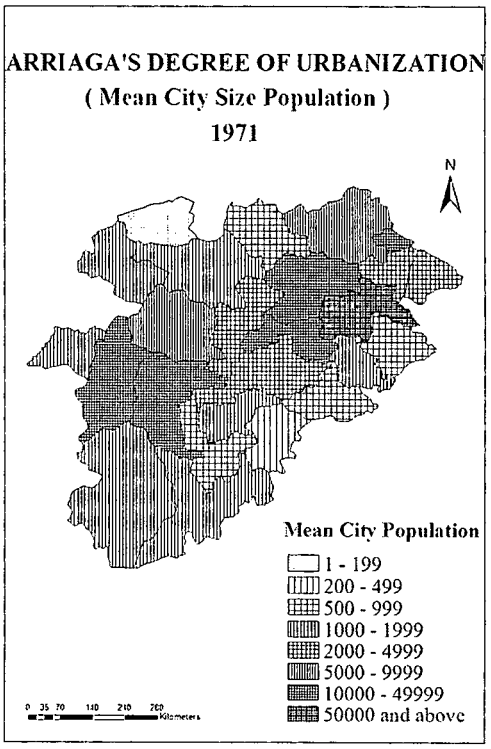
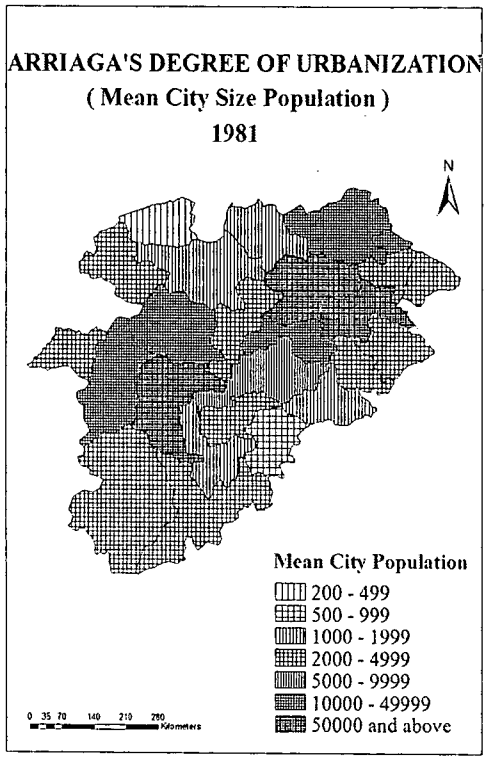


Fig: 4. 19.



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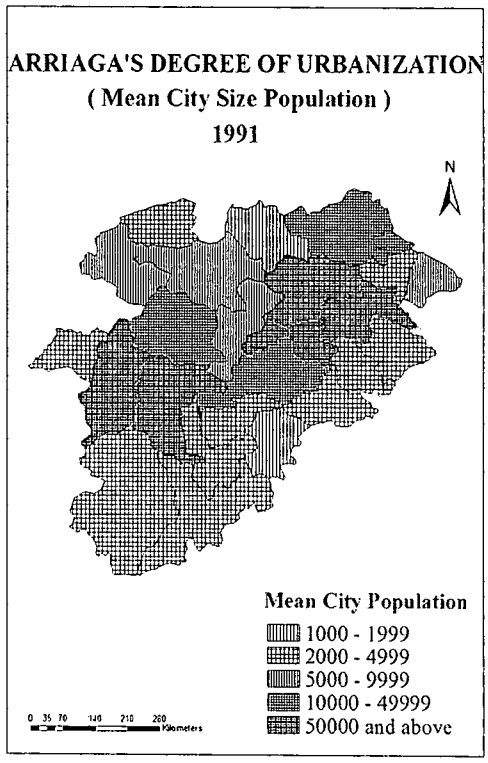

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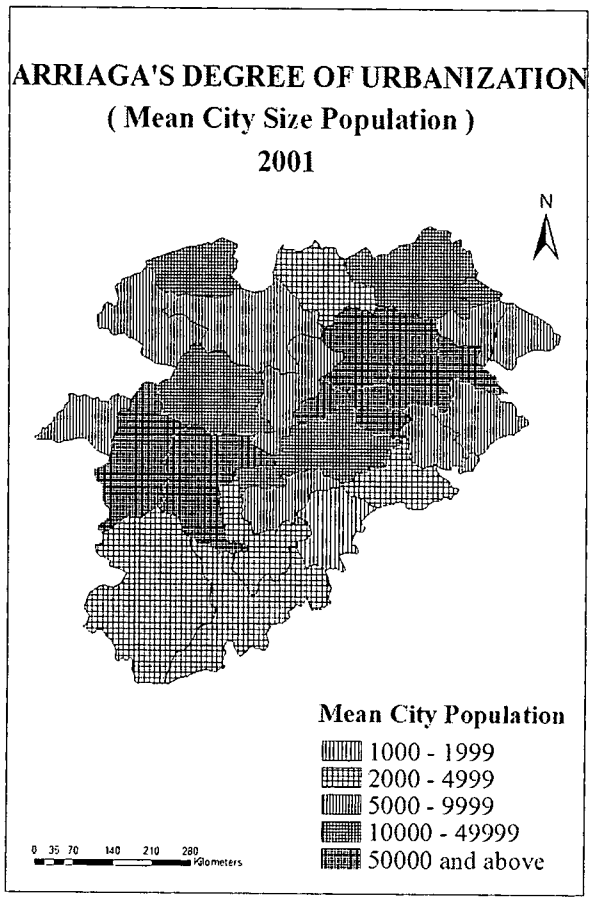


Fig: 4. 22.

Table: 4.5

Arriaga's Index of Degree of Urbanization

(Mean City Population)

in the South East Resource Region of India (1901 - 2001)

State / District	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
JHARKHAND											
PALAMAU	76	101	258	352	296	536	777	989	1851	1850	2382
HAZARIBAGH	383	379	560	634	774	1253	1698	5536	18534	28971	33702
RANCHI	625	853	1234	1692	2398	6225	9481	25479	78841	99355	161275
DHANBAD	0	0	316	513	1497	3018	7568	13111	19537	24637	30701
SINGHBHUM	99	134	3769	6565	16983	32697	46228	54686	78992	77048	107437
ORISSA											
SAMBALPUR	210	208	249	305	388	653	1729	4565	9505	12287	14846
SUNDARGARH	0	0	0	0	0	225	11711	18929	43300	51854	64205
KEONJHAR	0	0	0	0	153	148	718	1368	2951	4181	5419
MAYURBHANJ	52	49	51	43	70	84	397	663	2100	2950	5040
DHENKANAL	0	133	128	156	215	303	576	568	1550	2407	3550
PHULBANI	0	0	0	0	73	66	72	311	755	1214	1544
BOLANGIR	176	147	100	156	289	405	552	1462	2853	3837	5068
KALAHANDI	40	61	69	74	149	162	304	704	1410	2068	2535
KORAPUT	0	0	116	117	187	502	773	1798	3355	4232	4999
CHATTISGARH											
BASTAR	92	0	35	198	197	235	393	1029	2617	3839	3868
DURG	195	334	507	666	878	870	6648	16265	42622	69214	85739
RAIPUR	803	1051	1202	1505	2882	5216	10567	17387	57825	57523	101447
BILASPUR	421	400	565	792	1023	1070	4141	8585	14939	20731	44976
RAIGARH	170	169	200	321	624	1083	1485	2000	3734	5231	7368
SURGUJA	0	0	0	0	322	185	410	1028	1765	5873	6118
WEST BENGAL											
BANKURA	874	1006	1113	1362	2335	2399	3083	3976	4914	6085	6682
PURULIA	437	549	681	796	1071	1766	2070	2711	3708	4723	6055
MADHYA PRADESH											
SIDHI	0	0	0	0	0	0	43	113	390	3237	20044
SHAHDOL	71	78	63	111	155	515	996	1781	3704	5358	7414
BALAGHAT	97	115	104	164	277	619	766	1563	2966	3952	5428

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.2 Concentration of Urban Population:

The concentration of urban population gives the relative number of people who reside in centres designated as urban in a given sub-region (districts in this case) as compared to the rest of the entire region. City Concentration Index based on the Arriaga's Mean City size and Location Quotient has been considered as the two measures for analysing the Concentration of Urban Population.

4.3.2.1 City Concentration Index:

The City Concentration index or the Index of Concentration of Urbanization is based on the Arriaga's concept of the mean city population size.[16] It can be obtained through the following method given by Arriaga –

City Concentration Index (CC) = $\frac{\text{Degree of Urbanization (MC)}}{\text{Total Population}}$

The index which were thus obtained were so small that they had to be indicated in units 10^3. The city concentration index shows that:

- At the very beginning of the century in 1901, there were 4 districts which had relatively higher concentration of urbanization of over 0.50 namely Ranchi, Raipur, Purulia and Bankura. By 1921 Singhbhum attained a city concentration index of 4.13 followed by Bankura 1.09. Those districts with above 0.50 concentrations were Dhanbad, Raipur, Ranchi, Durg and Purulia. Rest of the region remained below 0.50.
- During the following two decades of the pre independence period (1931 and 1941) the highest concentration value was retained by district Singhbhum (5.88 in 1931 and 12.58 in 1941) followed by the 3 districts of Raipur, Dhanbad and Bankura which had concentration values of more than 1.50.
- In the post independence era, Sundergarh emerged all of a sudden (0.41 in 1951 to 15.44 in 1961) with huge concentration of urbanization. By 1981 Ranchi,

[16] The methodology has been based on Goldstein, S. and D.F. Sly ed. (1975): *The Measurement of Urbanization and Projection*, Ordina Editions. pp. 71 and has been adopted from Dwivedy Shubhra (1979), *Op. Cit.*, pp. 217

Singhbhum, Sundergarh and Raipur recorded Concentration index of over 25.00. While Ranchi and Sundergarh were successful in maintaining the ascending trend, Singhbhum, Raipur declined in the following decade.

- By 2001, the emergence of two distinct cores can be easily perceived. The core with the highest concentration of urbanization is formed of Ranchi (35.87) - Singhbhum (26.42) – Sundergarh (35.07). The other core with high concentration is formed by Durg (18.33) – Raipur (22.13) – Bilaspur (10.39) and a distant district Sidhi (10.95). The rest of the 18 districts had concentration of urbanization lower than 10.00 out of which 17 districts had concentration index even below 6.00 in 2001.

- This shows that initially the index of concentration was very low in all the districts, which although had been gradually increasing in the region, but at an extremely slow pace. Urbanization has been acutely concentrated in certain pockets, beyond which the region has been suffering from persistent stagnation and these peripheral districts lag almost by a century in case of urban development as compared to their core counterparts. There exist very steep gradient among the adjacent districts as well. Those districts which had relatively higher concentration in earlier decades like Purulia, Bankura and Dhanbad underwent utter stagnation in case of concentration of urbanization over the later years.

Table: 4.6 Distribution of districts by Concentration of Urbanization (1901 - 2001)

Concentration Index in 10^3	Number of districts										
	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
25.00 and above	-	-	-	-	-	-	-	-	4	2	3
10.00 to 24.99	-	-	-	-	1	1	2	2	1	3	4
6.00 to 9.99	-	-	-	-	-	-	1	4	1	1	1
1.50 to 5.99	-	-	1	1	3	5	6	8	10	14	13
1.00 to 1.49	-	-	1	2	1	1	3	2	6	4	3
0.50 to 0.99	4	4	5	5	4	7	7	6	2	1	1
0.01 to 0.49	13	13	13	12	14	10	6	3	1	-	-
0	8	8	5	5	2	1	-	-	-	-	-

Source: Based on the computation in Table: 4.7

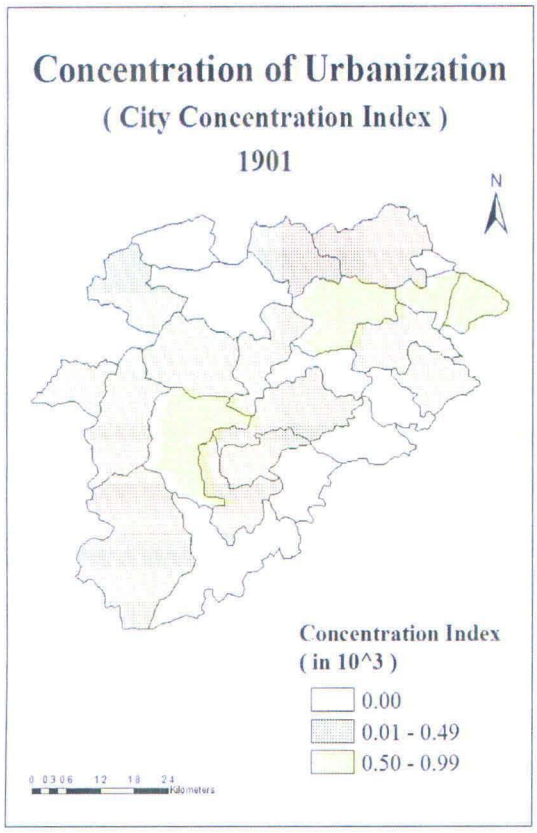


Fig: 4. 23.

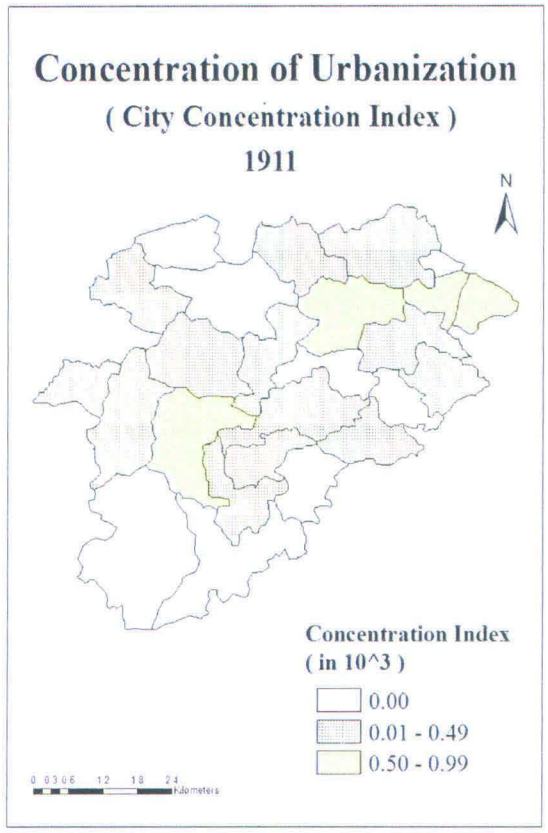
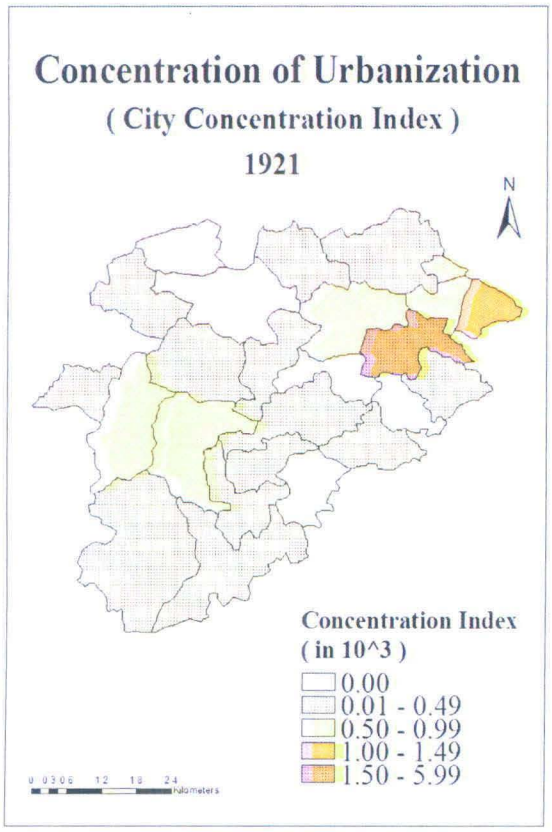


Fig: 4. 24.



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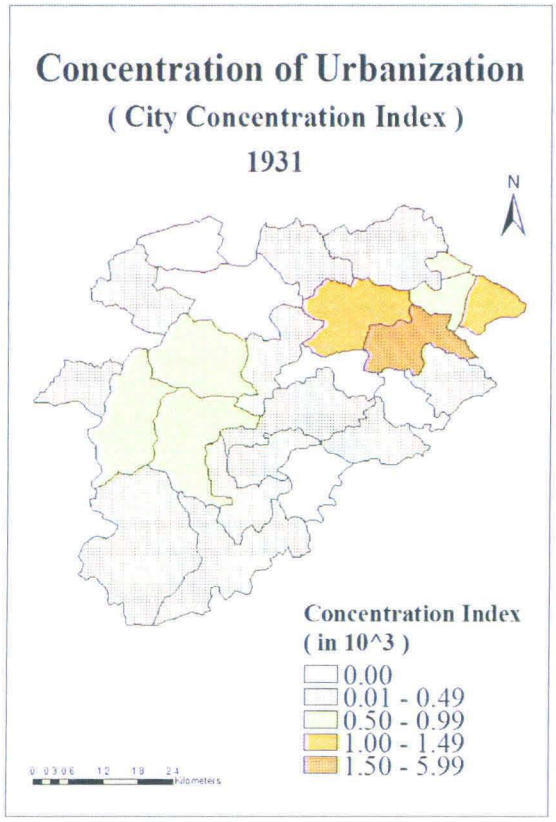
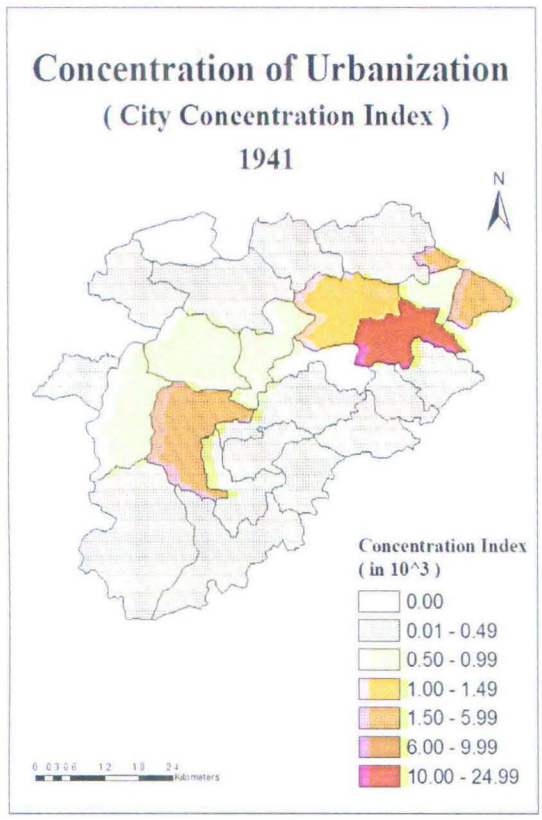


Fig: 4. 26.

Source: Fig. 4.23 to 4.33 - Based on the computation in Table: 4.7



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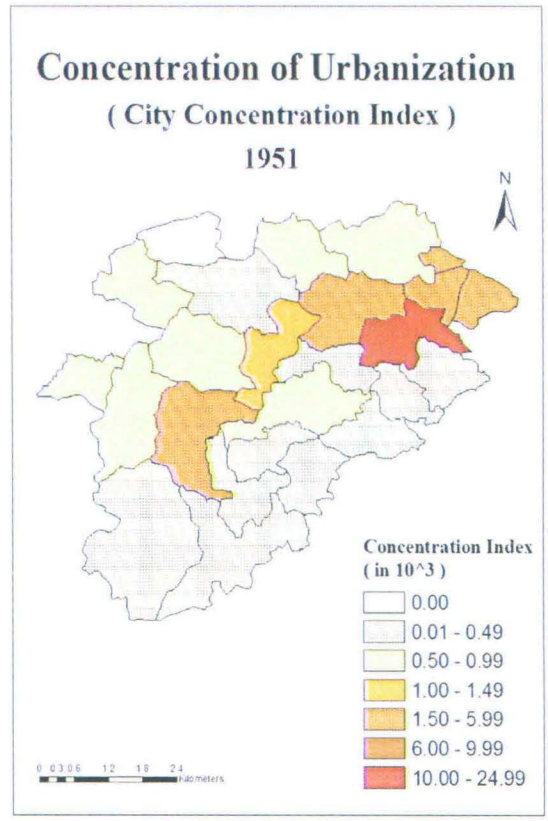


Fig: 4. 28.

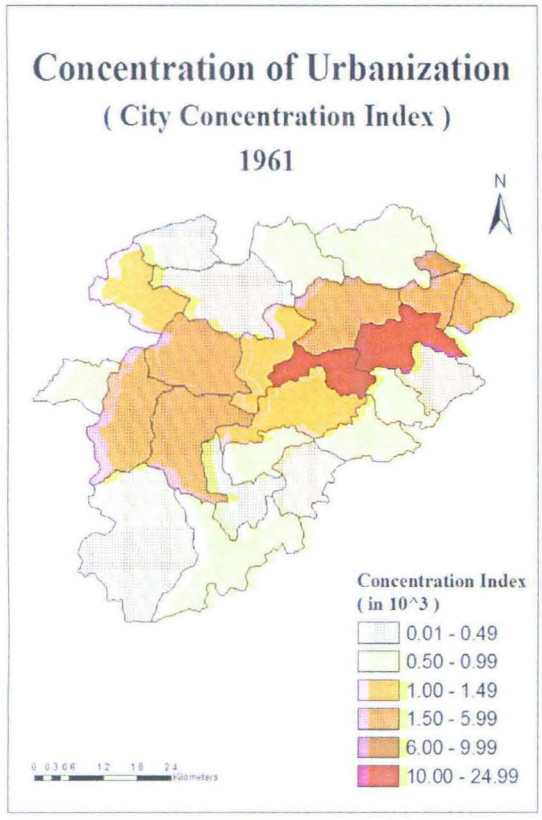
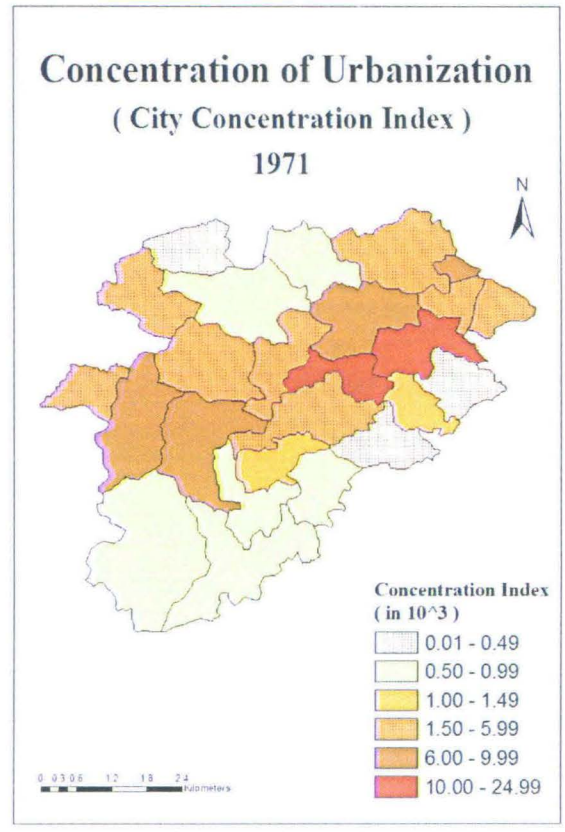


Fig: 4. 29.



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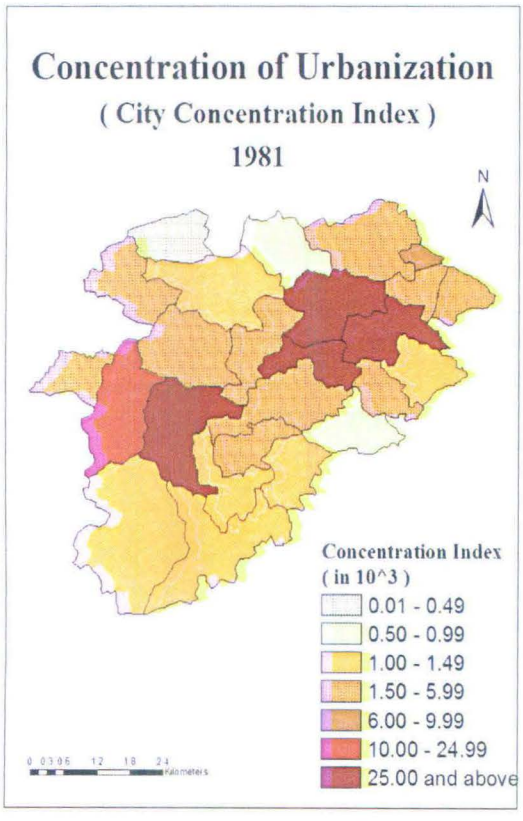

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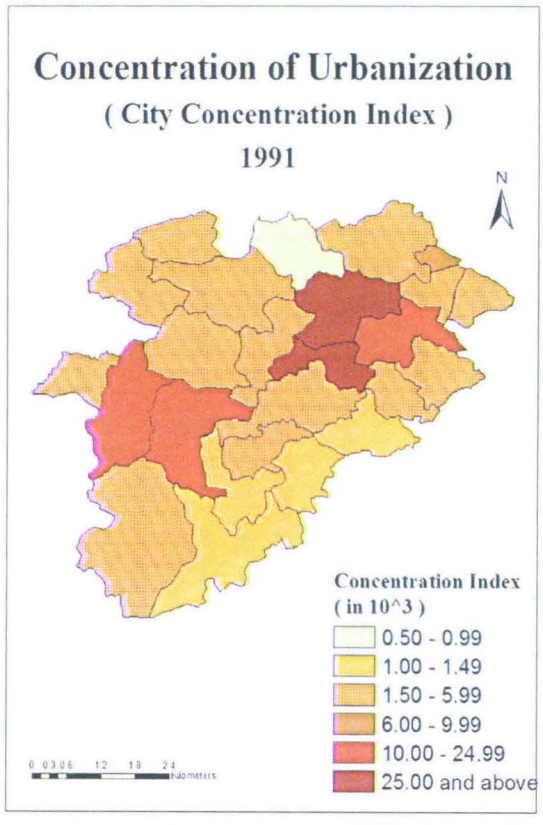

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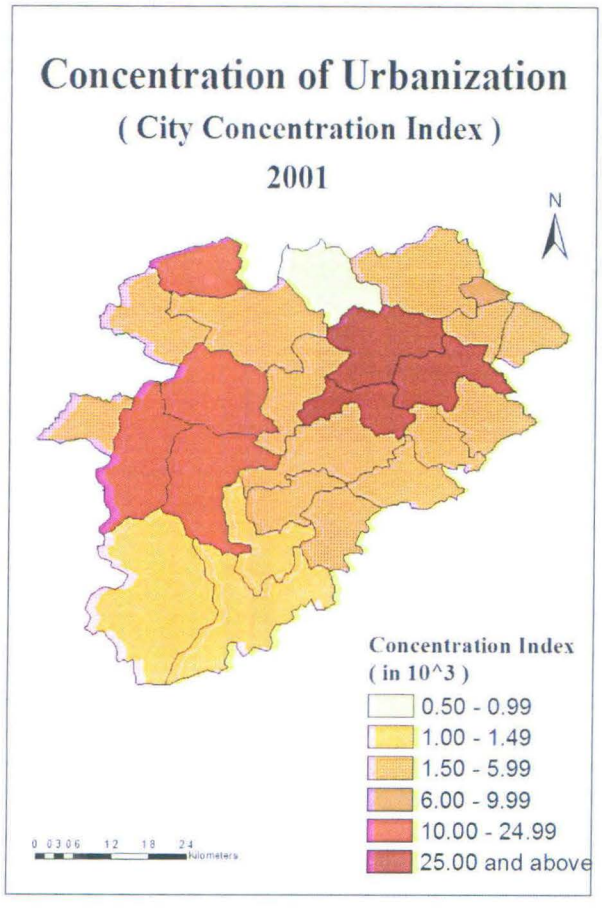


Fig: 4. 33.

Table: 4.7

Index of Concentration of Urbanization

(City Concentration Index)

in the South East Resource Region of India (1901 - 2001)

(In 10 ^ 3 units)

State / District	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
JHARKHAND											
PALAMAU	0.12	0.15	0.35	0.43	0.32	0.54	0.65	0.66	0.97	0.75	0.76
HAZARIBAGH	0.32	0.29	0.44	0.42	0.44	0.65	0.71	1.83	4.72	5.72	5.3
RANCHI	0.53	0.61	0.92	1.08	1.43	3.34	4.43	9.76	25.68	27.17	35.87
DHANBAD	0	0	0.7	0.99	2.57	4.12	6.53	8.94	9.24	9.21	9.33
SINGHBHUM	0.13	0.16	4.13	5.88	12.58	22.08	22.55	22.43	27.6	22.65	26.42
ORISSA											
SAMBALPUR	0.27	0.23	0.26	0.29	0.32	0.5	1.15	2.47	4.17	4.56	4.84
SUNDARGARH	0	0	0	0	0	0.41	15.44	18.36	32.36	32.95	35.07
KEONJHAR	0	0	0	0	0.29	0.25	0.97	1.43	2.65	3.13	3.47
MAYURBHANJ	0.08	0.07	0.07	0.05	0.07	0.08	0.33	0.46	1.33	1.57	2.27
DHENKANAL	0	0.23	0.25	0.25	0.29	0.36	0.56	0.44	0.98	1.26	1.61
PHULBANI	0	0	0	0	0.16	0.14	0.14	0.5	1.05	1.41	1.51
BOLANGIR	0.39	0.24	0.14	0.19	0.33	0.44	0.52	1.16	1.96	2.25	2.7
KALAHANDI	0.08	0.11	0.12	0.11	0.19	0.19	0.3	0.61	1.05	1.29	1.36
KORAPUT	0	0	0.14	0.12	0.17	0.4	0.52	0.88	1.35	1.4	1.41
CHATTISGARH											
BASTAR	0.23	0	0.06	0.3	0.25	0.26	0.34	0.68	1.42	1.69	1.44
DURG	0.19	0.43	0.68	0.81	0.94	0.59	3.53	6.61	13.94	18.04	18.33
RAIPUR	0.56	0.79	0.85	0.98	1.9	3.18	5.28	6.65	27.81	14.72	22.13
BILASPUR	0.42	0.35	0.46	0.57	0.66	0.64	2.05	3.52	5.06	5.46	10.39
RAIGARH	0.4	0.3	0.35	0.46	0.79	1.18	1.43	1.56	2.59	3.04	3.67
SURGUJA	0	0	0	0	0.46	0.23	0.4	0.78	1.08	2.82	2.39
WEST BENGAL											
BANKURA	0.78	0.88	1.09	1.22	1.81	1.82	1.85	1.96	2.07	2.17	2.09
PURULIA	0.56	0.62	0.82	0.82	0.98	1.51	1.52	1.69	2	2.12	2.39
MADHYA PRADESH											
SIDHI	0	0	0	0	0	0	0.07	0.15	0.39	2.36	10.95
SHAHDOL	0.17	0.17	0.15	0.21	0.26	0.79	1.2	1.73	2.75	3.07	3.55
BALAGHAT	0.24	0.24	0.2	0.29	0.44	0.89	0.95	1.6	2.58	2.89	3.62

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.2.2 Location Quotient:

Location Quotient is yet another measure to obtain concentration of urban population. It gives the concentration of urban population in each district vis-à-vis the rest of the region as a whole. The Location Quotient[17] is computed in the following way:

Location Quotient = $(^{u}{}_{i} / {}^{u}{}_{t}) / (^{U}{}_{i} / {}^{U}{}_{t})$

Where, $^{u}{}_{i}$ = urban population of a district

$^{u}{}_{t}$ = total population of the district

U_{i} = urban population of the region

U_{t} = total population of the region

The Location Quotient differs from the Index of Concentration of Urbanization in the sense that while the latter considers the total population of the respective districts as the denominator, the former takes into account the total population of the entire region of all the districts combined as the denominator. The concentration quotient for the entire region shall stand as 1 and the quotients of each constituent district shall be considered in relation to it. If the value of the quotient is greater than 1 for any district it shall indicate higher concentration of urban population in that district as compared to the entire region as a whole and also the other way round. The location quotient for all the districts in the region is computed for 1901 – 2001. It indicates that:

- The concentration of urban population in the district has been very low and quite noticeably has not increased drastically during the entire study period. There were 9 districts at the start of the century which recorded higher concentration as compared to the entire region as a whole and even at the close of the century the number remained the same i.e. 9 districts during 2001. It also remained the maximum figure for all the decades.

[17] The methodology has been adopted from Dwivedy Shubhra (1979), *Op. Cit.*, pp. 221

- During the pre-independence era the highest concentration was recorded by Singhbhum: 3.17 in 1931 and 3.59 in 1941. It was the only district to attain a quotient of more than 3. However it underwent a gradual decline in the post independence period form 3.42 in 1951 to 1.87 in 2001.
- During the post independence era, Dhanbad rapidly gained very high concentration of urban population from 1.90 in 1951 to 3.74 in 1971. It too faced a downward trend after 1981, so much so the recent decades of 1991 and 2001 witnessed not a single district with a concentration quotient of above 3.

- Majority of the districts reflected a gradual decline in their urban concentration. Bankura which had the highest urban concentration of 2.19 in 1901 has declined ever since and landed at a mere 0.39 in 2001.

Table: 4.8 Distribution of districts by Location Quotients for Urban Population (1901 - 2001)

Quotients	Number of districts										
	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
3.00 to 3.99	-	-	-	1	1	1	-	1	1	-	-
2.00 to 2.99	1	1	2	-	1	-	3	2	1	1	1
1.00 to 1.99	8	7	6	8	5	8	3	6	5	6	8
0.01 to 0.99	9	9	12	11	16	15	19	16	18	18	16
0	7	8	5	5	2	1	-	-	-	-	-

Source: Based on the computation in Table: 4.9

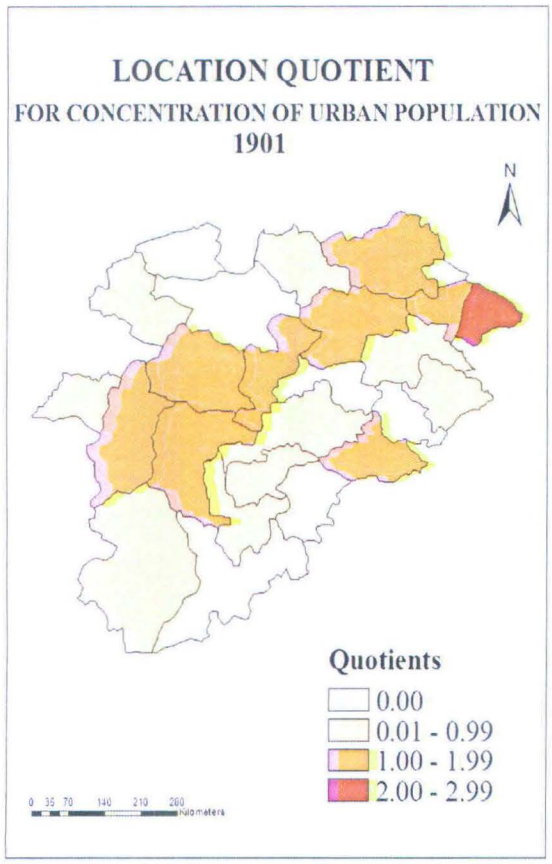


Fig: 4. 34.

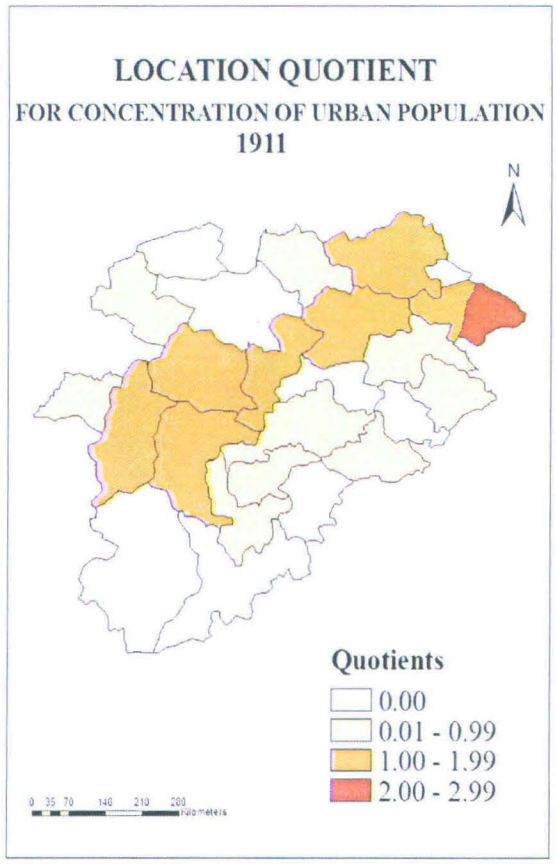
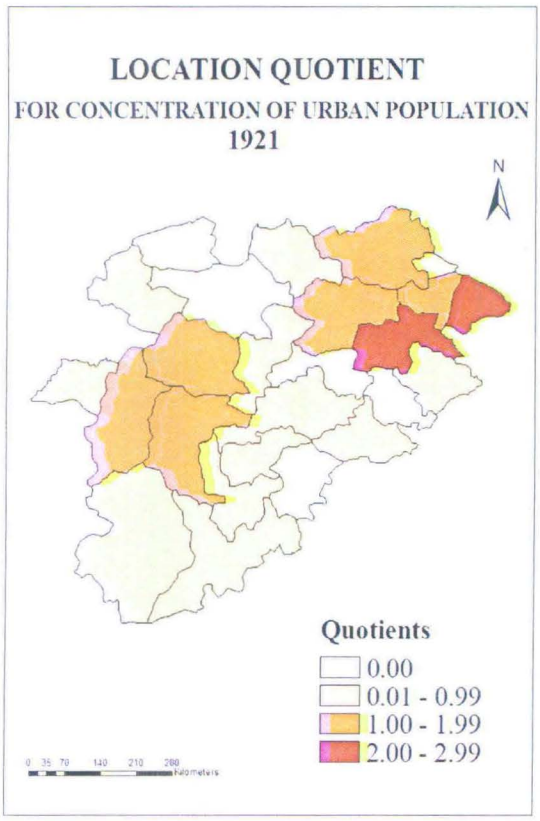


Fig: 4. 35.



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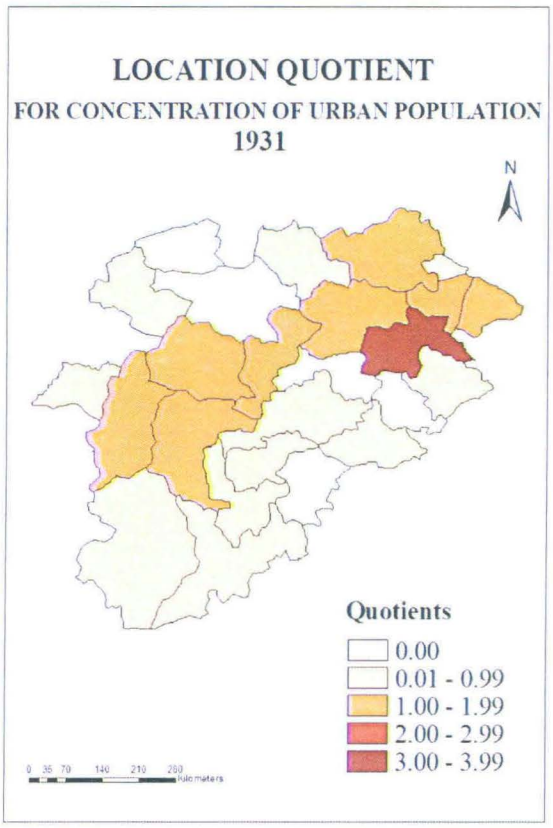
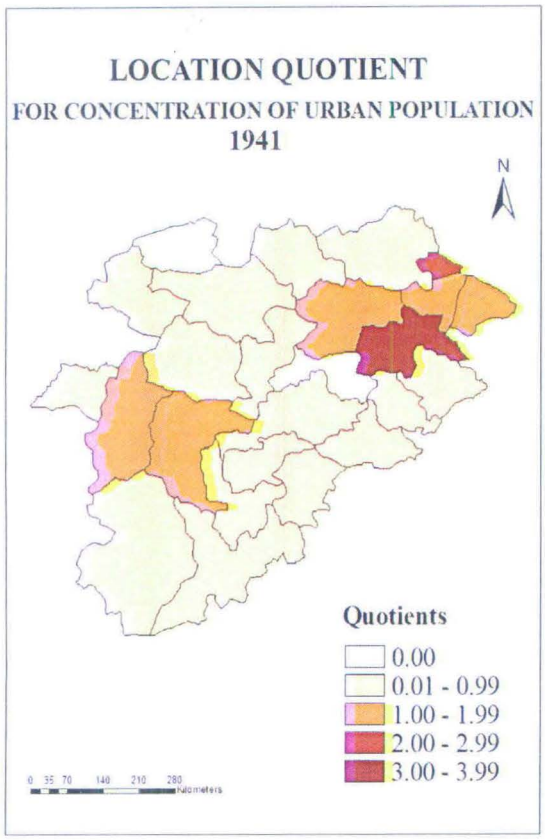


Fig: 4. 37.



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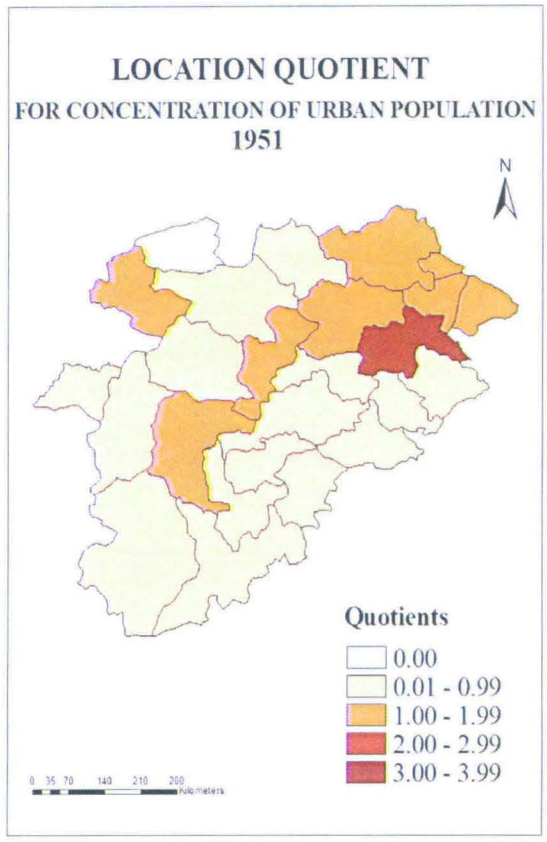

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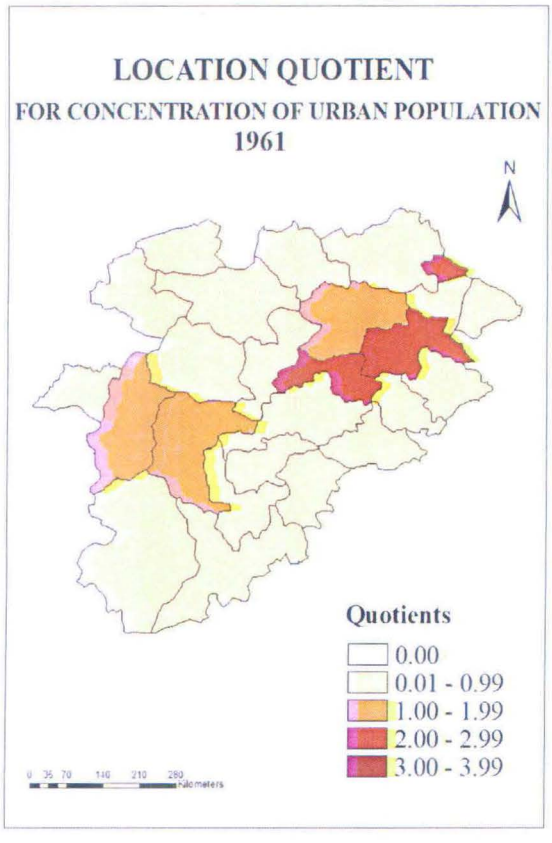

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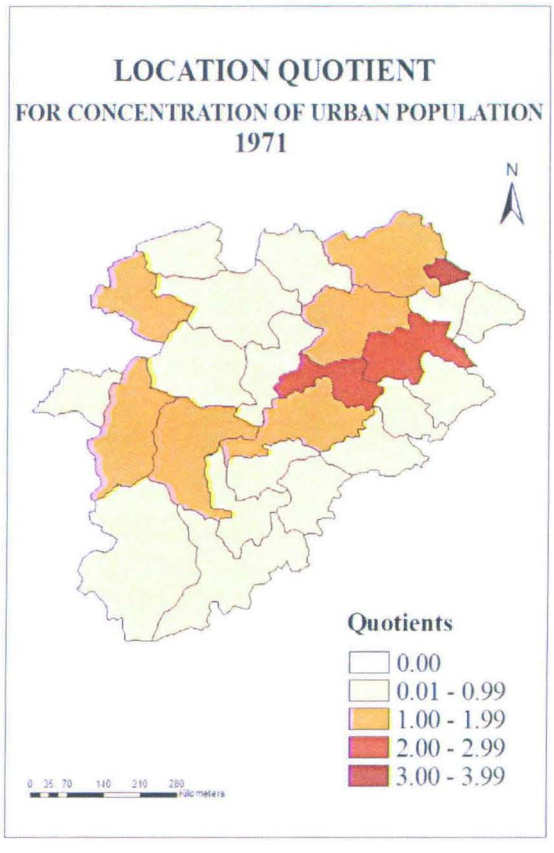

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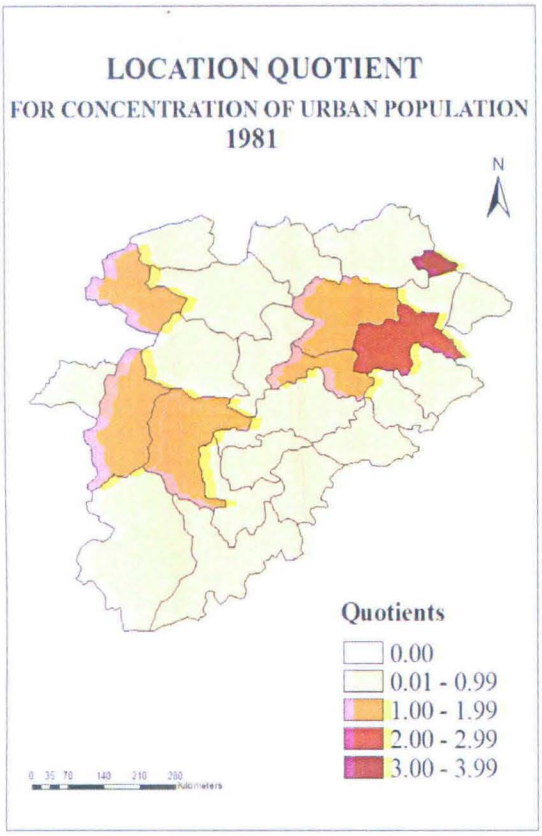

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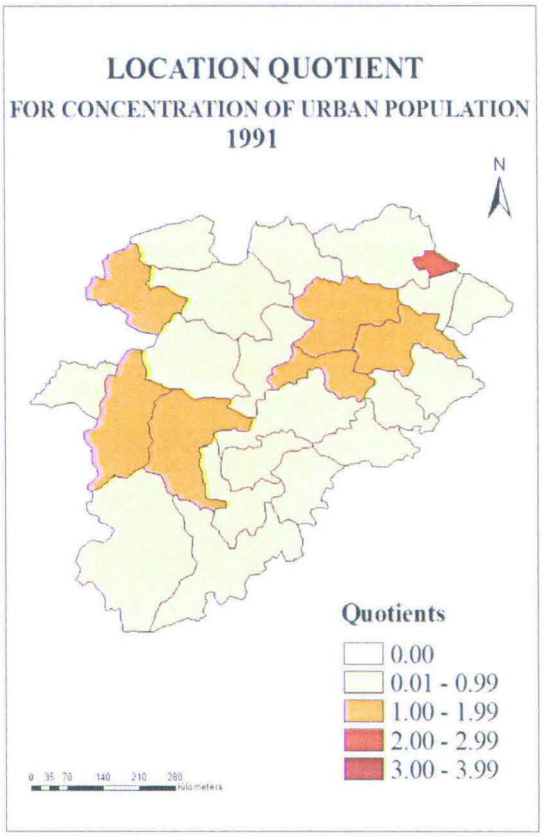

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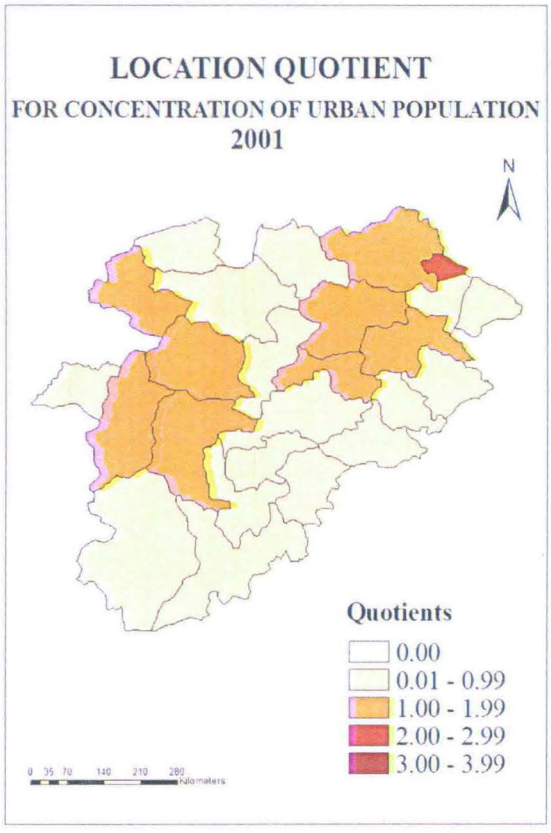


Fig: 4. 44.

Source: Fig. 4.34 to 4.44 - Based on the computation in Table: 4.9

Table: 4.9

Location Quotient for

Concentration of Urban Population

in the South East Resource Region of India (1901 - 2001)

DISTRICTS	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
JHARKHAND											
PALAMAU	0.7	0.77	0.9	0.91	0.56	0.66	0.55	0.4	0.35	0.31	0.28
HAZARIBAGH	1.4	1.33	1.17	1.04	0.77	1.2	0.98	1.11	0.93	0.98	1.07
RANCHI	1.45	1.56	1.31	1.28	1.04	1.18	1.11	1.18	1.31	1.29	1.29
DHANBAD	0	0	0.89	0.97	2.04	1.9	2.92	3.74	3.18	2.97	2.48
SINGHBHUM	0.53	0.81	2.76	3.17	3.59	3.42	2.51	2.26	2.02	1.93	1.87
ORISSA											
SAMBALPUR	0.75	0.89	0.85	0.85	0.75	0.7	0.89	1.03	0.97	0.99	0.97
SUNDARGARH	0	0	0	0	0	0.49	2.09	2	1.92	1.93	1.81
KEONJHAR	0	0	0	0	0.38	0.28	0.5	0.61	0.71	0.72	0.72
MAYURBHANJ	0.42	0.38	0.28	0.22	0.19	0.16	0.28	0.24	0.36	0.36	0.37
DHENKANAL	1	0.98	0.75	0.68	0.66	0.57	0.53	0.34	0.49	0.57	0.6
PHULBANI	0	0	0	0	0.29	0.21	0.14	0.27	0.33	0.34	0.32
BOLANGIR	0.91	0.95	0.53	0.7	0.77	0.78	0.54	0.59	0.57	0.56	0.54
KALAHANDI	0.42	0.48	0.37	0.32	0.31	0.24	0.33	0.42	0.38	0.38	0.37
KORAPUT	0	0	0.41	0.34	0.4	0.75	0.6	0.7	0.71	0.65	0.61
CHATTISGARH											
BASTAR	0.97	0	0.26	0.72	0.48	0.36	0.27	0.32	0.38	0.41	0.42
DURG	1.24	1.82	1.81	1.77	1.46	0.93	1.46	1.39	1.53	1.62	1.52
RAIPUR	1.52	1.8	1.49	1.45	1.41	1.35	1.33	1.07	1.6	1.14	1.27
BILASPUR	1.38	1.26	1.15	1.03	0.92	0.68	0.97	0.93	0.87	0.99	1.22
RAIGARH	1.29	1.12	0.88	1.02	0.92	1.05	0.67	0.51	0.53	0.55	0.53
SURGUJA	0	0	0	0	0.93	0.45	0.49	0.58	0.55	0.7	0.64
WEST BENGAL											
BANKURA	2.19	2.33	2.02	1.87	1.61	1.26	0.86	0.64	0.48	0.48	0.39
PURULIA	1.56	1.61	1.4	1.27	1.27	1.18	0.79	0.71	0.57	0.55	0.53
MADHYA PRADESH											
SIDHI	0	0	0	0	0	0	0.1	0.1	0.12	0.38	0.75
SHAHDOL	0.61	0.6	0.41	0.45	0.52	1.47	0.81	1.02	1.12	1.22	1.21
BALAGHAT	0.72	0.72	0.48	0.53	0.65	0.87	0.67	0.6	0.55	0.55	0.68

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.3 Speed / Tempo of Urbanization:

The speed or tempo of urbanization is indicative of the change in the degree of urbanization over the given time period. This index reflects the annual rate of change in the urban population per 1000 population in the district. The speed of urbanization[18] has been calculated as follows:

Speed of Urbanization = $\frac{\%\ \text{urban}\ (t+1) - \%\text{urban}\ (t)}{N} * 100$

Where, N= no. of years in between,

t= base year

The analysis on speed of urbanization has been conducted for all the districts of the Resource Region and it indicates that –

- The speed of urbanization has been gradually increasing in all the districts during the pre-independence era, with certain decades 1911-21 and 1931-41 when sudden spurt was experienced in almost all the districts.

- Districts with negative speed of urbanization were numerically higher during the pre-independence period, which declined considerably in the later decades. The ratio between the districts having positive speed to those having 0 or negative speed also declined.

- Immediately after the independence around 1951-61, a tremendous speed in urbanization was noted especially in Dhanbad, Sundergarh and Durg due to the mining – industrial activities taken up by the Government of India in the plan years. During 1971-81 yet another spurt in speed of urbanization was witnessed in Dhanbad, Sundergarh, Singhbhum, Ranchi, Durg, Raipur and Shahdol. The tempo however slowed down in the successive decades.

[18] The methodology is based on Goldstein and Sly, *Op. Cit.*, pp. 39 and has been adopted from: Dwivedy Shubhra (1979), *Op. Cit.*, pp. 224

- By the close of the century, Bilaspur, Raipur and Sidhi emerged with the highest speed of urbanization; while Dhanbad, Sundergarh and Durg underwent a downward trend possibly due to reaching a near saturation in levels of urbanization. District Dhanbad which had witnessed tremendous speed in urbanization in the previous decades, reflected massive negative speed during 1991-2001.

- A striking point to be noted here is regarding the backward districts like Kalahandi, Bastar, Phulbani, Koraput, Dhenkanal etc which recorded a very slow pace of urbanization in the beginning of the century, picked up a little immediately after the independence possibly due to the emphasis on backward area development in the five year plans, but later on again slowed down. Districts like Koraput, Keonjhar etc witnessed tremendous speed in urbanization during 1961-81 almost around 30% but declined sharply in the following decades. These are the areas of perennial backwardness and utter stagnation in case of urbanization.

Table: 4.10 Distribution of districts by Speed of Urbanization (1901-11 to 1991 -01)

Speed (%)	Number of districts									
	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-01
50.0 and above	-	1	-	2	1	3	2	7	-	2
25.0 to 49.9	-	1	-	1	4	5	8	6	6	3
10.0 to 24.9	1	3	2	7	8	6	9	8	8	7
5.0 to 9.9	2	8	3	7	1	4	-	3	4	6
0.1 to 4.9	7	3	8	4	4	4	4	1	4	5
0	7	5	5	2	1	-	-	-	-	-
-4.9 to -0.1	7	3	7	2	4	2	1	-	2	-
Below -5.0	1	-	-	-	2	1	1	-	1	2

Source: Based on the computation in Table: 4.11

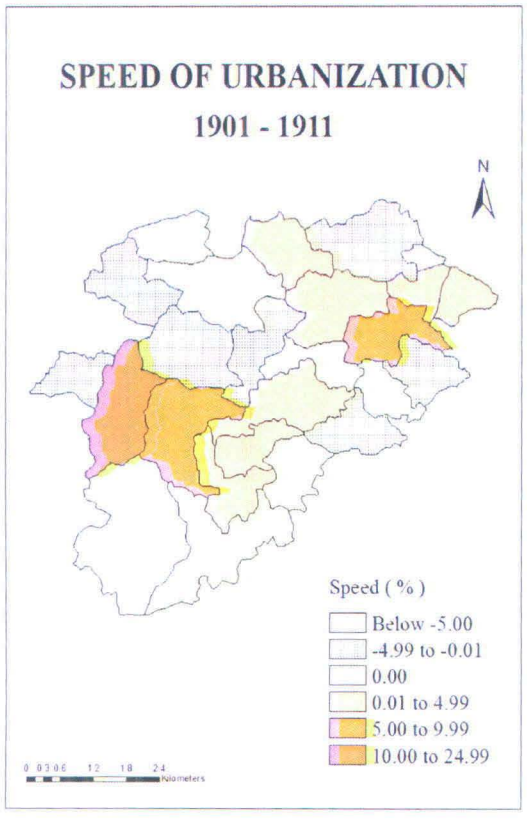
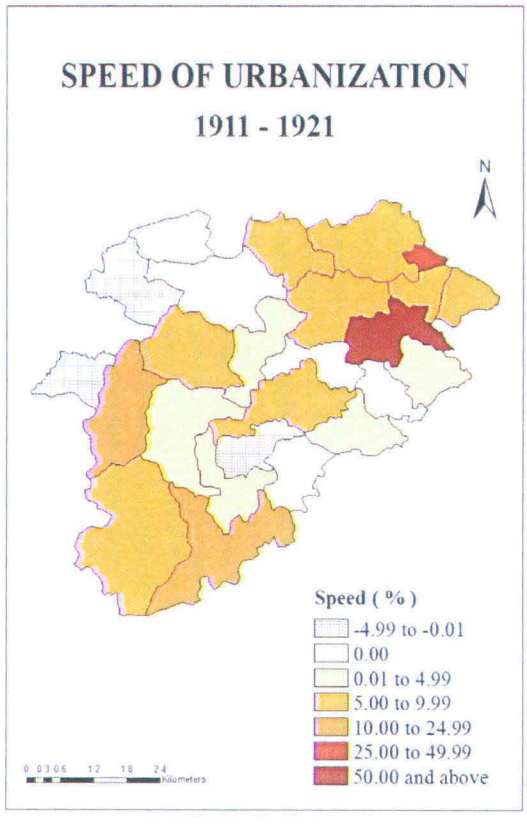


Fig: 4. 45.



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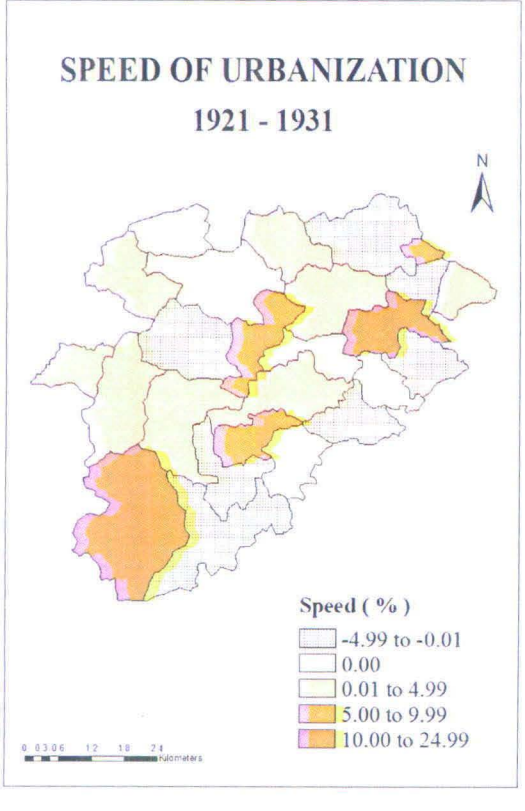

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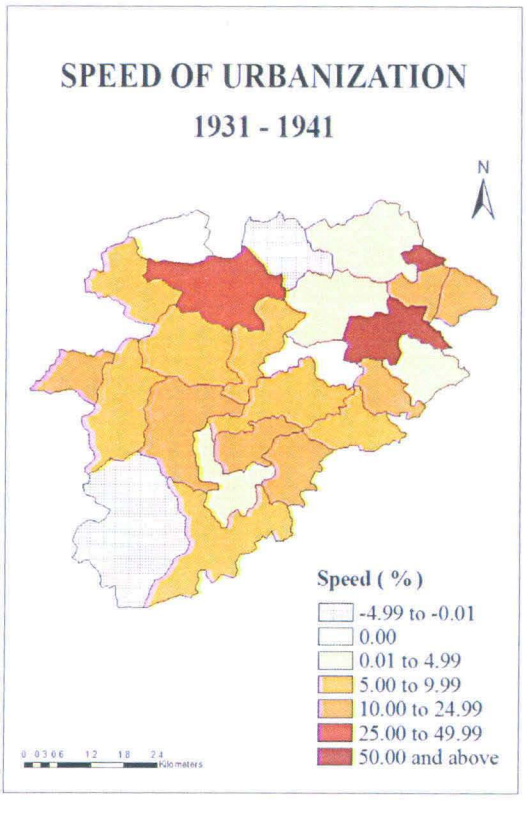


Fig: 4. 48.

Source: Fig. 4.45 to 4.54 - Based on the computation in Table: 4.11

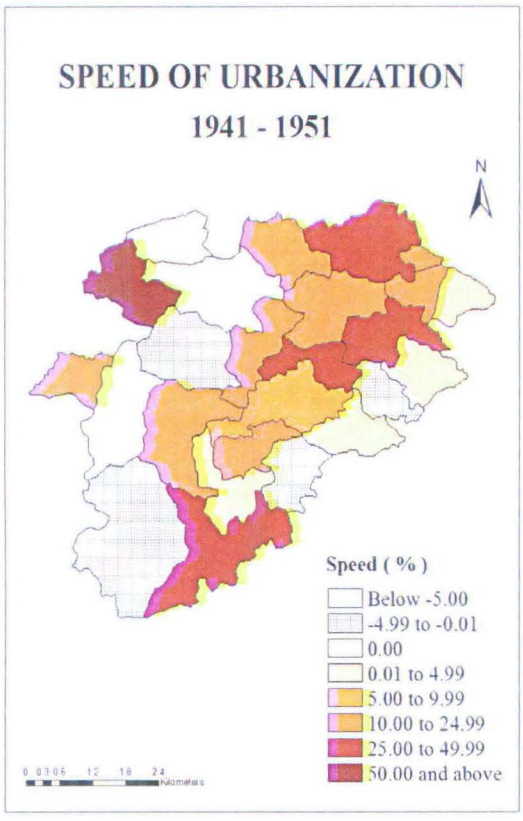
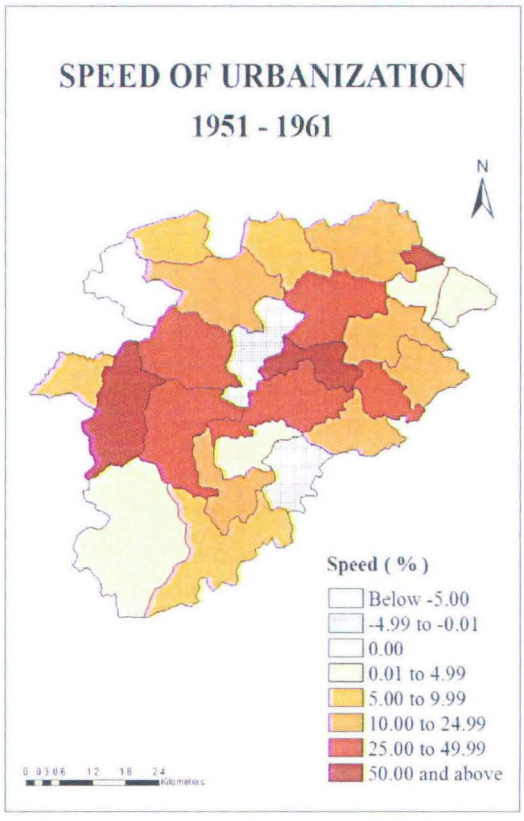


Fig: 4. 49.



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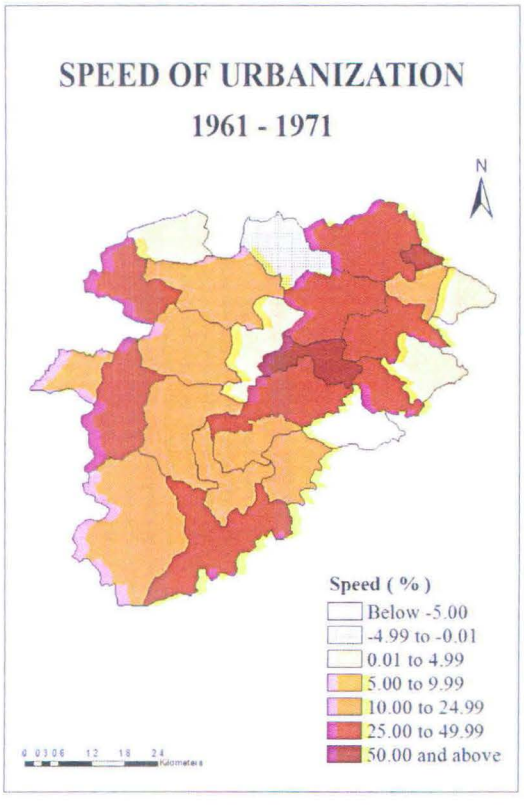

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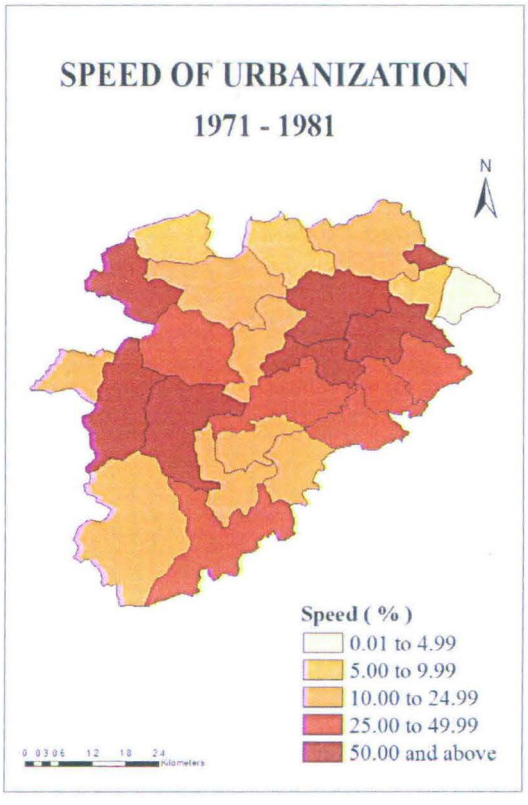

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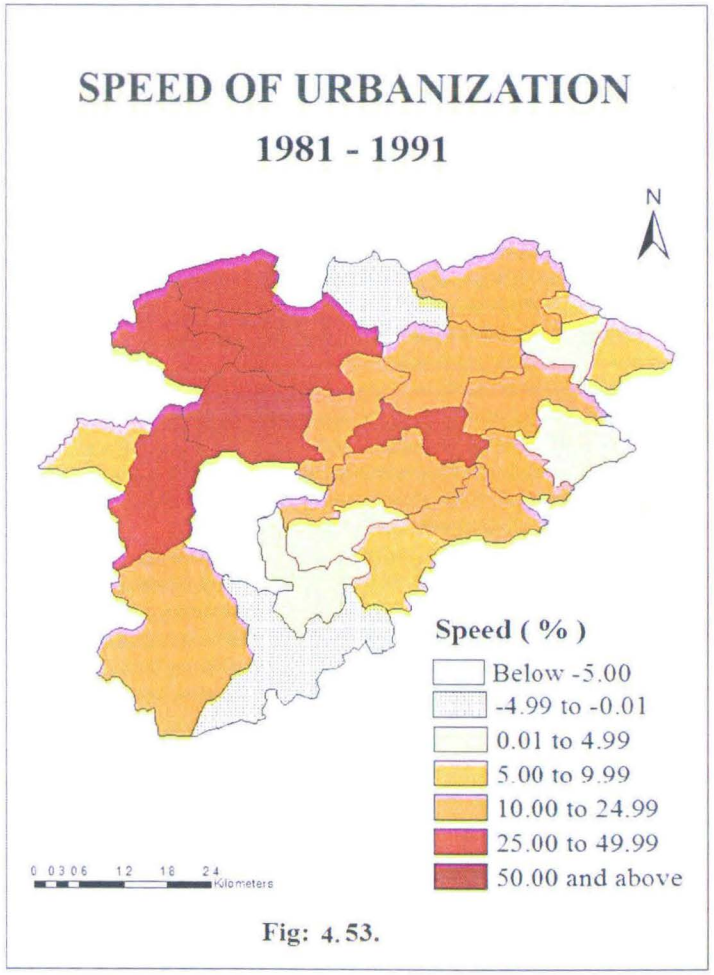

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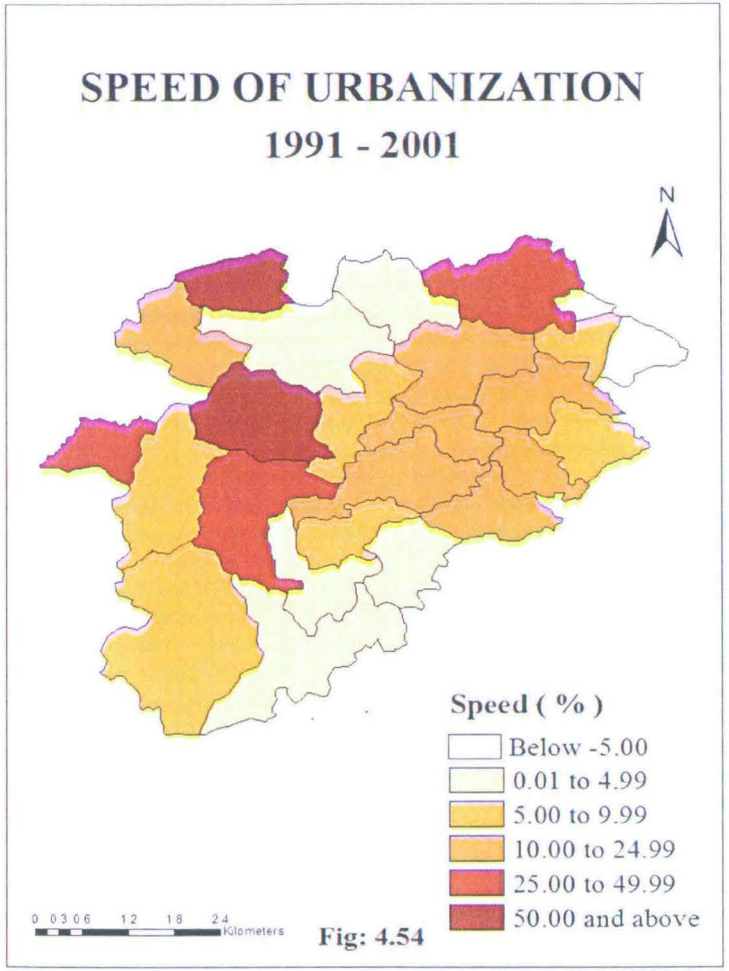


Fig: 4.54

Table: 4.11

Speed of Urbanization

in the South East Resource Region of India

(1901-11 to 1991-2001)

State / District	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-01
JHARKHAND										
PALAMAU	1.3	10	2.8	-4.5	12.7	9.7	-0.4	9.5	-2.9	0
HAZARIBAGH	-1.8	5.9	-1.1	0.7	34.5	15.2	44.8	18.6	21.8	34
RANCHI	2	5.1	2.4	4.7	21.3	27.5	42	72.5	13.6	21.4
DHANBAD	0	26.4	5	58.9	18.3	141.6	184.9	71.1	6.3	-41.8
SINGHBHUM	5.9	64.3	20.8	56	36.6	19.9	47.5	58.2	12.3	21.8
ORISSA										
SAMBALPUR	3	5.7	2.3	5.8	6.7	36.7	43.7	34.7	16.6	12.2
SUNDARGARH	0	0	0	0	27.8	151.1	53.6	73.4	27.7	10.1
KEONJHAR	0	0	0	17	-1.1	27.1	27.5	42.9	11.4	11.6
MAYURBHANJ	-1	0	-1.2	1.4	0.6	14.6	4.3	29.4	4.4	8.3
DHENKANAL	-0.5	1.1	-0.2	7.1	3.5	13	-5.7	38.1	20.4	15.3
PHULBANI	0	0	0	12.8	-0.7	-0.2	19.6	21.2	6.5	1.6
BOLANGIR	0.6	-4.8	7.1	11.3	10.3	2.1	22.1	22.7	4.9	7.3
KALAHANDI	1.1	0.5	-0.6	3.4	0.1	14.6	20.3	11.6	4.8	4.9
KORAPUT	0	12	-0.9	6.6	25.4	8.3	30.5	31.3	-1.1	3.1
CHATTISGARH										
BASTAR	-21.1	7.7	15.7	-2.3	-0.5	2.6	14.3	23.3	10.7	8.4
DURG	12.2	14.3	3.7	7.4	-11.8	72.1	36.4	82.4	35.7	8.9
RAIPUR	5.8	5	2.8	15.4	14.7	37.2	10.4	130.1	-57.1	44.5
BILASPUR	-2.7	6.8	-0.9	7.4	-1.9	44.7	24.9	30.2	31.6	60.9
RAIGARH	-3.8	1.8	6.8	7.9	19	-2.2	1.9	24.5	10.7	6.7
SURGUJA	0	0	0	41.1	-15.2	16.4	24.9	19.8	33.7	1.3
WEST BENGAL										
BANKURA	2.5	9.5	0.8	10.8	0.4	1.7	1.3	1.6	6.6	-9.2
PURULIA	0.8	6.7	-0.2	15.1	10.8	0.9	14.6	7.4	4.4	6.3
MADHYA PRAD.										
SIDHI	0	0	0	0	0	8.7	3.4	7.8	44.8	77.9
SHAHDOL	-0.3	-0.9	2.6	8.2	61	-14.2	48.7	59.8	33	19
BALAGHAT	0	-1.3	2.8	11.4	21.1	7.8	12.1	17.4	8.1	34.5

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.4 Urban Growth:

The most significant characteristic of the nature of urban development in case of the third world countries is the urban growth. It has been widely discussed that instead of urbanization i.e. increase in % urban, what has been occurring in the third world countries is urban growth i.e. absolute increase in total urban population. In order to take note of the urban growth, the decadal growth of urban population and Force of urbanization i.e. Urban – Rural growth difference have been taken into account.

4.3.4.1 Decadal Growth rate of Urban population:

The decadal growth of urban population gives the absolute increase in urban population for any district over a span of ten years. It is computed by the following method:

Decadal Growth rate of Urban population = $\frac{(U_{t+1}) - U_t}{U_t} * 100$

Where, U_t = Urban population of a district at t point of time

U_{t+1} = Urban population of the district at t+1 point of time

t = base year

- The urban growth has remained quite low in most of the districts prior to independence, with a few exceptions, but the spurt in urban growth is most marked in the post independence period, when the rate of growth of urban population multiplied tremendously. This was basically as a result of a huge number of new towns entering the urban arena.

- Negative urban growth rate was a frequent phenomenon of the pre-independence era resulting mainly due to frequent declassification and decline of towns. This became a thing of passé after independence, however, declassifications still occurred in the immediate years after independence, but it was balanced by the extremely high positive urban growth resulting from addition of large number of new towns.

- The level of urbanization in the entire region has been quite low with most of the districts recording a level much lower than 20% and almost half of them have level of urbanization even below 10% as per 2001. While the urban growth has been

above 20% in all the districts of the region in 2001 except Dhanbad, which has the highest level of urbanization. Thus, only Dhanbad can be said to be urbanizing in the true sense with highest level of urbanization (47 % in 2001) and lowest urban growth (13% in 2001).

- Sundergarh is again a similar case where high level of urbanization has been accompanied by low urban growth. Otherwise rest of the region has been experiencing high urban growth with high or low level of urbanization.

Table: 4.12 Distribution of districts by Decadal Growth rate of Urban Population (1901-11 to 1991 -01)

Growth Rate (%)	Number of districts									
	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-01
100.00 and above	-	1	1	1	3	9	7	3	1	1
75.00 to 99.99	-	-	-	4	1	1	6	6	1	-
50.00 to 74.99	1	1	3	4	4	5	3	10	3	2
25.00 to 49.99	3	3	3	7	7	4	7	5	16	12
10.00 to 24.99	6	5	11	2	2	3	2	1	4	9
0.01 to 9.99	7	3	2	1	4	2	-	-	-	1
0.00	7	8	5	5	2	1	-	-	-	-
Below -0.01	1	4	-	1	2	-	-	-	-	-

Source: Based on the computation in Table: 4.13

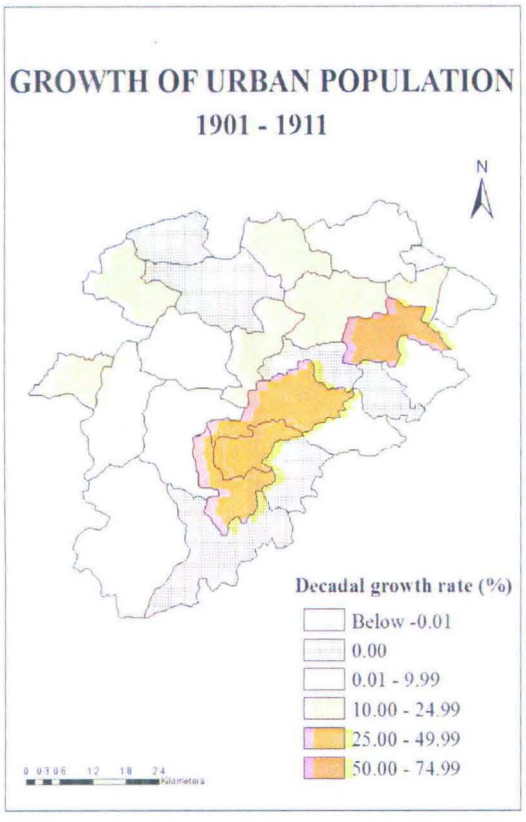


Fig: 4. 55.

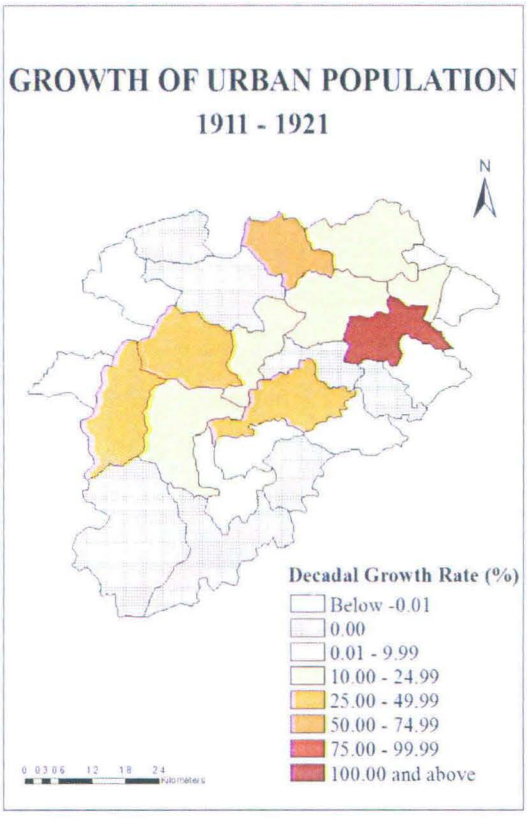
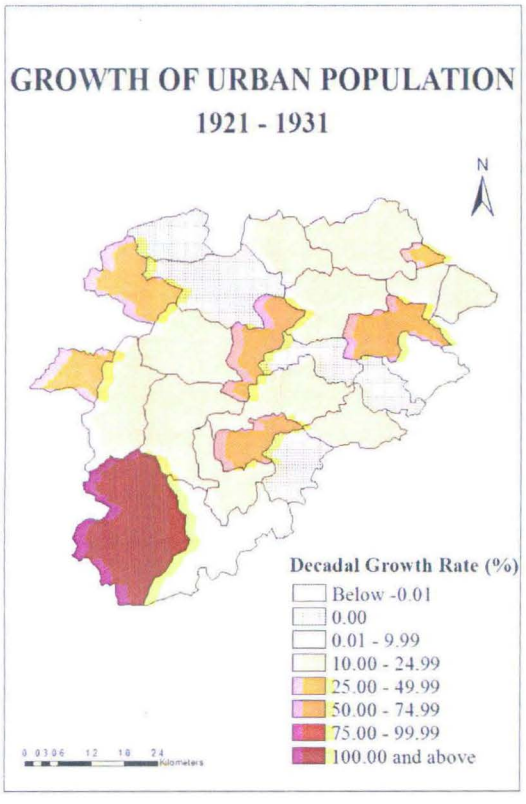


Fig: 4. 56.



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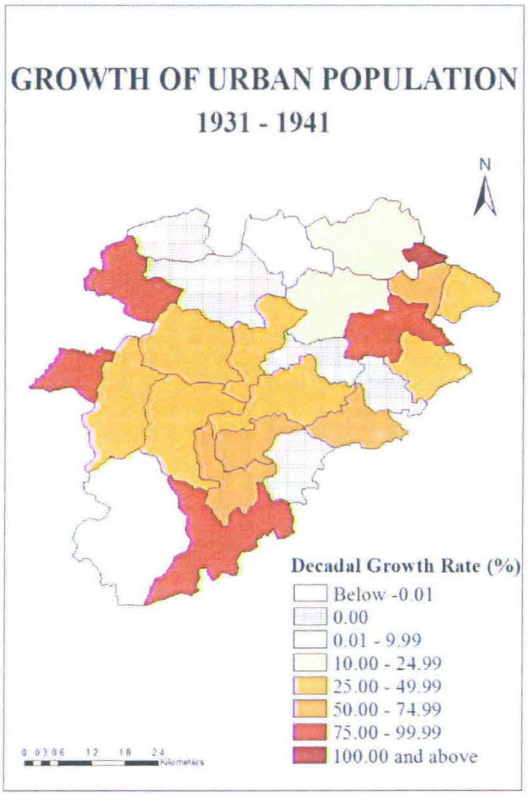
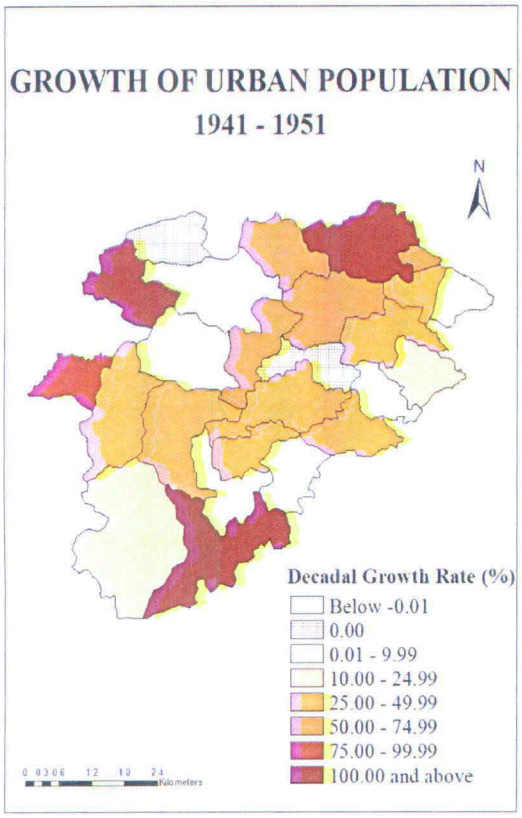


Fig: 4. 58.

Source: Fig. 4.55 to 4.64 - Based on the computation in Table: 4.13



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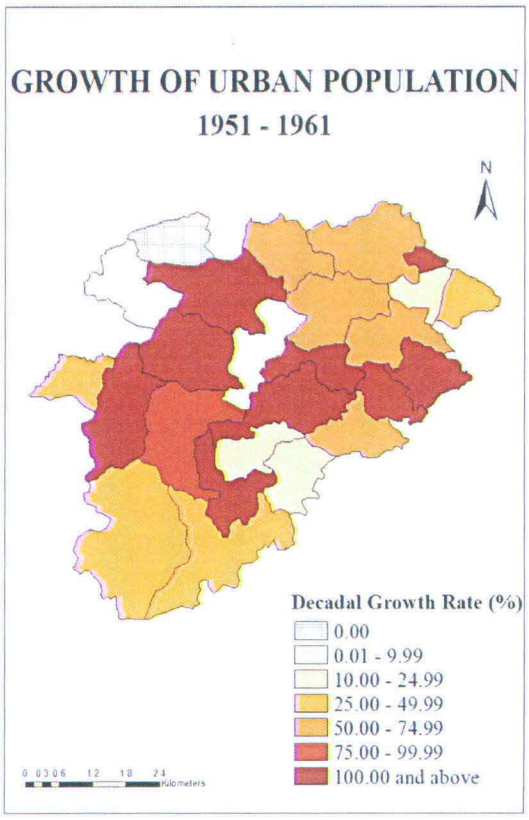

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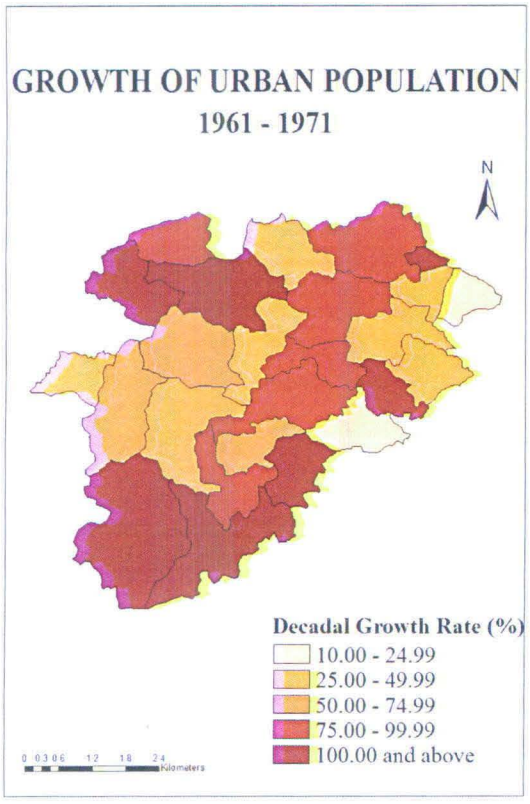

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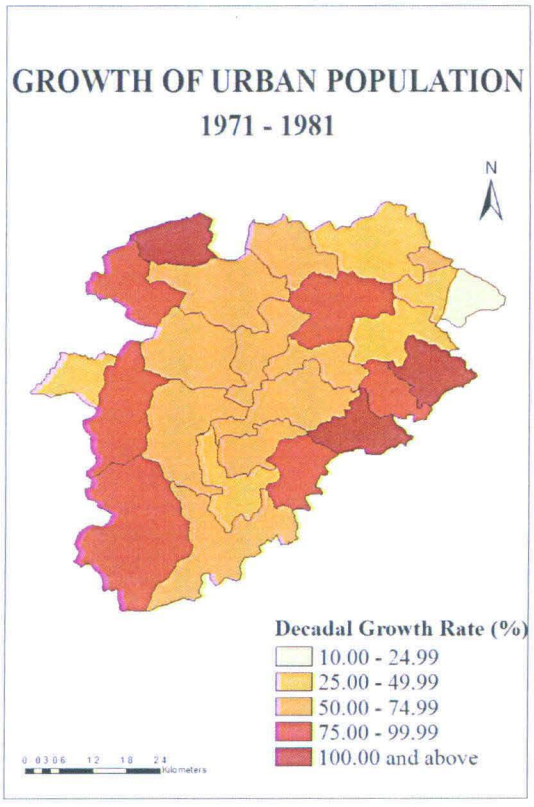

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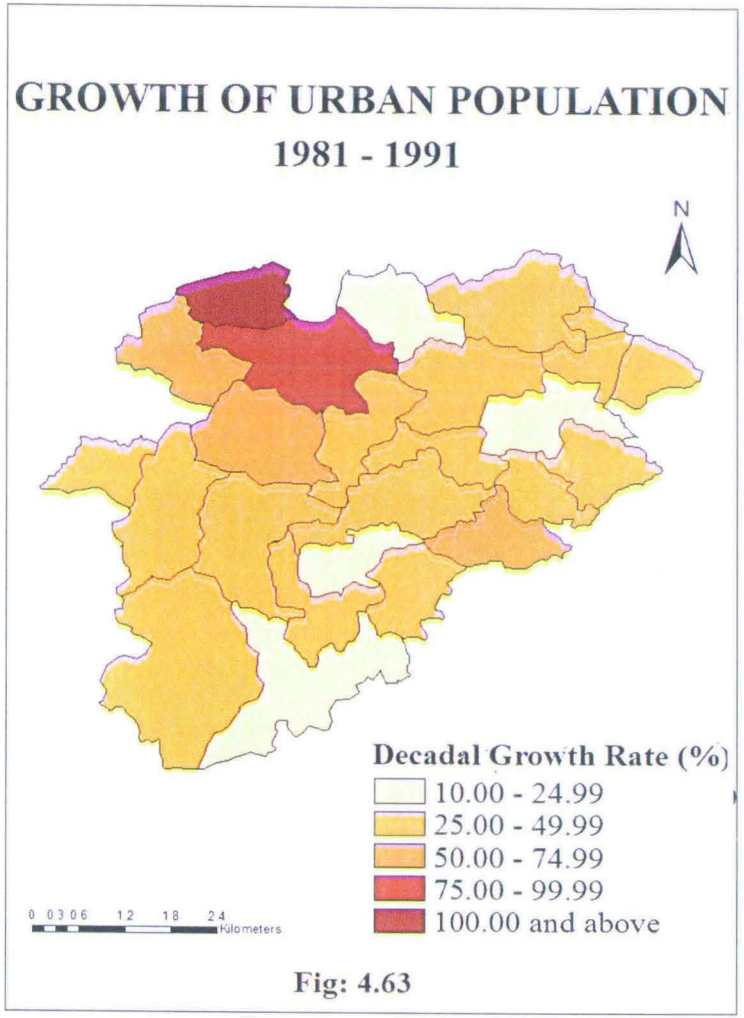


Fig: 4.63

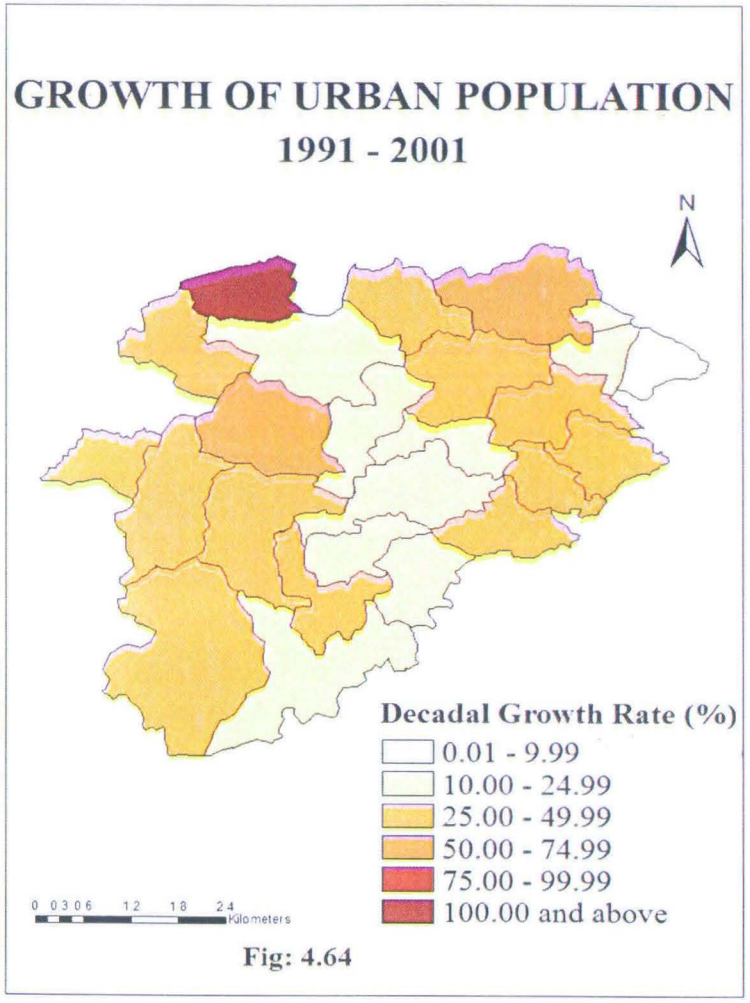


Fig: 4.64

Table: 4.13

Decadal Growth rate of Urban Population in the South East Resource Region of India (1901-11 to 1991-2001)

State / District	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-01
JHARKHAND										
PALAMAU	10.9	6.6	11.6	11.5	8	20.5	26.7	27.5	27.8	27.8
HAZARIBAGH	9.4	-0.9	18.8	15.4	10.6	23.7	26	30.1	29	25.4
RANCHI	16.8	-3.8	17.4	6.9	11.1	14.9	22.1	17.6	19.1	23
DHANBAD	38.6	18.2	14.8	11.9	25.5	58.3	26.6	44.2	26.5	23
SINGHBHUM	11.7	8.2	22.4	20.9	9.7	38.4	18.9	17.4	18.8	19.5
ORISSA										
SAMBALPUR	15.8	4.5	11.8	12.6	8.3	15.9	22.3	23.6	18.2	13.7
SUNDARGARH	30.7	4.2	15.7	12.3	12.5	37.4	35.9	29.8	17.6	16.3
KEONJHAR	27.6	4.1	21.4	15	11.1	26.3	28.5	16.7	20	16.8
MAYURBHANJ	19.5	3.4	17.9	10.7	4.5	17	19.1	10.3	19.1	18
DHENKANAL	3.3	-12.8	23.4	16.7	13.1	22.6	25.8	22.3	20.6	15.6
PHULBANI	13	-0.4	9.4	9.3	1.5	12.6	20.8	15.4	20.4	18.3
BOLANGIR	39.5	15.5	11.6	8.3	5.3	16.4	18.2	15.5	17	10
KALAHANDI	20.3	1.8	19	13.8	8.1	17.6	15.3	15.1	19.5	16.6
KORAPUT	20.2	-3.3	17.9	18.8	12.6	18	36.4	21.6	21.3	17.6
CHATTISGARH										
BASTAR	36.6	5.1	12.1	18.5	16.6	27.8	29.8	21.6	23.2	17.9
DURG	-25.3	-4.2	10	13.6	59.5	27.2	30.6	24.2	25.5	21.9
RAIPUR	-8	6.2	8.6	-0.7	8.1	22.1	30.5	-20.4	87.9	17.3
BILASPUR	13.2	7.5	13.7	10.7	8.4	20.4	20.7	21	28.4	14.1
RAIGARH	29.5	4.4	19.3	13.9	16.8	13.2	22.8	12.9	19.3	16.6
SURGUJA	27	-7.1	28.7	13.6	17.5	26.1	27.9	23.1	27.5	22.8
WEST BENGAL										
BANKURA	2	-10.4	9	16	2.3	26.2	22	16.9	18.1	13.8
PURULIA	13.7	-6	16.9	11.9	7.4	16.3	17.9	15.7	20	14
MADHYA PRAD.										
SIDHI	16.5	-13.9	14.7	17.2	9.5	24.9	33.9	27.5	38.7	33.3
SHAHDOL	14.4	-7.1	20.5	14.2	9.4	27.5	24.1	30.6	29.6	19.9
BALAGHAT	19	7.5	9.8	13	9.3	16.3	21.2	17.4	19	9.7

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.4.2 Force of Urbanization (Urban – Rural Growth difference):

The Force of Urbanization takes into account the annual % growth rate of the urban population in relation to its corresponding annual growth of rural population. This is comparatively better as it takes into account the rural counterpart as well and its corresponding growth.

Force of Urbanization (Uf) = gu – gr

Where, gu = annual % growth rate of urban population
gr = annual % growth rate of rural population

- In the earlier decades the force of urbanization was almost absent. And negative force of urbanization was not infrequent, which indicates that the rural growth was higher as compared to urban growth in those areas.

- The negative force however declined considerably in the later decades, and a tremendous spurt in force of urbanization was noted immediately after the independence.

- The maximum force of urbanization can be noted in this period i.e. 1951-61 in districts of Dhanbad, Sundergarh, Mayurbhanj, Keonjhar, Durg and Bilaspur.

- The force of urbanization slowed down in the subsequent decades. All the above districts with high force of urbanization immediately after independence, recorded the least even negative (Dhanbad -2.1) force of urbanization by 2001.

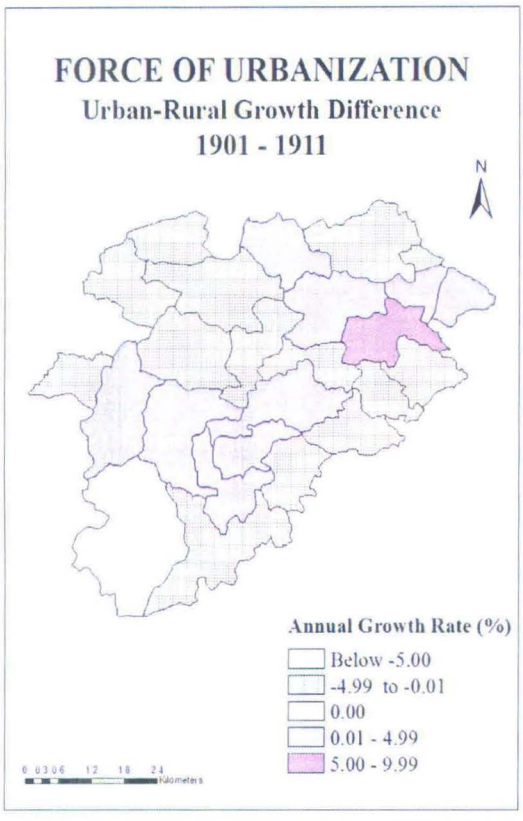


Fig: 4. 65.

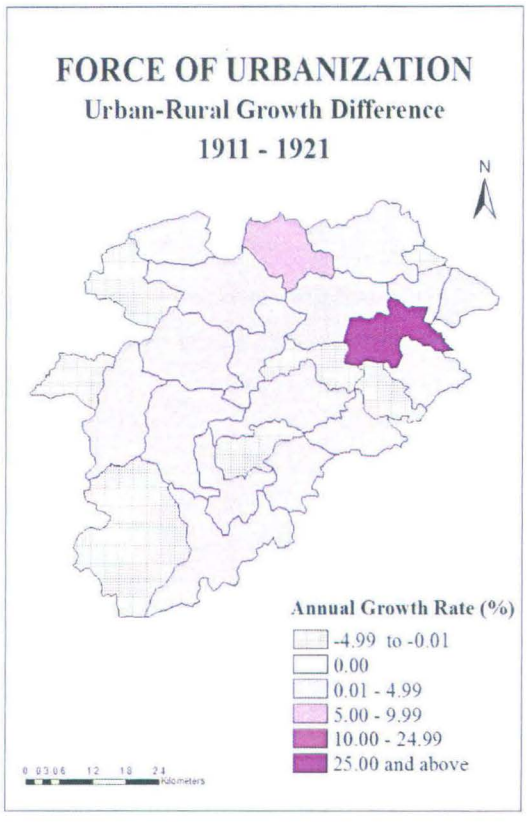
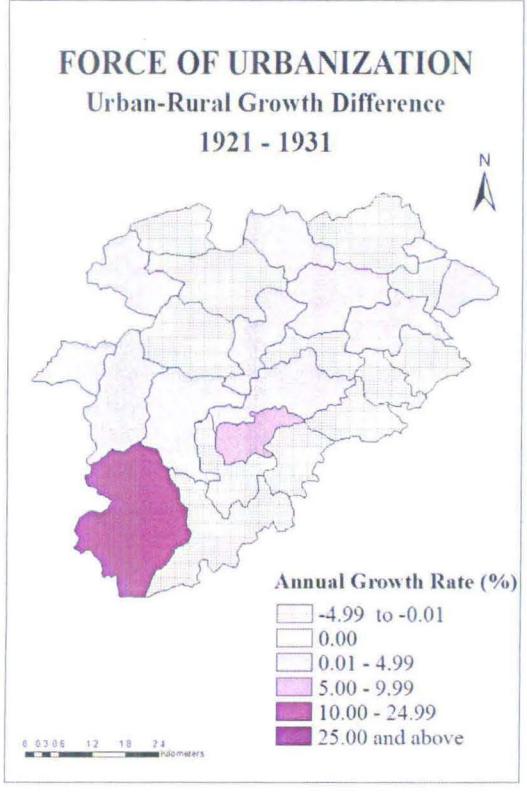


Fig: 4. 66.



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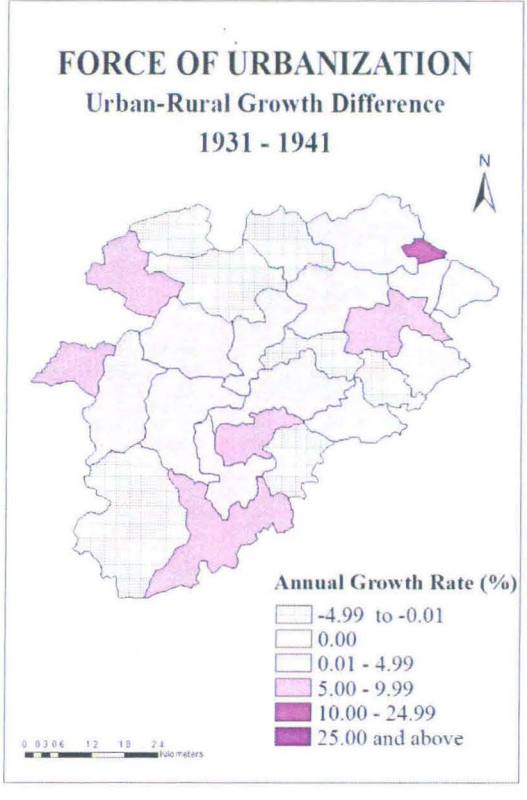
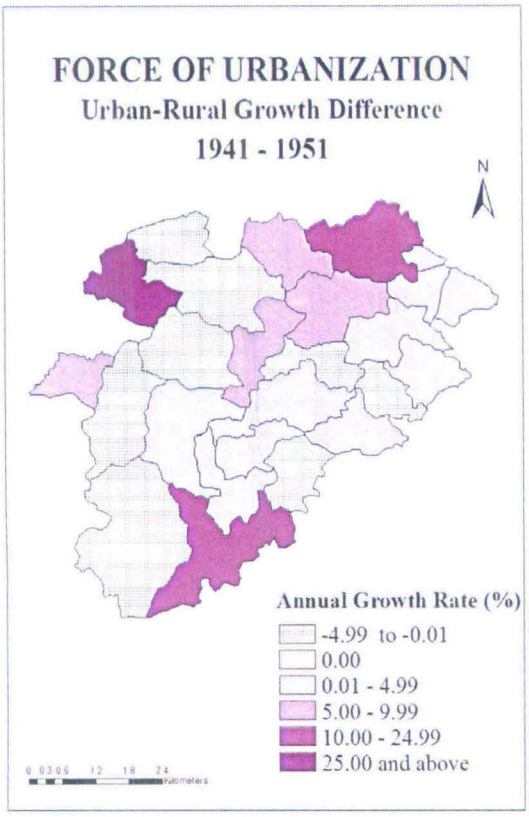


Fig: 4. 68.



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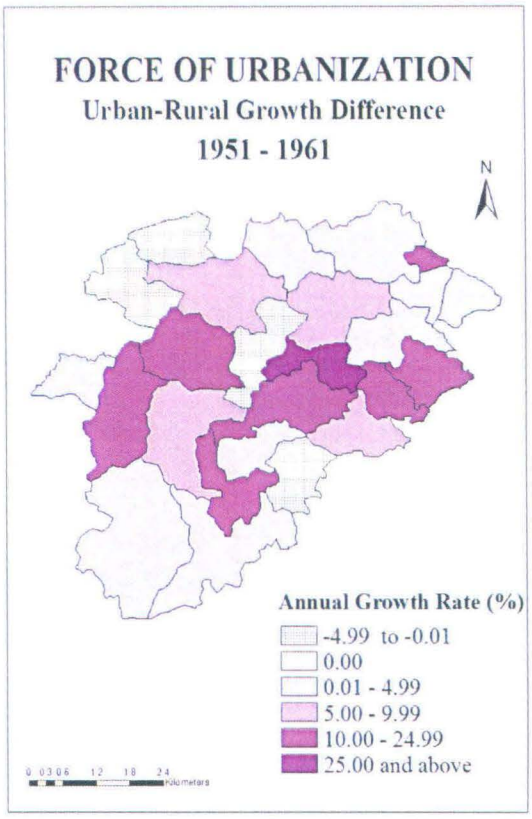


Fig: 4. 70.

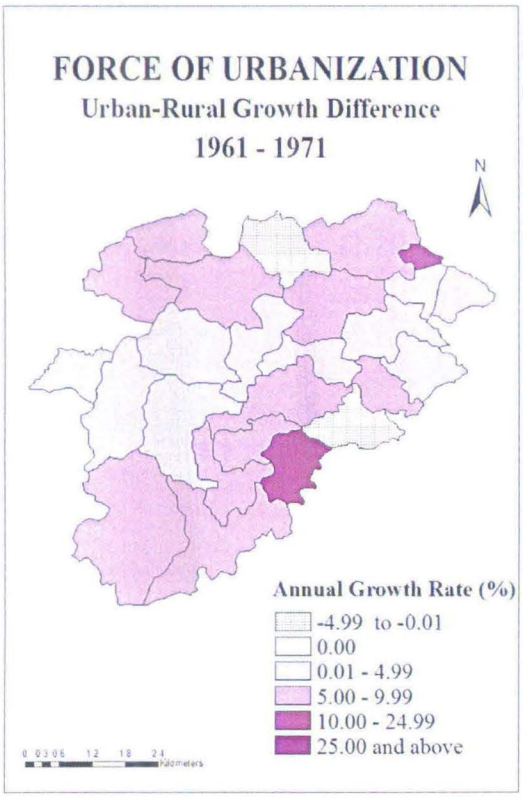


Fig: 4. 71.

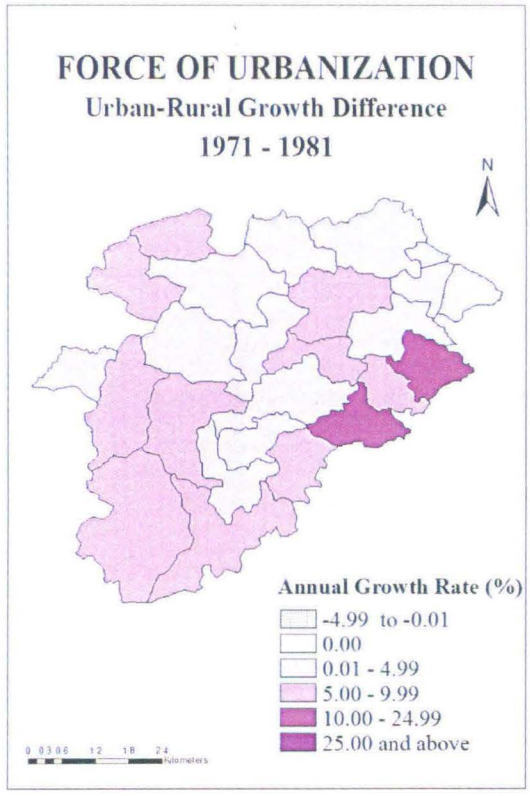
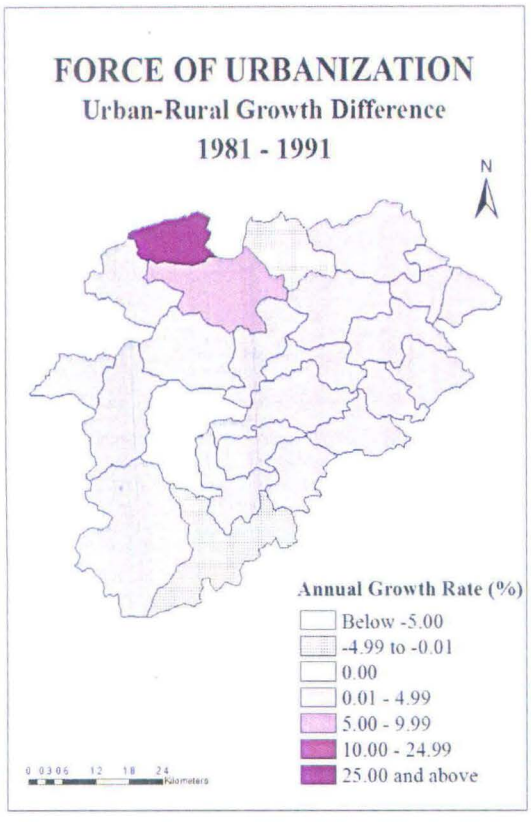


Fig: 4. 72.



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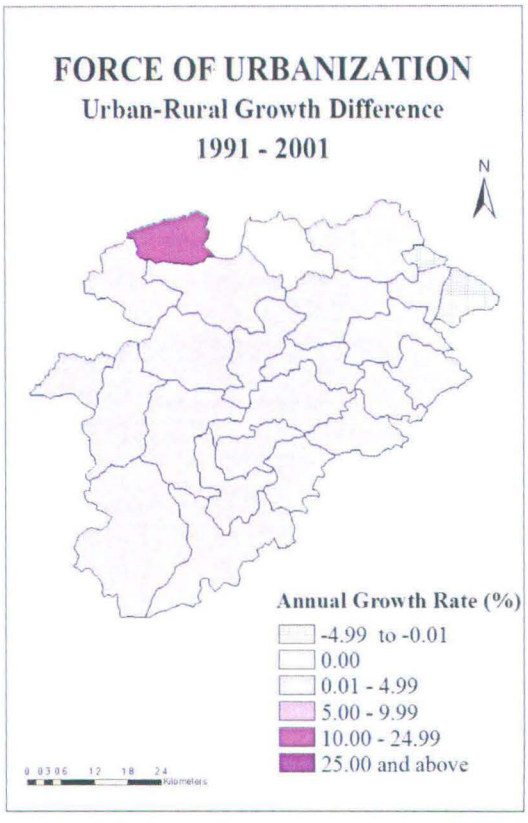


Fig: 4. 74.

Source: Fig. 4.65 to 4.74 - Based on the computation in Table: 4.15

Table: 4.14 Distribution of districts by Force of Urbanization (1901-11 to 1991-2001)

Annual Growth Rate (%)	Number of districts									
	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-01
25.00 and above	-	1	-	-	1	1	-	-	1	-
10.00 to 24.99	-	-	1	1	2	7	2	2	-	1
5.00 to 9.99	1	1	1	5	4	4	11	10	1	-
0.01 to 4.99	10	16	11	12	10	9	10	13	20	21
0	-	-	-	-	-	-	-	-	-	1
-4.99 to -0.01	13	7	12	7	8	4	2	-	2	2
Below -5.00	1	-	-	-	-	-	-	-	1	-

Source: Based on the computation in Table: 4.15

Table: 4.15

Force of Urbanization

(Urban - Rural Growth Difference)

in the South East Resource Region (1901-11 to 1991-2001)

State / District	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-01
JHARKHAND										
PALAMAU	1	6.5	1.2	-1.8	5.7	3.2	-0.1	2.7	-0.7	0
HAZARIBAGH	-0.7	2.1	-0.4	0.2	11.6	2.9	7.3	2.2	2.2	3
RANCHI	0.8	1.5	0.7	1.3	5.4	5	6	7.2	1	1.5
DHANBAD	-3.9	-1.5	2.2	21.7	2.8	23.2	12.5	4.2	0.3	-2.1
SINGHBHUM	5.9	40.6	3.4	7.4	3	1.8	3.3	3.5	0.7	1.2
ORISSA										
SAMBALPUR	2.2	3.1	1.1	2.5	2.2	11.1	7.6	4.1	1.5	1
SUNDARGARH	-3.1	-0.4	-1.6	-1.2	-0.9	76.7	5	5.3	1.5	0.5
KEONJHAR	-2.8	-0.4	-2.1	-1.3	-0.7	21.9	8.6	7.6	1.4	1.2
MAYURBHANJ	-1.3	0	-1.8	2.3	0.8	19.1	2.2	12	1	1.7
DHENKANAL	-0.2	0.4	-0.1	3.8	1.4	5.1	-1.6	12.1	3.4	2
PHULBANI	-1.3	0	-0.9	-0.8	-0.6	-0.2	20.3	8	1.6	0.3
BOLANGIR	0.4	-2.8	5.2	5.5	3.3	0.6	5.9	4.1	0.7	0.9
KALAHANDI	1.5	0.5	-0.7	3.8	0.1	12.6	8.5	2.9	1	0.9
KORAPUT	-2	0.4	-0.9	7.1	16.5	2.4	8.5	5.1	-0.1	0.4
CHATTISGARH										
BASTAR	-14	-0.4	23	-1.2	-0.3	1.6	8.3	7.9	2.3	1.5
DURG	3.5	3.6	0.8	1.6	-3.1	18.3	4.3	7.6	2.4	0.5
RAIPUR	1.7	1.4	0.7	3.4	2.7	6.4	1.3	9.5	-5.7	3.3
BILASPUR	-1	2.8	-0.3	2.5	-0.5	14.5	3.9	3.8	3.4	4.9
RAIGARH	-1.8	0.8	3.2	2.8	5.7	-0.4	0.4	5	1.7	0.9
SURGUJA	-2.7	0.7	-2.9	-0.9	-4.5	8.2	7.9	3.9	5.4	0.2
WEST BENGAL										
BANKURA	0.6	1.8	0.2	2.2	0.1	0.3	0.2	0.3	1.1	-1.4
PURULIA	0.3	1.9	-0.1	4.3	2.2	0.2	2.7	1.1	0.7	0.8
MADHYA PRAD.										
SIDHI	-1.6	1.4	-1.5	-1.7	-0.9	-2.4	5.3	8.3	32	17.2
SHAHDOL	-0.3	-0.6	2.6	6.5	29.9	-2.4	9.3	7.5	2.9	1.4
BALAGHAT	0	-0.9	2.2	7.7	8.3	1.9	2.7	3.2	1.2	4.4

Source: Compiled and computed from Town Directory, Census of India, 2001

4.3.5 Movement of Towns in terms of Size Classes:

This analysis has been undertaken in order to depict the movement of the towns in terms of various size-classes in accordance with the size class categories of Census of India, 2001. The urban centres have been classified into three categories according to the number and percentage of towns moving to higher Size-class, remaining in the same class and moving to lower Size-class at the end of each decade. However, the towns which either originated or decayed during the decade have been excluded from the analysis in order to maintain the coherency. The analysis has been conducted for each decade over the entire study period i.e. 1872-81 to 1991-2001.

The given table reveals that:

- During the entire study period of over a century, about 46 – 82% of towns in the Resource Region remained in the same Size-class although their population did undergo some positive or negative change. More number of towns remaining in same size- class is an apparent indicator of stagnation in urban development. Such stagnation can be noted during 1872-81 to 1941-51 when more than 70% of the towns remained in their same respective size classes. Only 1872-81 and 1931-41 were the two decades when the share of towns remaining in same class came down to 63 and 66% respectively.
- The immediate period after independence i.e. 1951-61 to 1971-81 is marked as the era of rapid urban development when only 46 – 61 % towns remained in their same size class. However, 1981 onwards till the recent; the stagnation has revisited the Resource Region with 68 – 76% towns again stagnating in their same class.

- The proportion of towns moving to higher size-classes remained quite low in the pre-independence period i.e. about 7% to 31% which experienced a sudden spurt to 45% during 1951-61 and went further up to 53% during 1971-81. These can be noted as the golden period of urban development in the Resource Region when the towns rapidly ascended the size class categories. This was the period of rapid urban growth. The successive decades recorded a slump with only 21 – 27% towns moving to higher size classes.
- Towns moving to lower size class constitutes negligible to low proportion. About 0% to 10% towns have experienced slump in terms of size class during the entire study period.

Table: 4.16. Movement of Towns in their Size Classes in the South Resource Region of India, (1872-81 to 1991-2001)

Years	No./ %	Moving to Higher Class	Remaining in Same Class	Moving to Lower Class	Total
1872-1881	No.	6	12	1	19
	%	31.6	63.2	5.3	100
1881-1891	No.	6	21	0	27
	%	22.2	77.8	0.0	100
1891-1901	No.	2	23	3	28
	%	7.1	82.1	10.7	100
1901-1911	No.	8	32	1	41
	%	19.5	78.0	2.4	100
1911-1921	No.	6	35	4	45
	%	13.3	77.8	8.9	100
1921-1931	No.	14	48	0	62
	%	22.6	77.4	0.0	100
1931-1941	No.	22	46	1	69
	%	31.9	66.7	1.4	100
1941-1951	No.	21	58	3	82
	%	25.6	70.7	3.7	100
1951-1961	No.	44	53	0	97
	%	45.4	54.6	0.0	100
1961-1971	No.	54	91	2	147
	%	36.7	61.9	1.4	100
1971-1981	No.	106	92	1	199
	%	53.3	46.2	0.5	100
1981-1991	No.	70	173	8	251
	%	27.9	68.9	3.2	100
1991-2001	No.	71	252	6	329
	%	21.6	76.6	1.8	100

Number of Towns Born or Dead has not been included.

Source: Compiled and computed from Census of India, 1872 to 2001.

Based on: The structure of the above table has been adopted from:

Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 233;

However, the methodology adopted differs from the above source.

4.3.6 Growth of Towns in each Size Class:

An attempt has been made to delve further into the size-class analysis with the growth of number of towns in each size-class and growth rate of the urban population by size-class of towns. The following table showing the number of towns in each size-class over the entire study period, i.e. 1871 – 2001. It indicates that:

- During the pre-Independence decades, there were no Class I and Class II towns till 1911. It was only in 1921 when one Class II town came up (Jamshedpur), followed by two Class II towns (Jamshedpur and Ranchi) in 1931 and the first Class I city (Jamshedpur) emerged in 1941. The post Independence decades of 1971-1991 marked a considerable increase in the number of Class II towns which rose from 8 to 37 towns in merely two decades. Increase in the number of Class I cities have been rather gradual during 1971 – 1991 when the number rose from 9 to 19 towns only in the two decades. However, 1991-2001 marked a slow down in case of Class II towns (37 to 39 towns) while Class I cities experienced great boost from 19 to 27 towns during a single decade.

- Class V (5,000 – 9,999) has been the dominant size class holding the maximum number of towns ever since 1881 till 1971, ranging from 14 out of 28 towns (50%) in 1881 to 66 out of 202 towns (33%) in 1971. From 1981 onwards, Class IV (10,000 – 19,999) remained the dominant class with 102 out of 251 towns (41%) in 1981, 122 out of 329 towns (37%) in 1991 and 115 out of 412 towns (28%) in 2001. The upward shift in the median class of towns is clearly noticeable. Gradually, the towns are getting distributed over the various size classes and there has been comparatively lesser concentration of huge number of towns in a single-lower size class.

The growth rate of the urban population has been indicated in terms of growth rate of the towns by their size class. This gives a relative picture of the towns by their size class depicting their comparative situation over the decades from 1872 – 2001. The following table on the growth rates indicates that:

Table: 4.17. Number of Towns in each Size Class in the South East Resource Region of India (1872 - 2001)

Size Class	Number of Towns													
	1872	1881	1891	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
1,00,000 and above	-	-	-	-	-	-	-	1	2	5	9	13	19	27
50,000 to 99,999	-	-	-	-	-	1	2	4	3	5	8	27	37	39
20,000 to 49,999	1	2	3	4	7	7	8	10	15	30	50	56	68	96
10,000 to 19,999	8	7	8	10	8	10	16	18	24	47	61	102	122	115
5,000 to 9,999	6	14	16	22	26	31	31	46	42	56	66	47	72	114
Less than 5,000	4	5	2	10	4	14	12	7	19	6	8	6	11	21
Total	19	28	29	46	45	63	69	86	105	149	202	251	329	412

Source: Compiled and computed from Census of India, 1872 to 2001

- The growth rates of all the size classes have been very fluctuating and thus negating the chance of establishing any trend or pattern for the entire study period.

- Negative growth has been a common trend for Class VI towns (Less than 5,000) which recorded negative growth rates in 6 decades out of 13 total decades under scrutiny here.
- Similarly, for Class I to Class IV towns, negative growth has been a rare phenomenon with the exception of Class IV towns showing negative growth rates during 1872-81, 1901-11 and 1991-2001 decades and Class II towns during 1941-51.
- During 1921-31 and 1931-41, rapid development of the cities and large towns has been witnessed with maximum growth rates being in Class I cities. The immediate decades after independence witnessed similar conditions with maximum growth rates being in Class I cities during 1951-61 and 1961-71; and utmost growth gate in case of Class II towns during 1971-81 decade. Such a rapid pace slowed down for the large towns in the successive decades when Class V and Class VI towns witnessed rapid growth. This can be accounted to the growth of large number of small towns which emerged during the 1991 and 2001 Censuses to the tune of 6 to 21 Class VI towns during 1981 – 2001 and 47 to 114 Class V towns during the same decades.

Table: 4.18 Total Urban Population by Size Class of Towns in the Resource Region (1872 - 2001)

Size Class	Total Urban Population by Size Class of Towns													
	1872	1881	1891	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
1,00,000 and above	0	0	0	0	0	0	0	148711	325011	795190	1760716	3244362	4941588	7753354
50,000 to 99,999	0	0	0	0	0	57360	134255	244734	241457	383294	566539	1762921	2454714	2785602
20,000 to 49,999	32321	59028	78542	113843	190986	210952	247414	283497	462298	931558	1559567	1773511	2101114	2859360
10,000 to 19,999	118830	107990	117315	149875	111719	142705	210133	249291	333586	638955	865870	1419963	1795403	1705314
5,000 to 9,999	40857	88845	99373	146547	174642	213467	224760	336289	321408	418802	527168	347830	538564	846569
Less than 5,000	13785	20243	8373	38630	17203	56784	45146	28195	67262	23288	35865	27248	50989	88013
Total	**205793**	**276106**	**303603**	**448895**	**494550**	**681268**	**861708**	**1290717**	**1751022**	**3191087**	**5315725**	**8575835**	**11882372**	**16038212**

Source: Compiled and computed from Census of India, 1872 to 2001

Table: 4.19 Growth Rate of Towns by Size Class in the Resource Region (1872-81 to 1991-2001)

Size Class		Growth Rate of Towns by Size Class (in %)												
		1872-81	1881-91	1891-01	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-2001
I	1,00,000 and above	-	-	-	-	-	-	-	118.55	144.67	121.42	84.26	52.31	56.90
II	50,000 to 99,999	-	-	-	-	-	134.06	82.29	-1.34	58.74	47.81	211.17	39.24	13.48
III	20,000 to 49,999	82.63	33.06	44.95	67.76	10.45	17.28	14.58	63.07	101.51	67.41	13.72	18.47	36.09
IV	10,000 to 19,999	-9.12	8.64	27.75	-25.46	27.74	47.25	18.63	33.81	91.54	35.51	63.99	26.44	-5.02
V	5,000 to 9,999	117.45	11.85	47.47	19.17	22.23	5.29	49.62	-4.43	30.30	25.88	-34.02	54.84	57.19
VI	Less than 5,000	46.85	-58.64	361.36	-55.47	230.08	-20.50	-37.55	138.56	-65.38	54.01	-24.03	87.13	72.61

Source: Computed from Table: 4.18

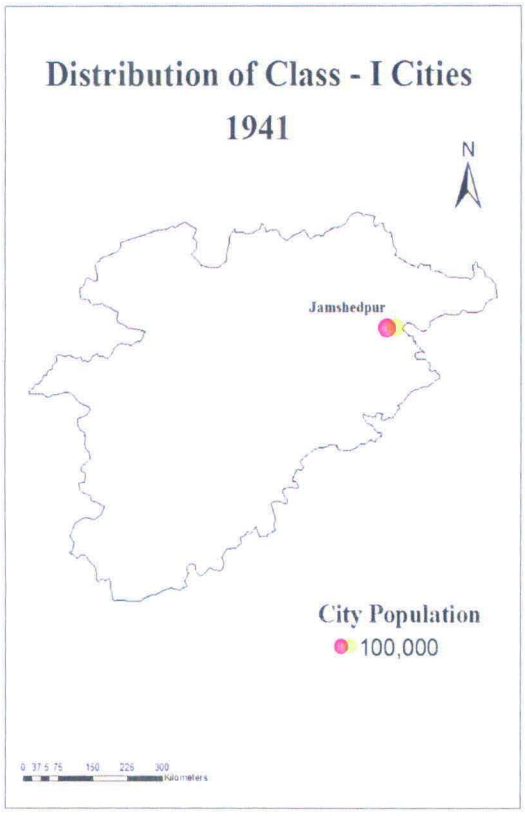


Fig: 4. 75.

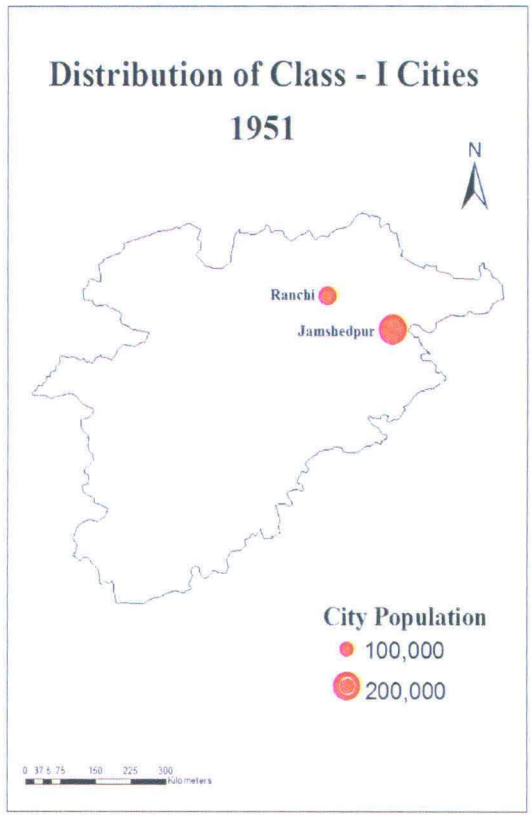


Fig: 4. 76.

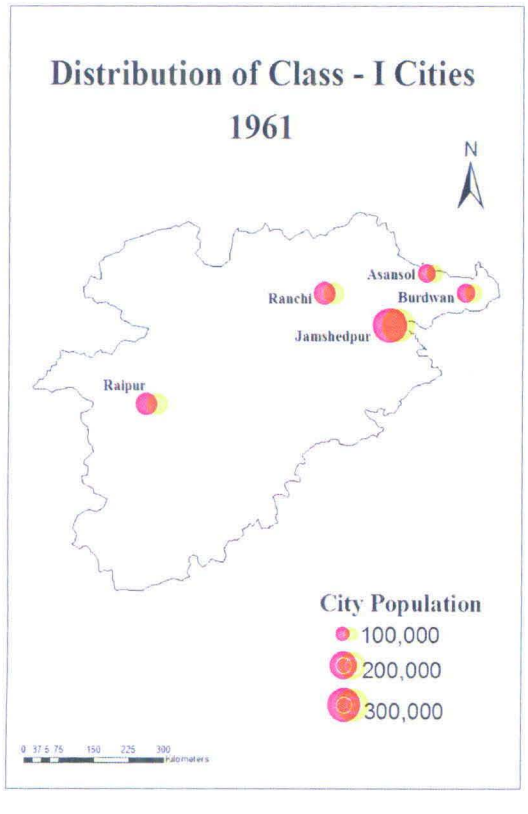


Fig: 4. 77.

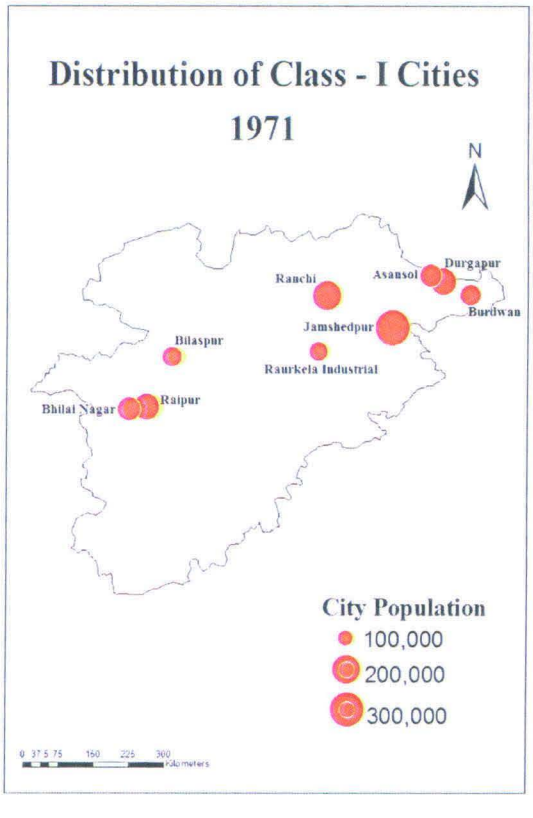


Fig: 4. 78.

Source: Fig. 4.75 to 4.81- Population of the Class I cities have been derived from Town Directory, Census of India, 2001

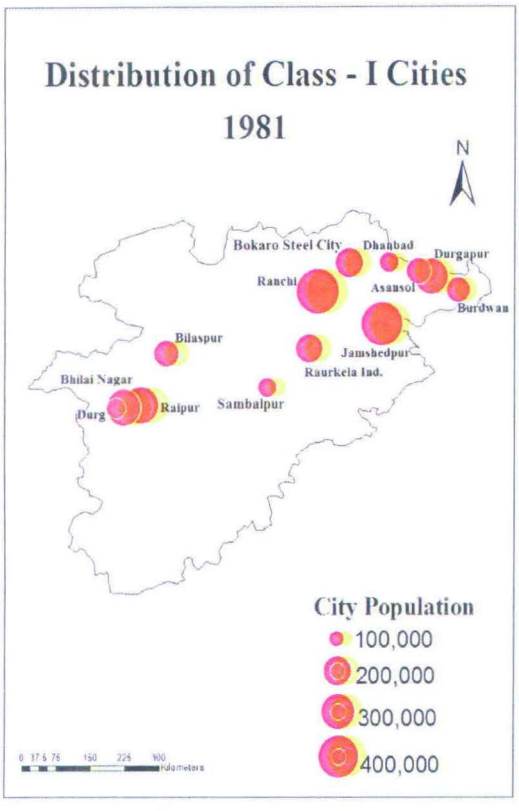


Fig: 4. 79.

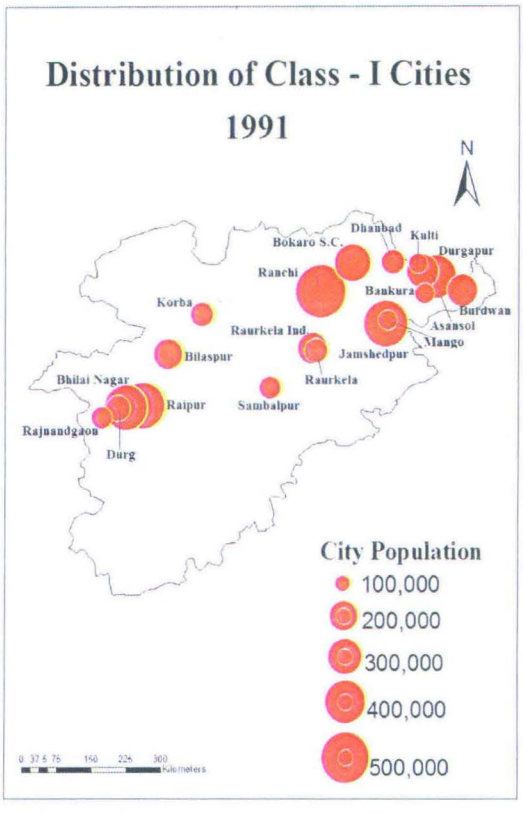


Fig: 4. 80.

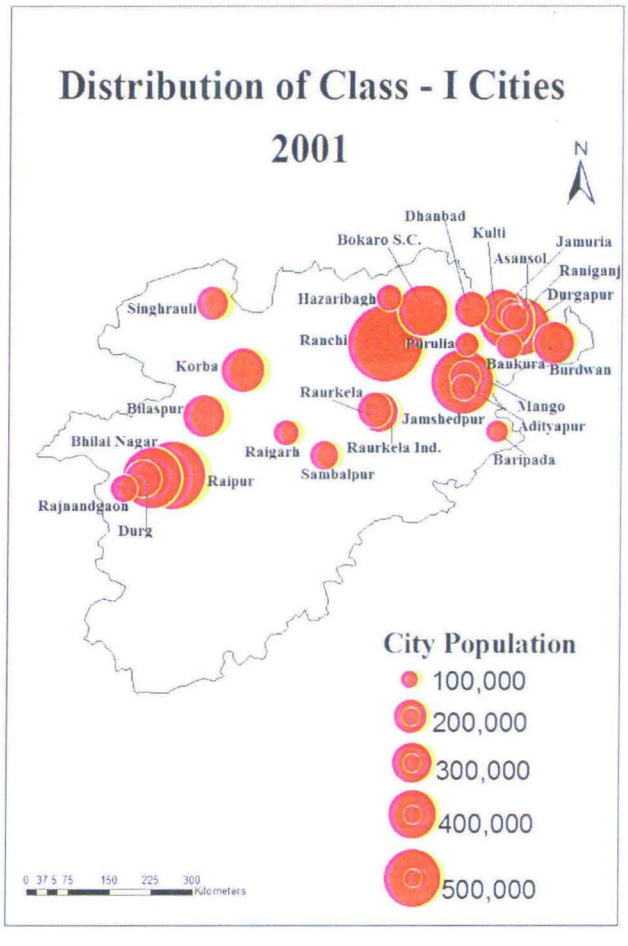


Fig: 4. 81.

4.3.7 Share of Urban Population in each Size Class Towns:

The following analysis has been undertaken considering the proportion of Urban Population residing in each size class towns over the entire study period 1872 – 2001. The Class I and II categories have been clubbed together as Cities and Large Towns; Class III and IV categories together form the Medium towns and Class V and VI towns jointly make the Small towns categories for better comprehension. The study reveals that:

- The maximum proportion of urban population of the Resource Region used to reside in Medium towns during 1872 to 1971. The proportion, however, has been gradually declining over the decades from 73% in 1872 to 46% in 1971. The Medium towns continued to decline in the successive decades as well (29% in 2001) when Cities and Large Towns occupied the maximum chunk of urban population in the region.

- Within the Medium towns, Class IV towns used to occupy the maximum chunk of 57% in 1872 to 33% in 1901. From 1911 onwards Class III towns had the majority share amongst the Medium Towns.

- Small towns used to constitute the second largest share of urban population from 1872 to 1931. From 1941 to 1971, Cities and Large towns took over holding the second largest proportion of urban population. The Small towns have experienced a steady decline ever since 1931 (31%) to 1951 (22%) after which there has been a drastic decline in case of Small Towns. During the post Independence era i.e. 1961 onwards the proportion of Urban population residing in Small Towns have dwindled, dropping off from 14% in 1961 to 4.4% in 1981. However, it improved slightly to 5.8% in 2001 following the addition of large number of small towns during 1991 and 2001 as mentioned earlier.

- Among the Small Towns, Class VI towns have constituted negligible proportion of urban population in the region during the entire study period.

- The Cities and Large Towns have increased their share of urban population by leaps and bounds ever since 1921. It rose from 8% in 1921 to 31% in merely two decades

during 1941. The post independence era witnessed rapid progress in large towns which occupied 44% of urban population during 1971 and shot up to 66% by 2001 out of which Class I cities alone constituted 48% of the urban population. From 1981 onwards, the Cities and the large towns occupied more than 50% of the urban population of the region.

- Among the Cities and Large Towns, Class I cities appeared very late on the urban map of the Resource Region i.e. during 1941 Census but immediately took over the Class II towns by 1951. The proportion of urban population in Class II towns have been fluctuating but the Class I cities galloped towards the top and occupied about 49% of the total urban population of the region by 2001.

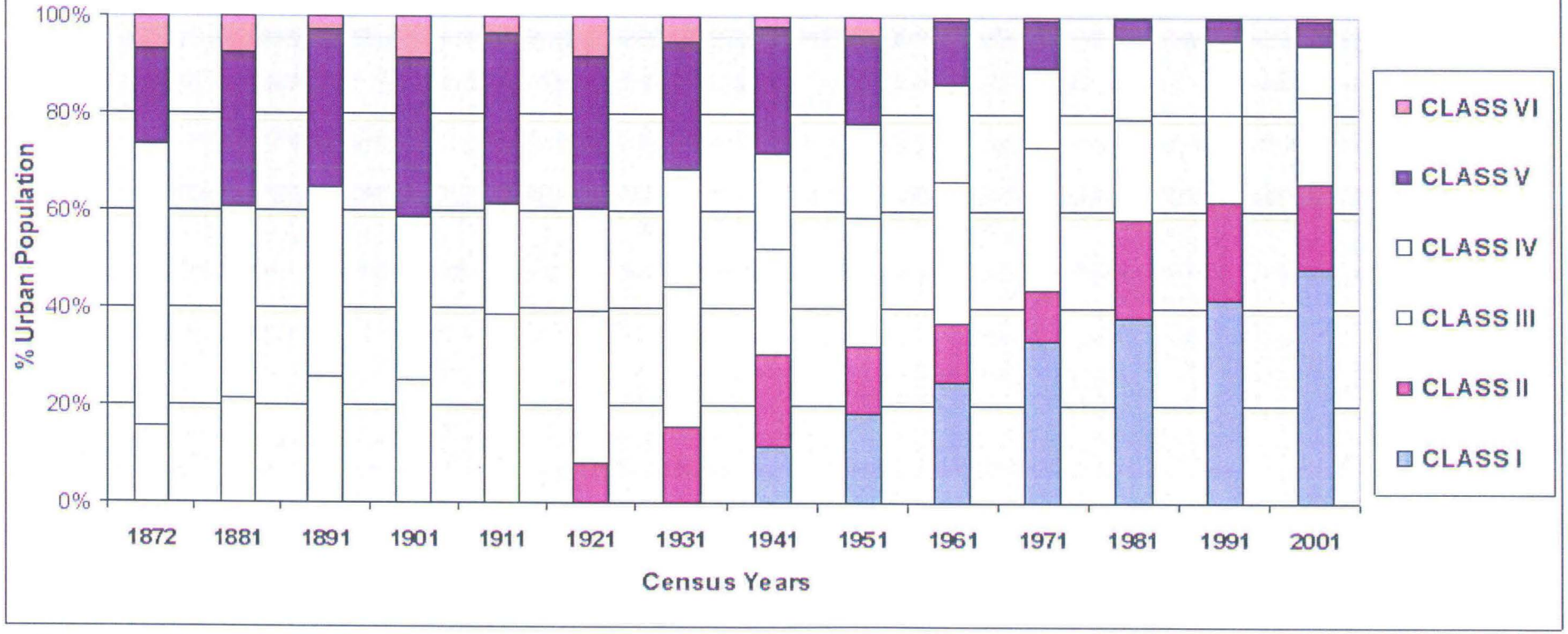
- Such a *"top heavy", "mega-cephalous"* situation reflects that most of the urban population of the region is getting concentrated in the Cities while the Medium towns are persistently declining and Small towns are suffering from utter stagnation.

Table: 4.20 Share of Urban Population in each Size Class of Towns in the Resource Region (1872 - 2001)

Size Class	Share of Urban Population in each Size Class of Towns (in %)													
	1872	1881	1891	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
1,00,000 and above	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.52	18.56	24.92	33.12	37.83	41.59	48.34
50,000 to 99,999	0.00	0.00	0.00	0.00	0.00	8.42	15.58	18.96	13.79	12.01	10.66	20.56	20.66	17.37
20,000 to 49,999	15.71	21.38	25.87	25.36	38.62	30.96	28.71	21.96	26.40	29.19	29.34	20.68	17.68	17.83
10,000 to 19,999	57.74	39.11	38.64	33.39	22.59	20.95	24.39	19.31	19.05	20.02	16.29	16.56	15.11	10.63
5,000 to 9,999	19.85	32.18	32.73	32.65	35.31	31.33	26.08	26.05	18.36	13.12	9.92	4.06	4.53	5.28
Less than 5,000	6.70	7.33	2.76	8.61	3.48	8.34	5.24	2.18	3.84	0.73	0.67	0.32	0.43	0.55
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Computed from Census of India, 1872 to 2001

Fig: 4.82 Share of Urban Population by Size Classof Towns in the Resource Region (1872 - 2001)



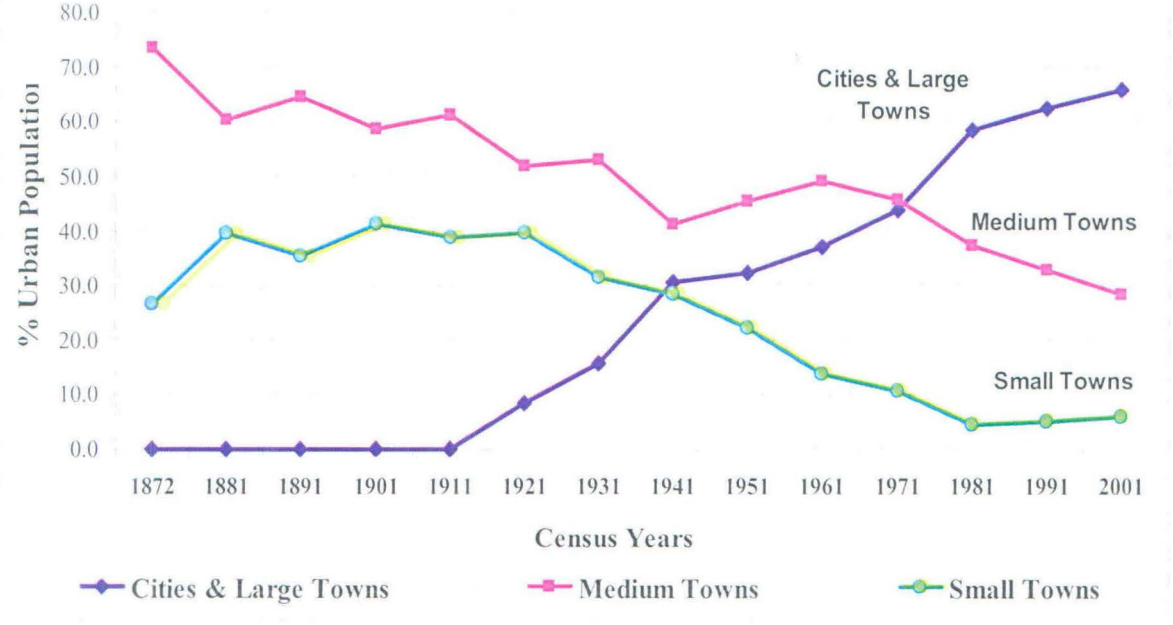
Source: Based on the computation in Table: 4.20

Table: 4.21 Share of Urban Population in Large, Medium and Small Towns (1872 – 2001)

Size Class	Share of Urban Population (in %)													
	1872	1881	1891	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
Cities & Large Towns	0.0	0.0	0.0	0.0	0.0	8.4	15.6	30.5	32.4	36.9	43.8	58.4	62.2	65.7
Medium Towns	73.4	60.5	64.5	58.7	61.2	51.9	53.1	41.3	45.5	49.2	45.6	37.2	32.8	28.5
Small Towns	26.6	39.5	35.5	41.3	38.8	39.7	31.3	28.2	22.2	13.9	10.6	4.4	5.0	5.8

Source: Computed from Table: 4.20

Table: 4.83 Share of Urban Population in Large, Medium and Small Towns (1872 – 2001)



Source: Based on the computation in Table: 4.21

4.3.8 Variability of Ranks of Selected towns:

A further analysis has been considered dealing with the largest eight urban centres in the Resource Region as per 1872 Census and their mutual variation in ranks have been considered in the successive decades from 1872 to 2001. However a large number of towns, other than these eight towns emerged during the study period and occupied top ranks, they have not been considered for the sake of consistency in study.

The measures of variability such as range and average deviation have been applied to calculate the degree of variability of ranks. The average rank of each of the eight towns over the entire period, the average deviation and range of ranks of the towns together with net gain or loss in rank during the entire period and ratio of the town's population (2001: 1872) has been calculated for the following analyses:

- Out of the 8 largest towns of the region, 4 towns (Ranchi, Sambalpur, Hazaribagh and Raipur) depicted a net gain in rank; 3 towns (Raniganj, Bishnupur and Burdwan) came up with net loss in rank while Bankura was the only town which maintained more or less the same rank with no net gain or loss in rank over the entire study period i.e. from 1872 – 2001. Maximum net gain was noted in case of Ranchi, which climbed up from 6th rank to 1st rank in 2001 while maximum net loss in rank was experienced by Raniganj which slipped from 2nd rank to 7th rank by 2001.

- Only 50% of the towns (Bankura, Burdwan, Raipur and Hazaribagh) showed some stability of rank and shifted only 1 – 2 positions, but the rest of the 4 towns (Sambalpur, Ranchi, Bishnupur and Raniganj) experienced high variation in their respective ranks.

- All the towns, irrespective of their net gain or loss in ranks, depicted gain in their absolute population as none of the towns came up with a negative ratio of town population in 2001:1872. Highest ratio can be noted in case of Ranchi (70) followed by Raipur (35). Both these towns added considerable population over the decades.

- As per the 1872 - 2001 analysis, Raipur came up with the highest average rank of 2.0 followed by Ranchi (2.2) and Burdwan (2.2). The lowest average rank was acquired by Raniganj (6.7).

Table: 4.22 Variability of Ranks of Selected Towns* in the Resource Region (1872 - 2001)

Towns	Ranks of the Towns in														Average Rank	Average Deviation	Range of Ranks	Net Gain or Loss	Population		Ratio 2001/1872
	1872	1881	1891	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001					1872	2001	
Barddhaman	1	1	1	1	1	3	3	2	3	3	3	3	3	3	2.2	0.90	2	-2	32321	285602	8.84
Raniganj	2	8	8	6	7	7	7	7	6	8	7	7	7	7	6.7	0.88	6	-5	19578	122781	6.27
Raipur	3	2	2	2	2	2	2	1	2	2	2	2	2	2	2.0	0.14	2	1	19116	670042	35.05
BISHNUPUR	4	3	5	5	5	5	6	5	7	7	8	8	8	8	6.0	1.43	5	-4	17436	61947	3.55
BANKURA	5	4	4	4	4	4	4	4	4	4	4	5	5	5	4.3	0.41	1	0	15979	128781	8.06
RANCHI	6	5	3	3	3	1	1	3	1	1	1	1	1	1	2.2	1.39	5	5	12086	847093	70.09
HAZARIBAG	7	6	6	7	6	6	5	6	5	5	6	6	6	6	5.9	0.40	2	1	11050	127269	11.52
SAMBALPUR	8	7	7	8	8	8	8	8	8	6	5	4	4	4	6.6	1.46	4	4	11020	157253	14.27

Source: Based on Census of India (1872 - 2001)

* The Largest 8 towns of the Resource Region as per 1872 Census.

Based on: The structure and methodology in the above table has been adopted from:

Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 239

Given the enormity of the study period which spans over more than a century, it would be unfair to neglect the major towns which surfaced in the later decades. Therefore, another similar analysis has been undertaken which considers the largest eight towns in the Resource Region as per the 1961 Census and their mutual variation in ranks thereafter till 2001. This shall do justice to the large cities which emerged during the post Independence period. However, other towns which came up during 1961-2001 have been again excluded to maintain the coherency.

- Out of the 8 largest towns of the region as per the 1961 Census, 4 towns (Ranchi, Raipur, Bilaspur and Bhilai Nagar) depicted a net gain in rank; 3 towns (Jamshedpur, Burdwan and Raurkela Industrial Township) came up with net loss in rank while Asansol was the only town which retained approximately the same rank with no net gain or loss in rank over the entire study period i.e. from 1961 – 2001. Maximum net gain was noted in case of Bhilai Nagar, which climbed up from 8^{th} rank to 4^{th} rank in 2001 while maximum net loss in rank was experienced by Burdwan which slipped from 4^{th} rank to 7^{th} rank by 2001.

- About 63% of the towns (Jamshedpur, Ranchi, Raipur, Bilaspur and Asansol) showed relative steadiness of rank and shifted only 1 – 2 positions, and the rest of the 3 towns (Bhilai Nagar, Burdwan and Raurkela) experienced higher variation in their respective ranks.

- All the towns, yet again, regardless of their net gain or loss in ranks, depicted gain in their absolute population. Highest ratio (2001:1961) can be noted in case of Bhilai Nagar (6.46) followed by Ranchi (6.04). Both these towns added considerable population over the decades.

- As per the 1961 - 2001 analysis, Ranchi came up with the highest average rank of 1.4 followed by Jamshedpur (1.8) and Raipur (2.8). The lowest average rank was acquired by Raurkela and Bilaspur (6.8).

Table: 4.23 Variability of Ranks of Selected Towns* in the Resource Region (1961-2001)

Towns	Ranks of the Towns in					Average	Average	Range of	Net Gain	Population		Ratio
	1961	1971	1981	1991	2001	Rank	Deviation	Ranks	or Loss	1961	2001	2001/1961
Jamshedpur	1	1	2	2	3	1.8	0.64	2	-2	303516	612534	2.02
Ranchi	2	2	1	1	1	1.4	0.48	1	1	140253	847093	6.04
Raipur	3	3	3	3	2	2.8	0.32	1	1	139792	670042	4.79
Barddhaman	4	6	8	6	7	6.2	1.04	4	-3	108224	285602	2.64
Asansol	5	5	7	5	5	5.4	0.64	2	0	103405	475439	4.60
Raurkela Industr.	6	8	5	7	8	6.8	1.04	3	-2	90287	213360	2.36
Bilaspur	7	7	6	8	6	6.8	0.64	2	1	86706	295235	3.41
Bhilai Nagar	8	4	4	4	4	4.8	1.28	4	4	86116	556366	6.46

Source: Based on Census of India (1961 – 2001)

* The Largest 8 towns of the Resource Region as per 1961 Census.

Based on: The structure and methodology in the above table has been adopted from:

Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 239

4.4 Origin of Towns:

An investigation into the urbanization scenario of the Resource Region would sound incomplete without an attempt to understand the nature and character of the towns which emerged in this region during a century. The origin of all the towns by their year of origin and factors of origin reflects a great deal about the importance attached to every important factor during each time period. The study has been split into pre-independence and post-independence sections for comprehension as well as due to the rise of new factors in the post independence era.

There were about 21 towns during 1872 which rose to about 91 during the 1941 Census and to a thumping figure of 412 towns during 2001 Census in the Resource Region. The following exercise on origin of towns gives the total figure as 416 towns which means 4 towns have completely decayed and did not rise thereafter during the entire study period. There has been a phenomenal increase in the number of towns in the post independence era i.e. from 91 towns at the beginning to 412 towns till recent Census. The names and respective population of the towns in the South East Resource Region by each Census Year have been listed in descending order of their sizes in Appendix III A to E.

4.4.1 Origin of Towns in Pre – Independence period:

The origin of all the towns during the pre-Independence era has been classified by their respective years of origin and factors of origin. The number of towns which existed before the first Census of 1872 has been figured out as 21, based on the information provided by the Gazetteers. Their number, however, cannot be quantitatively proved as it has been qualitatively derived from various gazetteers. All of these towns were early Administrative towns mainly in the Feudatory or Princely states. The most significant factors which led to the origin of all the 91 towns in the pre-independence era were Administration, expansion of the railways, trade and commerce, setting up of industries, mining activities and other miscellaneous reasons. The following Table 4.24 depicts the origin of towns by factors and Census years and have been compiled from various volumes of the - Imperial Gazetteer of India, 1908; L.S.S. O' Malley, Bengal District Gazetteers, 1907; M.G. Hallett, Bihar and Orissa Gazetteers, 1917; W.W. Hunter, Imperial Gazetteer of India, 1885 and 1887; Orissa District

Gazetteers, 1973; Charles Grant, The Gazetteer of the Central Provinces of India, 1870; H. Coupland, District Gazetteer of Manbhum, 1911; Thornton Edward, A Gazetteer of the territories under the Government of the Viceroy of India, 1886; and Town Directory, Census of India, 2001. The structure and methodology in the table has been adopted from **Dwivedy Shubhra (1979).** The names of the respective towns have been listed in Appendix IV.

Table: 4.24 Origin of Towns by factors in Pre – Independence era in the Resource Region (Before 1872 to 1941)

		ADMINISTRATION		RAILWAY	TRADE	INDUSTRY	MINING	OTHER	TOTAL
		Early	British						
YEAR OF ORIGIN		1	2	3	4	5	6	7	
a.	Before 1872	21	-	-	-	-	-	-	21
b.	1872	-	3	1	8	2	1	-	15
c.	1881	-	3	1	1	1	-	1	7
d.	1891	-	-	-	-	-	-	-	0
e.	1901	-	-	1	5	1	2	-	9
f.	1911	-	-	-	1	1	-	-	2
g.	1921	-	-	3	5	-	2	3	13
h.	1931	-	-	-	2	1	-	3	6
i.	1941	-	-	1	3	1	10	3	18
TOTAL		21	6	7	25	7	15	10	91

Source: Compiled from various volumes of the - Imperial Gazetteer of India, 1908; L.S.S. O' Malley, Bengal District Gazetteers, 1907; M.G. Hallett, Bihar and Orissa Gazetteers, 1917; W.W. Hunter, Imperial Gazetteer of India, 1885 and 1887; Orissa District Gazetteers, 1973; Charles Grant, The Gazetteer of the Central Provinces of India, 1870; H. Coupland, District Gazetteer of Manbhum, 1911; Thornton Edward, A Gazetteer of the territories under the Government of the Viceroy of India, 1886; and Town Directory, Census of India, 2001

Based on: The structure and methodology in the above table has been adopted from:

Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi

Note: The names of the respective towns have been listed in Appendix IV

4.4.1.1. Administrative Towns:

Towns which emerged by the virtue of being centres of administration either in the Princely States or under British administration comprised of the largest proportion of towns which surfaced during the Pre independence period. About 27 towns came up due to purely reasons out of which 21 were early administrative towns and 6 of them came up as centres of British administration. The centralization of administration formed an important factor for the origin of towns as large number of people who were professionally dependent on administration of justice, revenue, legal professions etc congregated at the district headquarters which even grew at the expense of the other centres in the district.[19]

4.4.1.1.a Early Administrative towns -

There were about 21 early administrative towns which had surfaced prior to the 1872 Census. According to the information collected from various gazetteers, most of these towns have been headquarters of the Feudatory States over a long time and later became centres of trade or important railway nodes. Most of them still hold administrative prominence while the existence of the other few is only a history.

Bishnupur was the ancient capital of district Bankura and the fortified seat of the Rajas of Bishnupur, who were acclaimed as one of the most important dynasties in Bengal during the eighth century. By 1901 it became an important trading centre and the centre of the *tasar* silk industry.[20] **Baripada** was the capital of Mayurbhanj Tributary State, a seat of administration and residence of the chief.[21] **Balaghat** town became the headquarters of the Balaghat district in the Nagpur Division in Central provinces in 1867 and became a municipality in 1877.[22] **Dhenkanal** (Nijgarh) was the capital of the Dhenkanal Tributary State of Orissa. The town was founded at the end of the 16th century. The town contained the residence of the Raja in 1901.[23] **Dongargarh** was a town in Khairagarh Feudatory State in the Central Provinces which by 1901

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[19] Gadgil, D.R. (1971), *Op. Cit.*, pp. 151.

[20] The Imperial Gazetteer of India, 1908, Vol. VIII. pp. 248 - 49

[21] The Imperial Gazetteer of India, 1908, Vol. VII. pp. 18

[22] The Imperial Gazetteer of India, 1908, Vol. VI. pp. 233.

[23] The Imperial Gazetteer of India, 1908, vol. XI. pp. 320

became a centre of trade for the adjoining tracts.[24] **Durg (Drug)** was the headquarters of the district Durg in Central Provinces. It contained the mud fort which was the basis of the Maratha operations in Chattisgarh.[25] **Raipur** was the headquarters of Chattisgarh in 1818. The town is believed to have existed since the ninth century.[26] **Kanker** was the headquarters of the Kanker Feudatory State in Central Provinces.[27] **Kawardha** was the headquarters of the Kawardha Feudatory State in Central Provinces.[28] **Palamau** was the capital of the "Chero" chief during early 17th century. The extent of the "Chero" Kingdom encompassed large parts of Gaya, Hazaribagh and the entire district Palamau.[29] **Palkot** was the seat of the Raja of Chotanagpur since 1725.[30]

Sakti was the headquarters of the Sakti Feudatory State in Central Provinces and later became an important railway station on the Bengal-Nagpur railway route.[31] **Sambalpur** was the headquarters of the District Sambalpur in Orissa division of Bengal. It was founded before 1493 [32] and was constituted a municipality in 1867.[33] **Sarangarh** was the headquarters of the Sarangarh Feudatory State in Central Provinces. Weaving of *Tasar* silk cloth was an important industry in this town.[34] **Sonapur (Sonpur)** was the headquarters of the Sonpur Feudatory State in Bengal.[35] **Titlagarh** is a quite an old town having originated during the 5th century B.C.[36]

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[24] The Imperial Gazetteer of India, 1908, vol. XI, pp. 368

[25] The Imperial Gazetteer of India, 1908, vol. XI, pp. 370

[26] The Imperial Gazetteer of India, 1908, vol. XXI, pp. 59-61

[27] The Imperial Gazetteer of India, 1908, vol. XIV, pp. 402.

[28] The Imperial Gazetteer of India, 1908, vol. XV, pp. 192 - 193

[29] L.S.S. O'Malley, Bengal District Gazetteer, Palamau, 1907, p.22

[30] M.G. Hallett, Bihar and Orissa District Gazetteer , Ranchi, 1917, p. 252

[31] The Imperial Gazetteer of India, 1908, vol. XXI, pp. 392

[32] W.W. Hunter, Imperial Gazetteer of India, 1887, vol. XII, pp. 185

[33] The Imperial Gazetteer of India, 1908, vol. XXII, pp. 17

[34] The Imperial Gazetteer of India, 1908, vol. XXII, pp. 95

[35] The Imperial Gazetteer of India, 1908, vol. XXIII. pp. 86

[36] Orissa District Gazetteer , Bolangir, 1973, p. 487

4.4.1.1.b British Administrative towns –

The British Administrative towns were mainly the District, Divisional and Sub-divisional headquarters which were established by the British Government after 1872. About 6 such towns surfaced in this region, 3 towns in 1872: Ranchi, Hazaribagh and Purulia; and 3 of them in 1881: Chaibasa, Daltonganj and Rajnandgaon. High preference was allotted to advantageous location in this case like accessibility and economic utility. As a result most of these towns still command outstanding prominence amidst the backward Resource Region.

Ranchi was the headquarters of the district Ranchi in the Chotanagpur division of Bengal. It was constituted a municipality in 1869. It was also the headquarters of the Chota Nagpur Volunteer Mounted Rifles and the chief seat of Christian missionary enterprise in Bengal.[37] **Hazaribagh** was the headquarters of the District Hazaribagh in Chotanagpur Division of Bengal. It has been the head-quarters of the civil administration since 1834 and was constituted a municipality in 1869.[38] **Purulia** was the headquarters of the District Manbhum of Bengal and was constituted a municipality in 1876.[39]

Chaibasa was the headquarters of the district Singhbhum of Bengal Province and was constituted a municipality in 1875.[40] **Daltonganj** was the headquarters of district Palamau in Bengal Province and was constituted a municipality in 1888.[41] **Rajnandgaon** was the capital of Nandgaon Feudatory State, a Native State in Central Provinces. It later became an important centre for trade for the surrounding region.[42]

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[37] The Imperial Gazetteer of India, 1908, vol. XXI, p. 210-211.

[38] The Imperial Gazetteer of India, 1908, vol. XIII, p. 99.

[39] The Imperial Gazetteer of India, 1908, vol. XX, p. 421.

[40] The Imperial Gazetteer of India, 1908, vol. X, p. 121.

[41] The Imperial Gazetteer of India, 1908, vol. XI, p. 128

[42] The Imperial Gazetteer of India, 1908, vol. XXI, p. 79

4.4.1.2. Railway Towns:

With the advent and expansion of railways in the region, various new towns appeared on the urban map either due to increase in trade activity or due to creation of new centres of trade along the way through which it passed. The transportation network enhanced the importance of the already existing trade centres.[43] As a result seven towns emerged in prominence. These towns were Dhamtari, Khairagarh, Asansol, Dhanbad, Chakradharpur, Bhatpara and Adra. Most of these became important trade centres and some are flourishing industrial cities in the present decade.

Since the opening of the railway in 1901 the importance of the **Dhamtari** town has greatly increased. It was connected to Raipur town by a narrow-gauge branch railway. It was the headquarters of the Dhamtari tehsil in District Raipur and was created a municipality in 1881.[44] **Khairagarh** was a village and headquarters of Khairagarh State[45], most important of the Chhattisgarh Feudatory States. Lying on the Bengal-Nagpur Railway line, 23 miles from both the Dongargarh and Raj-Nandgaon stations and situated at the junction of A'm and Piparia, this town rose to prominence due to its fortunate location on the railway route.[46] **Asansol** was the headquarters of the Asansol Sub division in District Burdwan in Bengal and was situated on the East Indian Railway. Being an important railway junction and one of the chief centres of the coal industry, it witnessed rapid growth as a town. It was constituted a municipality in 1896. The East Indian Railway Volunteers had stationed their head-quarters here.[47]

Dhanbad was a small village until 1890.[48] With the opening of the Jharia coal field in 1891, the East India Grand Chord Line was constructed in 1894 and Dhanbad gained prominence as an important railway station. Its proximity to the Jharia coalfield coupled with its strategic location on the railway route, worked in favour of this fortunate town. It emerged as the chief distribution centre of Jharia coal. It emerged as an important railway junction linking the surrounding coalfields. **Chakradharpur** was

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[43] Gadgil, D.R. (1971), *Op. Cit,* pp. 145.

[44] The Imperial Gazetteer of India, 1908, vol. XI, p. 285

[45] The Imperial Gazetteer of India, 1908, vol. XV, p. 208

[46] Grant, Charles, The Gazetteer of the Central Provinces of India, Nagpur, 1870, pp. 242

[47] The Imperial Gazetteer of India, 1908, vol. VI, p. 8

[48] H. Coupland. District Gazetteer of Manbhum, 1911, p. 270-71

a village in District Singhbhum in Bengal Province, situated on the Bengal - Nagpur Railway, whose importance increased greatly with the opening of the railway in 1890[49]. By virtue of being an important railway centre[50], it emerged as a railway town in 1921.

4.4.1.3. Trading Towns:

The expansion of railways resulted as a boon for the small market centres of the region, which witnessed a rapid transformation from local village level weekly markets to commercial trading centres. As many as 25 such towns emerged as centres of trade and commerce. The railways also did cast peril on some old towns which were left aside from the main railway line which resulted in diversion of the trade routes altogether and considerably reduced the importance of such trade towns.[51]

Bankura was the head-quarters of the District Bankura in Bengal Province. The town is situated on the grand trunk road from Calcutta to the north-west and also on the Midnapore - Jharia branch of the Bengal-Nagpur Railway making it a chief trading dealing in rice, oilseeds, lac, cotton, silk cloth, and silk cocoons. Bankura was constituted a municipality in 1869.[52] **Chatra** was a town in the head-quarters subdivision of District Hazaribagh, Bengal, and one of the principal trade centres of the District. Chatra was constituted a municipality in 1869.[53] **Katwa** was the head-quarters of the Katwa subdivision in District Burdwan, Bengal. Katwa, being an important trade centre, steamers used to visit it the year round, but owing to the silting up of the Bhagirathi and the opening of the East Indian Railway its commercial importance declined considerably. Construction of a branch railway from Hooghly was then proposed to allow Katwa to regain its trading prominence. It was constituted a municipality in 1869.[54] A similar experience was noted in case of **Kalna** town as well which was formerly the port which supplied the District, and steamers used to visit it

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[49] L.S.S. O'Malley, Bihar and Orissa District Gazetteer, Singhbhum, 1917,pp.38

[50] The Imperial Gazetteer of India, 1908, vol. X, p. 125.

[51] Gadgil, D.R. (1971), *Op. Cit*, pp. 145.

[52] The Imperial Gazetteer of India, 1908, vol. VI, p. 391.

[53] The Imperial Gazetteer of India, 1908, vol. X, p. 181 - 182

[54] The Imperial Gazetteer of India, 1908, vol. XV, p. 190.

throughout the year, but it suffered owing to the competition with the East Indian Railway, and its population declined. [55]

Bilaspur was the leading centre in the district for the distribution of imports. Its trade was principally with Bombay. Its importance multiplied with its prime location on the railway route. A municipality was constituted in 1867.[56] **Garhwa** was a town and a municipality and the chief distributing centre for the surplus produce of the Palamau Sub-division. Stick lac, resin, catechu, cocoons of tasar silk, hides, oilseeds, ghee, cotton, and iron were collected for exportation while the imports constituted of food-grains, brass vessels, piece-goods, blankets, silk, salt, tobacco, spices, drugs etc.[57] **Lohardaga** was until 1840, the head-quarter of the District Lohardaga and was constituted a municipality in 1888.[58] It was an important market town dealing in timber, rice and oilseeds. It rose to prominence after the opening of the Ranchi-Lohardaga railway branch of the Bengal-Nagpur railway in 1913.[59]

4.4.1.4. Industrial Towns:

The exploitation of the resources under the British rule witnessed the rise of about seven industrial towns. However, given that the commercial exploitation of economically useful minerals was in full swing coupled with the catalyst effect provided by the railways in this region, the number of industrial towns was definitely restricted. There was a dearth of mineral-based industrial towns in this region in the pre-independence era.

Sonamukhi was formerly the site of a commercial residency and of an important factory of the East India Company, where weavers were employed in cotton-spinning and cloth-making. The introduction of English piece-goods led to the abandonment of these industries, the native fabrics not being able to compete with the imported European article and from that time the prosperity of this place started declining.[60]

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[55] The Imperial Gazetteer of India, 1908, vol. XIV, p. 316.

[56] The Imperial Gazetteer of India, 1908, vol. VIII, p. 233.

[57] W.W. Hunter, Imperial Gazetteer of India, 1885, vol. V, pp. 33 - 34

[58] The Imperial Gazetteer of India, 1908, vol. XVI, p. 169.

[59] W.W. Hunter, Imperial Gazetteer of India, 1886, vol. VIII, pp.487

[60] W.W. Hunter, Imperial Gazetteer of India, 1887, vol. XIII, pp. 58

Raghunathpur was a town in the District Manbhum and was a centre of the *tasar* silk industry.[61] **Jhalda** was a town in District Manbhum and a centre of the lac and cutlery industry.[62] **Bundu** was also an important centre of lac industry and it emerged as a town in 1901 in Khunti Sub division in district Ranchi. It contained several factories for the conversion of lac into shellac and was also a flourishing trade mart. [63] **Jamshedpur**, in the district Singhbhum, emerged exclusively due to the establishment of the Iron and Steel factory at Sakchi by J.N. Tata in 1908. By 1911 it emerged as a class V town (5,672) and by 1921 it rose to prominence as a class II town with a population of 57,360. Since then there has been no looking back for this Steel Township.

4.4.1.5. Mining Towns:

This being a mineral Resource Region where the commercial exploitation of the minerals including coal had begun in the late nineteenth century towns emerging due to mining activities should have been the most dominant of all factors. However, the case in S.E. Resource Region has been quite on the contrary with only 15 mining towns in the pre-independence era out of which 10 such towns surfaced only during 1941 Census. The mining towns which existed during 1872-1931 were Raniganj, Giridih, Umaria, Birmitrapur and Talcher. Majority of them were exclusively coal mining towns.

Raniganj was a town in the Asansol Sub division of District Burdwan. The town, which had a station on the East Indian Railway and was the head-quarters of the subdivision until 1906, owes its importance to the development of the coal industry and became one of the busiest places in Bengal.[64] This town was the centre of the Raniganj coal industry; and its prosperity dates from the discovery and working of the mines, and also from the time when it was made a station on the East Indian Railway.[65] **Giridih** was connected by a branch with the main line of the East Indian Railway at Madhupur, and was the centre of the Karharbari coal-field. Important coal-fields belonging to the

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[61] The Imperial Gazetteer of India, 1908, vol. XXI, p. 36.

[62] The Imperial Gazetteer of India, 1908, vol. XIV, p. 122.

[63] The Imperial Gazetteer of India, 1908, Vol. IX, p. 88.

[64] The Imperial Gazetteer of India, 1908, Vol. XXI, p. 233.

[65] Thornton Edward, A Gazetteer of the territories under the Government of the Viceroy of India, 1886, pp. 771

East Indian Railway were situated in the neighbourhood of Giridih town.[66] **Umaria** was a town in the Rewah State in Central India and was the centre of a coal-field. Situated on the Katni – Bilaspur branch of the Bengal-Nagpur Railway, the town came into existence on the opening of the mines in 1881.[67]

The 10 mining towns which suddenly emerged during 1941 Census were: Chhuikhadan, Jharia, Chirimiri, Ambikapur, Musabani, Bokaro, Noamundi, Bermo, Mahendragarh, and Kota. Although the majority of them were again coal mining towns, iron ore mining towns like Noamundi, Musabani etc also came up following the establishment of the TISCO at Jamshedpur. This acted as a great impetus for new settlements to come up. **Noamundi** emerged as a town due to iron ore mining while **Musabani** came up due to copper mining both in district Singhbhum.

4.4.1.6. Other Towns:

Other towns refer to those towns which emerged due to miscellaneous factors such as religious, education etc. **Baudhgarh** was the chief place of the Baudh Tributary State of Orissa in Bengal Province. It was prominent for its several ancient temples, the most important being the Nabagraha temple probably dating from the ninth century.[68] **Debagarh (Deogarh)** was the head-quarters of the Bamra Feudatory State, Bengal. It witnessed a rapid increase in population owing to the enlightened views of the chief, who invited many educated natives to take up their residence at his headquarters. It became an educational hub with a high school affiliated to the Calcutta University, a chemical and physical laboratory maintained by the State. It also had a printing press with Oriya type along with a weekly paper being published.[69] **Jugsalai** emerged as a satellite town of Jamshedpur, when this steel town started expanding rapidly.

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[66] The Imperial Gazetteer of India, 1908, Vol. XII, p. 246.

[67] The Imperial Gazetteer of India, 1908, Vol. XXIV, p. 116.

[68] The Imperial Gazetteer of India, 1908, Vol. VII, p. 135.

[69] The Imperial Gazetteer of India, 1908, Vol. XI, p. 245.

4.4.2 Origin of Towns in Post – Independence period:

The tremendous spurt in force and tempo of urbanization that was noted in the post independence era, led to the emergence of about 325 new towns in a span of about fifty years (1951 – 2001). By 2001 there were 412 total towns in the region. While tracing the origin of the new towns in the immediate decades after Independence by their factors of origin, new factors surfaced to the foreground such as Power Projects (multipurpose projects, thermal and hydroelectric plants etc.); Communication (nodal location, road transport); Satellite or Residential (satellite towns or industrial colonies of major industrial cities, large resettlement colonies transforming into Census towns etc.); and Other factors (religious, tourism etc) beside the existing factors of Administrative, Railways, Trade, Mining and Industry.

The following Table 4.25 depicts the origin of towns by factors and Census years. It has been compiled from various volumes of Orissa District Gazetteers, 1966, 1968, 1980, 1986; Gazetteer of India, Orissa State, 1991; Madhya Pradesh District Gazetteers, 1978; West Bengal District Gazetteers, 1968; Bihar District Gazetteers, 1957 and various other District Gazetteers (1951 to 1991), District Census Handbooks (1951 to 1991) of Bihar, Orissa, Madhya Pradesh and West Bengal States and Town Directory, Census of India, 2001. The names of the respective towns have been listed in Appendix V.

Table: 4.25 Origin of Towns by factors in Post – Independence era in the Resource Region (1951 to 2001)

	YEAR OF ORIGIN	ADMINISTRATION 1	RAILWAY 2	TRADE 3	INDUSTRY 4	MINING 5	POWER PROJECTS 6	COMMUNICATION 7	SATELLITE / RESIDENTIAL 8	OTHER 9	TOTAL
a.	1951	7	1	2	3	8	-	2	-	-	23
b.	1961	8	1	12	9	13	4	2	-	-	49
c.	1971	15	2	4	8	13	4	-	3	3	52
d.	1981	11	-	-	5	19	4	-	4	3	46
e.	1991	18	1	4	7	27	1	3	4	8	73
f.	2001	9	-	4	8	21	2	11	14	13	82
TOTAL		68	5	26	40	101	15	18	25	27	325

Source: Compiled from various volumes of Orissa District Gazetteers, 1966, 1968, 1980, 1986; Gazetteer of India, Orissa State, 1991; Madhya Pradesh District Gazetteers, 1978; West Bengal District Gazetteers, 1968; Bihar District Gazetteers, 1957 and various other District Gazetteers (1951 to 1991), District Census Handbooks (1951 to 1991) of Bihar, Orissa, Madhya Pradesh and West Bengal States and Town Directory, Census of India, 2001

4.4.2.1. Administrative Towns:

There are 68 towns which emerged as owing to purely administrative reasons in the Post - Independence period in this region. The period during 1971-1991 witnessed the rise of maximum administrative towns i.e. 44 out of 68 which were mostly District, Divisional or Sub Divisional headquarters. **Khariar** was the headquarters of the ex-Khariar estate for well over 150 years due to its central location. It has been seat of activities of the American Evangelical Mission in 1920s and 1930s.[70] It came up as an administrative census town in 1961. **Sidhi** emerged as a headquarters town in 1961. **Umerkote** and **Malkangiri** in Koraput emerged as towns owing to the reclamation operation and project for settlement of displaced persons from East Pakistan by Dandakaranya Development Authority during 1971. **Junagarh** was the old time capital of Kalahandi ex-state[71] and emerged as an administrative town in 1971. **Dharamjaigarh** was the headquarters of princely state of Udaipur with commercial and industrial importance attached to it as well. It came up as an administrative town in 1981. **Barhi** was once a sub divisional town upto 1872 and later emerged as an important administrative town of Jharkhand in 2001.

4.4.2.2. Railway Towns:

Railways which became the veins of the mineral Resource Region resulting in the opening up of vast resources primarily owing to the expansion of railways in the pre-independence era, continued to be an important factor for the origin of towns in the post independence era as well. However there were only five towns which emerged by the very virtue of being important railway junctions during 1951 – 2001, out of which four of them had come up during 1951-1971. Towns like **Gomoh**, **Barkakana, Sini** and **Ghatsila** emerged as Railway Towns owing to their nodal location in the railway route. **Gomoh** is a major railway junction (renamed Netaji Subhash Chandra Bose Junction Gomoh on 23 January 2009) situated on the Grand Chord Line under Dhanbad division of the East Central Railway.

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[70] Senapati. N. (1980): Orissa District Gazetteer. Kalahandi. pp. 450.

[71] Senapati. N. (1980). *Op. Cit.* pp. 448.

4.4.2.3. Trading Towns:

Owing to the expansion of transport infrastructure both railways and roadways, about 26 trading towns came up in the post independence period out of which 12 of them emerged in 1961 itself. **Chas**, once a small grain trading hub of the region, became an important trade centre and the old Chas bazaar still remains a cheap wholesale market. It gained in stature after the establishment of the Bokaro Steel Plant. **Khariar Road** rose to prominence as a trade centre after the opening of the Raipur-Vizianagram Railway line.[72] **Anandpur** came up as a trading town following the considerable trade being carried out of forest produce brought by land and salt carried by boats. **Akaltara** grew as a trade centre specializing in paddy and grain trade. [73] **Belha (Bilha)** emerged as an important rice trading centre. **Bishamkatak (Bissam Cuttack)** grew as a trading town owing to the thriving trade of tobacco. It forms the tobacco emporium of the region.[74] **Kesinga** an obscure village formerly, grew as a prominent business centre with the opening of the Raipur-Vizianagram Railway line in early 1930s.[75] **Baloda Bazar** is a centre for cattle and grain trade. **Mahasamund** is an important commercial centre and regulated market for agricultural produce. **Saraipali** is an important retail marketing centre.

4.4.2.4. Industrial Towns:

The planned era of the post independence period witnessed the rise of many heavy industries in the region and as a result 40 industrial towns emerged during this period. **Sindri** came up in 1951 owing to the large Fertilizer factory (Fertilizer Corporation of India - FCIL) which was conceived here during the early industrializing India. **Chittaranjan** emerged during 1951 due to the railway engine manufacturing plant Chittaranjan Locomotive Works (C.L.W.) The Second Five Year plan witnessed the rise of Iron and Steel industries in this region and therefore 3 major industrial towns came up during 1961 Census **Durgapur**, **Raurkela** and **Bhilai. Raurkela** emerged as a modern steel town with the iron and Steel Plant coming up in 1955 in the public sector, which holds the distinction of being the first of the three public sector steel plants set up

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[72] Senapati, N. (1980), *Op. Cit*, pp. 451.

[73] Shrivastav, P.N. (1978): Madhya Pradesh District Gazetteer, Bilaspur, pp. 504

[74] Senapati, N. (1966): Koraput District Gazetteer, pp. 406.

[75] Senapati, N. (1980), *Op. Cit*, pp. 450.

in India to meet the growing demands of steel. The city is now the industrial capital of Orissa.[76] Other important towns which came up in 1961 are **Chirkunda** which by virtue of its strategic location amidst rich coal mines of Jharia and Raniganj and major power stations of Maithon and Panchet Dams emerged as an industrial town with major industries in and around it and **Brajrajnagar** which emerged due to the Orient Paper mills which started in this region in 1939 as the first paper mill of Orissa.[77] **Bokaro Steel City** came up in 1971 along with other important industrial townships of Gumia, Tarbha and Sunabeda. **Sunabeda** emerged following the establishment of the aero-engine factory called MIG with collaboration of Government of USSR and India. The township that grew up is well planned with modern facilities.[78] **Tarbha** known for its gold, silver and brass works rose to prominence with its silver products which witnessed a thriving trade in the region.[79] **Gumia** surfaced into the urban sphere with the establishment of the commercial explosives factory by Imperial Chemical Industry in 1956.

Prominent Steel Towns ceased to emerge after 1971. Other industrial towns came up during 1981-2001. **Ballavpur** grew with the establishment of paper mill. **Kumhari** became an industrial township with the establishment of Dharmsi Morarji Chemical factory in 1961. **Kondagaon** is a famous manufacturing centre of handicrafts that are sold throughout India under the name of Bastar tribal art. **Jamul** surfaced as an industrial town with the establishment of A.C.C. cement factory. **Kandra** gained importance owing to the establishment of Seraikela Glass Works Ltd. It is also an industrial satellite town of Jamshedpur, producing glass sheets and glass tubes. **Belpaharh** came to the fore front due to the refractory plant set up by TISCO.[80] **Damanjodi** came up with the establishment of an alumina plant on Panchpatmali bauxite deposit.[81] **Hatibandha, Lapanga** and **Champua** emerged as industrial towns with the IDL fertilizer plant, Aluminium Plant and textile industry respectively.

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[76] Behuria, N.C. (1991): Gazetteer of India, Orissa State, pp. 390.

[77] Behuria, N.C. (1991), *Op. Cit*, pp. 269.

[78] Behuria, N.C. (1991), *Op. Cit*, pp. 407.

[79] Senapati, N. (1968): Orissa District Gazetteer, Bolangir.

[80] Behuria, N.C. (1991), *Op. Cit*, pp. 257.

[81] Behuria, N.C. (1991), *Op. Cit*, pp. 291.

Khaliapali became an industrial town owing to the Hira cement factory developed by the Industrial Development Corporation (IDCOL Cement) in 1968.

Although there has been tremendous increase in the number of industrial towns in the post independence period, owing to the vast mineral resources which has been exploited in the planned years in this region, their number remains quite unsatisfactory. Most noticeable is the case of Steel towns which remained conspicuous by its absence after 1971. Also, a sizeable share of the number of industrial towns is being contributed by household industries, handicraft, paper mills, textiles, metal ware etc.

4.4.2.5. Mining Towns:

There has been unprecedented rise in the number of mining towns especially in the last few decades. Over a hundred towns emerged in this region owing to purely mining activities mainly coal and iron ore. **Jhumri Tilaiya** emerged as a mining town in 1951. It was once a major mica mining centre. While laying a railroad through Koderma in 1890s, the British first discovered vast mica deposits in this region. Mining activities started soon after and many mining houses were established. Mica mining through government corporations went on well into the mid 1990s and slowly succumbed to lack of demand and political willpower. **Tirodi,** rich in manganese and also important manganese exporting centres since 1906, came up as a mining town in 1951.

Korba, which abound in mineral wealth, coal, iron ore, bauxite etc, emerged in 1961 basically as a mining town with coal mining commencing by 1951 and commercial coal exploitation by 1956. It later developed into a power project township with two thermal power stations which started functioning around 1959 and 1963. Around these two power stations a modern township has sprung up. [82] It is now an important industrial hub and the *Power Capital* of the newly formed Chattisgarh state. **Dalli Rajhara** became a significant mining town in 1961 with highly mechanised mines according to Russian design being operational by 1960. Dalli-Rajhara is the twin mine and part of the Rajhara group of mines. It is home of captive iron ore mines and supplies iron ore to Bhilai Steel Plant. **Barbil** once an obscure village rose to

[82] Shrivastav. P.N. (1978). *Op. Cit.* pp. 513.

prominence since 1926 due to its iron and manganese mines. It later developed as a mining-industrial area with the Kalinga iron works.[83]

Koderma together with Jhumri Tilaiya was significant mica mining centre and developed as Mica capital of India. In 1940s and 1950s, a Japanese team came to **Kirandul** to verify the quality of Iron Ore (Hematite). It emerged as a mining centre of Bailadila iron ore and a mining town in 1971. Later on, National Mineral Development Corporation with help of Japan set up the first iron ore plant in Kirandul. **Kiriburu** became significant iron ore mining town in Singhbhum by 1971. **Dugda** in Bokaro is an important coal washery under BCCL, it emerged as a coal mining centre and became one of the oldest coal washeries in India with production commencing by 1960. **Joda** holds one of the richest iron ore deposits which Tata Steel began to explore in 1955. A Ferro manganese plant was established in 1958 to supply manganese alloys to TISCO, Jamshedpur. Joda mines were later modernised which resulted in large scale steel production in the region by Tata Steel, Jindal and SAIL. It witnessed unprecedented industrialization in the recent decades.

Daitari came up as an iron mining centre of Orissa Mining Corporation and emerged as a mining town in1981. **Chiria** located in Singhbhum surfaced as a significant mining centre, holding the reputation of India's largest iron ore mine with a thumping 2000 million tons of iron ore reserves, now being operated by SAIL. **Balagoda (Bolani)** iron ore mine was explored in 1930s and full scale operation started in 1960s, which was later on taken under SAIL in 1989.

Tensa and **Bade Bacheli** became mining towns in 1991 with iron ore mines under Jindal Steel & Power Ltd and NMDC respectively. **Baihar** emerged in the urban sphere as mining centre in 1991 with rich manganese fields. **Bharveli** came up as an urban centre in 2001 inspite of being an important mining centre for a century with first shipment of Bharveli manganese ore deposits being carried out in 1901. **Kalikapur** emerged as a mining town owing to its location in the Jadugora Uranium mines. **Bangura** emerged as a chromites mining town under the Orissa Mining Corporation.

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[83] Senapati, N. (1986): Orissa District Gazetteer, Kendujhar, pp. 427.

4.4.2.6. Power Project Towns:

The establishment of multipurpose projects, hydel power projects, thermal power stations etc in this region witnessed the rise of about 15 townships which surfaced around these developmental projects. As many as 12 towns out of 15 emerged during 1961 – 1981. The Damodar Valley Corporation, which was a part of the First Five Year Plan after India's independence and the first and one of the most accomplished and successful river valley projects of India, gave rise to two major towns Maithon and Panchet in 1961. **Maithon** developed due to the Maithon Dam, of the Damodar Valley Corporation (DVC). The DVC Area became one of the most industrially developed regions of India, and is often referred to as the Ruhr of India. **Panchet** Township emerged around the Panchet Dam which was the last of the four multi-purpose dams included in the first phase of the Damodar Valley Corporation. The establishment of Hirakud Multipurpose project gave birth to **Burla** and **Hirakud** in 1961. **Burla** Township was developed in course of construction of the Hirakud Dam. It started as a temporary colony of engineers and officers engaged in construction of the dam.[84]

Chandrapura Township, which came up as a census town in 1971, was created for the Thermal Power Project beside the river Damodar in erstwhile district Dhanbad. **Patratu** developed as a power project town in 1971 with residences for employees of Patratu Thermal Power Station which was established with Russian collaboration in 1962. **Kelhauri (Chachai)** grew in importance due to the Amarkantak Thermal Power Station which started functioning in 1965 and it emerged as an urban centre in 1991. **Khatiguda** became a power project town in 2001 due to its location near the Upper Indravati Dam. **Mukhiguda** holds one of the largest power houses under the Indravati Power Plant and became a town in 2001.

4.4.2.7. Communication Towns:

With the expansion of the transport network, various communication towns came up by the virtue of their nodal location on important highways. They act as liaison centres and are often situated at junction points in between major cities. A total of 18 towns emerged due to the dominance of this factor, out of which 11 towns came up only in 2001. **Rairangpur** acts as a liaison centre between Jamshedpur (Tatanagar) in

[84] Behuria, N.C. (1991): Gazetteer of India, Orissa State, Vol. II, pp. 273

Jharkhand, Durgapur in West Bengal and the Iron Ore Mines in Gorumahisani, Badampahar and Suleipat. It came up as a major communication town in 1961. The steel factories of Tata and nearby rely partly on the iron ores extracted from these mines. The Ferro Vanadium plant was put up by the Mayurbhanj Maharaja during pre independence days. It also holds the largest and oldest Sal oil extraction Plant. **Chandil,** which also holds the reputation of an important rail and road junction, emerged as a communication town in 2001. **Marma** by virtue of its prime nodal location between Nirsa and Kumardhubi, emerged as a communication town in 2001.

4.4.2.8. Satellite or Residential Towns:

Satellite or Residential towns include the peripheral outgrowths of industrial colonies of major industrial cities, large resettlement colonies which have over time transformed into Census towns, labour colonies especially created for settling the mine workers etc. Such towns were completely absent in the earlier decades of 1951-61 and started coming up by 1971 when the major industrial cities started expanding. There were 25 such towns out of which 14 came up only in 2001.

A huge number of satellite towns came up in the last four decades in the periphery of the large mining-industrial cities mainly Dhanbad, Jamshedpur, Raurkela etc. **Bhuli, Baua Kalan, Nagri Kalan, Rohraband, Basaria, Dhaunsar, Khurpania, Jena**(Dhanbad); **Bagbera, Mango, Chota Gobindpur, Gadhra, Jugsalai, Haldubani, Sarjamda, Ghorabandha** (Jamshedpur); **Jalda,** (Rourkela); **Paratdih, Bandhgora** (Giridih); **Mahira** (Andal/Ondal and Ukhra); **Banarsi** (Raipur); **Lingiyadih** (Bilaspur) are some of the important residential townships which emerged with the growth of their respective large cities. **Bhuli** holds the reputation of being one of the largest labour colonies in Asia. It holds the residential colonies of coal mine workers of Dhanbad, Jharia and surrounding mining centres in the coalfield and is managed by BCCL.

4.4.2.9. Other Towns:

Other factors which led to the origin of towns are religious, tourism etc. There had been a sizeable number of towns which emerged due to composite factors instead of one single dominating factor and also a few which surfaced due to obscure and miscellaneous reasons. About 27 such towns have been listed under this category out of

which 13 towns came up only in 2001. **Beliatore** once a seat of few respectable zamindar families emerged as seat of *Dharma* worship (*Dharmaraj* cult) which is quite popular in district Bankura.[85] **Shivrinarayan** emerged as a town following the religious value attached to it. It has been a well known place of pilgrimage, lying on the way to Puri from Central India, it attracts pilgrims en route.[86] Both these towns came into prominence in 1991. **Amarkantak** emerged as a town in 2001 due to the religious importance attached to it. It is a famous pilgrimage by virtue of being the origin point of the holy Narmada River. **Topchanchi** rose to importance with the artificial lake established as a water reservoir by British for supplying drinking water to mining centres of Jharia and Dhanbad. It developed as a tourist attraction following the visit of migratory birds.

4.5 Growth of Mining Towns:

The process of mineral exploitation in the region had formally started in the mid 19th century and commercial exploitation also began soon after. But this hardly contributed to the urbanization of the region. There was a marked absence of mining towns until 1941, in spite of the early exploration of important minerals in this mineral resource region. It was only in 1941 that small towns based on mineral exploitation surfaced as mining towns. However, the effect of this on the urbanization scenario in this region was almost imperceptible during the pre-independence period.

There existed a noticeable ***time - gap*** between the commercial exploitation of the minerals which resulted in the emergence of mining centres and development of these mining centres as urban centres. Most of the old mining towns which came up around 1941 could register substantial urban growth only in the last few decades i.e. 1981 onwards, which is almost a century after the opening up of the mineral resources. This indicates that the utilization of the indigenous resources was not focussed on bringing about an integrated and synchronized urban development in the region during the colonial period, the vestige of which is prominent in the Resource Region in recent times as well.

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[85] Banerjee, A.N. (1968): Bankura District Gazetteer, pp. 530

[86] Shrivastav, P.N. (1978), *Op. Cit*, pp. 524.

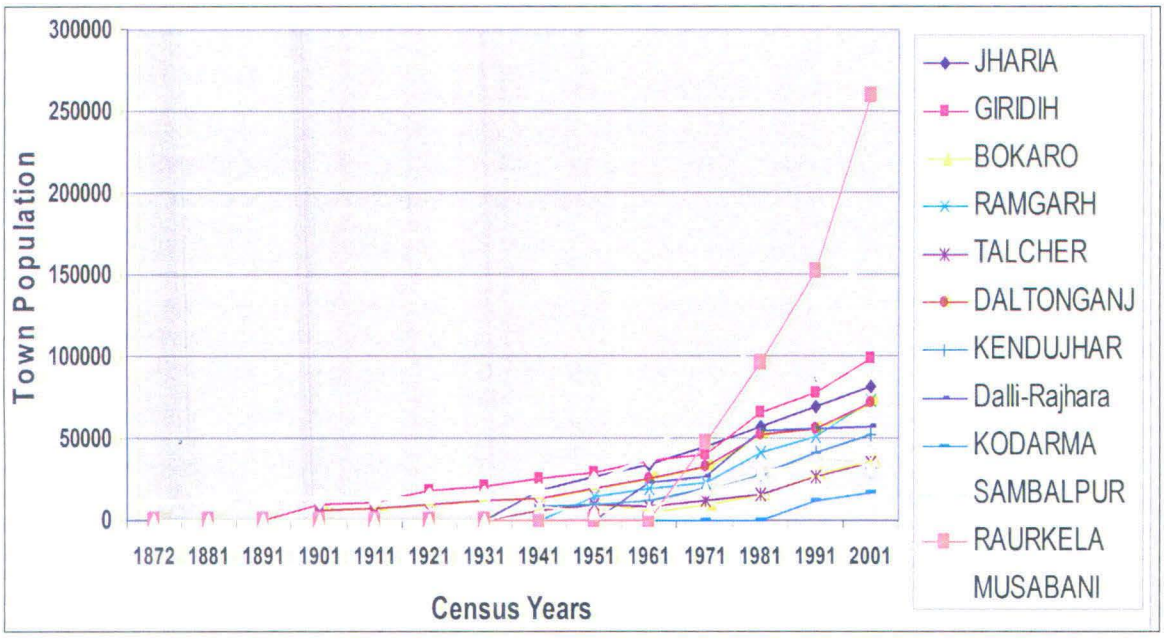
Table: 4.26 Mineral exploration and Urbanization – "the time gap" in the Resource Region

Mining centres	Opening up of mineral resources *	Emergence as Urban centre **
Jharia (coal)	1860 (1906)	1941
Giridih	1857 (1890)	1901
Bokaro	1908 (1919)	1941
Ramgarh	1920	1951
Talcher	1923-24	1941
Daltonganj	1920s	1881
Keonjhar (iron)	1927	1941
Noamundi	1917	1941
Dhalli	1887 (1914)	1961
Koderma (mica)	1826 (1900s)	1991
Sambalpur (dolomite)	1898	1872
Rourkela	1900s	1971
Musabani (copper)	1829 (1906-08)	1941
Palamau (bauxite)	1903	1872

Source: * The year of opening up of the mining centres have been derived from Dwivedy Shubhra (1979): "Some aspects of the development and utilization of resources in a colonial setting: a case study of mineral belt of Bihar, Bengal, Central Province and Orissa (1857 – 1947)", Unpublished Dissertation, Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi, pp. 66

** The year of emergence of the urban centres have been compiled from Census of India, 1872 to 1971 and Town Directory, Census of India, 2001

Fig: 4. 84 Growth of selected Mining towns in the Resource Region (1872 – 2001)



Source: compiled from Census of India, 1872 to 2001 and Town Directory, Census of India, 2001

4.6 Decay and Decline of Towns:

There has been tremendous increase in the total number of towns in the region over the entire study period of 1872 – 2001. Most of these towns have also witnessed phenomenal enhancement in their size. But urban decay has not been an alien term in the Resource region. While some towns lost their former glory, some lost their very existence in the journey of over a century.

Ichak and Palkot were the two towns which were lost forever. **Ichak** was a town and municipality in district Hazaribagh and contained the family residence of the Rajas of Ramgarh.[87] It came up as a town during 1872 census with a population of 8999 and continued in 1881 census with a population 7846. But it ceased to exist as a town thereafter. This former seat of the Ramgarh Raj dwindled down owing to the removal of the headquarters to Padma.[88] **Palkot** was a town in Gumla Subdivision of district

[87] Thornton Edward, A Gazetteer of the territories under the Government of the Viceroy of India, 1886, pp. 350

[88] Roy Choudhury, P.C. (1957): Bihar District Gazetteers, Hazaribagh, pp. 285.

Ranchi. It was the former headquarters of the Maharaja of Chotanagpur and one of the principal trade centres in the district. It had a population of 3246 in 1901.[89]

There are other towns which although retained their urban status but declined considerably in their significance. **Sonamukhi,** formerly the site of a commercial residency and of an important factory of the East India Company, where weavers were employed in cotton-spinning and cloth-making, declined in prosperity with the introduction of English piece-goods which led to the abandonment of these industries. The native fabrics not being able to compete with the imported European article led to the diminishing significance of this place during 1881.[90] However, it regained its status as a major town in the successive decades as the local centre of the shellac industry and also due to its nodal location on the road between Bishnupur and Panagarh station on the East Indian Railway. It was constituted a municipality in 1886.[91] **Katwa** was an important trade centre and a river port where steamers used to visit it the year round, but owing to the silting up of the Bhagirathi and the opening of the East Indian Railway its commercial importance declined considerably. [92] A similar experience was noted in case of **Kalna** town as well which was formerly the port which served the District, suffered owing to the competition with the East Indian Railway, and its population declined. [93] **Dainhat** was a trading town and municipality in District Burdwan. It was a situated on the banks of the Bhigirathi and declined considerably in importance and population as trade suffered due to receding of the river.[94]

There is yet another group of towns which underwent declassification for more than one census decade and reappeared in the later decades such as Ratanpur, Binika, Sakti, Chhuikhadan, Khairagarh, Jagdalpur, Chandia, Anuppur, Beohari, Jaisinghnagar and Jaithari.

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[89] The Imperial Gazetteer of India, 1908, Vol. XIX, p. 368.

[90] W.W. Hunter, Imperial Gazetteer of India, 1887, vol. XIII, pp. 58

[91] The Imperial Gazetteer of India, 1908, Vol. XXIII, p. 80.

[92] The Imperial Gazetteer of India, 1908, vol. XV, p. 190.

[93] The Imperial Gazetteer of India, 1908, vol. XIV, p. 316.

[94] W.W. Hunter, Imperial Gazetteer of India, 1887, vol. IV, pp. 95

4.7 Conclusions:

The investigation into the urbanization scenario of the Resource region spanning over a century reflects the following characteristics:

1. The degree, speed and concentration of urbanization were very low in the Resource Region during the early decades of the pre-independence period. The force of urbanization was almost in negatives. It witnessed a tremendous spurt in degree as well as pace of urbanization during the immediate decades after independence. Around 1951-61 and 1971-81, tremendous speed and force of urbanization were noted probably due to the due to the mining – industrial activities taken up by the Government of India in the plan years.

2. The tempo and force however slowed down in the successive decades during 1991 and 2001 when negligible to negative force in urbanization yet again became common. The districts which had experienced tremendous force and speed in urbanization during the earlier decades and had attained higher degrees of urbanization as compared to the rest of the region, underwent a downward trend in speed and force possibly due to reaching a near saturation in levels of urbanization.

3. The degree and concentration of urbanization increased gradually in almost all the districts in the post independence era, but their pace was again quite slow. The only districts which rose to prominence at the end of the century, i.e. Singhbhum, Ranchi, Sundergarh, Dhanbad etc were those which performed perennially well throughout the century. There was hardly any district where a drastic spurt in urban development was noted.

4. The study of urbanization in this region reflected the emergence of a **distinct Core-Periphery pattern**. The Core was characterized by unprecedented speed of urbanization during the immediate post independence decades till 1981 and attained the highest levels of urbanization with huge concentration of urbanization and constant increase in mean city sizes. The effective core formation took place around mining-industrial areas where heavy industries

were located. Two Core areas can be delineated here as **Dhanbad-Singhbhum-Sundergarh-Ranchi** core and **Durg-Raipur-Bilaspur** core. These are the pockets where urbanization and entire urban development has remained concentrated.

5. The rest of the region has persistently acted as the **Peripheral region** to these two cores, which can be easily distinguished due to the steep gradient in degree of urbanization even amongst adjacent districts. This peripheral region is characterized by low degrees of urbanization coupled with low speed and force of urbanization, lesser concentration of urbanization and mean city size of even below 10,000 persons. It has remained quite insignificant in terms of progress in mean city size. The periphery has been suffering from persistent stagnation and these districts lag almost by a century in case of urban development as compared to their core counterparts. The periphery consists of the backward districts like Palamau, Kalahandi, Bastar, Phulbani, Koraput, Keonjhar, Dhenkanal etc.

6. This indicates that the immense progress achieved by the core urban regions as early as during the colonial period and also later on in the post independence era had little effect on its peripheral areas and urban development has failed to trickle down in the rest of the region.

7. These backward districts were able to accelerate their speed of urbanization a little immediately after the independence possibly due to the emphasis on backward area development in the five year plans, but later on again slowed down. Districts like Koraput, Keonjhar etc witnessed tremendous speed in urbanization during 1961-81 but declined sharply in the following decades.

8. The post – independence period witnessed an enormous growth of urban population mainly due to emergence of new towns in the region. The decadal growth rates in the 1951-61 is almost double than that of 1941-51 in almost all the districts. But the level of urbanization shows very little improvement. This follows the **Mc Gee's** idea of Third world urbanization, where urban growth is prominent but urbanization is negligible.

9. Urban growth is increasingly being concentrated in the Cities and Large Towns. Class I cities have experienced tremendous growth during the recent decades. Medium towns which used to contain the largest share of urban population for most parts during the entire century, has witnessed a gradual decline during the recent years. Small towns, which have increased in number in the last few decades, have been suffering from utter stagnation with negligible proportion of population residing in them. The region is suffering from a *mega cephalous* situation with the class I cities almost exploding.

10. The distribution of the Class I cities have again been skewed rather than uniform. Generally, the industrial centres of the region have developed into large cities leading to a huge concentration of Class I cities in the Core Urban-Industrial areas. The periphery suffers from acute dearth of flourishing cities, which further lead to lack of development impetus in such stagnating areas.

11. During the pre-independence era, most of the towns were early administrative towns with a long regional history attached to them. The new towns which came up were mostly trading towns and railway towns which surfaced as a corollary to the advent of railways in the region. There was a prominent dearth of manufacturing towns (with very few exceptions) especially those based on heavy industries.

12. There was a perceptible absence of mining towns until 1941, in spite of the early exploration and commercial exploitation of important minerals in the mineral resource region. There existed a noticeable ***time - gap*** between the commercial exploitation of the minerals which resulted in the emergence of many mining centres and development of these mining centres as urban centres. This indicates that the utilization of the indigenous resources did not lead to synchronized urban development in the region during the colonial period.Most of the mining towns came up only in 1941 could register substantial urban growth only in the last few decades which is almost after a century of commercial mineral exploitation in this region.

13. A marked shift in the factors for origin of towns can be noted here in the post independence period. Unlike the pre independence era, this period was marked by emergence of quite a substantial number of mining and industrial towns. The opening up of many steel plants in this region in the 2nd Five year plan led to the growth of industrial towns like Bokaro Steel City, Raurkela, Durgapur and Bhilai which were typical industrial towns. Quite a substantial number of mining towns also came up due to the increased focus on development of heavy industries.

14. The major mining-industrial urban centres like Jamshedpur, Dhanbad, Bokaro Steel City, Raurkela, Durg-Bhilai Nagar etc functioned as the growth centres bringing about high levels of urbanization and urban development in their respective districts of Singhbhum, Dhanbad, Hazaribagh, Sundergarh and Durg. Such impetus was, however, extremely restricted and highly localized and failed to spill over even to the adjacent districts. In other words development could hardly spread, which goes a long way in proving why despite such rich mineral resources and huge industrial plants, the development of the overall region could not take place.

Chapter: 5

Regional Backwardness: A Reality, Contemporary Ramifications and the way ahead

Introduction

5.1 Direct Ramifications of the Developmental Process

5.1.1 Land Acquisition

5.1.2 Dwindling Forest Cover

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5.4 Conclusions

Chapter: 5

Regional Backwardness: A Reality, Contemporary Ramifications and the way ahead

"Where colonialism left off, development took over". - Rajni Kothari[1]

The developmental process in the resource – rich region took place in three different phases: the Colonial process of resource "drain", the planned development during the post independence era when resource development took place within the framework of "Internal Colonialism" and the corporate resource "grab" during the present Neo-liberal era. The post-reforms corporate process of resource development can be termed as the re-emergence of the colonial process of resource utilization as they both emanate from similar forms wherein the integration of the local- regional economy with the global economy has been executed similarly. During both these phases, the utilization of the indigenous resources has been done not for the development of the local-regional-national economy but for the benefit of a foreign economy. As a result of such an alienated process of development, the resource rich Mineral Belt has been facing perennial regional backwardness and marginalization of the indigenous population i.e. the tribes.

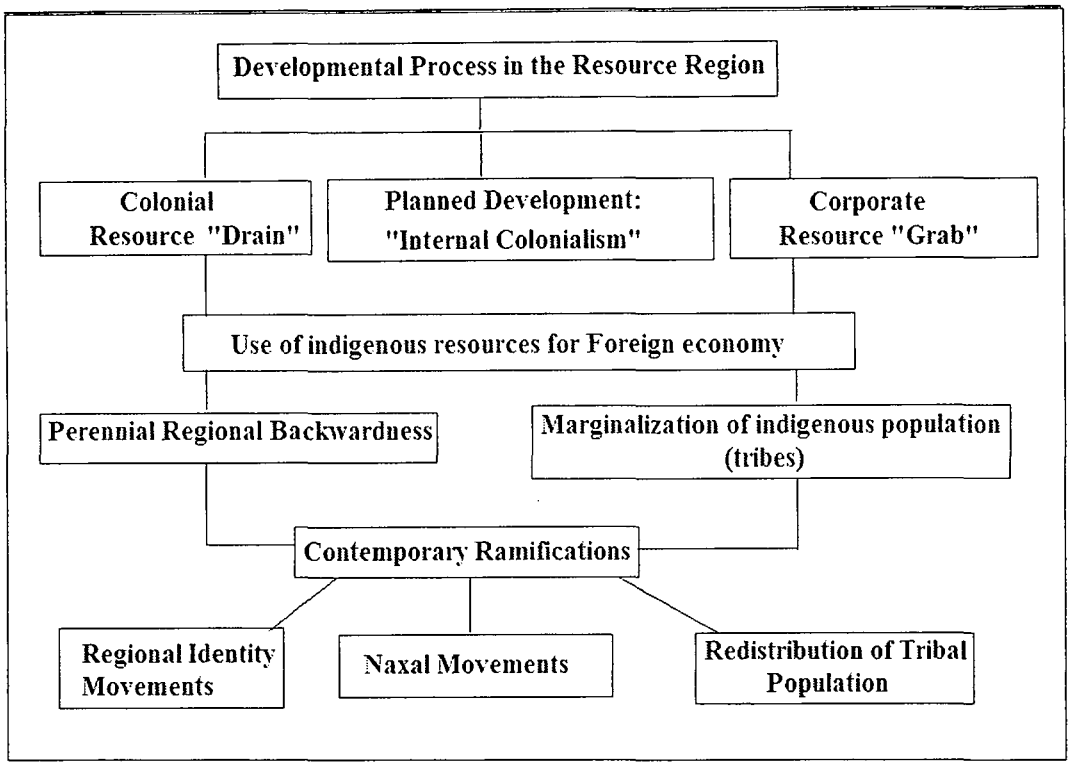
The regional backwardness of the Resource Region has continued to exist even after six decades of planned development. Although the post- independence era has witnessed accelerated development in the Mineral belt in the form of mining, industrial, transport infrastructure and urban development, the process and pattern of such development has failed to prove favourable for the indigenous population of the region i.e. the tribes which are inherent part of the characteristics of the region. The huge development projects that were directed towards the backward districts of the Mineral belt partly aimed at harnessing the rich resources and partly at bringing about regional development in these backward areas had far reaching paradoxical ramifications. While the paradox can be attributed to the nature of approach undertaken towards the

[1] Kothari, Rajni (1988): *Rethinking Development: In search of a humane perspective*, Ajanta Publications, New Delhi.

development of the region during each phase of its evolution, the magnitude of the ramifications accentuated under the present Neo liberal policies.

While there has been an apparent change in the "form of the state" from a dependent colony of the British Metropolis and an independent, self-reliant national entity to a globally integrated neo-liberal state; the "character of the state" in context to the Resource region has not altered ever since the colonial period. The exploitation of the indigenous resources has continuously been done for the development of the metropolis and not in favour of the Mineral belt itself. The identity of the Metropolis has also undergone a sea change over the different phases of development of the Resource region, with Britain being the sole Metropolitan centre during the colonial period and the Mineral Belt acting as a resource hinterland to a shift towards National Capitalism in the Indian Metropolis being the centre and this resource rich region forming its "internal colonies" during the post independence era to a transformation of the Resource region into the manufacturing centre during the present Corporate age. Although there has been an apparent shift in the Metropolitan-Periphery pattern during the Neo-Liberal era, with the "Global Capital" being invested directly into the Resource region transforming it from "raw material supply centre" into manufacturing centre, the basic attempt to alter the character of the region from a marginalized peripheral entity has however not been undertaken. Earlier, the investment of the international companies were concentrated only in the four major National Metropolitan centres with Calcutta (Kolkata) acting as the regional metropolis for the Resource region which remained as a periphery, the "shift" during the Neo-Liberal era ensured that the multinational companies invested into factories and manufacturing plants in this very periphery owing to its rich mineral deposits. Such a resource-attracted development approach is also far from being sustainable because most of the mineral resources which have become the centres of corporate attraction and investment are all stock resources which are mostly non-renewable which means the Corporate interest and investments shall wane and disappear along with the depletion and exhaustion of these resources. So, all that glitters is not gold for the Resource region, with the retreat of the welfare State and emergent corporate interest and their policies of greed under the Neo-Liberal economy coupled with the mere nominal existence of the Corporate Social Responsibility (CSR), the fate of this peripheral Resource region continues to remain disregarded and disdained.

Fig: 5.1. Conceptualization of Contemporary Ramifications



The contemporary ramifications of the long standing reality of regional backwardness in the Mineral belt have taken various forms and shapes ranging from the Regional Identity movements, Naxal movements, to an array of Tribal uprisings and Mass movements which have materialized as a corollary of complex processes of Land Alienation, Mass Displacement, deprivation of livelihood sources, Redistribution of tribal population and other forms of tribal marginalization along with environmental damage.

The consequences can be grouped into direct ramifications emanating from the nature of the developmental process and further indirect consequences arising out of the complex of the direct ramifications and the pertinent regional backwardness in the region. While the direct ramifications include land alienation, displacement, tribal redistribution, mass movements and tribal uprisings and also environmental damage; Naxal movements and Regional identity movements have emerged out of the amalgam of all these upshots and as a corollary of the long standing regional backwardness. However, there is no water tight compartmentalization of these two groups of ramifications and they are very much interlinked and each form a part of the complex and intricate scenario that exists in the Resource region in the contemporary times.

5.1 Direct Ramifications of the Developmental Process:

The direct consequences emanating from the nature of the developmental process and the approach undertaken towards the development of the Resource region constitutes of Land alienation and mass displacement of indigenous population which further results in redistribution of tribal population in the region through voluntary and involuntary migration of the tribes and incursion of the non-tribes, the mass tribal uprisings and rebellion attached to such marginalization and exploitation and also environmental damage through unsustainable and reckless use of the rich resources.

5.1.1 Land Acquisition:

The abundance and rich reserves of a variety of mineral resources have called for the establishment of developmental enterprises ranging from manufacturing units to infrastructure projects to obtain and exploit the rich mineral resources. This has invariably led to increasing pressures on land which is then acquired by the Government from individual property owners in the name of "***Public Purpose***". This has been termed as ***Land Acquisition***, ***Law of Compulsory Purchase*** and ***Power of Eminent Domain*** and is undertaken on Utilitarian grounds of an underlying principle that community good is paramount to the right of individual to hold property. It works on the legal maxim of *Salus Populi est Suprema Lex* which means that the welfare of the people is the supreme law. It is a much debated and contested doctrine which situates the power of the state at loggerheads with the individual property rights.

The enormous Land Acquisition cases in the Resource region have arrived as a by-product of developmental efforts in this region. Land Acquisition itself has far reaching consequences ranging from alienation of the indigenous population from their native lands or development induced displacements to loss of traditional livelihood sources and deep psychological trauma. Displacement itself gives rise to multiple issues of rehabilitation, resettlement and compensation. The problem is extremely sensitive and severe in case of the Mineral belt which is home to ethnic tribes and indigenous communities who have been living in these areas for centuries together and their lives are so intertwined with their lands, forests, rivers and the larger environment that any kind of alienation could be fatal to their health, lifestyles and their livelihood patterns. Any alteration in the balance of their dependence on the environment or change in their

habitat shall inflict severe blows on their civilization. Disrupted community life and marginalization are often seen to be associated with land acquisitions and development induced displacements.

A sincere attempt has been made in this sub-section to identify the nature, pattern and extent of Land Acquisition in the three major states of the resource region: Jharkhand, Orissa and Chattisgarh. The data pertains to the Gazette Notifications issued in the respective states over various points of time and in the present study has been limited by their availability. The database is as follows:

States	Gazette Notifications	Study Period
Jharkhand	1035	1947-1950, 1993-2007
Orissa	3169	1991-2007
Chattisgarh	17648	1924, 1934, 1982-1990, 1991-2007

The above database consisting of various gazette notifications have been comprehensively compiled in the report "Resource Rich Tribal poor: Displacing People, destroying identity in India's indigenous heartland" by Action Aid, Indian Social Institute, New Delhi in 2008. This report has been referred here for the land acquisition figures. The Gazette Notifications, however, provide data only with regard to the acquisition of private lands under the **Land Acquisition Act, 1894** and the **Land Acquisition (Amendment) Act, 1984.** These notifications do not provide data on acquisition of forest and Government lands. Therefore, the figures from Gazette Notifications fail to provide the complete picture but they can be considered as indicative of the actual scenario. Another limitation is the lack of comprehensive statistics or official government database regarding the exact number of people displaced and project affected people. Several studies have been conducted to collect primary data and estimate the probable number of people affected but these studies depict conflicting results and thus reaching to an exact statistical figure shall be quite difficult in case of the present study.

The Land Acquisition picture in case of Chattisgarh during 1924 to 2007 indicates that there has been tremendous acceleration in amount of land acquired over the period. Land Acquisition for water resource projects alone ranges from merely 6.13 acres during 1924 and 1934 to more than 50,000 acres during 1991 to 2007. Although,

the increased need for land for progress through developmental projects is quite understood but the tremendous acquisition especially during the last two decades of post liberalization, when huge chunks of land was acquired for corporate needs, is beyond any justification. It is during this period that massive land acquisition is noticed in Surguja, Raipur, Durg and Raigarh districts of Chattisgarh for water resource projects and in Durg and Raipur districts for industrial projects.

Table: 5.1 Land Acquisitions for Water Resource Projects in Chattisgarh (1924 – 2007)

Districts	1924 & 1934	1982 - 1990	1991 -2007	Total
Bastar	-	2025.00	1600.13	3625.13
Durg	-	2283.47	7869.21	10152.68
Raipur	-	1468.66	9619.52	11088.18
Bilaspur	-	41534.36	15669.13	57203.49
Raigarh	-	79.84	2861.44	2941.28
Surguja	6.13	1604.45	13809.36	15419.94
Chattisgarh	**6.13**	**48995.78**	**51428.79**	**100430.70**

(Land in acres)

Based on: Madhya Pradesh and Chattisgarh Gazette Notifications: 1924, 1934, 1982-1990, 1991-2007

Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

As compared to a mere 280 acres of land acquired for industrial projects in Chattisgarh during 1982-1990, about 5,500 acres of land was acquired during 1991-2007 for industrial purposes. Durg and Raipur districts contribute heavily to this figure followed by Raigarh and Bastar. Land Acquisition for mining projects also depict a similar scenario where the acquired amount of land has escalated from 62 acres in 1982-1990 to 1400 during 1991-2007 according to the Gazette notifications of the private land acquired. Durg, Raigarh, Bilaspur and Surguja districts comprise of the majority of land acquired in this case. In case of non-hydro projects, Bilaspur alone contributes for about 3000 acres of land out of the total 4000 acres of land acquired during 1991-2007. The state level situation however illustrates that majority land in the state was acquired by water resource projects followed by transport and communication projects industrial endeavours.

Table: 5.2 Land Acquisitions for Industrial Projects in Chattisgarh (1982 – 2007)

Districts	1982 - 1990	1991 - 2007	Total
Bastar	-	808.03	808.03
Durg	223.70	2189.83	2413.53
Raipur	44.45	1243.18	1287.63
Bilaspur	7.97	197.22	205.19
Raigarh	-	990.79	990.79
Surguja	3.61	5.07	8.68
Chattisgarh	**279.73**	**5434.12**	**5713.85**

(Land in acres)

Based on: Madhya Pradesh and Chattisgarh Gazette Notifications: 1982-1990, 1991-2007

Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

Table: 5.3 Land Acquisitions for Mining Projects in Chattisgarh (1982 – 2007)

Districts	1982 - 1990	1991 - 2007	Total
Bastar	36.28	9.18	45.46
Durg	3.78	322.94	326.72
Raipur	-	13.78	13.78
Bilaspur	-	312.13	312.13
Raigarh	-	319.37	319.37
Surguja	21.99	453.36	475.35
Chattisgarh	**62.05**	**1430.76**	**1492.81**

(Land in acres)

Based on: Madhya Pradesh and Chattisgarh Gazette Notifications: 1982-1990, 1991-2007

Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

Table: 5.4 Land Acquisitions for Non-Hydro Power Projects in Chattisgarh (1982 – 2007)

Districts	1982 - 1990	1991 - 2007	Total
Bastar	5.25	101.57	106.82
Durg	-	3.72	3.72
Raipur	-	131.76	131.76
Bilaspur	-	2939.93	2939.93
Raigarh	-	631.29	631.29
Surguja	-	274.77	274.77
Chattisgarh	**5.25**	**4083.04**	**4088.29**

(Land in acres)

Based on: Madhya Pradesh and Chattisgarh Gazette Notifications: 1982-1990, 1991-2007

Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

Table: 5.5 Category-wise Projects and Land Acquisition in Chattisgarh (1982 – 2007)

Category of Project	Land Acquired (in Acres)		
	1982 - 1990	1991 - 2007	Total
Water Resource	48995.78	51428.79	100424.6
Industry	279.73	5434.12	5713.85
Mining	62.05	1430.76	1492.81
Non-Hydro Power	5.25	4083.04	4088.29
Defence	3.74	3898.4	3902.14
Transport & Communication	1474.53	35769.41	37243.94
Housing	57.34	192.18	249.52
Urban Development	N.A	N.A.	421.59
Government Offices	N.A	N.A.	408.43
Human Resource Development	N.A	N.A.	95.78
Health Service	N.A	7.07	7.07
Refugee Resettlement	5.22	-	5.22
Social Welfare	N.A	N.A.	41.24
Tourism	N.A	0.37	0.37

Based on: Madhya Pradesh and Chattisgarh Gazette Notifications: 1982 - 1990, 1991-2007; Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

The land acquisition scenario, for various projects in case of Jharkhand during the study period of 1947-50 and 1993-2007, indicates that the maximum land acquisition has occurred due to establishment of industries followed by mining operations. Jharkhand, being a mineral rich region the coal capital of India, has been facing the land acquisition issue due to enormous mining-industrial activities. The erstwhile Hazaribagh district according to 1961 Census (which includes the present day Hazaribagh, Koderma, Bokaro, Giridih and Chatra districts of 2001) has faced the maximum land acquisition in absolute sense. About 12,000 acres were taken up for mining activities and about 8000 acres were occupied by the industrial activities. Nearly 5000 acres of land were taken up for industrial activities in Ranchi and about 3000 acres in Singhbhum district as well. Dhanbad being the major coal mining centre have also witnessed about 1700 acres of land being acquired for mining activities. As mentioned earlier, the figures are not all-inclusive but rather provide information about only private lands acquired under the Land Acquisition Act and that too for the limited time period for which Gazette notifications were available.

Table: 5.6 District-wise Land Acquisition for various Projects in Jharkhand* (1947 – 2007)

Districts	Water Resource	Industry	Mining	Non - Hydro Power
Palamau	21.35	-	-	-
Hazaribagh	495.31	8190.34	12481.94	1276.51
Ranchi	245.24	4850.00	-	-
Dhanbad	46.90	-	1730.93	761.22
Singhbhum	60.07	3212.00	25.37	-
Jharkhand	**868.87**	**16252.34**	**14238.24**	**2037.73**

(Land in acres)

Based on: Bihar and Jharkhand Gazette Notifications, 1947 – 1950 and 1993 – 2007;

Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008.

* Note: "Jharkhand" refers to only those districts of Jharkhand which are part of the South East Resource Region of India.

Table: 5.7 Category-wise Projects and Land Acquisition in Jharkhand* (1947 – 2007)

Category of Project	Land Acquired (in Acres)
Water Resource	868.87
Industry	16252.34
Mining	14238.24
Non-Hydro Power	2037.73
Defence	551.03
Transport & Communication	21270.7
Education	189.42
Housing	95.42
Tourism	54.27
Human Resource Development	50.82
Health Service	19.72

Based on: Bihar and Jharkhand Gazette Notifications, 1947 – 1950 and 1993 – 2007;
Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

* Note: "Jharkhand" refers to only those districts of Jharkhand which are part of the South East Resource Region of India.

The state level picture however depicts that maximum land in the state was acquired by infrastructure projects i.e. transport and communication projects to be exact followed by industrial and mining activities. The situation becomes complex because these are all developmental projects which have been undertaken during various periods of time in this part of the region and are supposed to bring prosperity to the entire region but the cost of development, the ramifications came hard on those who acquired these private lands.

The Land Acquisition information for Orissa was available for only 1991-2007 in the report of the Indian Social Institute based on the Orissa Gazette Notifications. The land acquisition situation in Orissa depicts that the majority of land acquired during 1991-2007 was for water resource projects followed by industrial projects and mining activities.

Table: 5.8 District-wise Land Acquisition for various Projects in Orissa* (1991 – 2007)

Districts	Water Resource	Industry	Mining	Non-Hydro Power
Sambalpur	2336.65	15406.33	218.87	5289.95
Sundergarh	25257.47	1159.07	7125.26	-
Keonjhar	2589.66	4504.74	9267.53	-
Mayurbhanj	3162.66	-	-	10.95
Dhenkanal	8811.95	19905.37	1671.42	493.36
Phulbani	508.96	-	-	-
Bolangir	15606.05	-	-	-
Kalahandi	29852.91	2686.67	652.75	-
Koraput	3125.5	2865.12	1307.98	-
Jajpur	107.99	1692.77	7819.57	-
Orissa	**91251.81**	**46527.30**	**20243.81**	**5794.26**

(Land in acres)

Based on: Orissa Gazette Notifications, 1991-2007

Source: "Resource Rich Tribal poor", Action Aid, Indian Social Institute, New Delhi, 2008

Note: The figures for Water Resource pertains to 1991-2006, Industry: 1993-2007, Mining: 1991-2007 and Non-Hydro Power to 1991-2007 time period.

* "Orissa" refers to only those districts of Orissa which are part of the South East Resource Region of India.

While the majority of land acquired was in Kalahandi, Sundergarh and Bolangir in that order for water resource projects, Dhenkanal and Sambalpur contributed the maximum share of private land acquired for industrial projects. Keonjhar, Jajpur and Sundergarh faced the wrath when it came to acquiring private lands for mining activities and Sambalpur contributed for the land acquired for non-hydro power resources. Thus, it is not a certain portion of Orissa but almost all the parts of Orissa which suffered from land acquisition. Orissa being rich in a variety of mineral resources has been a centre of attraction for the Corporates who invest heavily into mining-industrial activities. But with vast tracts of remote and backward areas and huge tribal proportion, the people of Orissa have also faced major exploitation when it comes to compensation for their lands

acquired as in these areas the cost of land is less and lands under Common Property Resources (CPR) are quite large. Thus, the compensation is very meagre as compared to the loss of livelihood that the indigenous population face in these areas.

There is lack of a thorough statistical data regarding the exact number of people displaced during various developmental projects. Various estimations have been undertaken to report the number of people displaced or affected. While **Arundhati Roy (1999)** in her work "The Greater Common Good" estimated a total of about 56 million people to have been displaced by large dams alone[2], **Surjit Bhalla (2001)** contradicted these figures by bringing forward an estimate of 1360 displaced persons per dam i.e. about five million people in total[3]. **Fernandes (1998)** estimated about 21.3 million people to be displaced / affected during 1951-1990, which included all developmental schemes[4]. His further works depicted that about 1.6 million people were displaced / affected in Jharkhand and Orissa each during 1951-1995. This analysis was based on the 80% of projects and 60% of projects studied in Orissa and Jharkhand respectively. He opined that huge amount of land was acquired in the late 1940s for refugee rehabilitation schemes in this region and later massive acquisition has again been done in the 1990s under liberalisation.[5] This has continued unabated during the last two decades of Neo-liberal era. **Fernandes (2006)** placed the final figure of total number of persons displaced/affected by all projects to 60 million during 1947 to 2000. The latest figures can be quoted from the recently released **Report of the Working Group on Human Rights in India and UN (WGHR), 2012** which states that about 60-65 million people are estimated to have been displaced in India ever since Independence as a result of "ostensible" development projects, out of which more than 40 percent are tribals and another 40 percent consists of dalits and other rural poor. Excluding the displacements due to armed and ethnic conflicts, India has the highest number of people displaced

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[2] Roy, Arundhati (1999): *The Greater Common Good,* India Book Distributors Ltd, Bombay.

[3] Bhalla, Surjit S. (2001): "Indian Poverty: Ideology and Evidence", *Seminar* , 497, pp. 24-28

[4] Fernandes, Walter. (1998): "Development-induced Displacement in Eastern India" in S. C. Dube (ed.) *Antiquity to Modernity in Tribal India: Continuity and Change Among the Tribals,* Inter-India Publications. New Delhi. pp. 230

[5] Fernandes, Walter. (2006): "Liberalisation and Development-induced Displacement", *Social Change,* Vol. 36. No. 1, pp. 110.

annually, which on an average stands at about one million displaced every year, due to development projects.[6]

Large scale land acquisitions for the private sector during the last two decades can be blamed for this enormous figure. With the multinational Corporates making their way in the mineral rich Jharkhand and Chattisgarh for mining activities and enormous land being acquired in this part of the Mineral Belt for mining operations during the past few years, the indication is towards multiplication of displaced persons in the near future. Majority of the mineral resources of the country are located in the remote and backward areas of the Resource Region which is heavily populated with indigenous tribal population. Thus, such corporate incursions shall lead to massive tribal displacement. Already efforts were made during 2001 to modify the Fifth Schedule to ease out land acquisition in tribal areas. Continued failures on behalf of the legislators and policy makers to draft a strong legislation, which has been dealt in details later in this chapter, to benefit the tribals in these areas have proved to be a major disappointment.

5.1.2 Dwindling Forest Cover:

The long process of peopling in India has placed the tribal population in regions of *complete isolation.* Even a perfunctory glance at their distribution pattern reveals that the "*tribal territories*" or areas of concentration of tribal population are marked by *relative isolation* and have essentially been positioned in "*environmentally negative*" densely forested locales. These *jungles* have not only become their hearth areas but over the centuries, have come to be a part and parcel of their cultures and economies.The extensive mining-industrial activities in this mineral rich Resource region and further development of transport infrastructure such as railways and other development projects like multipurpose projects, dams, thermal power stations etc have taken a toll on the forest cover[7] of this region.

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[6] Mukherji, Anahita (2012): "India uproots most people for progress", *The Times of India,* dated June 4, 2012, pp.1; and "Political Calamity: No policy for internally displaced", *The Times of India,* dated June 4, 2012, pp.10

[7] 'Forest Cover', here, strictly refers to the definition and criteria adopted by the Forest Survey of India (FSI) which is different from 'forest area'. "The term **'Forest Area'** (or recorded forest area) generally refers to all the geographic areas recorded as forest in government records **'Forest Cover'** as used in the

An attempt has been made here to detect the changes in the forest cover in the Resource region during the past few decades when developmental activities especially in the form of mining has been extensive which can possibly lead to rampant destruction of forest cover in the Mineral belt. The changes in the forest cover are based on the State of Forest Reports of the Forest Survey of India. The district-level forest cover data is available only from 1991, therefore the forest cover analysis has been done from 1991 to 2007 (the latest available report of 2009 gives the 2007 assessment) which also marks the Corporate era of Neo-liberal policies under which mining-industrial activities experienced a boost especially in the mineral rich forested areas.

The data is comparable with some limitations, one of which needs an urgent mention. The "inclusion of Trees Outside Forest (TOF) in the forest cover map which was started by the Forest Survey of India, to keep abreast with changing definitions of forests since 2001"[8] (FSI 2005) and the techno-methodological changes have attributed to an apparent increase in the forest cover data which is comparably misleading. The drastic increase in forest cover after 1999 is due to inclusion of TOF in the forest cover. Therefore the last comparable data belongs to 1999.

However, decline, instead of increase in forest cover resulting from inclusion of TOF, is noted in 1999-2005 change assessment, especially in the state of Chattisgarh (total -830 sq. km. and dense -829 sq. km). The loss in forest cover in Chattisgarh in this period is attributed mainly to "submergence due to construction of dams in Madhya Pradesh and Chattisgarh"[9] and in Keonjhar district of Orissa due to Super Cyclone in Orissa in October 1999 due to which "a large number of trees both outside as well as within forest area were uprooted leading to a large scale ecological devastation."[10] The

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'**SFR**' refers to all lands more than one hectare in area, having a tree canopy density of more than 10%. Thus the term 'forest area' denotes the legal status of the land as per the government records, whereas the term 'forest cover' indicates presence of trees over any land". The sub classes of dense and open are also based on the canopy density criteria of FSI. (SFR 2005, Ch. 3, pp. 23)

[8] Joshi, A.K., Pant, P., Kumar, P., Giriraj, A., and Joshi, P.K. (2010) National Forest Policy in India: Critique of Targets and Implementation. Small Scale Forestry, DOI: 10.1007/s11842-010-9133-z. Springer, published online 6th September, 2010.

[9] Joshi. *Op. cit.*

[10] http://fsi.org.in/fsi_projects/assessment_of_damage.pdf

figures for total forest cover, dense forest cover and forest cover as a percentage (%) of total geographical area has been listed in Appendix VI A to C.

The Change in forest cover, both total as well as dense, during 1991 to 1999 assessments, has displayed a constant decline, in almost the entire region. The total change in Total forest cover from 1991-99 (shown in the highlighted columns in Tables) gives the summary of the entire scenario. Massive decline in forest cover has been witnessed in the region under consideration, with Jharkhand loosing 176 sq. km, and Chattisgarh an immense 802 sq. km of their respective total forest cover. The most noticeable aspect is while forest cover declined in almost all the districts of Jharkhand during 1991-99, maximum loss was experienced by Singhbhum (73 sq km) and Ranchi (51 sq km) where development efforts have been most widespread. These are also the districts where the maximum proportion and concentration of tribal population was present during 1961, which later on deteriorated considerably.

Similarly, in case of Chattisgarh massive decline of forest cover has occurred in Durg, Raipur and Bilaspur districts which have been the core mining-industrial districts and has underwent rapid development efforts. Surguja district, which is a new entrant in the development map, have also experienced loss of forest cover due to rapid development during the last few decades. The only districts which escaped the brunt of forest cover decline were Bastar and Raigarh. Bastar has remained one of the most backward districts of Chattisgarh due to its inaccessibility and has been the hearth of a huge majority of tribal population and till recent remains the only district with the highest concentration of tribal population in the entire region. However, the richest Bailadila iron ore mines have attracted much attention in the last few years and led to increased mining activities. As a result, Bastar too witnessed decline of forest cover to the extent of 881 sq km during 1999 - 2005 in spite of the definitional changes. In Orissa as well the mining industrial districts of Sambalpur, Sundergarh, Keonjhar, Mayurbhanj and Dhenkanal have underwent massive depreciation in forest cover during 1991-99 while the rest of the districts of southern Orissa where developmental efforts have failed to reach out during this period have escaped the brunt.

Table: 5.9 Change in Total Forest Cover (in sq. km.)

DISTRICTS	1991-93	1993-95	1995-97	1997-99	1991-99	1999-05	2005-07
JHARKHAND	**-30**	**-26**	**-47**	**-73**	**-176**	**558**	**148**
PALAMAU	0	-22	-8	-6	-36	187	-92
HAZARIBAGH	-14	9	9	-26	-22	-357	-17
RANCHI	-15	-22	-6	-8	-51	396	165
DHANBAD	-1	6	2	-1	6	107	-3
SINGHBHUM	0	3	-44	-32	-73	225	95
ORISSA	**0**	**-38**	**271**	**85**	**318**	**1401**	**345**
SAMBALPUR	0	-12	-403	-1	-416	49	38
SUNDARGARH	0	0	-2	0	-2	36	16
KEONJHAR	0	-39	-148	3	-184	-321	4
MAYURBHANJ	0	-4	-206	90	-120	77	-29
DHENKANAL	0	0	-74	-18	-92	366	73
PHULBANI	0	8	461	2	471	308	3
BOLANGIR	0	10	107	10	127	64	-1
KALAHANDI	0	0	296	1	297	426	54
KORAPUT	0	-1	240	-2	237	396	187
CHATTISGARH	**-11**	**-74**	**-975**	**258**	**-802**	**-830**	**7**
BASTAR	0	-7	751	221	965	-881	13
DURG	1	-6	-219	115	-109	320	-10
RAIPUR	-5	-4	-611	-11	-631	181	25
BILASPUR	0	-17	-515	-2	-534	-397	1
RAIGARH	-7	-12	154	-67	68	181	8
SURGUJA	0	-28	-535	2	-561	-234	-30

Source: Compiled and computed by the author from *State of Forest Reports* of the respective years.

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

In case of dense forest cover, Orissa and Chattisgarh are the worst hit regions with a loss of 835 sq. km and 7908 sq. km of dense forest cover respectively which have either been converted into open forest or been completely lost. In Chattisgarh each and every district has lost a substantial portion of their dense forest cover with the maximum loss in absolute terms pertains to Bastar district. In case of Orissa, Sambalpur district has lost the maximum sizeable section of both of its total as well as dense forest cover. Reflecting a similar plight is Singhbhum district of Jharkhand, with huge loss of total and dense forest cover.

Table: 5.10 Change in Dense Forest Cover (in sq. km.)

DISTRICTS	1991-93	1993-95	1995-97	1997-99	1991-99	1999-05	2005-'07
JHARKHAND	**79**	**-2**	**-48**	**-13**	**16**	**224**	**282**
PALAMAU	0	4	36	28	68	136	-22
HAZARIBAGH	-4	-3	-13	20	0	120	139
RANCHI	83	9	-1	-12	79	274	104
DHANBAD	0	0	0	0	0	38	5
SINGHBHUM	0	-12	-70	-49	-131	-344	56
ORISSA	**-192**	**14**	**-625**	**-32**	**-835**	**979**	**287**
SAMBALPUR	-92	2	-867	-6	-963	55	12
SUNDARGARH	0	0	-90	0	-90	153	33
KEONJHAR	-100	0	-194	0	-294	-29	8
MAYURBHANJ	0	0	-88	-14	-102	-214	42
DHENKANAL	0	0	-124	-16	-140	-33	15
PHULBANI	0	0	322	7	329	844	-24
BOLANGIR	0	12	27	0	39	-33	-43
KALAHANDI	0	0	200	0	200	150	-63
KORAPUT	0	0	189	-3	186	86	307
CHATTISGARH	**-6**	**-63**	**-7536**	**-303**	**-7908**	**-829**	**472**
BASTAR	0	-7	-3035	-164	-3206	-509	46
DURG	1	-3	-515	-134	-651	335	86
RAIPUR	0	0	-597	-26	-623	-53	139
BILASPUR	0	1	-735	2	-732	-800	216
RAIGARH	-7	-1	-367	24	-351	494	-23
SURGUJA	0	-53	-2287	-5	-2345	-296	8

Source: Compiled and computed by the author from *State of Forest Reports* of the respective years.

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

Most interestingly, a significant portion of the total decline in forest cover in the entire region, has especially taken place in the ***Tribal Districts.***[11] The decline in forest cover in the tribal districts during 1991-99 shows that in Jharkhand, all the three major tribal districts are worst hit by loss of forest cover especially Singhbhum. In Orissa, Sambalpur, Keonjhar and Mayurbhanj have suffered huge loss in case of forest cover. While in Chattisgarh Surguja, Bilaspur and Durg have the major forest cover degradation.

[11] "Since 1997, FSI has been assessing forest cover in the districts identified as tribal districts by the Government of India in the Integrated Tribal Development Programme" (SFR 2005, Ch. 2, pp. 15)

Table: 5.11 Change in Forest Cover in the Tribal Districts (in sq. km.)

District	1993 Assessment	1995 Assessment		1997 Assessment		Total Change	
	Forest cover	Forest cover	Change 93-'95	Forest cover	Change '95-'97	1993 -'97	1991-'99
Jharkhand	**13,971**	**13,930**	**-41**	**13,872**	**-58**	**-99**	**-160**
PALAMAU	4,833	4,811	-22	4,803	-8	-30	-36
RANCHI	4,539	4,517	-22	4,511	-6	-28	-51
SINGHBHUM	4,599	4,602	3	4,558	-44	-41	-73
Orissa	**25,760**	**25,720**	**-40**	**25,424**	**-296**	**-336**	**143**
BALASORE	306	306	Nil	306	Nil	Nil	-47
GANJAM	2,156	2,164	8	2,160	-4	4	-93
KALAHANDI	1,924	1,924	Nil	1,919	-5	-5	297
KEONJHAR	3,730	3,691	-39	3,543	-148	-187	-184
KORAPUT	1,396	1,395	-1	1,344	-51	-52	237
MAYURBHANJ	4,062	4,058	-4	3,852	-206	-210	-120
SAMBALPUR	3,192	3,180	-12	3,172	-8	-20	-416
PHULBANI	4,981	4,989	8	5,117	128	136	471
SUNDARGARH	4,013	4,013	Nil	4,011	-2	-2	-2
Chattisgarh	**101,022**	**100,895**	**-127**	**98,709**	**-2186**	**-2313**	**-171**
BASTAR	22,394	22,387	-7	23,138	751	744	965
BILASPUR	6,939	6,922	-17	6,407	-515	-53	-534
DURG	4703	4697	-6	4478	-219	-225	-109
RAIGARH	4,488	4,476	-12	4,630	154	142	68
SURGUJA	12,106	12,078	-28	11,543	-535	-563	-561

Source: Compiled from *State of Forest Report* 1997, Chapter 6, pp 57-62 and computed from *State of Forest Reports* of 1991 and 1999.

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

The above detailed analysis proves it beyond doubt that decline in forest cover have been occurring in the entire given study region and that the degradation is especially significant in the tribal districts. It would be interesting to note, that, how such a state of dwindling forest cover and forest resources along with it, have influenced the tribal livelihood which revolves around forest and its products. Forests have traditionally been central to the economy and livelihood of the *adivasis*. The dwindling forest cover may prove fatal for the tribal planet.

5.1.3 Shifting Tribal Livelihood Patterns:

The issue of tribal livelihood has become critical in the contemporary times. The overarching dependence of the tribal communities on the land and forest resources as sources of livelihood and basis of survival has made them vulnerable on grounds of increasing alienation. This section is an attempt towards situating the tribal plight amidst decades of land alienation and diminishing forest cover within the scope of deteriorating sources of livelihood which have resulted in eroding traditional economic activities, shifting workforce patterns and eventually in physically dislocating the indigenous tribes or the *adivasis* from their native lands. The land and forest resources, which have been the source of living for the native tribes in the tribal belts of the Resource region, have undergone acquisition and degradation respectively which has led to their changing workforce structure. The Census industrial categories have been considered here to detect the change. The proportion of tribal main workers in various industrial categories in the Resource Region during 1971, 1981 and 2001 Census Years have been listed in Appendix VII A to C.

The tribal workforce structure of 1971[12] portrays that agriculture was the primary occupation of the tribals in the given region, as was the case for the tribals in rest of India. Agricultural labourers occupied by second largest share in all the three states during 1971. Similar scenario can be witnessed in case of 1991 census with a noticeable exception of Orissa where the share of the cultivators declined considerably while that of the agricultural labourers increased simultaneously. As a result, the cultivators occupied second largest share among the tribal main workers during 1991. Another significant decline can be noted in case of workers engaged in forestry, livestock etc especially in case of Jharkhand and Orissa during 1971 and 1991 census. Our concern shall remain focussed to these categories mainly as these occupations are mostly affected by land acquisition and dwindling forest cover. There has been slight increase in the proportion of tribals engaged in mining activities during the same period of 1971-1991 but the increase is negligible compared to the tremendous increase in mining activities in the region during this period as mentioned earlier in this study.

[12] The Workforce data has been considered from 1971 Census onwards because that of 1961 Census does not stand comparable due to subsequent change in the definition of workers.

Table: 5.12 Distribution of Tribal Workforce, 1971

	INDUSTRIAL CATEGORIES	Percentage of Tribal Workforce, 1971			
		JHARKHAND	ORISSA	CHATTISGARH	INDIA
I	Cultivators	60.59	53.67	70.37	57.56
II	Agricultural Labourers	27.47	35.56	25.19	33.04
III	Forestry, Livestock, Fishing etc	0.87	1.70	0.65	2.35
IV	Mining and Quarrying	2.14	1.43	0.50	0.61
Va	Household Industry	1.56	1.20	1.10	1.03
Vb	Other than Household Industry	2.29	1.22	0.32	1.11
VI	Construction	0.61	0.23	0.19	0.41
VII	Trade and Commerce	0.25	0.47	0.25	0.60
VIII	Transport, Storage, Communicat.	1.05	0.66	0.20	0.58
IX	Other Services	3.15	3.87	1.22	2.71

Source: Computed from Special Tables for Scheduled Tribes, Census of India, 1971

Table: 5.13 Distribution of Tribal Workforce, 1991

	INDUSTRIAL CATEGORIES	Percentage of Tribal Workforce, 1991		
		JHARKHAND	ORISSA	CHATTISGARH
I	Cultivators	64.71	36.18	71.42
II	Agricultural Labourers	21.41	37.09	21.36
III	Forestry, Livestock, Fishing etc	0.26	0.76	0.74
IV	Mining and Quarrying	2.28	1.52	0.74
Va	Household Industry	1.36	1.68	0.76
Vb	Other than Household Industry	1.76	1.62	0.97
VI	Construction	0.60	0.41	0.47
VII	Trade and Commerce	0.57	0.81	0.60
VIII	Transport, Storage, Communicat.	0.69	0.58	0.43
IX	Other Services	6.36	3.14	2.52

Source: Computed from Special Tables for Scheduled Tribes, Census of India, 1991

The workforce structure of the tribals as compared to the general population depicts a huge majority of cultivators followed by agricultural labourers. The 2001 Census figures indicates that about half of the tribal workers are engaged as cultivators in Jharkhand and Chattisgarh while in Orissa the share of agricultural labourers is higher as compared to cultivators. The share of cultivators and agricultural labourers is higher among the tribals as compared to the general population in all the three states as well as the national average. But the share in case of other services is significantly low for the tribals than the general population where at least one-fourth of the workers are

engaged in other services. Quite interestingly, all the three states depict lower proportion of workers engaged in other services in relation to the national average, the maximum being in Orissa (15%) and the minimum in Chattisgarh (9%). In both Jharkhand (3%) and Orissa (4.8%), the share of workers engaged in household industry is higher than the national average of 2.1%.

Table: 5.14 Distributions of Tribal and General Workforce, 2001

Industrial Categories		Percentage of Workforce, 2001			
		Cultivators	Agricultural Labourers	Household Industry	Other Services
Jharkhand	General	38.5	28.2	4.3	29.1
	S.T.	52.6	31.0	3.0	13.5
Orissa	General	29.8	35.0	4.9	30.3
	S.T.	33.3	46.9	4.8	15.0
Chattisgarh	General	44.5	31.9	2.1	21.5
	S.T.	56.6	32.7	1.2	9.5
India	General	31.7	26.5	4.2	37.6
	S.T.	44.7	36.9	2.1	16.3

Source: Computed from Primary Census Abstract and Special Tables for Scheduled Tribes, Census of India, 2001

The tribal workforce structure has undergone a shift during the last few decades. The scenario differs in all the three states according to their unique tribal characteristics. While in Orissa the maximum decline is noted in case of tribal workers as cultivators, where the share declined from 54% in 1971 and 1981 to 36% in 1991, with a simultaneous maximum increase in case of agricultural labourers, the situation in case of Jharkhand and Chattisgarh has been on the contrary. These two states have witnessed considerable rise in tribal workers engaged in other services. Forestry, livestock etc and household industry which used to be the traditional livelihood sources of the tribals have been gradually shifting away to other economic activities.

The Census category of Forestry, Livestock, Hunting, Fishing and allied activities constitutes a fraction of tribal workers in this region. A significant decline in tribal workers engaged in this category can be clearly noted. While the maximum decline is apparently in Orissa, which mainly attributes to decreasing proportion of tribal in forestry in Dhenkanal, Mayurbhanj, Sundergarh and Keonjhar districts in that

order. Jharkhand also witnessed shift in the workforce pattern with a substantial section of the workers engaged in Forestry etc. moved out. A similar scenario is witnessed mainly in case of Surguja district in Chattisgarh.[13]

Table: 5.15 Change in the Tribal Workforce Structure (in % points) 1971 - 1991

DISTRICTS	I	II	III	IV	Va	Vb	VI	VII	VIII	IX
JHARKHAND	**4.12**	**-6.06**	**-0.62**	**0.14**	**-0.20**	**-0.53**	**-0.01**	**0.32**	**-0.36**	**3.21**
PALAMAU	1.32	-3.50	-0.88	0.02	0.07	0.06	0.13	0.22	-0.19	2.74
HAZARIBAGH	-1.10	-4.82	-1.08	2.47	0.29	0.40	0.58	0.39	0.38	2.50
RANCHI	4.93	-6.61	-0.34	0.03	-0.54	-1.06	0.13	0.25	-0.40	3.61
DHANBAD	-3.62	-3.83	-0.27	2.28	0.59	4.18	-3.91	0.66	-0.61	4.51
SINGHBHUM	5.61	-6.50	-0.84	-0.49	-0.08	-0.67	0.20	0.38	-0.49	2.88
ORISSA	**-17.48**	**1.52**	**-0.93**	**0.09**	**0.49**	**0.40**	**0.18**	**0.34**	**-0.08**	**-0.73**
SAMBALPUR	-17.33	3.20	-0.48	0.60	0.78	-0.17	0.02	0.41	-0.19	0.44
SUNDARGARH	-36.48	2.93	-1.06	0.53	-0.12	0.81	0.60	0.14	0.00	0.36
KEONJHAR	-23.94	3.62	-0.77	-0.58	-0.03	0.68	0.29	0.28	-0.54	-1.32
MAYURBHANJ	-13.23	-7.14	-1.99	0.05	1.83	0.56	0.12	0.55	0.16	-1.14
DHENKANAL	-10.15	5.02	-3.13	0.76	0.95	1.65	0.98	0.28	0.08	0.22
PHULBANI	-36.98	3.82	-0.05	0.00	0.34	0.23	0.01	0.12	0.08	-0.14
BOLANGIR	-37.41	3.60	-0.46	0.45	0.50	0.47	0.22	0.36	0.16	-0.02
KALAHANDI	-31.61	5.01	-0.39	0.07	0.86	0.25	0.04	0.45	0.04	-2.20
KORAPUT	-1.49	2.99	-0.51	-0.03	-0.21	0.22	0.06	0.29	-0.17	-1.14
CHATTISGARH	**1.05**	**-3.83**	**0.09**	**0.24**	**-0.34**	**0.65**	**0.28**	**0.35**	**0.22**	**1.29**
BASTAR	3.93	-5.65	0.00	0.07	-0.17	0.20	0.22	0.12	0.05	1.22
DURG	-3.81	-0.52	0.25	0.19	0.10	1.41	0.53	0.60	0.21	1.11
RAIPUR	1.29	-5.72	0.48	0.22	-0.12	1.15	0.36	0.76	0.55	1.04
BILASPUR	0.51	-4.47	0.45	0.56	-1.02	1.10	0.38	0.58	0.29	1.62
RAIGARH	0.13	-2.14	0.02	-0.01	-0.02	0.28	0.13	0.13	0.19	1.27
SURGUJA	2.82	-4.01	-0.44	0.42	-0.82	0.14	0.13	0.09	0.12	1.56

Source: Computed from Census of India Special Tables for Scheduled Tribes, 1971 and 1991

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

Jharkhand has comparatively higher proportion of tribal workers engaged in Household Industry (1.56 % in 1971 and 1.36% in 1991) as compared to the rest of the study region as well as the national average. Amongst the tribes engaged in household industry, the case of Birhor tribe of Jharkhand has been dealt with in various studies,

[13] The major limitation to this analysis lies in its inability to establish a clear correlation between the forest cover changes and shifting workforce patterns in this case because the FSI data is biennial starting from 1991 for district level, while, Census of India data is decadal and the recent Census data in detailed form is yet to be available.

which includes **Roy (1925), Prasad (1961), Adhikary (1984), Sahu (1995) and Firdos Sohel (2005)** to mention a few. The Birhors of Jharkhand are traditionally engaged in Rope making within Household industry. These studies have embarked upon the shift in the livelihood pattern of this tribe from hunting of wild game to rope making. Such a shift has been attributed to the decline in forest cover. With extensive degradation of forest cover in the recent decades, as analysed in details above, a further shift in livelihood pattern of the Birhors is expected to occur.

Table: 5.16 Proportion of Tribal Main Workers engaged in Forestry

DISTRICTS	FORESTRY etc.		CHANGE
	1971	1991	(in % points)
JHARKHAND	**0.87**	**0.26**	**-0.62**
PALAMAU	1.50	0.63	-0.88
HAZARIBAGH	1.53	0.45	-1.08
RANCHI	0.50	0.16	-0.34
DHANBAD	0.53	0.26	-0.27
SINGHBHUM	1.05	0.21	-0.84
ORISSA	**1.70**	**0.76**	**-0.93**
SAMBALPUR	1.45	0.97	-0.48
SUNDARGARH	1.67	0.61	-1.06
KEONJHAR	2.00	1.23	-0.77
MAYURBHANJ	2.74	0.76	-1.99
DHENKANAL	4.27	1.14	-3.13
PHULBANI	0.75	0.70	-0.05
BOLANGIR	1.19	0.73	-0.46
KALAHANDI	1.00	0.62	-0.39
KORAPUT	1.11	0.60	-0.51
CHATTISGARH	**0.65**	**0.74**	**0.09**
BASTAR	0.53	0.53	0.00
DURG	0.55	0.81	0.25
RAIPUR	0.48	0.96	0.48
BILASPUR	0.71	1.16	0.45
RAIGARH	0.58	0.60	0.02
SURGUJA	1.00	0.57	-0.44

Source: Computed from Census of India Special Tables for Scheduled Tribes, 1971 and 1991

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

Firdos Sohel (2005) undertook an interesting study on the Birhors of Jharkhand for 1961-1991. He pointed out that "the traditional sources of livelihood of the Birhor was hunting and gathering along with rope making. All these activities were sustained by the forest. The degradation of forest land coupled with restrictions on their access to the forests has forced them out of their traditional occupation"[14] and finally concluded on the point that "the degradation of the forest cover has uprooted the Birhors from their traditional sources of livelihood and brought in instability in their economic activities."[15] **Fernandes et al (1984)** and **Fernandes and Menon (1987)** pointed out that the increasing destruction of forests during the last few decades has cast deprivation over the tribal communities who have been alienated from their traditional sources of livelihood especially in case of food and has further resulted in impoverishment, indebtedness and also bondage in some cases.

The persistent degradation of the forest resources due to unabated commercial felling ever since the mid-eighteenth century and all through the nineteenth and twentieth century, in favour of expansion of the railways and increasing demands for other infrastructure projects[16], proved out to be a catastrophe for the forest resources of the Mineral Belt. Such intensive mode of forest resource utilization has led to an increasing stress over participatory democracy and community participation in management of the forest resources during the past few decades. This came up as local resistances by indigenous communities who were completely dependent on forests for their lives and livelihoods and thus direct sufferers of forest resource degradation coupled with derogatory Forest Acts which increasingly alienated such communities from access to forest resources and gradually degraded the tribal rights over forest lands to mere 'privileges'. As a corollary response to the persistent failure of the State, both in the form of Colonial forestry system and Indian Government's forest policies, in providing environmental safeguard and equitable distribution of the forest resources,

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[14] Firdos Sohel (2005): "Forest Degradation, Changing Workforce Structure and Population Redistribution: The Case of Birhors in Jharkhand", *Economic and Political Weekly*, Vol. 40, No. 8, pp. 776

[15] *Ibid.*, 778

[16] Poffenberger, Mark and Betsy McGean, eds. (1995): *Village Voices, Forest Choices*, Oxford University Press, Delhi, pp. 127

various forms of Forest Management Systems gradually came up to restore the damage already done and to provide a sustainable future for both our forests as well as the forest-bound communities. Some are completely community-based like the Community Forest Management (CFM) where safeguarding and managing of forest land and resources are undertaken by local communities themselves without any assistance from the Forest Department, while there are others like Participatory Forest Management (PFM) and Joint Forest Management (JFM) which are based on collaboration of the local community participation and the State agencies in the form of the Forest Department. According to **Chatterji (1996, 1998)** CFM groups were actively engaged in safeguarding forest resources in various parts of this Resource region in Orissa, West Bengal and erstwhile Bihar (present Jharkhand), ever since the early decades of independence.

The major legislation affecting the forest lands and forest management came up in the form of **Forest Conservation Act, 1980** (FCA) which stated that "no forest land may be diverted for non-forestry purpose without permission of the Government of India" and enforced significant constraints on exploiting the natural forests. This together with the **Orissa Forest Act, 1972** ensured that vast lands which were conventionally owned by the aboriginal inhabitants were to be characterized as 'forest lands' overlooking the ownership and usage rights of the tribals. The FCA extended to those lands which were demarcated as 'forest lands' under the **Indian Forest Act, 1927** but later in 1996 this was extended to all lands having forest growth in accordance with the dictionary definition of 'forests', again neglecting the ownership rights and the fact that most of the forest estates which became State property conventionally belonged to the tribals.[17]

The first policy favouring the indigenous communities was the **National Forest Policy (NFP), 1988** which was inclusive in nature in the way it provided space for the local community groups to safeguard and manage the forests and also recognized the dependency of the forest-dwelling tribes on the forest resources and thus bestowed the communities, with modest resource and residing in proximity to the forest lands, with

[17] Kumar, K and Choudhury, P.R. (2005): "A Socio-Economic and Legal Study of Scheduled Tribes' Land in Orissa", World Bank, Washington, pp. 54-55

the first share of the forest produce for their livelihood sustenance.[18] Orissa was one of the pioneer states to initiate the Joint Forest Management System (JFM) way back in 1950s and to issue a resolution in 1988 and it has about 9778 JFM committees, constituting of about 41% Scheduled Tribe families, managing only 14% of the forest area of the State as on March 2005.[19] Compared to this, Jharkhand and Chattisgarh, which started with the JFM only in 1990 and 1991, have about 91.8% and 48% of the forest area under this endeavour with 10,903 and 7050 JFM committees respectively by 2005.[20] Although the region, especially the state of Orissa has witnessed dynamic forest management policies and reforms, much still needs to be done regarding the decentralization of operational and consumer rights to the forest dwelling communities. However, the **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006**, which has been dealt in details later in this chapter, has provided a great hope for these aboriginals.

5.1.4 Tribal Redistribution

The tribal population constitutes of a significant section in the kaleidoscopic social fabric of the Resource region. The contemporary setting of the tribals or *adivasis* is a product of the long process of peopling in India, in compliance with the miscellany of the geographical entity. The spatial manifestation of the process is remarkably evident in the placement of tribal population in *complete isolation*, often referred to as *'tribal territories'*, which have been generally speaking *'environmentally negative'*, *'physically isolated'* and *'inaccessible areas'*.[21]

For centuries together, the *adivasis* or the original settlers i.e. the tribes have been characterised by their *'ethnic isolationism'* [22] and are *"typified* by their geographical isolation"[23]. **Ahmad (1985)** is of the opinion that tribes exhibit a staunch

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[18] "Capacity Building for Participatory Management of Degraded Forests in Orissa", Orissa Forest Department, Bhubaneshwar, 1996, pp.6

[19] "India State of Forest Report", Forest Survey of India, 2009, pp 132

[20] *Ibid*, pp 98 and 70

[21] Raza Moonis and A. Ahmad (1990) : *An Atlas of Tribal India* , Concept Publication, New Delhi, pp.5

[22] Corboridge S. (1988) : "The Ideology of Tribal Economy and Society: Politics in the Jharkhand, 1950-1980", Modern Asian Studies, Vol. 22, No. 1, pp.7

[23] *Ibid.* pp. 7

propensity to concentrate in the hilly, isolated and stagnant economies[24] giving the tribal territories the designation of *cul de sac* or refugee zones.[25] However, the gradual evolutionary process and rapid regional development efforts, in the backward tribal belts, over the last few decades, have largely influenced the isolationist character of the tribals. **Roy Burman** (1978) argues that complete isolation of tribals is a myth.[26] The ongoing processes of development-displacement, land alienation, mining in tribal areas, imposing forest-restrictions, non-tribal incursions etc in the name of tribal-regional development has been responsible for redistribution of the indigenous tribal population particularly in the Mineral Belt which forms a portion of the Central India tribal belt.

The regional-spatial dimensions of tribal demography and the problem of ***tribal redistribution*** has been contextualized here as a direct outcome of the nature of the developmental process undertaken in the Resource region and the inherent approach towards the tribals. Tribal Redistribution has been perceived as a phenomenon emanating from land alienation occurring from acquisition of vast lands in tribal territories, diminishing forest cover, which implies gradual alienation of the forest based tribes from their habitat which further results in erosion of their traditional economic activities and shifting livelihood patterns.

5.1.4.1 Conceptualizing Redistribution:

The term **"redistribution"** implies the 'rearrangement or reshuffling of any phenomenon in time and space'. Population redistribution is a function of birth, death, and migration. Migration may not be the sole factor of redistribution but is significant especially when tribal redistribution is being considered, as it also takes into consideration the displacement of population resulting from various processes. In context to the present study , the term "redistribution' has been considered in a restricted sense focusing at the varying share and concentration of tribal population with reference to total population in the study region.

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[24] A. Ahmad (1985): "A Regional Distribution Process and Redistribution of Tribal population in Mid – India" in L.A.Kosinki and K.M.Elahi (eds.) *Population Redistribution and Development in S. Asia*, Reidle Publishers Co., p.65.

[25] Subba Rao (1958): *Personality of India* , University of Baroda, Baroda, pp.11

[26] B.K. Roy Burman (1978): "A Tribal India – Population and Society". *Indian Anthropologist*, Vol.8. p. 75-76.

5.1.4.2 Redistribution of Tribal Population in the Mineral Belt:

Immense research has gone into investigating the causative factors of the exclusionary tribal redistribution process in this resource rich Tribal belt and their consequences thereupon. ***Badgaiyan (1986)*** pointed out that during the colonial period, in late 19th and early 20th century, various plantations and mining enclaves were established by the British. Need for cheap labour resulted in opening new economic vistas for tribals who migrated to these regions. This resulted in considerable alteration in the ethnic constitution of the tribal population in this region.[27] This stands further justified by ***Chowdhury and Bhowmic (1986)*** who were of the opinion that 'Chotanagpur region has experienced both out and in migration during 1961 and 1971'. "The low growth of tribal communities in Bihar and Orissa and simultaneous increase in neighbouring states like West Bengal and Madhya Pradesh strengthen the mass tribal exodus".[28]

Ahmad (1985) came up with yet another form of intervention witnessed in this mineral rich region. The utilization of mineral resources coupled with the process of industrialization and urbanization brought "non- tribal elements of diverse origins into the tribal homelands".[29]The waves of this incursion were effectively vicious as it altered the tribal mode of life and ruined their conventional economic activities. The design of tribal- non tribal interface went through a qualitative revolution in the post independence period. The process of regional development in the planned era brought within its ambit the tribal regions as well. Thus began the entire process of integration in this region which went a long way in dismantling not only their traditional economic activities but also their social behaviour and unique traditional characteristics.

The impact of mining and industrialization on non-tribal incursion and resultant tribal redistribution has been clearly pointed out by ***Bandyopadhyay (1999.*** She closely

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[27] Badgaiyan (1986): "19th century in Chotanagpur and Santhal parganas – Political Economy of migration", in M.C.A. Rao (ed.), *Studies in Migration*, Manohar Publication, New Delhi.

[28] Choudhury N.C. & Bhowmic S.K. (1986): "Migration of Chotanagpur Tribes to West Bengal", in M.C.A. Rao (ed.), *Studies in Migration*, Manohar Publication, New Delhi

[29] A. Ahmad (1985) : "A Regional Distribution Process and Redistribution of Tribal population in Mid – India" in L.A.Kosinki and K.M.Elahi (eds.) *Population Redistribution and Development in S. Asia* . Reidle Publishers Co

associates the population in-migration in the Chotanagpur region to the opening up of the mines and consequential industrial activity. The rise and depression in coal and mica mining industries in Hazaribagh and Dhanbad districts were directly correlated with the in and out migration of population in these districts.[30]

More recent studies such as ***Maharatna & Chikte (2004)*** reveal that Jharkhand's tribal population has since independence, persistently experienced a slower population growth than the non-tribal groups. They empirically analysed that in the recent past, substantial tribal out migration to other states over a long period appears to have been a major cause of this trend.[31] ***Firdos (2005)*** has captured the aspect of forest degradation which has caused a change in the workforce structure of the tribes, finally resulting in redistribution of Birhors in Jharkhand. The Birhor population has not been diminishing, rather they are getting redistributed as a result of the dismantling of their traditional activity of rope making due to forest degradation.[32]

Thus, the entire exclusionary process of tribal redistribution is a complex process, resulting from composite factors. While continuous land acquisition-alienation and diminishing forest cover under the given developmental process remain as causative factors for tribal out-migration, erosion of traditional economic activities and changing workforce structure can be both cause as well as corollary to redistributive forces. However, the core aspect remains the same as all these processes and phenomena emanate from the very nature and approach of the developmental process which has refused to change over the decades. The changing share and concentration of the scheduled tribe population in the Resource region have been considered here to capture the redistribution aspect.

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[30] Bandyopadhyay, Madhumita (1999): "Demographic consequences of non-tribal incursion in Chotanagpur region during colonial period (1850-1950)", *Social Change*, Vol. 29, No. 3 & 4, pp. 22-23

[31] Maharatna, Arup and Chikte, Rasika (2004): "Demography of tribal population in Jharkhand 1951-1991", *Economic and Political Weekly*, Vol. 39, No. 46-47, Nov. 13-26, pp. 5053

[32] Firdos, Sohel (2005): "Forest Degradation, Changing workforce structure and Population Redistribution: the case of Birhors in Jharkhand", *Economic and Political Weekly*, Vol. 40, No. 8, Feb. 19-25.

5.1.4.2.1 Share of Tribal Population:

The spatial distribution of tribal population is necessary to understand its redistribution. Any change or shift in the spatial distribution reveals the pattern of redistribution. The simplest measure of proportion of tribal population expressed in percentages has been employed here to note the changing share of tribal population in the resource region.

$$\text{Percentage of tribal population} = \frac{\text{Tribal population of a district}}{\text{Total Population of the district}} * 100$$

Initially in 1961, there were six major districts of Ranchi, Mayurbhanj, Sundergarh, Surguja, Koraput and Bastar with very high tribal proportion. A continuous belt of high tribal proportion is noticeable in the 1961 map, which stretches from Singhbhum and Ranchi districts in southern part of Jharkhand and its bordering districts of Mayurbhanj, Sundergarh and Keonjhar in north Orissa upto north-eastern districts of Surguja and Raigarh in Chattisgarh. This formed almost a continuous core of tribal population where the tribes composed of more than 45% of the total population in their respective districts. A similar core can be perceived in the southern part of the Resource region which constitutes of Koraput district of Orissa and Bastar district of Chattisgarh which contained a whopping tribal proportion of more than 55% of their respective total population. The scenario continued unaffected until the 1971 Census figures after which the 1981 Census witnessed a drastic decline in tribal proportions in these core tribal areas. Surguja, Sundergarh, Keonjhar and Singhbhum underwent a decline in tribal proportion resulting in collapse of the continuous tribal core. The decline continued in the successive decades with Ranchi and Koraput districts experiencing depreciation in its tribal proportion. By 2001, only Mayurbhanj and Bastar retained their high tribal share. Such a categorical shift makes it clear that the tribal population has suffered a noticeable corrosion in the core tribal areas.

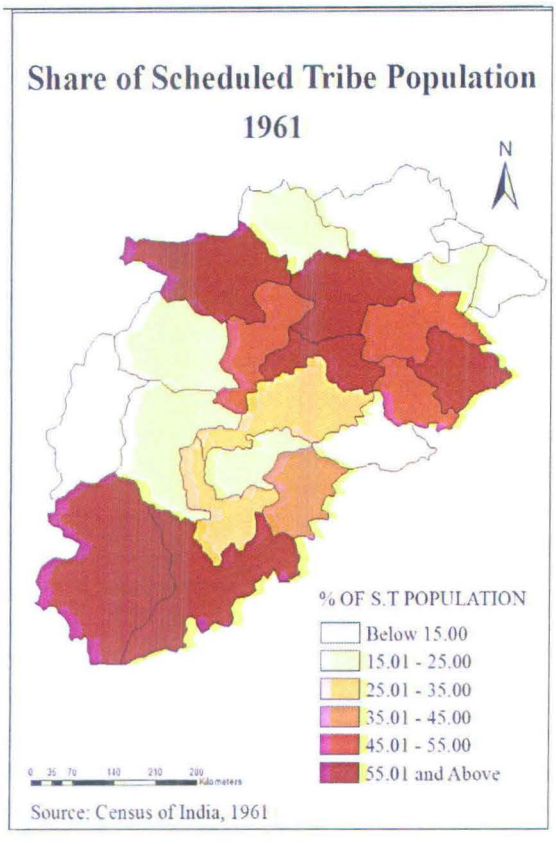


Fig: 5.2.

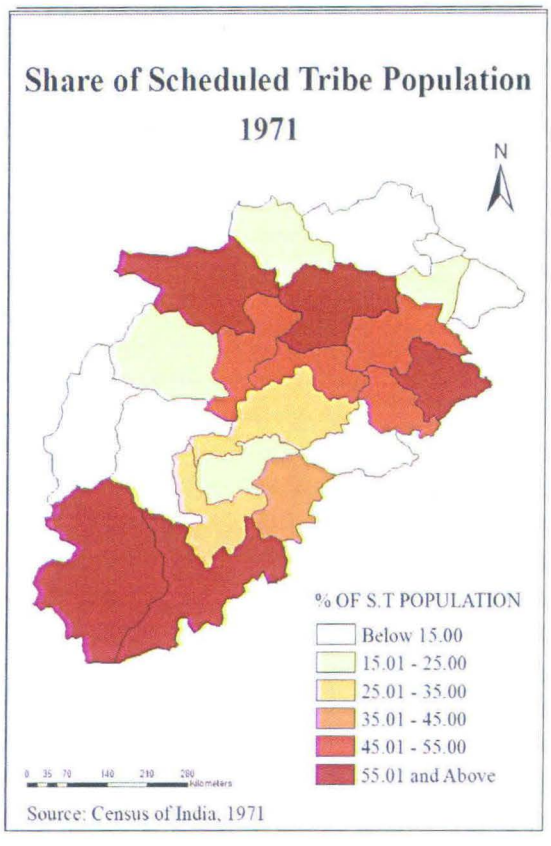


Fig: 5.3.

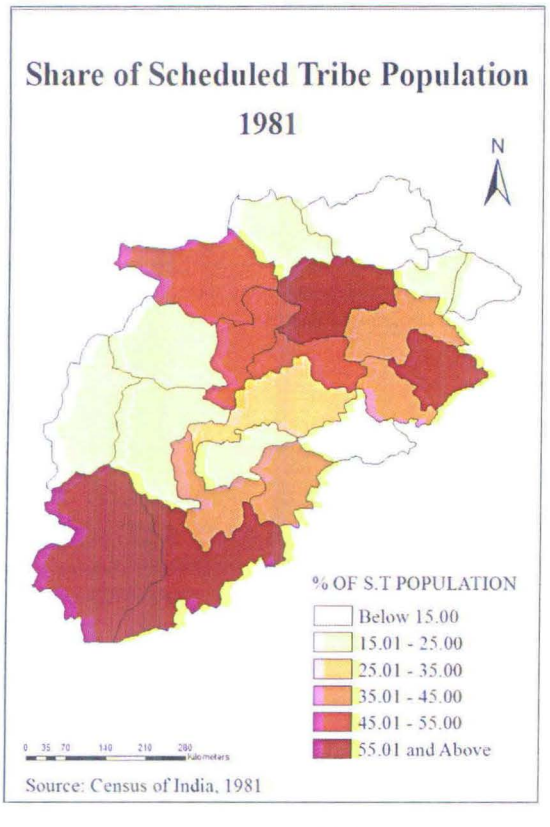


Fig: 5.4.

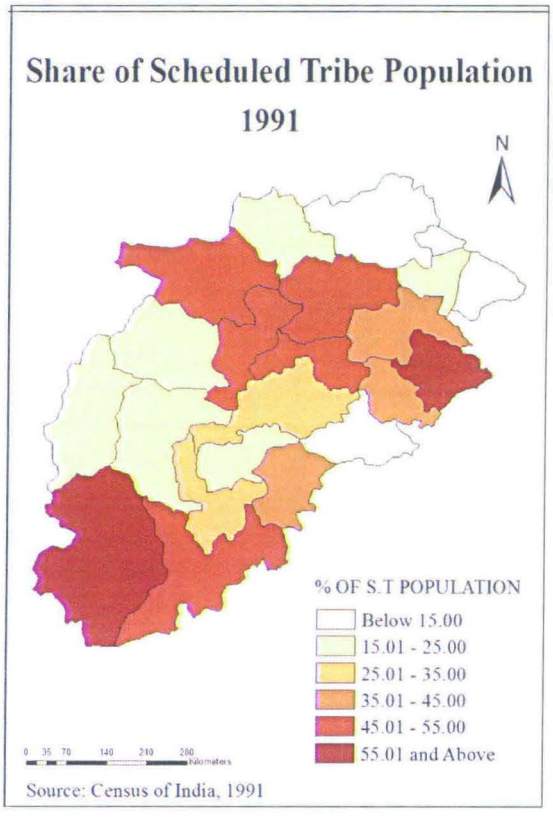


Fig: 5.5.

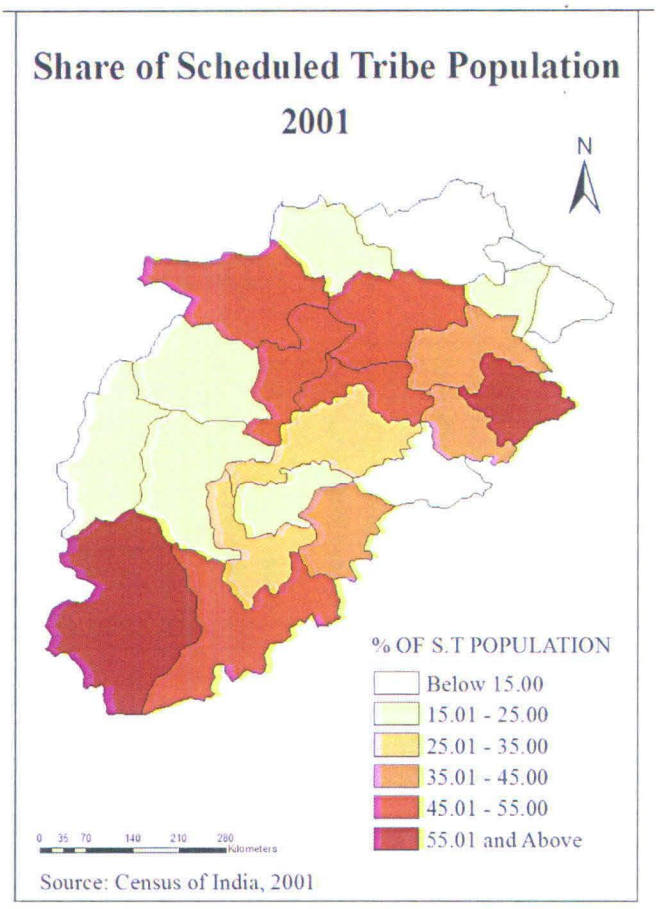


Fig: 5.6

Source: Fig. 5.2 to 5.6 – Computed from General Population Tables and Primary Census Abstracts 1961 to 2001.

5.1.4.2.2 Concentration of Tribal Population:

The concentration of tribal population in the Resource region has been depicted by location quotient index which offers the relative variation between the concentration pattern at the regional level and the level of component spatial unit/district in this case. Location quotient is indicative of "local specialization" or local concentration. The basic thrust here is to see the change in the concentration of tribal population at various points of time i.e. 1961 to 2001 Census years. Location quotient is the best method to show the concentration and clustering of tribal population and is computed through the following method:

$$\text{Location Quotient (L.Q.)} = \frac{\text{Total tribal population in the district / Total population in the district}}{\text{Total tribal population of the region / Total population of the region}}$$

The tribal concentration depicted by location quotient shows that the maximum concentration of the tribals in the region can be found in Bastar district which has retained its status over the five decades. High tribal concentration can be noted in Ranchi, Mayurbhanj, Sundergarh and Koraput districts in 1961. Again a continuous core of high tribal concentration is noticeable in south Jharkhand-north Orissa-north Chattisgarh belt and the Koraput-Bastar belt. While the core tribal area of Bastar-Koraput retained the highest concentration of tribal population in the region over the successive decades, the other core deteriorated considerably in its tribal concentration. It can be noted here that Bastar and Koraput are also the most backward districts of the region with little regional development efforts being meted out while the other core of Sundergarh, Ranchi, Mayurbhanj have attracted several industrial and other developmental projects. By 2001, Ranchi, Surguja and Sundergarh recorded drastic decline in their tribal concentration. Areas with low concentration did not show much change but the high concentration areas have declined drastically in tribal concentration.

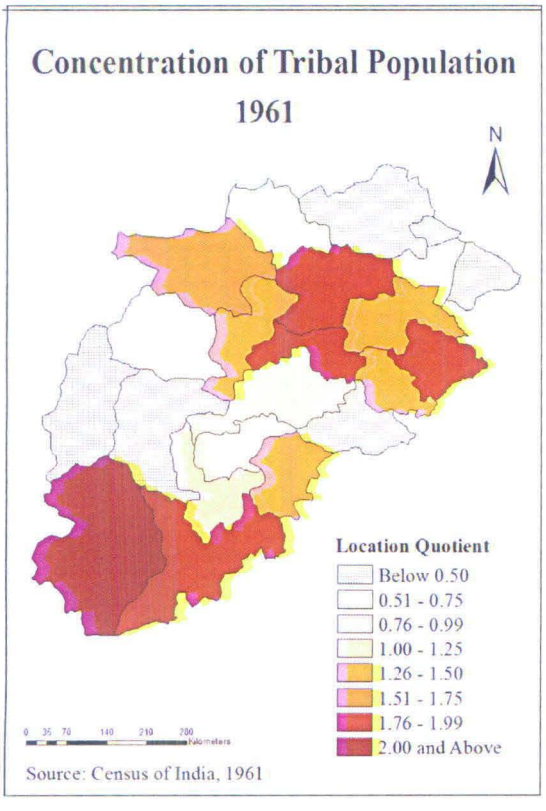
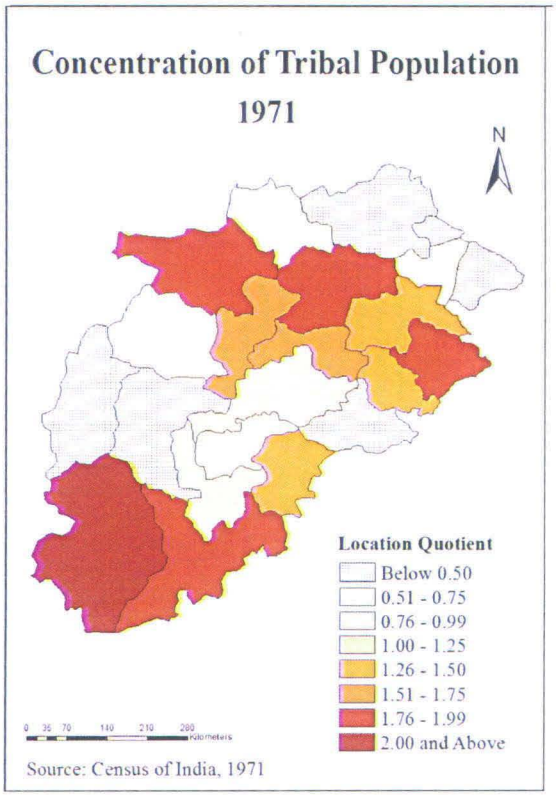


Fig: 5.7.



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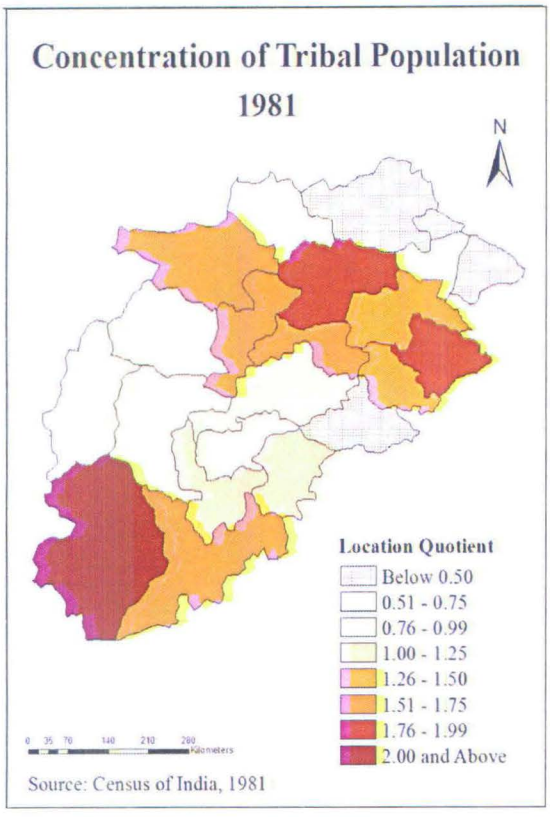

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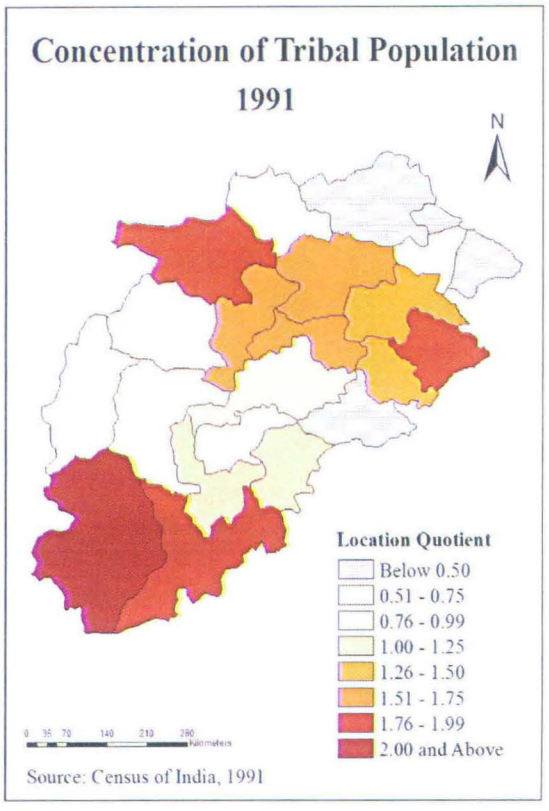

Fig: 5.10.

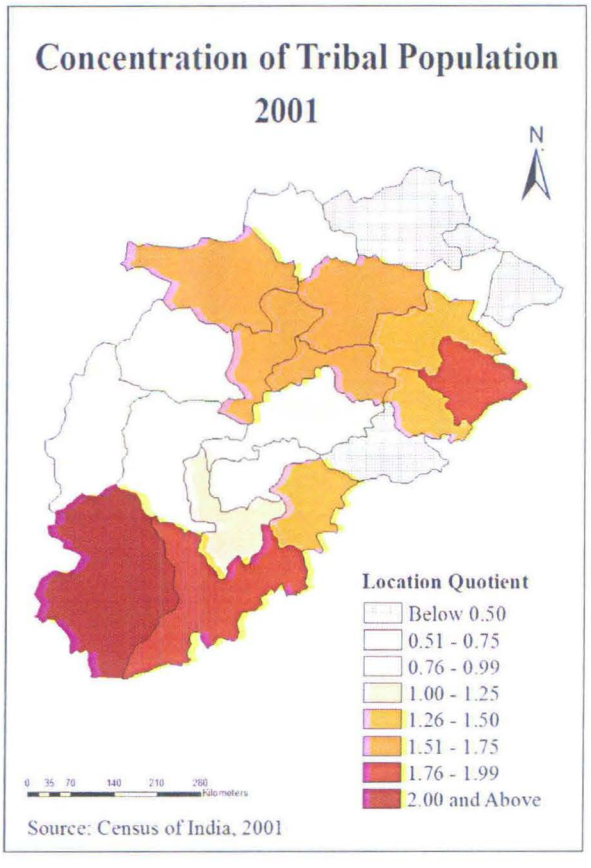

Fig: 5.11

Source: Fig. 5.7 to 5.11 – Computed from General Population Tables and Primary Census Abstracts 1961 to 2001.

The spatio-temporal analysis of tribal redistribution in the given study region portrays that the share of tribal population is declining in the core tribal areas, the causative factors of which could be establishment of developmental projects and forest degradation which has been apparent in the core tribal regions. The entry of incursive non-tribes as a result of declining forest cover has resulted in the tribals being increasingly squeezed into backward and remote areas. The concentration of tribal population has gone down drastically in the conventional tribal regions. Development projects such as dams, railways, industrial plants have resulted in mass displacements, land alienation, forest degradation which had immense impact on the traditional livelihood patterns and such complex amalgam of factors stand as integral part of the causal relation leading to the exclusionary process of tribal redistribution.

5.1.5 Tribal uprisings and Mass movements

Surviving the odds of utter regional backwardness coupled with displacements, dispossessions and destitution for decades together, are the aboriginal tribes and local people of the Resource region. So, when the public loses confidence in the law, and the government, they are bound to resort to extreme violence out of desperation, and popular resistance, unrests and mass movements become their only weapon against persistent suppression and exploitation. In their book *"Out of this Earth: East India Adivasis and the Aluminium Cartel"*, anthropologist **Felix Padel** and film-maker **Samarendra Das** portray the re-emergence of looting of the indigenous natural resources out of the forests and mines in the heart of the Mineral Belt of India which was witnessed during the worst phases of colonial resource 'drain' and colonialism in India. The present Neo-Liberal pattern and process of resource development strikes a chord of similarity with the strategy of the British East India Company of over two centuries ago. **Padel and Das (2010)** remarked that the multinational corporations have only switched places with the regime of the East India Company in ushering another era of 'underdevelopment' and slavery, especially for the mineral rich regions of the country. In a way, the present rebels and uprisings of the native tribes and local populace resemble the freedom struggle over six decades ago. Organized struggle committees have been steering the way for the tribal communities to defend their rights, lands and resources.

- **Vedanta Alumina and POSCO projects: Towards "Development of Underdevelopment" in Orissa:**

The development and utilization of the indigenous resources for the growth and development of an alien economy was characteristic of the Colonial pattern of resource development, which seems to have been revisited in the present Neo-Liberal age when rich mineral resources of the Mineral belt are being easily granted to the multinational Corporates who work strictly with profit motives and corporate social responsibilities towards the native population remain rather nominal.

The case of bauxite mining-processing by Vedanta Alumina Ltd at Niyamgiri and Lanjigarh in Orissa is a classic account of injustice, human rights violation and environmental degradation. It all began in the year 2004 when the Orissa Government signed a Memorandum of Understanding (MoU) with the United Kingdom (U.K) based Vedanta Alumina Ltd (VAL) to undertake bauxite mining at the Niyamgiri Hills for the new alumina refinery to be established by the same company at Lanjigarh. The extent of land needed to be acquired for these two projects amounts to 723 ha and 721 ha for the refinery and mines respectively, which has been estimated to affect around 300 villages with 15,000 families and 12 villages are to be completely displaced.[33] The mining site of Niyamgiri hills is a biodiversity extravaganza with numerous rare and endangered species of flora and fauna and is thus rightfully protected under the section 18 of the Indian Wildlife Act. It is also home to several aboriginal tribes such as Dongaria Kondhs, Kutia Kondhas and Jharania Kondhas who are completely dependent on the forests and rivers of the Niyamgiri Hills not only for their livelihood and cultural significance but their entire existence. They regard the Niyamgiri Hills as a living God as it stands tall not only as a source of their spiritual beliefs but also as source of 32 rivulets which drain the districts of Kalahandi, Koraput and even beyond to Andhra Pradesh. This makes this region ethnically and environmentally significant but the Orissa Government has shown sheer neglect of the socio-cultural-environmental facet of the Niyamgiri Hills, completely ignored the human rights and ecological stability issues

[33] "Resource Rich Tribal poor: Displacing People, destroying identity in India's indigenous heartland", Action Aid, Indian Social Institute, New Delhi, 2008, pp. 61

in turning on to a "resource intensive mode of development" in this region.[34] This had direct ramifications on the native inhabitants, who stood up in revolt to safeguard their lands, livelihoods, culture and their very existence but have persistently been suppressed by the State administration and Police equally, who have been defending and protecting the interests of a U.K. based corporate rather than its own citizens. Several legal battles have been fought by the NGOs and social activists on behalf of the Dongaria tribals along with global awareness and media advocacy which resulted in the Supreme Court offering a temporary respite in the year 2007 by barring the Vedanta Resources from any mining ventures in the Niyamgiri Hills. Meanwhile, the local communities are determined to defend their lands and rights and continue to protest demanding the ouster of the mining company completely from their hearths.

With over one fourth of the major mineral reserves of the country, cheap labour and port facility along with the incentives offered by the Orissa government in the form of land and tax concessions and right to directly mine the riches from below the earth, Orissa has become the hotspot for multinational investors interested in making huge profits through mining operations. The POSCO project proposed by the South Korean Pohang Steel Company in Jagatsinghpur district of Orissa is just a living example of the same. The captive access to the Kandahar mines and ready grant of 4000 acres of land to the POSCO project did not come round well with the native inhabitants of the land. The people who might suffer displacement due to the POSCO project have organized under the *Posco Pratirodh Sangram Samiti* (PPSS) and expressed their dissent in every possible way through petitions, demonstrations, rallies etc and in return have received severe suppression from the administration and police together. Constant struggle has yielded momentary but momentous success for the populace as the work on this project was held up and forced the company to even consider abandoning the entire project. However, the inhabitants of this region are surviving with a constant fear of being displaced due to renewed proposals of the POSCO steel plant project and continue with their struggle to safeguard their rights and lands.

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[34] Sahu, Geetanjoy (2008): "Mining in the Niyamgiri Hills and Tribal Rights". *Economic and Political Weekly*. Vol. 43, No. 15, pp. 19

- **From Kashipur to Kalinga Nagar: Dispossession looms large across Orissa:**

The intensified mineral explorations and industrial activities during the present Neo-liberal period have ushered an era of displacements, deprivation and destitution for the native inhabitants. The distress knell rang for Kashipur in Rayagada (part of erstwhile district of Koraput in Orissa) with the displacement of a large section of its populace from their native lands and declaration of dispossession from their forests. Kashipur being a densely forested area with more than 70 percent of its inhabitants comprising of indigenous tribes, the *jungle* used to form an essential part of their livelihood and culture. The traditional forest rights were eventually denied to the local tribal communities resulting in depriving off their livelihood sources. The Neo-liberal period steered the fate of this region into greater woes and destitution. During 1990s, Kashipur witnessed the arrival of a bauxite mining and processing company, Utkal Alumina International (UAIL) which was a joint venture of the Hindalco of India, Alcan of Canada and Hydro, a Norwegian company (which later withdrew from the project). The poverty stricken tribals of Kashipur, where starvation deaths has become a common phenomenon, opposed this "sweeping tide of industrialization" on the grounds of displacements and erosion of livelihood sources of about 25,000 aboriginal inhabitants. They formed an organized struggle committee named *Prakrutik Sampad Suraksha Parishad* (PSSP) and demanded the cancellation of all bauxite mining projects in the region along with posing a stiff resistance against the establishment of the aluminium plant of UAIL.[35]

The alienation and suppression of the tribals continues unabated across Orissa despite the unrests and local resistances. Kalinga Nagar in Jajapur stands as yet another victim to the wave of injustice meted out to the commoners. It all began with the Tata Steel signing a Memorandum of Understanding (MoU) with the Orissa Government in November 2004 for the establishment of a 6 million ton per annum integrated steel plant, which was later doubled in capacity to 12 million tons to compete with POSCO, at site earmarked as the Kalinga Nagar Industrial Complex in Jajapur district of Orissa. Around 2000 acres of land was initially allotted to Tata Steel for the Kalinga Nagar steel project which witnessed mass opposition and unrests on grounds of the huge chunk

[35] Sarangi, D. R (2002): "Surviving against odds: Case of Kashipur", *Economic and Political Weekly*, Vol. 37, No.31, pp. 3239 and 3241

of land acquired without suitable compensation to their rightful owners. The protest demonstration received the wrath of the police and administration which quashed the popular struggle. The tribals organized under the *Bistapan Birodhi Jan Manch (BBJM)* and *Kalinganagar Surakshya Samiti* demanded the departure of the Tata Company from their lands along with police and other Tata officials. Relentless struggle of the tribals against displacement resulted in forcing the Orissa Government to abandon the provision of imparting Special Economic Zone (SEZ) status to Kalinga Nagar.[36]

- **Organized Unrests: Replacing the Displacements in Orissa:**

Mass displacements of the indigenous inhabitants have been a direct ramification arising out of developmental projects like large scale mining activities, industrial endeavours, construction of dams, hydroelectric projects and other developmental projects. Perennial suffering in these backward tribal areas has witnessed the rise of several campaigns and popular movements to protect their indigenous natural resources and livelihood. The organized mass struggles against displacements were noted in various districts like Sundergarh, Keonjhar, Koraput and Lanjigarh where alienation of the local people from arable lands faced major unrests. Organized struggle committees constituting of local villagers, tribal communities, Non-Governmental organizations, social activists etc have come up with huge popular backing to defend their resources and ownership rights. Organizations like *Sachetan Nagarika Manch, Niyamgiri Surakhya Samiti* in Lanjigarh; *Keonjhar Surakhya Parishad* in Keonjhar; *Shakti network* in Sundergarh; *Bisthapan Birodhi Manch* in Kaling Nagar industrial area in Jajapur; *Machkund Displaced Committee* and *RITES* in Koraput are few among the numerous such which believe in defending, retaining and regaining their legitimate rights through organized social action and engage actively against the evils of displacement, ranging from asserting the right to work and equal minimum wages to protection against human trafficking, from protecting their resources, forestland from encroachment to defending their sources of livelihood.[37]

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[36] Asher, Manshi (2006): "Steel not enough?", *Economic and Political Weekly*, Vol. 41 , No.7, pp. 556 and "Resource Rich Tribal Poor, *Op. Cit.*, pp. 60- 61

[37] "Resource Rich Tribal poor, *Op. Cit.*, pp. 60

- **The Koel Karo Movement in Jharkhand:**

The Koel Karo became a popular name for more than three decades, less because of the proposed hydroelectric project and more because of the tribal struggle and mass movement associated with it. The Koel Karo project was initiated way back in 1973 with an ambitious plan of harnessing hydroelectric power from the Koel and Karo rivers. Around 1980 the National Hydroelectric Power Corporation (NHPC) was assigned the task of building dams on the two rivers. Ever since its announcement, the project faced outright protests by the tribals of Ranchi and Singhbhum districts who would get directly affected. Although the official assessment depicted only 42 villages being affected, which was later revised to 112, the tribal leaders claimed that about 256 villages would be submerged due to the project which includes large part of their agricultural lands (around 40, 000 acres), forest lands (around 50,000 acres) and a substantial number of their religious places (about 175 Churches and 120 Temples) including 300 sacred groves 'Sarnas'. The tribals rose up in protest and formed the *Koel Karo Jan Sangathan* to vehemently oppose the ambitious project. They demanded an all-inclusive resettlement package including that of the social, economic, environmental and religious disruptions that would occur due to the project. The government continued with the construction of the project and deployed police personnel during 1985. There were strong protests and demonstrations by the tribals and the project petered out after a while. The government came up with renewed vigour during 1995 when decision was made to lay the foundation stone and witnessed mass tribal agitation amidst police firing. Ultimately the project was cancelled in 2005 but the tribal organization continues to remain active until the project is officially declared as closed in the gazette notifications.[38]

- **Mass movement against Jindal Steel in Singhbhum, Jharkhand:**

The proposed establishment of the Jindal Steel Plant in Saraikela-Kharsawan in West Singhbhum during the year 2002 faced strong resistance from the local people as the 5200 acres of land requirement by the Jindal included forest lands, revenue lands and private agricultural lands and as a result was shifted to the Potka block in East Singhbhum. The people's movement started in 2003 and led to the formation of *Bhumi Raksha Sangharsh Samittee.* Around November 2005, mass agitation marked the

[38] *Ibid.* pp. 59

inauguration programme of the project and submitted a memorandum to the State government to stop the project as a result of which the work was stalled. Just a year later the state government directed the organization of gram sabha to pass the resolution and give the land to the Jindal Steel but the people's struggle committee opposed such steps and ultimately the Jindal steel had to abandon the project.[39]

Along with the few above-listed incidents, there have been numerous such uprisings of the local population against the usurpation of their lands and rights and mass displacements, altogether uprooting various villages and communities. With the given backdrop of ever increasing Corporate interest in exploiting the mineral-rich resource-abundant region, coupled with the willingness of the State in granting them their whims and wishes rather than protecting the rights of its citizens, the situation is bound to worsen, if not interfered timely by strict legislation and sincere execution. The pressure groups, media, civil society and commoners have been earnestly doing their part in protecting the indigenous resources but the policy legislation and administration should have the much required 'political will' to see it through.

5.2 Complex Ramifications of the Regional Backwardness:

The historical legacy combined with the development process has resulted in certain intricate ramifications which are a complex of the direct consequences of the nature and approach of development and the ensuing persistent regional backwardness which the Resource region has been witnessing for over a century now. The unabated exploitation of resources, mineral and human, in the hands of Colonial powers; incessant suppression of the native population, constituting of mostly aboriginals or *adivasis* and continued neglect of their rights over their land and resources resulted in dissatisfaction and unrests which gave rise to several Identity movements demanding their rights and even a step beyond to asserting the formation of separate administrative divisions based on their regional identity. The South East Resource Region witnessed the formation of two new states of Jharkhand and Chattisgarh, which were carved out of erstwhile Bihar and Madhya Pradesh respectively in the year 2000, as triumph of the assertive indigenous inhabitants and jubilation after their long-standing struggle against tribulations. Another form of such assertion which took shape of an armed rebellion is

[39] *Ibid.* pp. 60

the Naxal movement, prominent mostly in the mineral-rich tribal dominated Resource region. It has been perceived variously by different interest groups, from a struggle against exploitation to a revolt against the State authority and from a parallel form of administration in the dark interiors of the Mineral Belt to a threat to internal security. However, the solutions provided by the national government in the form of *'Green Hunt'* and *'Salwa Judum'* have only further complicated the issue.

5.2.1 Regional Identity Movements:

The region specific movements, initiated and led by the tribes and indigenous communities, relating to the assertion of their unique identity, their rights and organized struggles against continuous exploitation are no different from the tribal uprisings and mass movements which the region has witnessed against alienation, displacements and deprivation during the past few decades, but can only be stated as a level higher in their evolution, social base, extent and impact. The regional movements against the administrative authority and stated law of the land, asserting their rights over their own land has similar colonial roots as does the exploitation.

The tribal movement in colonial Orissa, designated as the **Munda Rebellion,** way back in the year 1938-39 when a section of Christian-convert Munda tribe rose in revolt against the feudal state and Colonialism in the princely state of Gangpur in Orissa, redefines the conventional "colonial modernity" which has always been kept in favour of the "*bhadraloks*".[40] **Pati (2010)** illustrated the nature of the tribal resistance, when a section of the oppressed Munda tribe converted to Christian religion with a hope of support to get back their rights, and depicted its affinity to the "**Birsa Munda's Movement**" in nineteenth century Chotanagpur. The uprising of the Munda tribe led by Birsa Munda during 1874-1901 in the Chotanagpur region, which forms an integral part of the larger Resource region, was based on issues such as relegation of the conventional rights, exploitation under the feudal system and colonialism and usurpation of land and resources by the *dikus* (outsiders). The fundamental claim by the Mundas remained that "Chotanagpur belonged to them", due to which it can be dubbed as one such movement defining the colonial roots of the various regional identity

[40] Pati, Biswamoy (2010): "Religion and Social 'Subversion': Re-examining Colonial Orissa", *Economic and Political Weekly*, Vol. 45 , No.25, pp. 44

movements which the Resource region witnessed in the subsequent decades. The historic movement, according to **Pati (2010),** had a 'broad social base' in the form of Kols, women activists and economically marginal non-tribals who worked hand in glove with the Munda tribes and went on to experience similar responses from the administration as the tribal unrests witness in present times. The Munda rebellion in Gangpur during the late 1930s was a kind of successor and was inspired by the Birsa Munda movement in Chotanagpur and the "**Prajamandal** (state people's) movement", which although absent in the princely state of Gangpur was extensively operational in other parts of Orissa.

The two centuries of constant struggle by the adivasis of south Bihar (which later was carved out as a new state of Jharkhand) for an autonomous region and tribal self-rule in the form of the **Jharkhand Movement** resulted in the formation of a new state altogether. The state of Jharkhand became a reality in the year 2000 after a long-drawn struggle by the indigenous communities against dispossession, exploitation and marginalization in the hands of Zamindars, Colonial powers, *dikus* (non-tribal aliens) as well as the administration. Despite the diversity among the various tribal communities of Jharkhand, they united under a common tribal-regional identity which provided them with a strong basis for political assertion of *'Adivasi Swashashan'* - tribal self-rule and conventional forms of tribal governance in a unique, autonomous, administrative region. [41]

Damodaran (2002) has noted the perennial nature of suppression of the adivasis by the non-tribals, 'outsiders', Hindu elites, British colonialists and nationalist state. Jharkhand as a region came under the East India Company around 1771 which was followed by an unforgettable history of *'peripheralization'* of the native tribals by the colonial state. The protests too have historical roots in nineteenth-century adivasis protest movements in the form of great Kol (Munda) rebellion of 1832 and the Santhal *hul* of 1851 which initiated the "pan-'tribal' identity". According to **Louis (2000)** there were four basic factors which led to the identity formation among the *'Jharkhandis'*: the socio-cultural similarity and ethnic homogeneity, the virtue of being tribes and aboriginal inhabitants of the region which infused a sense of belongingness to their

[41] Louis, Prakash (2000): "Marginalisation of Tribals", *Economic and Political Weekly*, Vol. 35, No. 47, pp. 4087-4088

lands and culture and went on to become a common base for political awakening among the adivasis of Jharkhand which reached its zenith with the formation of the Jharkhand Party in 1950; the spread of Christianity through various missionaries provided education which widened the horizons for the backward tribes by infusing the concept of private land rights and a sense of uniqueness of identity based on their golden history of civilization in this part of the country and finally the extension of this unique feeling to the sense of distinction between "we the tribals" and "they the *dikus*" which further united them and strengthened the regional-ethnic identity formation which led to their unabated struggle, which also encompassed the marginalized and deprived non-tribals and took shape of a struggle of the destitute, against every group of exploiters.

Damodaran (2002) indicates that the post independence nationalist government heralded an era of "renewed exploitation" in the name of "tribal assimilation" and "mainstreaming" the tribals, against the "isolationist" British policies which led to increased non-tribal incursions into the tribal homelands. The ramifications were evident in the form of dispossession and loss of tribal lands for construction of industries and even residential buildings by the non-*adivasis*. The prime cities of Ranchi, Dhanbad and Jamshedpur increasingly became non-tribal territories and the tribes were rendered homeless in their own homeland. The formation of the new state of Jharkhand in October, 2000 was perceived as a victory of the long-standing tribal struggle but under the aegis of Neo-liberal policies the "detribalization" unfortunately continues through mass displacements and land alienation in favour of corporate houses. The untiring struggle of the tribals for their rights also continues in the form of organized tribal uprisings and mass movements in every part of the Resource Region.

5.2.2 Naxalite Movement:

Emerging out of the composite process of "development of underdevelopment" of the mineral rich tribal territories combined with dispossession, displacement and continuous exploitation of the indigenous communities is the extreme form of tribal protest in the shape of Naxalite movement. As **Padel (2010)** remarked that the Naxalite insurgency has added further complexity to the "complex tapestry" comprised of numerous non-violent tribal unrests and peaceful local movements against marginalization, alienation and displacements which were imposed upon them rather

being voluntary. Comparing the Naxalite insurgency in the tribal areas of this region and the State's war against the Naxalite, which has been designated as the "Operation Green Hunt", to the global "War on Terror" against the militants, **Padel (2010)** categorized the local movements of having "global significance" as these unrests generally emerge as "resistance to capitalist growth-oriented devouring of resources and wrecking of environment" and are popular demands for the most basic rights to life and livelihood. As the development projects notoriously get transformed into "displacement projects", any kind of protest against them even if they are peaceful, anti-administration and anti-corporate demonstrations, they are more often than not labelled as Maoist instigated and associated with Naxalite insurgency. The mass movements against the Vedanta Alumina, POSCO Steel project, Tata Steel etc are essentially popular movements evolving out of solidarity of the indigenous inhabitants but branding of such protests as Naxal oriented and the extreme nature of suppression that they undergo in the hands of State administration has proved havoc and fatal for the aboriginals.

Among the various causes that **Padel (2010)** catalogues for the rise of tribal militancy, "Operation Green Hunt", the war against the Maoists has been cited as a significant factor for the extreme form of tribal protests. He opines that the "terror tactics" employed by the security forces coupled with subjugation of the peaceful protests by the indigenous communities against dispossession and displacement are the most unavoidable factors for growing tribal militancy in the Mineral Belt. The fundamental reason behind the emergence of Naxalite insurgency in the Resource region is rooted in the long-standing exploitation of the lands, resources and aboriginal populace of this area which has been compounded by the recent invasion of the mining giants and steel companies into the tribal area; the unabated displacement of the *adivasis* population from their own hearths and homeland through extensive purchases of their native land which more often than not is unwilling on the part of the seller; and the injustice which has been meted out to them for centuries and "the impossibility of redress for these outrages through the courts".[42]

[42] Padel, Felix (2010): "Mining and Movements – Causes of Tribal Militancy", *Social Action*, Vol. 60, July-September, pp. 223-225

The Naxalite movement, which emerged in Naxalbari village of North Bengal about half a century ago, has been estimated to be spread across 180 districts in ten states of India and is most prominent in the South East Resource Region. The map of the naxal affected areas depict that the Mineral belt is the core of the Naxalite activities in India, the reason for which seems more obvious with the extensive plunder of mineral wealth and land acquired in the name of development at the cost of lives, rights and livelihood of the tribal inhabitants in this part of the country. The armed struggle of the Naxalites in favour of the poor tribals and raged against the suppression and atrocities bestowed by the State Governments and the latter's "war on terror" together has crippled the normal life of the local inhabitants. The **"Operation Green Hunt"** and government sponsored ***Salwa Judum*** (campaign for peace) which have been employed as remedy to the insurgency have only added to the violence and bloodshed that the region has been witnessing as a part of the Naxal rebellion. In the name of remedial measure the administration has pitted the tribals against their own people; the tribal youths including women are recruited in police as **Special Police Officers (SPOs)** without adequate training, salary or facilities and are armed to fight the naxal violence. The tribal youths who are the future of these indigenous communities are either taken away by the Naxalites groups or the administration as SPOs to take part in the seemingly never-ending internal war. This has played havoc for the tribal societies in various parts of the Resource region, especially in Bastar, Dantewada, and Koraput and pronounces a fatal future for them. Instead of such detrimental remedial measures, dealing with the root causes of extremist activities and embarking upon land reforms, local participation in development programmes and mining activities shall be more effective.[43]

[43] Resource Rich Tribal Poor, *Op. Cit.*, pp. 71

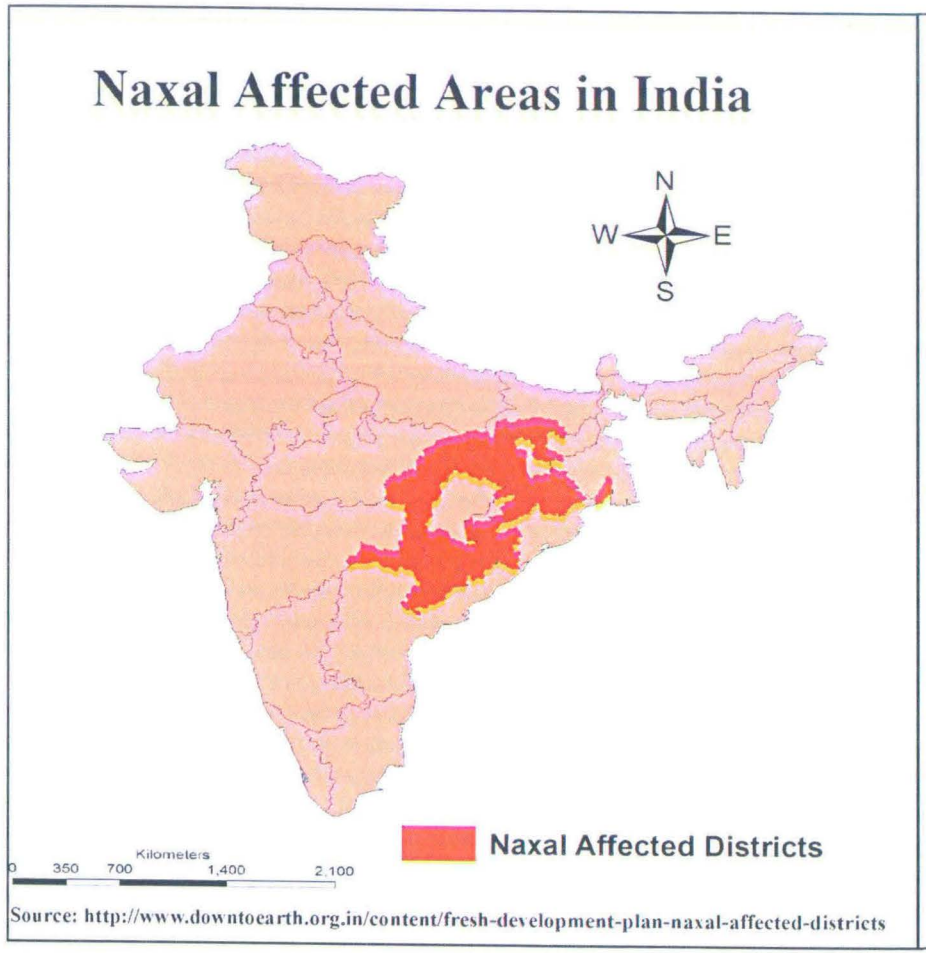

Fig: 5.12

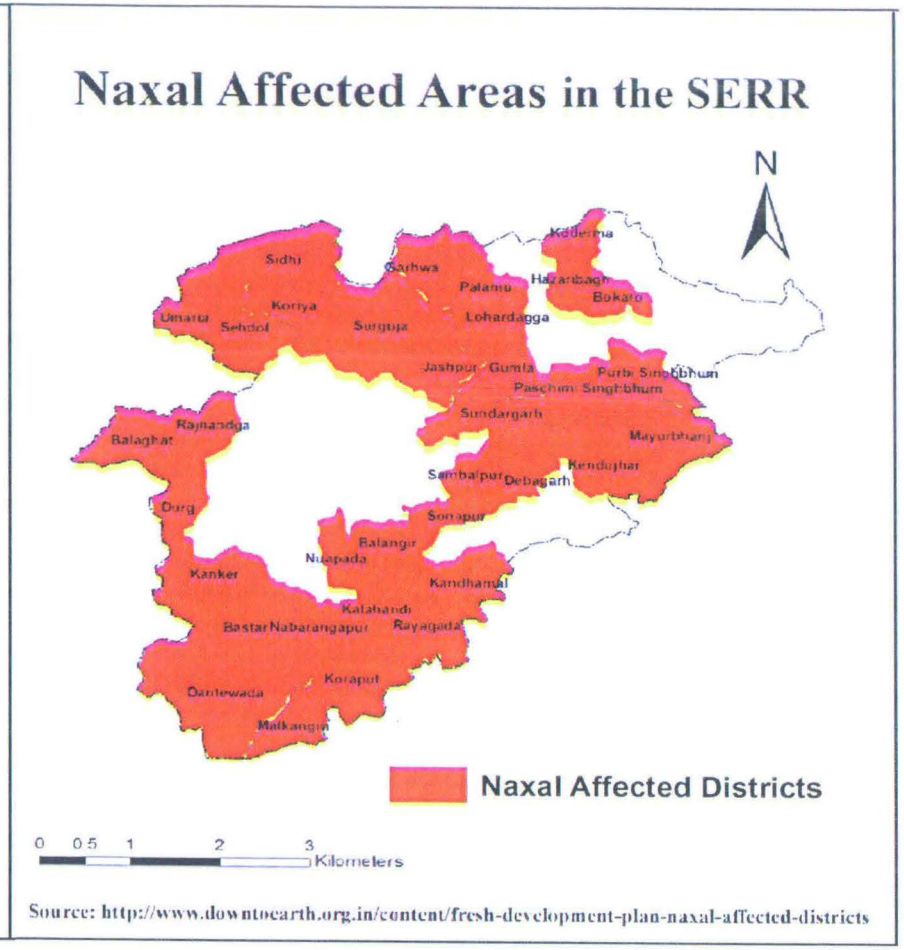

Fig: 5.13

5.3 Resource alienation, Tribal Rights and Policy-Legislation: the way ahead

The rich mineral resources in the Resource region are often extracted from underneath the tribal lands which have traditionally and historically been under the ownership and possession of the indigenous tribes. These tribal and indigenous communities, however, have remained perennially deprived of any legal rights of ownership or even a share of the mineral wealth which is plundered from their very hearths. Several mass movements have been witnessed during the recent decades, opposing such resource grab both in the form of land resource as well as mineral resources and asserting their rightful ownership on the same. But such demonstrations against human rights violations have often failed to generate substantial results and have fell on deaf ears of the policy makers. The historical injustice meted out to these tribal communities continues to remain unabated and nothing seems to change for these indigenous dwellers.

The deprivation scenario has rather been exacerbated under the present phase of Neo-liberal policies. The post reforms era has witnessed the retreat of the state mechanism and ever increasing influence of the domestic Corporates and Multinational Corporations in mining activities. With the Welfare oriented approach and Area and group based development approach of the early Plan years being increasingly replaced by growth and profit oriented neo-liberal policies, the case of the tribals in this part of the country seems almost doomed. Although the outcry of these indigenous communities, which have fell victim to the intensified plunder and exploitation of the resources under the neo-liberal framework, have been able to grab global attention and is reflected in the recent United Nations Conventions, the recent policies of the Indian national government does not reflect any such sympathetic approach.

In the international arena, the recent ILO and U.N Conventions have acknowledged the rights of the tribal and other indigenous communities to ownership, control and management of resources both in the form of land resource as well as other resources which they traditionally owned either on an individual basis or on a community basis. The Conventions further provide them with the right to a crucial and decisive role in decision-making which relates to the development of their native areas

and also the right to prior, free and informed 'consent' to any sort of project which is planned or proposed to be established on their lands.[44]

The United Nations (U.N.) has recently (May, 2012) adopted certain norms against "land grabbing" within which it has issued global guidelines defending the rights of the poor over their own lands. The U.N recognized the 'informal indigenous claims' over their traditionally owned land and native resources and necessitated transparent consultation by the private companies with the local people as well as recognition of 'customary tenure systems' by the indigenous people. This guideline has also been a call on the respective national governments to "provide appropriate recognition and protection of the legitimate tenure rights of indigenous people". The implementation of this guideline is being perceived as reaffirmation of the human rights of the indigenous population which have been living on those lands for ages together and would "improve secure access to land, fisheries and forests and protect the rights of millions of often very poor people."[45] In the present Neo-Liberal age, when greed and competition for natural resources especially rich mineral resources has augmented and corporate grab of tribal lands goes unabated, such guidelines by a premier international organization is being perceived as a significant step towards ensuring 'people-centred land governance' and restoration of a better human rights condition especially in resource rich tribal dominated areas where the tribes have a little voice and authority towards their own property. While it clearly underlines the Corporate Social Responsibility (CSR) of the Multinational Companies, which has been rather nominal in these areas, to respect the human and tenurial rights, it also directs the national governments to utilize these guidelines in adopting adhering policy measures and legislations to protect violation of the rights and ensure consultation and participation of indigenous communities which have been affected by land investments.

Based on such international guidelines, the future scenario seems extremely rosy for the indigenous population but when it comes to proposed legislations and policy measures in case of our national government towards the tribal dominated - mining

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[44] Karat, Brinda (2012): "Of Mines. Minerals and Tribal rights", *The Hindu*, Vol. 135, No. 116, dated: 15th May, pp. 10.

[45] "U.N. adopts norms against 'land grabbing'", *The Hindu*, Vol. 135, No. 20, dated: 13th May, pp. 11.

regions, like the case of the Mineral belt, the situation is as grim as has always been or maybe would turn rather worse under the proposed legislative measures. The **Mining and Minerals (Development and Regulation) Amendment Bill, 2011** (MMDRA), which is presently before the Parliamentary Standing Committee, proposes a clear liberalisation of the mining and minerals sector and its provisions sound pro-corporate and a further onslaught for the tribal communities and indigenous owners of the land and resources. There is a principle of mandatory payments of funds by companies to the tune of 26% of their profits in case of coal mining companies and in case of other major minerals it is equivalent to the annual royalty paid. The proposed MMDRA bill has provisions to place these funds under the control of a district mineral foundation which shall be dominated mainly by mine owners and the bureaucracy and only a nominal representation of the indigenous communities. With the composition of the mine owning community being increasingly consisting of either the domestic Corporates or the Multinational Corporations coupled with absence of decisive role of the indigenous communities in the management of funds, the "mismanagement" of such funds is quite predictable and rather inexorable, as has been in the case of U.S. Federal Government which was forced to pay compensation to Native Indian-American communities for 'mismanaging' similar assets. Such a scenario coupled with the meagre amount of royalty paid by the mining companies which in spite of recent revisions comprises only a negligible fraction of the profits earned by them, does not seem to be beneficiary for the native population.[46]

While the U.N. conventions necessarily underlined the need for "consultation" of the indigenous communities for any project or investment on their native lands, the MMDRA bill provides no such provisions of "consultation" for giving all types of leases and licenses for exploring and extracting the major minerals. Only "consultation" required will be in case of granting licenses for *minor* minerals in Fifth and Sixth Schedule areas where the "gram sabha or the District council" shall be consulted. Such a provision shall stand as a violation of the constitutional rights of the tribal communities of the Fifth Schedule areas as well as against the provisions of **Panchayat Extension (to Schedule Areas) Act (PESAA), 1996** which makes the "consultation'

[46] Karat, Brinda (2012), *Op. Cit*

with the Gram Sabha mandatory.[47] The transfer of tribal land to non-tribals is prohibited in the Fifth Schedule areas, which was further supported by the Chotanagpur Tenancy Act and Santhal Parganas Tenancy Act in Jharkhand, but the companies which are granted mining leases are never owned by the local tribes. The possibility of involvement of any tribal co-operative society in mining operations is also bleak as mining of *major* minerals can only be done by registered companies and obtaining a lease for mining of *minor* minerals in the Fifth and Sixth Scheduled areas remain at the mercy of the State government which "may" consider these cooperatives. The minimum stake, that the tribal communities were provisioned to have over mining operations in their homeland, had been to receive about 26% of shares of the mining companies without any cost. Such provisions were outlined under the MMDRA draft bill of 2010 but were further curtailed to just "one share per member of the affected family".[48]

The only legislation for land acquisition that exists in the present day is **The Land Acquisition Act, 1894** (LAA) which was enacted by the British Government and by the virtue of The Indian Independence (Adaptation of Central Acts and Ordinances) Order, 1948 continues to remain as the law of land acquisition in independent India as well. Although the Act has undergone multiple amendments over the time, the Colonial essence has been retained throughout. Blame it on the lack of political will; it has taken the legislative body over a century to draft a new **Land Acquisition, Rehabilitation and Resettlement Bill, 2011** (LARR). As the Land Acquisition Act is based on the principle that welfare of the people is paramount in law, it unravels a clash between the individual rights of the property owners and the power of the State to acquire such property. Although the Right to Property was long back done away with in our country, the unabated acquisition of land for private and multinational companies, which the recent LARR bill 2011 sets to legitimise further, is completely unjustified.

The major issues that have remained the bone of contention during the several amendments to the LAA, 1894 and continues to remain with the present LARR bill, 2011 includes the lack of a comprehensive definition of the term "Public purpose" for which the land needs to be acquired either by persuasion or else even by compulsion.

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[47] Mohanpuria, K.L. (1996): "The Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996", Government of India, No.40 of 1996.

[48] Karat, Brinda (2012). *Op. Cit*

As per the Article 31 (2) of the Indian Constitution a land can only be acquired by the State for "Public Purpose". Such "public purpose" generally refers to the welfare of the community as opposed to the individual interests. The Land Acquisition Act further mentions under its Section 3(f) that the expression "Public Purpose" is not to be strictly constructed and shall remain as an inclusive definition. The courts have held different purposes as "Public Purpose" from time to time and empowered the government with the final say regarding this issue i.e. the declaration of Public Purpose by the government remains as final except if there is a colourable exercise of power. More often than not the clause of Public Purpose has been infamously used to attain narrow political ends. The revised version of this legislation in the form of the LARR bill, 2011 fails to define the stringently the term "Public Purpose" again and thus it further "keeps the door open for misuse".[49]

The LARR bill, 2011 while defining the term "Public Purpose", sets up a scope for land acquisition for "private companies for public purpose"[50] In a way the bill legitimises land acquisition for-profit private companies. The continuity of the colonial flavour in the recent legislations becomes evident when a comparison is made between the clause in the recent bill regarding the land acquisition for private companies and the colonial Land Acquisition Act of 1894 which continues to be followed with multiple amendments. The Section 3: za (vii) of the LARR bill, 2011 states that "acquiring land for private companies for the production of goods for public or provision of public services" would be a legitimate public use. This sound similar to the Section 40 (1b) of the LAA, 1894 under which land acquisition for companies for the purpose of "construction of some work and that such work is likely to prove useful to the public" is declared valid according to the law. Land Acquisition for construction of infrastructure projects such as roads, railways etc convincingly relate to direct public use but that for private commercial development remains largely unaccepted.[51] The use of the sovereign power of the State to forcefully acquire individuals' lands for private companies, which

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[49] Srivathsan, A. (2012): "Owner's nightmare, realtor's fantasy", *The Hindu*, Vol. 135, No. 126, dated 26th May, 2012, pp. 13

[50] The Draft Land Acquisition and Rehabilitation and Resettlement Bill (LARR), 2011, Ministry of Rural Development, Government of India, July 29th, 2011.

[51] Srivathsan, A. (2012), *Op. Cit*

are primarily profit oriented rather than befitting the case of public welfare, continues to be inexplicable. The 2007 Bills had provisions to reduce the land acquired by the state for a private company to 30 percent and the rest of the 70 percent of the land needed was to be purchased by the company itself through negotiation. The LARR bill, 2011 has replaced this condition with new provisions which provides for "partial" acquisition by the state for the private company if so requested for "public purpose". Here lies the valid apprehension of such "partial" acquisition moving beyond 30 percent or may even stretch up to near-full acquisition by the state.[52]

The LARR bill, 2011 excludes the acquisition of only multi-cropped irrigated agricultural lands and not all irrigated agricultural lands. The bill fails to incorporate provisions based on principles like 'no forced displacement' or 'free, informed prior consent' for displacing people. It also fails to retain the provision for a National Rehabilitation Commission as was mentioned in the 2007 bill which would have necessitated a statutory displacement clearance. The "Land for Land" rule remained conspicuous by its absence in the Rehabilitation package of the present bill except in case of displacements due to irrigation projects. Such short sightedness on behalf of the legislators is beyond comprehension because displacements of similar magnitude can occur due to flood control or hydroelectric or multi-purpose projects as well. In such case, the nature of the project remains of secondary importance to the nature of the impact. If an agricultural community is forced to displace from its hearth then the rehabilitation package should ensure the supply of agricultural land to the community elsewhere at resettlement sites and not forced again to undergo a shift in their nature of occupation. Discarding the idea of a National Rehabilitation Commission does not remain justified either. There is yet another issue which used to remain mostly unresolved is of compensation. The two core principles which were supposed to be the basis for the present bill were: a) minimum displacement of people and b) compensation assessment is made on a scientific basis. There has been a significant rise in the compensation amount in the present bill but its efficient delivery would actually solve the problem.

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[52] Iyer, Ramaswamy R. (2011): "A good Bill that disappoints", *The Hindu*, dated 18th August, 2011.

The policy-legislation system in India has been widely criticized for retaining the flavour of the Colonial Acts and policies even after multiple amendments. Until recently, the same stood true for the Forest Acts and policies in independent India. The British legacy in the form of the **Indian Forest Act, 1927** continued to exist, if not in exact form then in spirit, and the situation was rather worsened by the **Forest Conservation Act, 1980** which led to further centralization of the forest rights. The recent ratification of the **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006** is a living result of the long-standing struggles of the forest-dwelling tribal communities against deprivation and alienation of their ownership and usage rights. It has ushered new hopes for these communities by recognizing the following rights under Section 3 (1) of the Act: a) "Right to hold and live in the forest land under the individual or common occupation for habitation or for self-cultivation for livelihood by a member or members of a forest dwelling scheduled tribe or other traditional forest dwellers"; b) "Right of ownership, access to collect, use, and dispose of minor forest produce"; c) "Right to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use" and other Community rights[53] which are being perceived as revolutionary measures in the history of Tribal Rights-Forest Acts nexus in India. This Act stands as a great contrast to the Colonial forest act and its other predecessors and bestows the user communities with significant ownership, usage, relief and development and forest management rights coupled with a remarkable attempt to create a new democratic system of forest governance.[54]

The mineral rich tribal dominated Fifth and Sixth Scheduled Areas are witnessing arbitrary plunder of rich resources by the domestic as well as multinational Corporates. The lack of political will and proper legislation to safeguard the ownership and human rights of the tribals, carve out a pitiable future for the rich Resource region. Without a strong legislative measure, befitting the tribals instead of favouring the profit minded Corporates, and its equally stern execution the path ahead for the Resource region shall only lead to further injustice and discrimination.

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[53] "Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006", Government of India, 2006

[54] Sahu, Geetanjoy (2008): *Op Cit*, pp. 20.

5.4 Conclusions:

1. The direct consequences emanating from the nature of the developmental process and the approach undertaken towards the development of the Resource region constitutes of Land alienation and mass displacement of indigenous population which further results in redistribution of tribal population in the region through voluntary and involuntary migration of the tribes and incursion of the non-tribes, the mass tribal uprisings and rebellion attached to such marginalization and exploitation and also environmental damage through unsustainable and reckless use of the rich resources.

2. The enormous Land Acquisition cases in the Resource region have arrived as a by-product of developmental efforts in this region. The problem is extremely sensitive and severe in case of the Mineral belt which is home to ethnic tribes and indigenous communities who have been living in these areas for centuries together. Disrupted community life and marginalization are often seen to be associated with land acquisitions and development induced displacements. With increasing multinational-Corporate incursions in the mineral rich region for mining activities and enormous land being acquired in this part of the Mineral Belt for mining operations during the past few years, the multiplication of displaced persons is much evident. Continued failures on behalf of the legislators and policy makers to draft a strong legislation to benefit the tribals in these areas have further aggravated the sufferings of the aboriginals.

3. The extensive mining-industrial activities in this mineral rich Resource region and further development of transport infrastructure such as railways and other development projects like multipurpose projects, dams, thermal power stations etc have taken a toll on the forest cover of this region. The most noticeable aspect is while forest cover declined in almost all the districts of Jharkhand, maximum loss was experienced in Singhbhum and Ranchi where development efforts have been most widespread. Similarly, in case of Chattisgarh massive decline of forest cover has occurred in Durg, Raipur and Bilaspur districts which have been the core mining-industrial districts and have experienced rapid development efforts. While,

decline in forest cover have been occurring in the entire region, degradation has especially been significant in the mining-industrial as well as in the tribal districts.

4. The overarching dependence of the tribal communities on the land and forest resources as sources of livelihood and basis of survival has made them vulnerable on grounds of increasing alienation. Land alienation and diminishing forest cover have deteriorated the sources of livelihood and have resulted in eroding traditional economic activities, shifting workforce patterns and eventually in physically dislocating the indigenous tribes from their native lands.

5. Development projects such as dams, railways, industrial plants have resulted in mass displacements, land alienation, forest degradation and erosion of traditional livelihood patterns, complex amalgam of which stand as integral part of the causal relation leading to the exclusionary process of tribal redistribution. The rehabilitation has been meagre and beyond satisfactory, while the nature and approach of the developmental process towards the indigenous populace has refused to change over the decades. The share of tribal population has declined in the core tribal areas due to massive development projects and entry of incursive non-tribes. As a result, the tribals have been increasingly squeezed into backward and remote areas. The concentration of tribal population has gone down drastically in the conventional tribal regions which have been marked by increasing mining-industrial activities.

6. The historical legacy combined with the development process has resulted in certain intricate ramifications which are a complex of the direct consequences of the nature and approach of development and the ensuing persistent regional backwardness which the Resource region has been witnessing for over a century now. The unabated exploitation of resources, mineral and human, in the hands of Colonial powers; incessant suppression of the native population, constituting of mostly aboriginals or *adivasis* and continued neglect of their rights over their land and resources resulted in dissatisfaction and unrests which gave rise to several Identity movements demanding their rights and even a step beyond to asserting the formation of separate administrative divisions based on their regional identity. The region specific movements are initiated and led by the tribes and indigenous

communities and are related to the assertion of their unique identity and their rights. The regional movements against the administrative authority and stated law of the land, asserting their rights over their own land has similar colonial roots as does the exploitation.

7. Emerging out of the composite process of "development of underdevelopment" of the mineral rich tribal territories combined with dispossession, displacement and continuous exploitation of the indigenous communities is the extreme form of tribal protest in the shape of Naxalite movement. The armed struggle of the Naxalites in favour of the poor tribals and raged against the suppression and atrocities bestowed by the State Governments and the latter's "war on terror" together has crippled the normal life of the local inhabitants. The "Operation Green Hunt" and government sponsored *Salwa Judum* (campaign for peace) which have been employed as remedy to the insurgency have only added to the violence and bloodshed that the region has been witnessing as a part of the Naxal rebellion.

8. The policy-legislation system in India has been widely criticized for retaining the flavour of the Colonial Acts and policies even after multiple amendments. The continuity of the colonial flavour is evident in the recent legislation bill regarding land acquisition for private companies. The British legacy continues to exist in the forest acts as well, if not in exact form then in spirit, and the situation has rather worsened. While the International guidelines by U.N. in favour of the indigenous population makes the future scenario seem extremely rosy but when it comes to proposed legislations and policy measures in case of our national government towards the tribal dominated - mining regions, like the case of the Mineral belt, the situation is as grim as has always been or maybe would turn rather worse under the proposed legislative measures.

Chapter: 6

Summary of Findings and Conclusions

1.1 Mineral Resource Regions form an integral and significant part of the regional structure of any economy. The pattern and process of development of the mineral resource regions and the subsequent utilization of the indigenous mineral resources shapes the economic development of the country. The South East Resource region of India is considered to be the prime mineral belt of India. It holds the major share of the total coal reserves of the country and abounds in a wide array of other mineral resources as well. The mineral resource base of this region is undoubtedly the richest in the country. The process of mineral resource development that the prime Mineral Belt of India underwent during the extractive regime of British Imperialism in India structured the regional backwardness of the Resource region. The scope of this prosperous region was restricted in the form of a "*mining enclave*" which set the ball rolling for the pattern of economic backwardness in this region for the subsequent decades. The islands of development continued to exist in the post Independence period, if not entirely in the same form but in the same spirit and is on its way of becoming a perpetual reality under the Neo-Liberal policies of resource utilization for development of alien economy instead of indigenous development.

1.2 The persistent regional backwardness in the South East Resource region of India has been essentially analysed under the dependency paradigm which explains the persistent status of the ex-colonies as *underdeveloped* or *backward* within the context of European domination, expropriation and exploitation of natural resources which resulted in underdevelopment in the colonies. The nature of incorporation of the resource region into the world economy during the colonial regime and later on as an independent closed economy followed by the economic liberalization and opening up of the economy to market forces have further accentuated the enclave character and shaped the regional backwardness of the resource-supply region without bringing about any substantial indigenous development in this resource hinterland.

2.1 The opening up of the Resource region was completely based on coal mining as coal was the very first mineral to be explored and exploited in this region. The coal mining industry in this region, by the very virtue of being controlled and operated by foreign hands during the colonial times, responded according to the external world events to an extent that acceleration or retardation of coal production, opening or closing down of coal mines was determined to a great degree by the external demand-supply situation. In the absence of any impetus from an indigenous iron and steel industry till the turn of the next century, coal mining was mainly geared towards development of the railways which itself was constructed for extracting the mineral resources from the resource hinterlands. Iron ore mining too did not receive any substantial impetus till the establishment of an indigenous steel industry. During the planned development of the National economy the coal mining witnessed rapid and tremendous development. The extent to which the development of these enormous coal reserves was directed towards indigenous development was greatly determined by the approach undertaken to develop them in different phases.

2.2 The rules for granting of mining lease or license in British India were highly in favour of the British Subjects wherein a certificate of approval or a prospecting license or a mining lease could be granted only to a person who was a British subject or to a company or firm controlled by British Subjects. After Independence the national government followed a restrictive policy. Mineral concessions were safely not granted to foreign investors, but the need to rapidly develop the indigenous mineral resources for achieving a self reliant industrial base resulted in permitting foreign investment and participation on a minority share basis or collaborations on mutual benefit basis. While coal mining was essentially kept under the public sector and government policies and legislations tilted highly in favour of State control over mineral industry, foreign participation was allowed a narrow entry. The era of State control came to a grinding halt after the economic reforms of 1991 and the mineral policies were altered and transformed in lines with the new liberal policies. Multiple amendments in the existent mineral legislations were carried out highly in favour of the large Corporates and eased out the entry of foreign and private entrepreneurs which marked a clear and further liberalisation of the mining and

minerals sector. A re-emergence of the colonial tragedy seems to have come knocking with the mining legislation in India being all set to encourage privatization further by providing rules and regulations in favour of the private and multinational Corporates, continuously overlooking the ownership rights and participation of the indigenous inhabitants especially the tribal communities.

2.3 The colonial pattern of ownership of coal mines depicts that the collieries under major coal companies were mainly under the control and directorship of Europeans and the privately owned collieries were highly in favour of the Indians. But given the small size, unsteady development and uneconomic nature of the privately owned collieries, the effective ownership and control of the coal industry in the Mineral belt rested mainly with the Europeans. The post independence era witnessed a wave of Nationalization of the coal mines which went on to reserve and restrict coal mining in India for public sector, but it later underwent several amendments which moulded the ownership laws to mark the legal narrow entry of private ownership in coal mining which assumed greater magnitude after the economic liberalization wherein private sector participation was allowed in coal mining through captive consumption. Although the number of collieries under public sector far exceeds that of private sector, due to the ongoing hold of the public sector over the major chunk of coal mining sector i.e. non-captive mines, recent years have witnessed an increasing trend in private sector ownership of coal mines. The recent pattern of ownership in case of iron ore mines is highly skewed in favour of private sector. The rising privatization in mineral sector is apparent with 95% of the existing mining leases and 71% of the total land under mining leases to be in possession of the private sector and the situation in the Mineral belt being a stark example with 91% of the mining leases in Jharkhand and about 89% of the mining leases each in Orissa and Chattisgarh been granted to the private sector.

2.4 The growth of the coal mining industry at its prime stage was rather "extensive" instead of being "intensive" in nature and its demand-based nature led to frequent stagnations. There was nothing resembling an investment policy and as a result of which there was meagre reinvestment and large fraction of profits were not reinvested into the indigenous mining industry by the coal mining

giants during the crucial period of rapid expansion of the coal mining industry in the Mineral belt i.e. during 1890-1920. The system of Managing agency prohibited the emergence of any major local entrepreneur and such a colonial legacy refused to die out and continued in the form of "internal colonialism" even during the post-independence period. The wave of nationalization of coal mines in the post-independence period made investments in coal mining essentially a State or public sector issue. However, foreign and private investment gradually made a narrow entry into the investment policy and the economic liberalization of 1990s made the gates wide open. The Foreign Direct Investment (FDI) policy in the mining sector has been gradually liberalized during the past few years with FDI in the mining sector being fully opened upto 100% through the automatic route for all non-atomic and non-fuel minerals.

2.5 There is an urgency to make necessary legal provisions, with sustainable approach geared towards indigenous development. The South East Resource Region boasts of its immense mineral wealth, parts of which have been extensively mined and huge enticing reserves of remaining resources still exists. The long exploitative history of the Mineral Belt and with such undying legacy and "negative heritage" haunting its evolution, coupled with the present scenario of ever-increasing strides of privatization and intensifying control of profit oriented private, both domestic and foreign, entrepreneurs over its rich mineral base, it becomes the prime responsibility of the policy makers to make provisions to steer the utilization of the rich mineral resources towards the indigenous regional development and in turn national development as well as to protect the ownership rights, interests and welfare of the indigenous people.

2.6 The development of railways in India was not directed towards promoting indigenous industrial development, as was the case in the developed countries, but was strictly controlled by the political and commercial interests of the British. The rail network was laid to open up the vast interiors of India to form a ready market for British manufactured goods and to extract and export the rich resources of the hinterlands in the form of cheap raw materials to feed the British industries.

2.7 The rates of freight movement were designed in such a way that they were profitable for the British economy far more than they benefited the indigenous economy The rate structure favoured the import of manufactured goods from Britain and export of raw materials from the hinterlands of India. The exports sent by rails from the resource hinterlands to the ports to be sent to Britain were charged with lower rates same as the imports from England to the vast Indian markets. This went on to deepen the resource rich country's economic dependence on the metropolitan economy. Such a pattern of trade proved fatal for the development of the indigenous industry. The railways formed the prime "instrument" for fostering such a dependent development or rather "underdevelopment".

2.8 The structure of the Railway administration was completely under the control of British with the officers as well as top personnel being essentially British and virtually no Indians holding any significant posts. The companies neither were interested in training the local Indians for holding any higher positions in the Railways nor were they technically trained. The materials needed for expansion and maintenance of the network were obtained from England even if they were available locally. The main reason for the "disruptive effect" of the railways on the Indian economic structure was the nature of railway organization and foreign orientation of the Indian economy which led to the "wasteful use of her limited resources".

2.9 The pattern of expansion and growth of the railway network in the South East Resource region, ever since its introduction, has been oriented towards linking the rich coal mining centres and opening up of new mining centres of coal, iron ore and other industrially useful minerals. The lack of extension of railway lines to the other backward areas of the Resource region explains the extractive character of the railway development in the region. The most crucial aspect of the development of railways during the post-independence period which also characterized the growth of railway network in the Mineral Belt was that the expansion of capacity remained concentrated to lines related to the expansion of iron and steel and coal production.

2.10 The expansion of the railway lines has been essentially concentrated along the existing network in the Resource Region. The pattern of railway development and its spatial extension has essentially followed the pattern that was set during the colonial period and any major extension of railway routes to the rest of the backward region has not taken place even over a century after the introduction and rapid extension of railways in this region. Huge tracts of the Resource region are still devoid of railway connection which pronounces the regional backwardness of the area. The approach of the colonial and national governments towards the railway development in the region has remained highly in favour of linking only the mineral bearing areas and mining centres with the manufacturing centres in order to exploit and utilize the mineral resources of the region but have failed to extend the benefits of its existent rich resources and their exploitation to the rest of the Resource region which has remained perennially backward

3.1 The South East Resource Region had a prosperous traditional industrial base till the first half of the nineteenth century. The indigenous iron industry, metal works, silk and cotton weaving industries were the local industries, which formed the traditional industrial base of the Resource Region, stood essentially on the rich natural resources available locally. They were geared mainly towards domestic demands and local consumption while exporting the surplus and most importantly employed the native population. With the advent of British imperialism in India the traditional industrial base either faced a decline or was devastated due to various reasons ranging from lack of demand to competition from cheap imported factory goods.

3.2 The artisans involved in these cottage and handicraft industries lost their traditional skills without being replaced by new factory skills which was the case in developed countries where the loss of skills was compensated through instilling new skills in the factory workers coupled with providing elementary education to everybody. In the Resource region and in India the number of persons acquiring factory skills remained extremely small because the really skilled occupations in factories were controlled by Europeans and were kept away from the natives. Such a system generated a new type of dependence on

the foreigners for technical personnel which continued to haunt the industrial development in the region during the successive decades.

3.3 With the decline of the indigenous industry in the Resource Region, a new extractive industry developed. The Resource region acquired the character of a secondary or derivate enclave which was geared towards the demands of an alien economy or the primary enclaves which served the metropolitan economy. It marginally employed the native populace unlike its indigenous counterpart and was highly centralized mainly in the mining centres. The apparent industrial development in the region took place in an "isolated enclave" form, the development of which remained completely insulated from its surroundings.

3.4 The industry being external demand driven, the motive was to extract maximum output and no emphasis was given to proper utilization of the coal resources. The *slaughter mining* engaged in over production and resulted in wastage of superior quality coal indicating the negligence of the British Government towards sustainable development of the coal industry. The pattern of industrial development which emerged during the colonial times, continued into the post-independence era when in order to meet the ambitious production targets of the Five Year Plans, focus was intensified on "extensive" development of the coal industry through opening up of new mines based on minimum technology instead of intensifying development of the existing mines through proper mechanization.

3.5 The pattern of coal consumption during the colonial period depicts that the indigenous coal produced was mostly consumed within the country and was not directly exported to the metropolitan country but the exploitation was in an indirect form as the coal mines formed the derivative or secondary enclaves which served the primary enclaves such as cotton and jute mills and tea gardens which were major consumers of the domestic coal and were directly exploited by the British imperialism for use in the metropolitan economy. Railways remained the largest consumer of the domestic coal produced which was again directed towards extracting the mineral resources of the hinterland. Thus, it formed a vicious circle, wherein the end product invariably reached the metropolitan economy. The pattern of coal consumption witnessed a significant

transformation in the post-independence era with power houses becoming the largest consumer of coal followed by Iron and steel industries.

3.6 The technological development was severely neglected during the entire colonial period which greatly affected the steady growth of the coal industry. While industrial revolution in England was characterized by invention of machinery and rapid exploitation of its indigenous mineral resource base, the rise of modern industry in the Resource Region and India was based on imported industrial machinery coupled with slow exploitation of the local mineral resources. There was no emphasis on modernization of the large mines, while small non-mechanised mines multiplied with every spurt in demand. The lack of technically trained personnel and equipments and the attitude towards technological development which had crippled the industry during the colonial times continued even three decades after independence when the main emphasis remained on opening up of new mines based on minimum technology instead of mechanizing the existing mines which were capable of higher production. Nationalisation of the coal industry ushered in the "open-cast mining drive" wherein greater degree of mechanization was achieved for the open-cast mines while the underground mines which required higher levels of technology faced continuous neglect at the cost of future sustainability.

3.7 The scenario of low productivity of coal is evident for the entire colonial period, the major factors of which were lack of suitable training of the labour employed, outdated methods of mining and inadequate mechanization The low productivity despite increase in production and comparatively low production despite opening up of huge reserves of coal in the Mineral belt points towards low levels of technology used in the coal industry. India remained far behind in terms of progress in labour productivity as compared to that of the coal industries of other countries. While productivity of Open-cast mines improved tremendously after nationalization of the coal mines, the productivity of Under Ground mines deteriorated and made slow progress during the successive decades.

3.8 The adjacent Provinces of the coal mining areas essentially remained the main source of labour supply for the coal industry. The pattern in which the local

workforce was employed was such that the non-aboriginal workers drawn from outside the mining centres were preferred for the more skilled operations. The local aboriginal miners, mainly Santhals, were engaged as unskilled and casual labour. A considerable proportion of the unskilled workforce was also obtained from Gorakhpur or eastern parts of the United Province. Such recruitment of long-distance labour strengthened the enclave character of the resource region. Independence did not bring about any structural changes in the mining enclave wherein employment of local aboriginal labour continued for casual and temporary work while recruitment of unskilled *Gorakhpuri* labour was done more effectively which reconfirmed the enclave structure and further accentuated the isolation of the enclave from its hinterland.

3.9 The participation of the government in development of the coal industry during the entire colonial period was marked by reckless mining and lack of intensive development. The policies of the National Government affirmed exclusive State participation in the industrialization process which was allotted exclusive right to set up new establishments in the Coal industry sector while assigning limited role to the private sector. This was further supported by Nationalisation of the Coal mines Reorganization of the Coal industry. But the economic liberalization of the 1990s and the neo-liberal regime witnessed a kind of reversal of policies which ushered in an era of 'formal privatisation'. The foreign companies were allowed to hold a 51 percent stake in Indian coal mines and captive consumption was allowed in coal mining which provisioned "private sector participation in coal mining.

3.10 The industrialization process of England and its constant quest for markets in the colonies restricted the development of indigenous industries in India on modern lines for a considerable length of time. Despite rich reserves of mineral resources, the process of industrialization made a late start in the Mineral Belt due to failure of the British regime to provide a congenial climate for the establishment of the most basic industry of iron and steel. The establishment of TISCO came up due to the initiative of Indian entrepreneur, based on indigenous capital which refuted the myth that scarcity of domestic savings was the single biggest obstacle to India's industrial growth. The industrial development

remained concentrated in few centres which during the successive decades formed the islands of development. This enclave character handicapped the economic growth and muffled the regional development process to an extent that the steel plants and industrial towns in a much later stage were equally isolated.

3.11 The technical dependence imposed on the colonised country by the British imperialism by arresting the skill formation became evident when TISCO had to persistently depend on foreign countries for machinery and technical personnel. While it always made timely up gradation of its technology and capacity which was a major factor behind the tremendous growth of the industry during the pre-independence period, the process of extensions was more rapid as compared to training of Indians for technical positions. Such a problem faced by the TISCO reflected the educational backwardness and lack of formation of new skills in the region as well as in India. The issue of "Indianisation" of the technical personnel was considered by TISCO which resulted in establishing a technical institute to train Indian students. But the refusal of the Government to offer any technical assistance for the institute reflects the attitude of the imperial government towards skill-formation in India. The lack of adequate trained manpower, both technical and managerial remained a problem which persistently confronted the steel industry during the post-independence era when the National Government relied heavily on foreign experts for establishment of new steel plants in public sector and dependence on foreign collaboration became a necessity for consultancy services for expansion of TISCO. Some of the problems faced by India's public sector steel mills have resulted from their almost singular concentration on achieving output records than focussing on the technological development and productivity of the plants.

3.12 The desirable level of labour productivity, which has been repeatedly emphasized in the context of manpower planning in steel mills, remained unachieved in the Indian Steel mills which sacrificed quality to achieve output. Attainment of record output could not simultaneously lead to an increase in mill's efficiency rather the labour productivity trends in all steel plants in the Mineral belt depicted an overall decrease which is an indicator of persistent lack of efficiency in production.

3.13 The participation of the imperial government in industrialization process in the Mineral Belt was negligible. The policy of *laissez faire* was prevalent which aimed at extracting the indigenous mineral wealth as raw material for the metropolitan industries and use the Indian market for the British manufactures. Government's focus was restricted to improving transport infrastructure in order to facilitate such flow of trade. TISCO was established by an Indian entrepreneur entirely based on domestic capital and the tariff and trade policies of the British Government which were imposed on the domestic steel industry essentially contained an element of "preferential treatment to British manufactures" to provide an advantageous position for British steel industry to capture the Indian market. The "imperial preference" coupled with "half-heated" protection policies towards the domestic steel industry and control over the prices of steel resulted in a retarded development of the steel industry.

3.14 The central control over iron and steel continued during the post-independence era wherein the steel industry was almost completely State regulated and State had an exclusive right in enlarging the public sector and controlling the private sector. The price control and rationing over steel were gradually lifted and New Industrial Policy adopted by the Government of India under the economic liberalization went on to open up the iron and steel sector for private ownership and foreign and private investment. It was further exempted from compulsory licensing and imports of foreign technology were freely permitted along with deregulation of pricing and distribution of Iron and Steel. Ownership of crude steel operations is now split approximately evenly between private and public entities.

3.15 With the economic liberalization, an era of "privatization" dawned in the iron and steel industry. The increased control of the Corporates over the iron ore mines and augmented establishment of steel plants in the private sector has become a threat to the regional economy and its resource base because the minerals are exploited strictly with profit motives and to be exported directly to foreign lands instead of being utilized for indigenous development as in case of POSCO wherein the steel processed in Orissa is to be shipped out to its main

market China. This sounds as a re-emergence of the colonial pattern of resource exploitation in the region wherein the indigenous resources were utilised for the development of an alien economy instead of the regional or local economy. The increased privatization of the most basic industry in the Mineral Belt, which aims at utilizing the rich mineral wealth of the region not towards indigenous development but towards achieving profit for the Corporate Houses, has accentuated the *enclave* character in the Mineral Belt which has been persistently serving as a resource-supply region amidst constant regional backwardness in its indigenous territory.

4.1 The degree, speed and concentration of urbanization were very low in the Resource Region during the early decades of the pre-independence period. The force of urbanization was almost in negatives. It witnessed a tremendous spurt in degree as well as pace of urbanization during the immediate decades after independence. Around 1951-61 and 1971-81, tremendous speed and force of urbanization were noted probably due to the due to the mining – industrial activities taken up by the Government of India in the plan years.

4.2 The tempo and force however slowed down in the successive decades during 1991 and 2001 when negligible to negative force in urbanization yet again became common. The districts which had experienced tremendous force and speed in urbanization during the earlier decades and had attained higher degrees of urbanization as compared to the rest of the region, underwent a downward trend in speed and force possibly due to reaching a near saturation in levels of urbanization.

4.3 The degree and concentration of urbanization increased gradually in almost all the districts in the post independence era, but their pace was again quite slow. The only districts which rose to prominence at the end of the century, i.e. Singhbhum, Ranchi, Sundergarh, Dhanbad etc were those which performed perennially well throughout the century. There was hardly any district where a drastic spurt in urban development was noted.

4.4 The study of urbanization in this region reflected the emergence of a distinct Core-Periphery pattern. The Core was characterized by unprecedented speed of urbanization during the immediate post independence decades till 1981 and attained the highest levels of urbanization with huge concentration of urbanization and constant increase in mean city sizes. The effective core formation took place around mining-industrial areas where heavy industries were located. Two Core areas can be delineated here as Dhanbad-Singhbhum-Sundergarh-Ranchi core and Durg-Raipur-Bilaspur core. These are the pockets where urbanization and entire urban development has remained concentrated.

4.5 The rest of the region has persistently acted as the Peripheral region to these two cores, which can be easily distinguished due to the steep gradient in degree of urbanization even amongst adjacent districts. This peripheral region is characterized by low degrees of urbanization coupled with low speed and force of urbanization, lesser concentration of urbanization and mean city size of even below 10,000 persons. It has remained quite insignificant in terms of progress in mean city size. The periphery has been suffering from persistent stagnation and these districts lag almost by a century in case of urban development as compared to their core counterparts. The periphery consists of the backward districts like Palamau, Kalahandi, Bastar, Phulbani, Koraput, Keonjhar, Dhenkanal etc.

4.6 This indicates that the immense progress achieved by the core urban regions which were the islands of development, as early as during the colonial period and also later on in the post independence era had little effect on its peripheral areas and urban development has failed to trickle down in the rest of the region.

4.7 These backward districts were able to accelerate their speed of urbanization a little immediately after the independence possibly due to the emphasis on backward area development in the five year plans, but later on again slowed down. Districts like Koraput, Keonjhar etc witnessed tremendous speed in urbanization during 1961-81 but declined sharply in the following decades.

4.8 The post – independence period witnessed an enormous growth of urban population mainly due to emergence of new towns in the region. The decadal

growth rates in the 1951-61 is almost double than that of 1941-51 in almost all the districts. But the level of urbanization shows very little improvement. The region is characterised by prominent urban growth with negligible urbanization which is an integral element of Third world urbanization.

4.9 Urban growth is increasingly being concentrated in the Cities and Large Towns. Class I cities have experienced tremendous growth during the recent decades. Medium towns which used to contain the largest share of urban population for most parts during the entire century, has witnessed a gradual decline during the recent years. Small towns, which have increased in number in the last few decades, have been suffering from utter stagnation with negligible proportion of population residing in them. The region is suffering from a *mega cephalous* situation with the class I cities almost exploding.

4.10 The distribution of the Class I cities have again been skewed rather than uniform. Generally, the industrial centres of the region have developed into large cities leading to a huge concentration of Class I cities in the Core Urban-Industrial areas. The periphery suffers from acute dearth of flourishing cities, which further lead to lack of development impetus in such stagnating areas.

4.11 During the pre-independence era, most of the towns were early administrative towns with a long regional history attached to them. The new towns which came up were mostly trading towns and railway towns which surfaced as a corollary to the advent of railways in the region. There was a prominent dearth of manufacturing towns (with very few exceptions) especially those based on heavy industries.

4.12 There was a perceptible absence of mining towns until 1941, in spite of the early exploration and commercial exploitation of important minerals in the mineral resource region. There existed a noticeable *time - gap* between the commercial exploitation of the minerals which resulted in the emergence of many mining centres and development of these mining centres as urban centres. This indicates that the utilization of the indigenous resources did not lead to synchronized urban development in the region during the colonial period. Most of the mining

towns came up only in 1941 could register substantial urban growth only in the last few decades which is almost after a century of commercial mineral exploitation in this region.

4.13 A marked shift in the factors for origin of towns can be noted here in the post independence period. Unlike the pre independence era, this period was marked by emergence of quite a substantial number of mining and industrial towns. The opening up of many steel plants in this region in the 2nd Five year plan led to the growth of industrial towns like Bokaro Steel City, Raurkela, Durgapur and Bhilai which were typical industrial towns. Quite a substantial number of mining towns also came up due to the increased focus on development of heavy industries.

4.14 The major mining-industrial urban centres like Jamshedpur, Dhanbad, Bokaro Steel City, Raurkela, Durg-Bhilai Nagar etc functioned as the growth centres bringing about high levels of urbanization and urban development in their respective districts of Singhbhum, Dhanbad, Hazaribagh, Sundergarh and Durg. Such impetus was, however, extremely restricted and highly localized and failed to spill over even to the adjacent districts. In other words development could hardly spread, which goes a long way in proving why despite such rich mineral resources and huge industrial plants, the development of the overall region could not take place.

5.1 The direct consequences emanating from the nature of the developmental process and the approach undertaken towards the development of the Resource region constitutes of Land alienation and mass displacement of indigenous population which further results in redistribution of tribal population in the region through voluntary and involuntary migration of the tribes and incursion of the non-tribes, the mass tribal uprisings and rebellion attached to such marginalization and exploitation and also environmental damage through unsustainable and reckless use of the rich resources.

5.2 The enormous Land Acquisition cases in the Resource region have arrived as a by-product of developmental efforts in this region. The problem is extremely

sensitive and severe in case of the Mineral belt which is home to ethnic tribes and indigenous communities who have been living in these areas for centuries together. Disrupted community life and marginalization are often seen to be associated with land acquisitions and development induced displacements. With increasing multinational-Corporate incursions in the mineral rich region for mining activities and enormous land being acquired in this part of the Mineral Belt for mining operations during the past few years, the multiplication of displaced persons is much evident. Continued failures on behalf of the legislators and policy makers to draft a strong legislation to benefit the tribals in these areas have further aggravated the sufferings of the aboriginals.

5.3 The extensive mining-industrial activities in this mineral rich Resource region and further development of transport infrastructure such as railways and other development projects like multipurpose projects, dams, thermal power stations etc have taken a toll on the forest cover of this region. The most noticeable aspect is while forest cover declined in almost all the districts of Jharkhand, maximum loss was experienced in Singhbhum and Ranchi where development efforts have been most widespread. Similarly, in case of Chattisgarh massive decline of forest cover has occurred in Durg, Raipur and Bilaspur districts which have been the core mining-industrial districts and have experienced rapid development efforts. While, decline in forest cover have been occurring in the entire region, degradation has especially been significant in the mining-industrial as well as in the tribal districts.

5.4 The overarching dependence of the tribal communities on the land and forest resources as sources of livelihood and basis of survival has made them vulnerable on grounds of increasing alienation. Land alienation and diminishing forest cover have deteriorated the sources of livelihood and have resulted in eroding traditional economic activities, shifting workforce patterns and eventually in physically dislocating the indigenous tribes from their native lands.

5.5 Development projects such as dams, railways, industrial plants have resulted in mass displacements, land alienation, forest degradation and erosion of traditional livelihood patterns, complex amalgam of which stand as integral part of the

causal relation leading to the exclusionary process of tribal redistribution. The rehabilitation has been meagre and beyond satisfactory, while the nature and approach of the developmental process towards the indigenous populace has refused to change over the decades. The share of tribal population has declined in the core tribal areas due to massive development projects and entry of incursive non-tribes. As a result, the tribals have been increasingly squeezed into backward and remote areas. The concentration of tribal population has gone down drastically in the conventional tribal regions which have been marked by increasing mining-industrial activities.

5.6 The historical legacy combined with the development process has resulted in certain intricate ramifications which are a complex of the direct consequences of the nature and approach of development and the ensuing persistent regional backwardness which the Resource region has been witnessing for over a century now. The unabated exploitation of resources, mineral and human, in the hands of Colonial powers; incessant suppression of the native population, constituting of mostly aboriginals or *adivasis* and continued neglect of their rights over their land and resources resulted in dissatisfaction and unrests which gave rise to several Identity movements demanding their rights and even a step beyond to asserting the formation of separate administrative divisions based on their regional identity. The region specific movements are initiated and led by the tribes and indigenous communities and are related to the assertion of their unique identity and their rights. The regional movements against the administrative authority and stated law of the land, asserting their rights over their own land has similar colonial roots as does the exploitation.

5.7 Emerging out of the composite process of "development of underdevelopment" of the mineral rich tribal territories combined with dispossession, displacement and continuous exploitation of the indigenous communities is the extreme form of tribal protest in the shape of Naxalite movement. The armed struggle of the Naxalites in favour of the poor tribals and raged against the suppression and atrocities bestowed by the State Governments and the latter's "war on terror" together has crippled the normal life of the local inhabitants. The "Operation Green Hunt" and government sponsored *Salwa Judum* (campaign for peace)

which have been employed as remedy to the insurgency have only added to the violence and bloodshed that the region has been witnessing as a part of the Naxal rebellion.

5.8 The policy-legislation system in India has been widely criticized for retaining the flavour of the Colonial Acts and policies even after multiple amendments. The continuity of the colonial flavour is evident in the recent legislation bill regarding land acquisition for private companies. The British legacy continues to exist in the forest acts as well, if not in exact form then in spirit, and the situation has rather worsened. While the International guidelines by U.N. in favour of the indigenous population makes the future scenario seem extremely rosy but when it comes to proposed legislations and policy measures in case of our national government towards the tribal dominated - mining regions, like the case of the Mineral belt, the situation is as grim as has always been or maybe would turn rather worse under the proposed legislative measures.

The mineral resource utilization in the South East Resource region has been directed towards extraction of maximum mineral resources without bringing about substantial regional development in the indigenous territory. The development process during various phases have only depleted the rich resource region of its mineral wealth and in return have marginalised and alienated the indigenous population of their lands, resources and rights. Development in the form of urban-industrial growth have remained concentrated in few centres which were the *enclaves* during the colonial period and continued as islands of development or development cores without spreading any development impetus in the surrounding region which has persistently remained the backward resource hinterland.

Although a sincere attempt has been made in the present study to deal with the resource utilization-regional backwardness nexus in the richest mineral belt of India over its various evolutionary phases which has structured and retained its *enclave* character and backward status, enormous scope exists in exploring the issue further. A detailed analysis of the pattern of trade both internal and external, the changing workforce structure and characteristics of labour migration together with the agrarian economic base and tribal economic structure of the region can be included to the present

study to enhance it further and strengthen the propositions and conclusions that have been drawn from it. The study can be extended to other mineral resource regions of the country and a comparative analysis of the prevailing situation could strengthen or weaken the proposition highlighted in the present study. A comparative analysis would underline the spatial organization of the region within the country and amidst its surrounding and its dynamism over the various phases of development.

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Appendix I –

Administrative Divisions of the South East Resource Region, 1971 and 2001

STATE	DISTRICTS_1971	DISTRICTS_2001
JHARKHAND	PALAMAU	Palamau Garhwa
	HAZARIBAGH	Hazaribagh Chatra Koderma Bokaro Giridih
	RANCHI	Ranchi Lohardaga Gumla
	DHANBAD	Dhanbad
	SINGHBHUM	Purbi Singhbhum Paschim Singhbhum
ORISSA	SAMBALPUR	Sambalpur Jharsuguda Bargarh
	SUNDARGARH	Sundergarh
	KEONJHAR	Keojhar
	MAYURBHANJ	Mayurbhanj
	DHENKANAL	Dhenkanal Anugul
	PHULBANI	Baudh Kandhamal
	BOLANGIR	Bolangir Sonapur
	KALAHANDI	Kalahandi Nuapada
	KORAPUT	Koraput Malkangiri Nawarangpur Nuapada

STATE	DISTRICTS_1971	DISTRICTS_2001
CHATTISGARH	BASTAR	Bastar Dantewada Kanker
	DURG	Durg Rajnandgaon Kawardha
	RAIPUR	Raipur Dhamtari Mahasamund
	BILASPUR	Bilaspur Jahangir-Champa Korba
	RAIGARH	Raigarh Jashpur
	SURGUJA	Surguja Koriya
WEST BENGAL	BANKURA	Bankura
	PURULIA	Purulia
	(Parts of Burdwan)	Burdwan
MADHYA PRADESH	SIDHI	Sidhi
	SHAHDOL	Shehdol Umaria
	BALAGHAT	Balaghat

Appendix II –

Census of British India

Year	Volume name	Vol. no./ Pt.	Tables / Reports
1872	Census of Bengal		
	Census of India , Central Provinces	No. VI	
1881	Census of Bengal	Vol. II	Report
	Census of Central Provinces	Vol. I	Tables
1891	Census of Central Provinces and Feudatory states	Vol. XII / Pt. II	Tables
	Census of the Lower Provinces of Bengal and their Feudatories	Vol. III	Report
1901	Census of the Lower Provinces of Bengal and their Feudatories	Vol. VI A / Pt. II	Tables
	Census of Central Provinces	Vol. XIII-A /Pt. II	Tables
1911	Census of Bengal	Vol. V / Pt. II	
	Census of Bihar and Orissa	Pt. II	Tables
	Census of Central Provinces and Berar	Vol. X / Pt. II	Tables
1921	Census of Bengal	Vol. XI / Pt. II	Tables
	Census of Bihar and Orissa	Vol. VII / Pt. II	Tables
	Census of Bihar and Orissa	Vol. III / Pt. I	Report
	Census of Central Provinces and Berar	Vol. XI / Pt. II	Tables
1931	Census of Bihar and Orissa	Vol. VII / Pt. I	Report
	Census of Bihar and Orissa	Vol. VII / Pt. II	Tables
	Census of Bengal and Sikkim	Vol. V / Pt. II	Tables
	Census of Central Provinces and Berar	Vol. XII / Pt. II	Tables
1941	Census of Bengal	Pt. IV	Tables

Appendix: III A

Towns in the South East Resource Region by Census Years

(In descending order of their size)

1872	Pop.	1881	Pop.	1891	Pop.
Barddhaman	32321	Barddhaman	34080	Barddhaman	34477
Raniganj	19578	Raipur	24948	Raipur	23759
Raipur	19116	BISHNUPUR	18863	RANCHI	20306
BISHNUPUR	17436	BANKURA	18747	BANKURA	18743
BANKURA	15979	RANCHI	18443	BISHNUPUR	18190
SONAMUKHI	12565	HAZARIBAG	15306	HAZARIBAG	16672
RANCHI	12086	SAMBALPUR	13939	SAMBALPUR	14571
HAZARIBAG	11050	CHATRA	11900	Raniganj	13772
SAMBALPUR	11020	Raniganj	10792	SONAMUKHI	13462
CHATRA	8818	SONAPUR	7928	Bilaspur	11122
Katwa	7963	Bilaspur	7775	CHATRA	10783
Dainhat	7562	DALTONGANJ	7440	Rajnandgaon	8850
Dhamtari	6023	Katwa	6820	SONAPUR	8698
RAGHUNATHPUR	5380	Dhamtari	6647	LOHARDAGA	7110
Ratanpur	5111	RAGHUNATHPUR	6115	CHAIBASA	6850
Bilaspur	4898	GARHWA	6043	Dhamtari	6729
CHAIBASA	4641	CHAIBASA	6006	Katwa	6699
GARHWA	3133	Rajnandgaon	5849	Ratanpur	6389
DALTONGANJ	1113	Dainhat	5789	RAGHUNATHPUR	6216
		Kawardha	5685	Dongargarh	5674
		Ratanpur	5615	Kawardha	5349
		SONAMUKHI	5590	Arang	5250
		Dongargarh	5543	DALTONGANJ	5193
		BINIKA	4680	Dainhat	5144
		JHALDA	4391	Balaghat	5138
		Jagdalpur	4294	Jagdalpur	5044
		LOHARDAGA	3461	BINIKA	5040
		BHAWANIPATNA	3417	JHALDA	4890
				BHAWANIPATNA	3483

Source: Appendices III A to III E has been compiled from the Town Directory, Census of India, 2001.

Appendix: III B

Towns in the South East Resource Region by Census Years

(In descending order of their size)

1901	Pop.	1911	Pop.	1921	Pop.
Barddhaman	35022	Barddhaman	35921	JAMŞHEDPUR	57360
Raipur	32114	Raipur	35335	RANCHI	39628
RANCHI	25970	RANCHI	32994	Raipur	38341
BANKURA	20737	BANKURA	23453	Barddhaman	34616
BISHNUPUR	19090	Asansol	21919	Asansol	26499
Bilaspur	18937	PURULIYA	20886	BANKURA	25412
PURULIYA	17291	BISHNUPUR	20478	Bilaspur	24295
Raniganj	15841	Bilaspur	19850	PURULIYA	22161
HAZARIBAG	15799	HAZARIBAG	17009	BISHNUPUR	19398
Asansol	14906	Raniganj	15497	GIRIDIH	18874
SONAMUKHI	13448	SONAMUKHI	13275	HAZARIBAG	17060
SAMBALPUR	12870	SAMBALPUR	12981	Raniganj	14536
Rajnandgaon	11094	Rajnandgaon	11979	SAMBALPUR	13594
CHATRA	10599	GIRIDIH	10668	Dhamtari	12721
GIRIDIH	9433	Dhamtari	10460	Rajnandgaon	12631
Dhamtari	9151	CHATRA	9222	DHANBAD	11973
SONAPUR	8887	CHAIBASA	9009	Durg	11274
CHAIBASA	8653	SONAPUR	8638	SONAMUKHI	10644
Kalna	8121	Kalna	8603	DALTONGANJ	9817
Katwa	7220	Raigarh	8041	JEYPUR	9669
BHUBAN	6788	JEYPUR	7800	GARHWA	9626
Raigarh	6764	Balaghat	7400	CHAIBASA	9178
JEYPUR	6689	DALTONGANJ	7179	Raigarh	8667
Arang	6499	Durg	7048	Kalna	8424
Balaghat	6223	BUNDU	6950	CHATRA	8225
LOHARDAGA	6123	Katwa	6904	CHAKRADHARPUR	7944
Mungeli	5907	LOHARDAGA	6773	SONAPUR	7680
Dongargarh	5856	DHENKANAL	6615	BIRAMITRAPUR	7316
DALTONGANJ	5837	Dongargarh	6249	Balaghat	7300
Dainhat	5618	Umaria	6008	LOHARDAGA	7152
BARIPADA	5613	BARIPADA	5968	Dongargarh	7120
DHENKANAL	5609	BHAWANIPATNA	5945	Katwa	6823
Ratanpur	5479	BHUBAN	5905	Mungeli	6536
BUNDU	5469	Mungeli	5881	RAGHUNATHPUR	6493
Umaria	5381	Arang	5820	Sarangarh	6391
Sarangarh	5227	JAMSHEDPUR	5672	BHAWANIPATNA	6376
JHALDA	4877	JHALDA	5616	Champa	6344
Jagdalpur	4762	Ratanpur	5499	BARIPADA	6189
Khairagarh	4656	Sarangarh	5375	DHENKANAL	6132
BHAWANIPATNA	4400	Dainhat	5342	Arang	6052
Kawardha	4372	Kawardha	5180	JHALDA	5737
RAGHUNATHPUR	4171	BARGARH	4689	BALANGIR	5645
Kanker	3906	GARHWA	4198	KENDUJHAR	5429
GARHWA	3610	RAGHUNATHPUR	4186	BHUBAN	5331
Chhuikhadan	2085	BINIKA	4130	GUNUPUR	5317
Sakti	1791			Umaria	5206

1901	Pop.	1911	Pop.	1921	Pop.
				BARGARH	5204
				JHARSUGUDA	5109
				BUNDU	5035
				Dainhat	4843
				PATNAGARH	4839
				Kawardha	4773
				Ratanpur	4751
				Bhatapara	4714
				Kanker	4536
				TITLAGARH	4384
				BAUDHGARH	4146
				Khairagarh	4045
				BINIKA	3597
				NABARANGAPUR	3569
				TALCHER	3316
				KANTABANJI	3213
				RAYAGADA	2058

Appendix: III C

Towns in the South East Resource Region by Census Years

(In descending order of their size)

1931	Pop.	1941	Pop.	1951	Pop.
JAMSHEDPUR	83738	JAMSHEDPUR	148711	JAMSHEDPUR	218162
RANCHI	50517	Raipur	63465	RANCHI	106849
Raipur	45390	Barddhaman	62910	Raipur	89804
Barddhaman	39618	RANCHI	62562	Asansol	76277
BANKURA	31703	Asansol	55797	Barddhaman	75376
Bilaspur	31374	BANKURA	46617	BANKURA	49369
Asansol	31286	Bilaspur	37460	Kulti	41803
PURULIYA	25974	PURULIYA	30445	PURULIYA	41461
GIRIDIH	21122	Kulti	29194	Bilaspur	39099
HAZARIBAG	20947	GIRIDIH	25325	DHANBAD	34077
BISHNUPUR	19696	BISHNUPUR	24961	HAZARIBAG	33812
Raniganj	16373	HAZARIBAG	24918	Raigarh	29684
DHANBAD	16356	Raniganj	22839	GIRIDIH	29167
Rajnandgaon	15977	DHANBAD	21411	JHARIA	26480
SAMBALPUR	15017	Raigarh	20327	Raniganj	25939
Durg	13172	Rajnandgaon	19039	BISHNUPUR	23981
Raigarh	12820	JHARIA	18037	SAMBALPUR	23525
DALTONGANJ	12040	SAMBALPUR	17079	Rajnandgaon	23300
GARHWA	11985	Durg	16766	JEYPUR	20352
Kulti	11574	JUGSALAI	16684	Durg	20249
Dhamtari	11505	CHAKRADHARPUR	14807	CHAKRADHARPUR	19948
CHAKRADHARPUR	11191	SONAMUKHI	14667	DALTONGANJ	19223
SONAMUKHI	10989	Dhamtari	14071	Kalna	17324
CHAIBASA	10785	DALTONGANJ	13943	Dhamtari	17161

1931	Pop.	1941	Pop.	1951	Pop.
JEYPUR	10525	CHAIBASA	13052	CHAIBASA	16474
Jagdalpur	10128	Kalna	12562	Balaghat	16291
Balaghat	9605	JEYPUR	12504	Chittaranjan	16162
Kalna	9567	Balaghat	11482	Katwa	15533
CHATRA	8758	Jagdalpur	11304	RAMGARH CANTT.	14775
JUGSALAI	8721	Katwa	11282	Jagdalpur	13793
Dongargarh	8533	BALANGIR	11105	BALANGIR	13646
SONAPUR	8506	BHAWANIPATNA	10863	JHARSUGUDA	13405
BIRAMITRAPUR	8434	Chirmiri	10044	SINDRI	13045
Champa	8362	Bhatapara	9974	Dongargarh	12596
Bhatapara	7974	Dongargarh	9891	Shahdol	12394
Katwa	7772	Champa	9868	SONAMUKHI	12352
Umaria	7614	Ondal	9856	Bhatapara	12262
LOHARDAGA	7577	CHATRA	9638	Champa	11907
KENDUJHAR	7565	BIRAMITRAPUR	9426	BHAWANIPATNA	11807
DHENKANAL	7480	SONAPUR	9065	Kawardha	11642
BHAWANIPATNA	7174	KENDUJHAR	9004	ADRA	10577
RAGHUNATHPUR	7139	GARHWA	8712	LOHARDAGA	10555
BARGARH	7085	Ambikapur	8517	Ambikapur	10362
JHARSUGUDA	7077	DHENKANAL	8422	DHENKANAL	10352
Sarangarh	7046	RAGHUNATHPUR	8390	CHATRA	9911
JHALDA	6924	BARIPADA	8281	BOKARO	9807
Mungeli	6665	MUSABANI	8270	Waraseoni	9556
BHUBAN	6563	BARGARH	8236	GARHWA	9467
Arang	6496	Sarangarh	8045	BIRAMITRAPUR	9408
BUNDU	6487	JHARSUGUDA	8032	RAYAGADA	9386
BALANGIR	6473	BALARAMPUR	7725	KENDUJHAR	9343
BARIPADA	6193	ADRA	7516	BARIPADA	9277
GUNUPUR	6005	BOKARO	7509	BARGARH	9197
PATNAGARH	5540	GUNUPUR	7416	TALCHER	9189
Kanker	5305	LOHARDAGA	7400	BALARAMPUR	9121
TITLAGARH	5068	BHUBAN	7231	JHUMRI TILAIYA	9090
Kawardha	5052	JHALDA	7182	RAGHUNATHPUR	9028
Dainhat	4845	BUNDU	6982	GUNUPUR	9027
TALCHER	4532	Mungeli	6915	BERMO	8920
BAUDHGARH	4507	Umaria	6842	Tirodi	8530
NABARANGAPUR	4379	Shahdol	6753	HUSSAINABAD	8317
SUNDARGARH	4203	Arang	6719	JHALDA	8283
Khairagarh	4159	RAYAGADA	6642	Umaria	8175
KANTABANJI	3684	Waraseoni	6607	Dainhat	8149
BINIKA	3326	DEBAGARH	6537	Mungeli	8108
Sakti	3240	NOAMUNDI	6389	BHUBAN	7915
Ondal	3110	Kawardha	6210	KANTABANJI	7741
Kharsia	2805	PATNAGARH	6189	Sarangarh	7721
RAYAGADA	2356	SERAIKELA	6105	BUNDU	7641
		TALCHER	6002	SONAPUR	7356
		BAUDHGARH	5740	NABARANGAPUR	7302
		BERMO	5674	NOAMUNDI	7227
		TITLAGARH	5652	Arang	6703
		NABARANGAPUR	5325	TITLAGARH	6050
		Kanker	5173	PATNAGARH	5900
		Jhagrakhand	5149	CHAS	5873

1931	Pop.	1941	Pop.	1951	Pop.
		Dainhat	5036	Kota	5722
		Mahendragarh	5027	DEBAGARH	5711
		Khairagarh	5015	Kharsia	5539
		SUNDARGARH	4875	Khairagarh	5524
		Kota	4352	BAUDHGARH	5498
		Sakti	4187	Mahendragarh	5478
		KANTABANJI	4109	SUNDARGARH	5443
		BINIKA	3825	Sakti	5301
		Kharsia	3657	Burhar	5254
		Chhuikhadan	3190	MUSABANI	5220
				Kanker	4924
				SERAIKELA	4777
				GUA	4726
				Jashpurnagar	4388
				Ondal	4288
				GHATSHILA	4211
				Beohari	3909
				Chandia	3835
				Kotma	3691
				Jaithari	3659
				Anuppur	3651
				KHARSAWAN	3438
				Chhuikhadan	3343
				Pali	3194
				Ramanujganj	2911
				Baikunthpur	2515
				Gharghoda	2263
				Jaisinghnagar	1963
				Dhanpuri Nargada Hari Dafai	1576

Appendix: III D

Towns in the South East Resource Region by Census Years

(In descending order of their size)

1961	Pop.	1971	Pop.	1981	Pop.
JAMSHEDPUR	303516	JAMSHEDPUR	356783	RANCHI	489626
RANCHI	140253	RANCHI	255551	JAMSHEDPUR	457061
Raipur	139792	Durgapur	206638	Raipur	338245
Barddhaman	108224	Raipur	205986	Bhilai Nagar	319450
Asansol	103405	Bhilai Nagar	174370	Durgapur	311798
RAURKELA IND.	90287	Asansol	155968	BOKARO SC	224099
Bilaspur	86706	Barddhaman	143318	RAURKELA IND.	214521
Bhilai Nagar	86116	Bilaspur	136676	Bilaspur	187104
BANKURA	62833	RAURKELA IND.	125426	Asansol	183375
DHANBAD	57352	BOKARO SC	94007	Barddhaman	167634
Kulti	48454	DHANBAD	79838	DHANBAD	120221
PURULIYA	48134	BANKURA	79129	Durg	118597
Durg	47114	SAMBALPUR	74458	SAMBALPUR	112631
Rajnandgaon	44678	Durg	70754	RAURKELA	96000
Durgapur	41696	PURULIYA	57708	BANKURA	94954
SINDRI	41315	Rajnandgaon	55827	Rajnandgaon	86367
HAZARIBAG	40958	HAZARIBAG	54818	Korba	83387
SAMBALPUR	38915	Raigarh	48049	HAZARIBAG	80155
Raigarh	36933	RAURKELA	47076	Kulti	75031
GIRIDIH	36881	SINDRI	46385	PURULIYA	73904
JHARIA	33683	JHARIA	45236	SAUNDA	70780
JARIDIH BAZAR	31605	JORAPOKHAR	44675	SINDRI	70645
Dhamtari	31552	Kulti	44289	Raigarh	69791
BISHNUPUR	30958	Dhamtari	43362	MANGO	67284
CHAKRADHARPUR	30906	Chittaranjan	40736	GIRIDIH	65444
Raniganj	30113	GIRIDIH	40308	JORAPOKHAR	65156
Chittaranjan	28957	Raniganj	40104	Jagdalpur	63632
JEYPUR	25291	BISHNUPUR	38135	JHARIA	57496
DALTONGANJ	25270	Jagdalpur	36932	Dhamtari	55797
JUGSALAI	24528	BALANGIR	35748	Dalli-Rajhara	55360
Dalli-Rajhara	23346	CHAIBASA	35386	BALANGIR	54943
Kalna	22603	CHAKRADHARPUR	34967	JHARSUGUDA	54859
Shahdol	22196	JEYPUR	34319	BRAJARAJNAGAR	54033
CHAIBASA	22019	TISRA	33891	JEYPUR	53981
JHUMRI TILAIYA	21777	Balaghat	33346	ADITYAPUR	53421
Katwa	20621	JARIDIH BAZAR	33084	Balaghat	53183
Jagdalpur	20412	Korba	32654	BARIPADA	52989
BIRAMITRAPUR	20301	DALTONGANJ	32367	DALTONGANJ	51952
BARIPADA	20301	SAUNDA	32293	Raniganj	51629
RAMGARH CANTT.	20041	BRAJARAJNAGAR	31817	Chittaranjan	50748
BARBIL	19340	JHUMRI TILAIYA	29097	BISHNUPUR	47529
JHARSUGUDA	19227	Katwa	28832	TISRA	46930
Balaghat	18990	BARIPADA	28725	JARIDIH BAZAR	46477
BALANGIR	18663	Kalna	28594	CHAIBASA	45751
Ondal	18645	Shahdol	28490	CHAKRADHARPUR	44532
KATRAS	17224	ADITYAPUR	28226	Katwa	44430
Jamuria	17216	BIRAMITRAPUR	28063	Shahdol	44342

1961	Pop.	1971	Pop.	1981	Pop.
Bhatapara	16930	BAGBERA	28053	BAGBERA	42710
Champa	16258	SUNABEDA	27980	RAMGARH CANTT.	41257
BRAJARAJNAGAR	16196	JUGSALAI	27364	Bhilai Charoda	41198
ANUGUL	15738	Dalli-Rajhara	26657	BHULI	40832
JORAPOKHAR	15595	BHOWRAH	25597	CHAS	40381
BARGARH	15375	RAYAGADA	25064	SUNABEDA	40375
Ambikapur	15240	JHARSUGUDA	24727	JHUMRI TILAIYA	38705
SONAMUKHI	15027	BARBIL	24342	BHAWANIPATNA	37821
RAYAGADA	14537	BHAWANIPATNA	23264	Ambikapur	37220
GHATSHILA	14330	Chirmiri	23108	RAYAGADA	35838
BHAWANIPATNA	14300	Ambikapur	23087	DHENKANAL	35653
Dongargarh	14119	RAMGARH CANTT.	23052	BARGARH	35400
RAJAGANGAPUR	13843	BARGARH	22865	Kalna	35023
BERMO	13813	RAJAGANGAPUR	21876	GUMIA	34589
DHENKANAL	13727	Bhatapara	21859	JUGSALAI	34119
ADRA	13215	Ondal	21810	BARBIL	33030
LOHARDAGA	13203	KORAPUT	21505	RAJAGANGAPUR	31925
NOAMUNDI	13159	GUMIA	20884	BHOWRAH	31695
KENDUJHAR	12624	BHULI	20876	KORAPUT	31665
CHATRA	12507	Dhanpuri	20411	BIRAMITRAPUR	31099
Mungeli	12431	MUSABANI	19811	Bhatapara	30825
Korba	12424	DHENKANAL	19615	Dhanpuri	29851
GOMOH	12097	KATRAS	19444	KATRAS	29587
GARHWA	11656	KENDUJHAR	19340	MUSABANI	29413
LOYABAD	11553	LOYABAD	19287	Chirmiri	29266
SUNDARGARH	11329	SONAMUKHI	18974	PATRATU	29210
Waraseoni	11308	ADRA	18838	KENDUJHAR	28059
Umaria	11277	GHATSHILA	18351	BURLA	27882
BALARAMPUR	10881	Champa	18323	Mahasamund	27122
GUMLA	10710	Dongargarh	18266	LOYABAD	26475
Mahasamund	10624	Mahasamund	17520	JODA	26303
Dhanpuri	10617	BHAGATDIH	17465	Dongargarh	25772
BHOWRAH	10587	JODA	17353	GHATSHILA	25175
RAGHUNATHPUR	10556	BERMO	17325	JAMADOBA	25171
Dainhat	10519	SUNDARGARH	17244	ANANDAPUR	24605
SIMDEGA	10438	LOHARDAGA	17087	SUNDARGARH	23699
NABARANGAPUR	10380	CHATRA	16737	LOHARDAGA	23342
BURLA	10230	JAMADOBA	16646	Champa	22996
GUNUPUR	10180	SIJUA	16346	CHATRA	22738
Kawardha	10117	GOMOH	15986	PATHARDIH	22720
SIJUA	9997	TITLAGARH	15840	BHAGATDIH	22514
Mahendragarh	9807	Mungeli	15789	GOMOH	21973
JHALDA	9692	BURLA	15587	GUMLA	21798
CHIRKUNDA	9477	GARHWA	15228	HIRAKUD	21701
BHUBAN	9476	GUMLA	15131	GARHWA	21514
HUSSAINABAD	9464	HIRAKUD	15040	TITLAGARH	21486
Sarangarh	9452	Waraseoni	14876	ADRA	21108
BUNDU	9285	SIMDEGA	14699	SIJUA	20614
KANTABANJI	8863	PATRATU	14502	Amlai	20066
Tirodi	8807	NABARANGAPUR	13739	SONAMUKHI	19890
DUMARKUNDA	8670	Naila Janjgir	13589	Sidhi	19654
GUA	8633	CHAS	13152	Mungeli	19585
HIRAKUD	8593	BALARAMPUR	12957	Mahendragarh	19265

1961	Pop.	1971	Pop.	1981	Pop.
Arang	8469	CHIRKUNDA	12945	NABARANGAPUR	19084
KOTPAD	8368	Dainhat	12906	BERMO	18901
Akaltara	8164	RAGHUNATHPUR	12721	KHUNTI	18787
KHUNTI	8156	GUNUPUR	12702	Jamuria	18691
TALCHER	8147	ARRA	12642	SIMDEGA	18444
Sakti	8125	Mahendragarh	12532	PHULBANI	18326
RAIRANGPUR	8119	NOAMUNDI	11992	ANUGUL	18060
Gobra Nawapara	8037	TALCHER	11794	Naila Janjgir	17886
MAITHON	8033	JHALDA	11747	Waraseoni	17673
KHARIAR	7873	KHUNTI	11743	Kondagaon	17279
Ukhra	7871	BHUBAN	11350	Kawardha	17037
Kharsia	7737	RAIRANGPUR	11226	GUNUPUR	16712
LATEHAR	7689	Kawardha	11226	Ahiwara	16643
MUSABANI	7599	BUNDU	11153	Gobra Nawapara	16427
PATNAGARH	7592	Gobra Nawapara	11047	TALCHER	16227
TISRA	7470	KANKE	10994	Dainhat	15843
KORAPUT	7461	Sakti	10754	Pasan	15787
TITLAGARH	7433	PHULBANI	10677	BOKARO	15785
Katangi	7205	Ahiwara	10667	Kirandul	15710
Pali	7189	Ukhra	10659	Umaria	15667
SONAPUR	7108	Kanker	10646	RAGHUNATHPUR	15606
Baloda Bazar	7108	HUSSAINABAD	10563	CHANDRAPURA	15580
DEBAGARH	6839	KANTABANJI	10489	MALKANGIRI	15575
Kota	6591	Umaria	10249	BALARAMPUR	15564
Khairagarh	6576	MAITHON	10163	CHIRKUNDA	15539
JAMADOBA	6568	PATNAGARH	10085	BHUBAN	15517
Chirmiri	6563	Tilda Newra	10074	RAIRANGPUR	15503
JHINKPANI	6497	Tirodi	10037	ARRA	15246
Kanker	6487	Kharsia	9932	Balod	15098
Burhar	6481	PATHARDIH	9906	Tilda Newra	15089
KHARIAR ROAD	6400	LATEHAR	9872	Kanker	15085
BAUDHGARH	6088	KOTPAD	9856	CHHOTA GOBINDPUR	14985
Pendra	6081	UMARKOTE	9826	Ondal	14921
Takhatpur	6075	Katangi	9694	KARANJIA	14910
ANGARPATHAR	6001	Jamuria	9632	KANTABANJI	14818
KHELARI	5779	Nowrozabad	9585	Bemetra	14661
Jashpurnagar	5765	Baloda Bazar	9449	Kajora	14474
Jhagrakhand	5745	Takhatpur	9406	HUSSAINABAD	14441
Tilda Newra	5636	Balod	9393	NOAMUNDI	14376
Gaurella	5582	BOKARO	9374	Pali	14335
SERAIKELA	5452	Sidhi	9364	UMARKOTE	14309
BOKARO	5406	GUA	9347	BUNDU	13876
Sidhi	5021	Sarangarh	9317	Sakti	13655
PANCHET	4700	KHARIAR ROAD	9226	BARAPALI	13639
MURI	4654	Kirandul	9057	PATNAGARH	13597
KHARSAWAN	4012	ANUGUL	9053	DEBAGARH	13581
Chhuikhadan	3488	TENUDAM	9037	Bagbahara	13572
Baikunthpur	3262	BARAPALI	9017	MAITHON	13511
Ramanujganj	3172	Akaltara	8927	KHELARI	13269
		Pali	8917	RENGALI DAM	13213
		DEBAGARH	8906	JHALDA	13194
		BAUDHGARH	8891	Tendudam	13159

1961	Pop.	1971	Pop.	1981	Pop.
		Burhar	8756	KANKE	13145
		DUGDA	8753	Ratanpur	13140
		Amlai	8687	Jaithari	13115
		CHANDRAPURA	8544	Akaltara	12985
		KESINGA	8536	GIDI	12958
		Jhagrakhand	8424	SIRKA	12895
		Kota	8196	Baloda Bazar	12701
		Kotma	8176	Ukhra	12660
		Beohari	8124	BAUDHGARH	12589
		Khairagarh	8116	LATEHAR	12535
		KHELARI	8104	CHANDILI	12487
		SONAPUR	8084	Burhar	12401
		Jashpurnagar	7973	Kharsia	12342
		SIRKA	7936	BARUGHUTU	12289
		JUNAGARH	7876	Nowrozabad	12202
		Bemetra	7793	JALDA	12089
		KHARIAR	7651	SARAIDHELA	11956
		BARUGHUTU	7595	Takhatpur	11858
		KODARMA	7559	Jhagrakhand	11851
		JHINKPANI	7506	Katangi	11748
		MALKANGIRI	7494	Kenda	11671
		PADMAPUR	7349	KOTPAD	11604
		Gaurella	7232	Bhanowara	11572
		BARKAKANA	6935	JADUGORA	11540
		DUMARKUNDA	6889	KHARIAR ROAD	11448
		KOCHINDA	6838	Arang	11336
		MURI	6712	Tirodi	11203
		Pasan	6691	Parashkol	11169
		CHAKULIA	6646	Jashpurnagar	11142
		Hindusthan Cables Town	6605	KESINGA	11133
		JADUGORA	6558	BARKAKANA	11116
		Jemari	6433	BINIKA	11004
		TARBHA	6417	Jamul	10969
		ANANDAPUR	6312	Kotma	10949
		SERAIKELA	6290	Beohari	10683
		Sirgiti	5936	GUA	10618
		Saraipali	5768	Kota	10518
		CHAPARI	5754	GADHRA	10474
		PANCHET	5425	JHINKPANI	10469
		Surajpur	5296	SONAPUR	10451
		ANGARPATHAR	5150	Sarangarh	10379
		Baikunthpur	5065	PADMAPUR	10337
		SINI	4903	DUMARKUNDA	10327
		GUDARI	4774	Hindusthan Cables Town	10297
		KHARSAWAN	4765	JUNAGARH	10193
		KIRIBURU	4675	KAMAKSHYANAGAR	10154
		BARAJAMDA	4615	KHARIAR	9946
		KENDUADIH	4220	Bijuri	9880
		Chhuikhadan	4035	Khairagarh	9812
		Ramanujganj	3878	Anuppur	9728
				Jemari	9596
				BALAGODA(BOLANI)	9515

1961	Pop.	1971	Pop.	1981	Pop.
				BALIMELA	9454
				KOCHINDA	9370
				MURI	9312
				BHOJUDIH	9283
				Kumhari	9181
				Chandia	9140
				KIRIBURU	9036
				NIRSA	8923
				Gaurella	8916
				CHAKULIA	8712
				Dharamjaigarh	8309
				Saraipali	8111
				Pathalgaon	8059
				SERAIKELA	7865
				Surajpur	7477
				Sirgiti	7313
				PANCHET	7301
				UDALA	7136
				Dignala	6976
				TARBHA	6926
				G.UDAYAGIRI	6846
				CHAPARI	6835
				Chak Bankola	6726
				Ballavpur	6606
				Baikunthpur	6530
				Amkula	6423
				CHANDAUR	6297
				Khand (Bansagar)	6181
				SINI	5976
				CHIRIA	5756
				GUDARI	5698
				Ramanujganj	5539
				KENDUADIH	5470
				ANGARPATHAR	5401
				TALCHER	5371
				SANTALDIH	5305
				Chhuikhadan	5264
				KHARSAWAN	5106
				MALKERA	5094
				FCI Township	5067
				Raghunathchak	5062
				DAITARI	4844
				Parasia	4823
				DEORIKALAN	4758
				Khandra	4649
				DERA	4452
				Naya Baradwar	3722

Appendix: III E

Towns in the South East Resource Region by Census Years

(In descending order of their size)

1991	Pop.	2001	Pop.
RANCHI	599306	RANCHI	847093
JAMSHEDPUR	478950	Raipur	670042
Raipur	462694	JAMSHEDPUR	612534
Bhilai Nagar	461352	Bhilai Nagar	556366
Durgapur	425836	Durgapur	493405
BOKARO SC	333683	Asansol	475439
Asansol	262188	BOKARO SC	393805
Barddhaman	245079	Korba	315690
RAURKELA IND.	233058	Bilaspur	295235
Bilaspur	229615	Kulti	289903
Durg	166932	Barddhaman	285602
RAURKELA	152690	RAURKELA	259553
DHANBAD	151789	Durg	232517
Korba	146727	RAURKELA IND.	213360
SAMBALPUR	134824	DHANBAD	199258
Rajnandgaon	125371	Singrauli	185190
BANKURA	114876	MANGO	166125
Kulti	108518	SAMBALPUR	157253
MANGO	108100	Rajnandgaon	143770
HAZARIBAG	97824	Jamuria	132785
PURULIYA	92386	BANKURA	128781
Raigarh	90265	HAZARIBAG	127269
Chirmiri	89460	Raniganj	122781
Jagdalpur	84578	ADITYAPUR	119233
GIRIDIH	78097	Raigarh	115908
ADITYAPUR	77803	PURULIYA	113806
SAUNDA	76691	BARIPADA	100651
JORAPOKHAR	72919	GIRIDIH	98989
SINDRI	72333	CHAS	97221
PHUSRO	70544	Chirmiri	93373
BALANGIR	69920	BHULI	89534
BRAJARAJNAGAR	69667	Bhilai Charoda	87585
JHARIA	69641	Jagdalpur	87521
Dhamtari	69357	BALANGIR	85261
BARIPADA	69240	JORAPOKHAR	85100
Balaghat	67151	SAUNDA	85075
Raniganj	65517	PHUSRO	83474
JEYPUR	65246	Dhamtari	82111
CHAS	65207	JHARIA	81983
JHARSUGUDA	65054	Shahdol	78624
Singrauli	60207	BRAJARAJNAGAR	76959
BAGBERA	57039	SINDRI	76746
BHULI	56774	JEYPUR	76625
CHAIBASA	56729	JHARSUGUDA	76100
DALTONGANJ	56323	Balaghat	75997
BISHNUPUR	56128	RAMGARH CANTT.	73434

1991	Pop.	2001	Pop.
Dalli-Rajhara	55996	Katwa	71589
TISRA	55677	DALTONGANJ	71422
Katwa	55541	JHUMRI TILAIYA	69503
Shahdol	55508	BAGBERA	67121
JHUMRI TILAIYA	53577	Ambikapur	66012
SUNABEDA	52507	BARGARH	63678
RAMGARH CANTT	51264	CHAIBASA	63648
BARGARH	51205	BISHNUPUR	61947
BHAWANIPATNA	51062	BHAWANIPATNA	60787
Ambikapur	50277	SUNABEDA	58884
RAYAGADA	48247	RAYAGADA	57759
Bhilai Charoda	47756	DHENKANAL	57677
Kalna	47729	Dalli-Rajhara	57058
CHAKRADHARPUR	47666	CHAKRADHARPUR	55228
Chittaranjan	47186	TISRA	53572
DHENKANAL	46314	BARBIL	52627
Bhatapara	45468	Kalna	52182
BHOWRAH	45425	KENDUJHAR	51845
BARBIL	42032	KATRAS	51233
KENDUJHAR	41945	Bhatapara	50118
GUMIA	41295	Mahasamund	47100
Dhanpuri	39893	LOHARDAGA	46196
RAJAGANGAPUR	39549	JUGSALAI	46114
Mahasamund	39176	Chittaranjan	45957
JUGSALAI	38623	Sidhi	45700
KATRAS	37520	GUMIA	45548
MUSABANI	36909	BHOWRAH	44295
KORAPUT	34924	Dhanpuri	43915
BURLA	34640	RAJAGANGAPUR	43594
BIRAMITRAPUR	33556	BURLA	42822
CHIRKUNDA	33535	CHATRA	42020
PATRATU	33131	GUMLA	39761
GHATSHILA	32417	KORAPUT	39548
JAMADOBA	31761	PATHARDIH	39541
LOHARDAGA	31761	CHIRKUNDA	39131
Dongargarh	31459	JODA	38689
LOYABAD	31297	SUNDARGARH	38421
CHATRA	31147	ANUGUL	38018
JODA	31069	Champa	37951
SUNDARGARH	30352	GHATSHILA	37854
ANANDAPUR	30278	GARHWA	36686
BHAGATDIH	30174	BOKARO	36429
Champa	30086	ANANDAPUR	35048
Sidhi	28641	TALCHER	34998
GUMLA	28539	Dongargarh	34441
CHHATATANR	28420	JAMADOBA	34092
BOKARO	28368	SIMDEGA	33981
GARHWA	27751	MUSABANI	33980
PATHARDIH	27319	PHULBANI	33890
PHULBANI	27154	BHAGATDIH	33507
TALCHER	26806	BELPAHAR	32826
JARIDIH BAZAR	26560	LOYABAD	32721

1991	Pop.	2001	Pop.
Mahendragarh	26326	Naila Janjgir	32513
Pasan	26060	Kawardha	32415
Amlai	25818	Malajkhand	32296
TITLAGARH	25719	CHHATATANR	32173
SIJUA	25448	PATRATU	32134
ANUGUL	24772	Mungeli	31613
Naila Janjgir	24754	Kanker	31385
SONAMUKHI	24640	Mahendragarh	30758
BELPAHAR	24607	Amlai	30336
Kondagaon	24398	TITLAGARH	30273
KHUNTI	24183	JARIDIH BAZAR	30096
Kawardha	23916	SIJUA	29828
HIRAKUD	23833	Kumhari	29756
SIMDEGA	23750	Pasan	29565
NABARANGAPUR	23513	BIRAMITRAPUR	29447
Jamuria	23368	KHUNTI	29282
Mungeli	23102	GOMOH	28587
ADRA	22118	Kotma	28487
GOMOH	22084	Bijuri	28218
Kotma	21169	NABARANGAPUR	28005
Gobra Nawapara	21003	SONAMUKHI	27354
Waraseoni	20757	Tilda Newra	26909
Kanker	20702	Kondagaon	26898
Tilda Newra	20578	Umaria	26842
Dainhat	20349	HIRAKUD	26394
Umaria	20269	Gobra Nawapara	25591
CHANDRAPURA	19814	CHURI	25222
CHURI	19633	Kajora	24995
Kirandul	19623	UMARKOTE	24859
Kajora	19398	CHHOTA GOBINDPUR	24781
CHHOTA GOBINDPUR	19368	Waraseoni	24757
RAGHUNATHPUR	19187	GUNUPUR	24706
BALARAMPUR	19124	SARAIDHELA	24189
Bemetra	19093	Birgaon	23562
BHUBAN	18966	HUSSAINABAD	23441
Ahiwara	18702	Bemetra	23315
UMARKOTE	18604	MALKANGIRI	23114
Hindusthan Cables Town	18503	Baloda Bazar	22853
Ukhra	18424	Dainhat	22597
MALKANGIRI	18351	Nowrozabad (Khodargama)	22403
GUNUPUR	18317	CHANDRAPURA	22396
ARRA	18207	Hindusthan Cables Town	22154
RAIRANGPUR	18097	ADRA	22031
Nowrozabad (Khodargama)	18004	RAGHUNATHPUR	21932
Balod	17916	RAIRANGPUR	21896
Akaltara	17854	BALARAMPUR	21827
KARANJIA	17623	Jamul	21640
Pali	17563	KARANJIA	21441
KANTABANJI	17535	Balod	21165
TENUDAM-CUM-KATHHARA	17391	BARUGHUTU	21092
Baloda Bazar	17373	SIULIBAN	20970
SIRKA	17333	Pali	20942

1991	Pop.	2001	Pop.
HUSSAINABAD	17307	Bangawan	20720
DEBAGARH	17275	TENUDAM-CUM-KATHHARA	20441
JHALDA	17217	Bade Bacheli	20411
BERMO	17113	Akaltara	20367
Bijuri	17009	Jashpurnagar	20239
Sakti	16894	BHUBAN	20234
BARUGHUTU	16719	Sakti	20213
MAITHON	16583	SIRKA	20175
Burhar	16515	Dipka	20150
JADUGORA	16506	DEBAGARH	20096
SARAIDHELA	16393	KANTABANJI	20095
BARAPALI	16371	Beohari	20010
Ondal	16288	HALUDABNI	19929
PATNAGARH	16246	ARRA	19924
CHANDILI	16151	Ukhra	19862
Ratanpur	16069	Ratanpur	19839
BUNDU	16064	JHARIA KHAS	19831
Khandra	15939	MAITHON	19719
Jamul	15913	JADUGORA	19565
KANKE	15489	Ondal	19497
Jaithari	15482	BARAPALI	19157
BAUDHGARH	15458	LATEHAR	19082
NOAMUNDI	15289	Kirandul	19059
Beohari	15245	DUGDA	18867
DUGDA	15209	KHELARI	18783
LATEHAR	15078	Ahiwara	18719
Bangawan	14947	PATNAGARH	18694
HALUDABNI	14830	CHANDILI	18685
KUJU	14812	DERA COLLIERY TOWNSHIP	18592
Bagbahara	14801	Katghora	18523
Jashpurnagar	14788	BUNDU	18519
Katghora	14761	SARJAMDA	18385
Takhatpur	14733	NALCO	18045
KEDLA	14670	KUJU	18040
GADHRA	14587	BAUDHGARH	18025
GIDI	14484	JHALDA	17872
SONAPUR	14409	Khongapani	17862
Khongapani	14297	Burhar	17724
Arang	14257	KEDLA	17586
Kharsia	14236	SONAPUR	17540
KHELARI	14180	Kharsia	17388
KESINGA	14127	KODARMA	17246
KHARIAR ROAD	14027	Saraipali	17081
Parashkol	14007	Takhatpur	17005
Jhagrakhand	13933	BERMO	16967
Saraipali	13869	KESINGA	16917
BARKAKANA	13731	BARKAKANA	16887
Kurud	13668	Surajpur	16834
Khairagarh	13569	Bagbahara	16747
Simga	13551	KHARIAR ROAD	16629
Gaurella	13478	Arang	16629
Baihar	13442	Anuppur	16403

1991	Pop.	2001	Pop.
Chharchha	13404	KANKE	16402
KOTPAD	13309	Bhanpuri	16365
Katangi	13282	NOAMUNDI	16230
NIRSA	13251	Phunderdihari	16037
Kumhari	13123	Lingiyadih	15870
JALDA	13116	GADHRA	15767
DERA COLLIERY TOWNSHIP	13096	JUNAGARH	15759
Surajpur	13049	GHANTAPADA	15593
JUNAGARH	12974	PADMAPUR	15442
PADMAPUR	12971	Baihar	15390
BINIKA	12955	Chharchha	15217
Kenda	12872	Gaurella	15189
KAMAKSHYANAGAR	12832	Khairagarh	15157
CHAKULIA	12716	Kota	15031
KODARMA	12664	KAMAKSHYANAGAR	15003
Jemari	12609	KOTPAD	14917
Kota	12601	Katangi	14763
Bade Bacheli	12582	GHORABANDHA	14724
Anuppur	12474	BINIKA	14539
Sarangarh	12266	Kenda	14519
KOCHINDA	12161	Sarangarh	14459
Chandia	11987	CHAKULIA	14325
KUSTAI	11830	ARA	14165
KHARIAR	11738	Jemari	14074
ARA	11600	Pathalgaon	13956
Chak Bankola	11516	NIRSA	13902
BALAGODA(BOLANI)	11370	CHANDAUR	13761
Vishrampur	11313	REDHAKHOL	13723
Pendra	11305	Mowa	13706
UDALA	11289	GIDI	13656
Bhanowara	11278	Dharamjaigarh	13598
SERAIKELA	11178	KOCHINDA	13586
JHINKPANI	11043	Khandra	13504
Dharamjaigarh	11000	KHARIAR	13409
Pathalgaon	10917	Bodri	13403
RENGALI DAM PROJECT TOWNSHIP	10855	Simga	13143
Bodri	10561	Churhat	13104
BALIARI	10501	Chandia	12946
Lormi	10377	Rajgamar	12600
Pandariya	10369	Sirgiti	12520
MURI	10342	Dignala	12511
SARJAMDA	10338	Pandariya	12477
Gandai	10274	Pendra	12397
BALIMELA	10096	Vishrampur	12376
GHANTAPADA	9978	KUSTAI	12280
CHANDAUR	9690	SERAIKELA	12270
GUA	9608	Lormi	12156
PANPOSH	9564	MURI	12009
BARJORA	9554	JALDA	11961
Baloda	9553	JHINKPANI	11845
GHORABANDHA	9533	BALAGODA(BOLANI)	11833
Fertilizer Corporation of India Township	9366	Gandai	11831

1991	Pop.	2001	Pop.
Dongargaon	9317	UDALA	11712
Kelhauri (Chachai)	9220	Deori	11668
DUMARKUNDA	9160	BALIARI	11536
Sirgiti	9087	Dongargaon	11517
KIRIBURU	9043	BARJORA	11512
Pithora	8882	BALIMELA	11502
Dola	8849	Kurud	11473
BALKUNDRA	8825	ATHMALLIK	11376
Dignala	8742	Baloda	11331
Baska	8713	Parashkol	10994
PANCHET	8651	DUMARKUNDA	10989
Bhatgaon	8639	Khand (Bansagar)	10921
HATIBANDHA	8521	GUA	10851
G.UDAYAGIRI	8508	Deohara	10840
BHOJUDIH	8441	Banarsi	10653
Baikunthpur	8316	TATI	10511
Murgathaul	8314	Gogaon	10456
Parasia	8260	Dola	10377
Khand (Bansagar)	8225	Chak Bankola	10310
NALCO	8102	PANPOSH	10233
Ramanujganj	7834	EGARKUNR	10213
Tirodi	7738	G.UDAYAGIRI	10204
Kharod	7737	Baikunthpur	10077
Amkula	7657	BARHI	9933
Chelad	7646	Rampur Naikin	9900
RELIGARA ALIAS PACHHIARI	7538	Ramanujganj	9855
Dhamdha	7474	MALKERA	9806
TARBHA	7466	PALAWA	9758
Bilha	7260	Dumar Kachhar	9722
BAUA KALAN	7243	Frezarpur	9638
GODHAR	7200	KIRIBURU	9554
TALCHER THERMAL	7148	GODHAR	9552
Patan	7142	Kelhauri (Chachai)	9498
Gharghoda	7040	Urla	9363
Jaisinghnagar	6825	HATIBANDHA	9297
SINI	6766	DHAUNSAR	9214
KENDUADIH	6740	Bharveli	9169
Ambagarh Chowki	6672	Bilha	8988
BARWADIH	6642	Namna Kalan	8918
PONDARKANALI	6628	KAILUDIH	8913
GUDARI	6611	BHOJUDIH	8894
KANDRA	6551	Tirodi	8849
CHAPARI	6512	BAUA KALAN	8825
DARI	6441	Basna	8818
MERU	6421	Patan	8812
Ukwa	6417	ISRI	8804
LAPANGA	6355	SEWAI	8789
Shivrinarayan	6298	Parasia	8723
PALAWA	6274	Kharod	8606
ANGARPATHAR	6274	Dhamdha	8577
GOBINDPUR	6273	MERU	8547
Khamharia	6236	Ambagarh Chowki	8513

1991	Pop.	2001	Pop.
Chhuikhadan	6189	GOBINDPUR	8504
ISRI	6009	DAMANJODI	8475
CHAMPUA	5746	Harishpur	8401
KHARSAWAN	5735	KENDUADIH	8359
DAMANJODI	5719	PANCHET	8354
HIJULI	5713	Siduli	8345
Ballavpur	5576	CHAMPUA	8309
Naya Baradwar	5467	ANGARPATHAR	8305
AMLABAD	5341	Bhatgaon	8228
NABAGRAM	5236	OKANI-II	8204
DANGUAPASI	5084	RENGALI DAM	8115
Chapui	5029	Shivrinarayan	8107
MALKERA	4991	Gharghoda	8103
Palashban	4925	TARBHA	7989
Raghunathchak	4776	Pithora	7934
BELIATORE	4745	DHANWAR	7926
DEORIKALAN	4719	Chelad	7906
CHIRIA	4627	Murgathaul	7850
TENSA	4599	Jaithari	7800
Ratibati	4553	Bhanowara	7732
DAITARI	4434	BARAJAMDA	7693
KAILUDIH	4314	NAGRI KALAN	7688
SANTALDIH THERMAL P.	4306	Pangachhiya	7668
		BARABAZAR	7564
		Jhagrakhand	7504
		PONDARKANALI	7485
		RELIGARA ALIAS PACHHIARI	7473
		KURPANIA	7436
		BISHAMKATAK	7408
		Jaisinghnagar	7393
		DARI	7384
		LAPANGA	7355
		CHAPARI	7245
		BARWADIH	7218
		JENA	7152
		Telgaon	7149
		Naudhia	7137
		Ukwa	7110
		Amarkantak	7082
		FCI Township	7058
		LAKARKA	6966
		LATHIKATA	6896
		MEGHAHATUBURU	6887
		HIJULI	6856
		GUDARI	6849
		KANDRA	6811
		Khamharia	6799
		KHARSAWAN	6792
		MUKHIGUDA	6756
		BANDHGORA	6754
		CHHOTAPUTKI	6727
		PARATDIH	6645
		Dantewada	6641

1991	Pop.	2001	Pop.
		TALCHER THERMAL	6621
		SINI	6591
		Chhuikhadan	6418
		KHATIGUDA	6406
		Naya Baradwar	6231
		PAR BELIYA	6039
		Hatkachora	5964
		SINDURIA	5953
		Amkula	5934
		Geedam	5901
		ORLA	5872
		HESLA	5860
		SAHNIDIH	5800
		Mehmand	5780
		Deori	5763
		BELIATORE	5654
		KHARKHARI	5653
		NABAGRAM	5651
		Hirapur	5641
		Raghunathchak	5480
		Kunustara	5426
		TOPCHANCHI	5410
		Ballavpur	5391
		BALKUNDRA	5372
		JHUMPURA	5265
		KHALIAPALI	5264
		MERA	5205
		DANGUAPASI	5192
		BANGURA	5168
		Chapui	5159
		Banshra	5134
		TOPA	5009
		Baska	4974
		Palashban	4856
		Badra	4756
		AMLABAD	4699
		SANTALDIH THERMAL P.	4679
		MARMA	4611
		Mahira	4489
		SIJHUA	4478
		Ratibati	4370
		CHANDIL	4347
		Belebathan	4294
		ROHRABAND	4285
		DAITARI	4239
		TENSA	4236
		BASARIA	4022
		CHIRIA	3951
		DEORIKALAN	3930
		Dhandadihi	3843
		KALIKAPUR	3775
		MUGMA	2983
		O.C.L.INDUSTRIAL	2196

Appendix: IV

Origin of Towns by factors in Pre – Independence era in the Resource Region (Before 1872 to 1941)

		ADMINISTRATION		RAILWAY	TRADE	INDUSTRY	MINING	OTHER	TOTAL
		Early	British						
YEAR OF ORIGIN		1	2	3	4	5	6	7	
a.	Before 1872	21	-	-	-	-	-	-	21
b.	1872	-	3	1	8	2	1	-	15
c.	1881	-	3	1	1	1	-	1	7
d.	1891	-	-	-	-	-	-	-	0
e.	1901	-	-	1	5	1	2	-	9
f.	1911	-	-	-	1	1	-	-	2
g.	1921	-	-	3	5	-	2	3	13
h.	1931	-	-	-	2	1	-	3	6
i.	1941	-	-	1	3	1	10	3	18
TOTAL		21	6	7	25	7	15	10	91

Source: Compiled from various volumes of the - Imperial Gazetteer of India, 1908; L.S.S. O' Malley, Bengal District Gazetteers, 1907; M.G. Hallett, Bihar and Orissa Gazetteers, 1917; W.W. Hunter, Imperial Gazetteer of India, 1885 and 1887; Orissa District Gazetteers, 1973; Charles Grant, The Gazetteer of the Central Provinces of India, 1870; H. Coupland, District Gazetteer of Manbhum, 1911; Thornton Edward, A Gazetteer of the territories under the Government of the Viceroy of India, 1886; and Town Directory, Census of India, 2001

1. a.	Raipur, Bishnupur, Sambalpur, Sonapur, Kawardha, Dongargarh, Jagdalpur, Bhawanipatna, Balaghat, Baripada, Dhenkanal, Sarangarh, Sakti, Kanker, Titlagarh, Palamau, Palkot, Jajpur, Ichak, Durg, Ratanpur.
2. b.	Ranchi, Hazaribagh, Purulia.
2. c.	Chaibasa, Daltonganj, Rajnandgaon
3. b.	Dhamtari.
3. c.	Khairagarh
3. e.	Asansol
3. g.	Dhanbad, Chakradharpur, Bhatapara
3. i.	Adra
4. b.	Burdwan, Bankura, Chatra, Katwa, Dainhat, Bilaspur, Arang, Garhwa.

4. c.	Lohardaga
4. e.	Kalna, Raigarh, Jeypore, Mungeli, Bhuban
4. f.	Bargarh
4. g.	Champa, Keonjhar, Gunupur, Jharsuguda, Bolangir.
4. h.	Ondal, Kharsia
4. i.	Waraseoni, Saraikela, Shahdol
5. b.	Sonamukhi, Raghunathpur
5. c.	Jhalda
5. e.	Bundu
5. f.	Jamshedpur
5. h.	Kulti
5. i.	Balarampur
6. b.	Raniganj
6. e.	Giridih, Umaria
6. g.	Birmitrapur, Talcher
6. i.	Chhuikhadan, Jharia, Chirimiri, Ambikapur, Musabani, Bokaro, Noamundi, Bermo, Mahendragarh, Kota.
7. c.	Binika
7. g.	Baudhgarh, Rayagada, Nabarangapur
7. h.	Jugsalai, Sundergarh.
7. i.	Debagarh, Jhagrakhand

Source: Compiled from various volumes of the - Imperial Gazetteer of India, 1908; L.S.S. O' Malley, Bengal District Gazetteers, 1907; M.G. Hallett, Bihar and Orissa Gazetteers, 1917; W.W. Hunter, Imperial Gazetteer of India, 1885 and 1887; Orissa District Gazetteers, 1973; Charles Grant, The Gazetteer of the Central Provinces of India, 1870; H. Coupland, District Gazetteer of Manbhum, 1911; Thornton Edward, A Gazetteer of the territories under the Government of the Viceroy of India, 1886; and Town Directory, Census of India, 2001

Appendix: V

Origin of Towns by factors in Post– Independence era in the South East Resource Region (1951 to 2001)

	YEAR OF ORIGIN	ADMINISTRATION	RAILWAY	TRADE	INDUSTRY	MINING	POWER PROJECTS	COMMUNICATION	SATELLITE / RESIDENTIAL	OTHER	TOTAL
		1	2	3	4	5	6	7	8	9	
a.	1951	7	1	2	3	8	-	2	-	-	23
b.	1961	8	1	12	9	13	4	2	-	-	49
c.	1971	15	2	4	8	13	4	-	3	3	52
d.	1981	11	-	-	5	19	4	-	4	3	46
e.	1991	18	1	4	7	27	1	3	4	8	73
f.	2001	9	-	4	8	21	2	11	14	13	82
TOTAL		68	5	26	40	101	15	18	25	27	325

Source: Compiled from various volumes of Orissa District Gazetteers, 1966, 1968, 1980, 1986; Gazetteer of India, Orissa State, 1991; Madhya Pradesh District Gazetteers, 1978; West Bengal District Gazetteers, 1968; Bihar District Gazetteers, 1957 and various other District Gazetteers (1951 to 1991), District Census Handbooks (1951 to 1991) of Bihar, Orissa, Madhya Pradesh and West Bengal States and Town Directory, Census of India, 2001

1. a.	Kharsawan, Ramanujganj, Jashpurnagar, Gharghoda, Pali, Beohari, Jaisinghnagar.
1. b.	Anugul, Khariar, Kotpad, Koraput, Gaurella, Pendura, Katangi, Sidhi.
1. c.	Chakulia, Padmapur, Barapali, Kochinda, Phulbani, Junagarh, Gudari, Umarkote, Malkangiri, Surajpur, Naila Janjgir, Ahiwara, Balod, Bemetra, Pasan.
1. d.	Udala, Karanjia, Kamakshyanagar, G. Udayagiri, Pathalgaon, Dharamjaigarh, Naya Bardwar, Bhilai Charoda, Bagbahara, Bijuri, Khand (Bansagar),
1. e.	Dari, Chhatatanr, Gobindpur, Panposh, Katghora, Baloda, Kharod, Bodri, Lormi, Pandariya, Ambagarh Chowki, Dongargaon, Dhamdha, Khamharia, Patan, Bhatgaon, Simga, Pithora.
1. f.	Sinduria, Barhi, Redhakhol, Athmallik, Namna Kalan, Dantewada, Churhat, Naudhia, Rampur Naikin,
2. a.	Ghatsila

2. b.	Gomoh
2. c.	Barkakana, Sini.
2. e.	Barwadih
3. a.	Chas, Jaithari.
3. b.	Latehar, Jaridih Bazar, Khunti, Gumla, Simdega, Khariar Road, Akaltara, Takhatpur, Baloda Bazar, Gobra Nawapara, Tida Newara, Mahasamund.
3. c.	Pathardih, Anandpur, Kesinga, Saraipali.
3. e.	Isri, Phusro, Bilha, Kurud
3. f.	Dhanwar, Jhumpura, Bishamkatak, Geedam.
4. a.	Hussainabad, Sindri, Chittaranjan.
4. b.	Chirkunda, Khelari, Muri, Jhinkpani, Brajrajnagar, Rajagangapur, Raurkela Industrial Township, Bhilai Nagar, Durgapur.
4. c.	Bokaro Steel City, Gumia, Adityapur, Raurkela, Tarbha, Sunabeda, Sirgiti, Hindustan Cables.
4. d.	Fertilizer Corporation of India Township, Jamul, Kumhari, Kondagaon, Ballavpur.
4. e.	Lapanga, Kandra, Belpahar, Hatibandha, Champua, NALCO, Damanjodi,
4. f.	Tati, O.C.L. Industrial, Bhanpuri, Birgaon, Gogaon, Mowa, Khaliapali, Urla.
5. a.	Ramgarh, Jhumri Tilaiya, Gua, Baikunthpur, Burhar, Dhanpuri, Kotma, Tirodi
5. b.	Katras, Angarpathar, Sijua, Loyabad, Jamadoba, Tisra, Jorapokhar, Bhowrah, Dumarkunda, Barbil, Korba, Dalli Rajhara, Jamuria.
5. c.	Saunda, Sirka, Koderma, Kenduadih, Bhagatdih, Dugda, Kiriburu, Barajamda, Jadugora, Joda, Kirandul, Nowrozabad, Amlai.
5. d.	Gidi, Bhojudih, Malkera, Chandaur, Saraidhela, Nirsa, Chiria, Balagoda (Bolani), Daitari, Dera Colliery town, Bhanowara, Kenda, Parasia, Amkula, Raghunathchak, Chak Bankola, Parashkal, Khandra, Khajora.
5. e.	Kedla, Ara, Kuju, Amlabad, Kailudih, Pondarkanali, Baliari, Godhar, Kustai, Churi, Tensa, Chharchha, Khongapani, Vishrampur, Gandai, Bade Bacheli, Bangawan, Dola, Singrauli, Baihar, Ukwa, Barjora, Baska, Palashban, Murgathaul, Chapui, Ratibati.
5. f.	Topa, Orla, Kharkhari, Jharia Khas, Mugma, Egarkunr, Siuliban, Sijhua, Kalikapur, Meghahatuburu, Lathikata, Bangura, Rajgamar, Badra, Par

	Beliya, Bharveli, Banshera, Dhandadihi, Siduli, Harishpur, Malajkund.
6. b.	Maithon, Panchet, Burla, Hirakud
6. c.	Chandrapura, Patratu, Tenudam, Kanke
6. d.	Rengali Dam Project, Talcher Thermal, Balimela, Santhaldih Thermal
6. e.	Kelhauri (Chachai)
6. f.	Mukhiguda, Khatiguda.
7. a.	Chandia, Anuppur
7. b.	Rairangpur, Ukhra
7. e.	Meru, Religara (Pachhiari), Dangua Pasi.
7. f.	Hesla, Marma, Chandil, Telgaon, Dipka, Mehmand, Basna, Hatkachora, Deori, Deohara, Hirapur.
8. c.	Bhuli, Bagbera, Jemari
8. d.	Mango, Gadhra, Chota Gobindpur, Jalda,
8. e.	Baua Kalan, Haludabni, Sarjamda, Ghorabandha
8. f.	Paratdih, Bandhgora, Sahnidih, Lakarka, Nagri Kalan, Chhotaputki, Basaria, Rohraband, Khurpania, Jena, Lingiyadih, Banarsi, Mahira.
9. c.	Barughutu, Arra, Chapari.
9. d.	Deorikalan, Chandili, Dignala.
9. e.	Palawa, Balkundra, Ghantapada, Shivrinarayan, Beliatore, Nabagram, Hijuli, Chelad.
9. f.	Okani –II, Sewai, Topchanchi, Mera, Punderdihari, Deori, Frezarpura, Amarkantak, Kunustara, Pangachhiya, Barabazar, Dumar Kachhar, Belebathan.

Source: Compiled from various volumes of Orissa District Gazetteers, 1966, 1968, 1980, 1986; Gazetteer of India, Orissa State, 1991; Madhya Pradesh District Gazetteers, 1978; West Bengal District Gazetteers, 1968; Bihar District Gazetteers, 1957 and various other District Gazetteers (1951 to 1991), District Census Handbooks (1951 to 1991) of Bihar, Orissa, Madhya Pradesh and West Bengal States and Town Directory, Census of India, 2001

Appendix: VI A

Total Forest Cover in the Resource Region (in sq. km.)

DISTRICTS	1991	1993	1995	1997	1999	2005	2007
JHARKHAND	**21779**	**21743**	**21723**	**21692**	**21644**	**22591**	**22894**
SANTHAL PARG.	1453	1447	1453	1469	1494	1883	2038
PALAMAU	4833	4833	4811	4803	4797	4984	4892
HAZARIBAGH	6245	6231	6240	6249	6223	5866	5849
RANCHI	4554	4539	4517	4511	4503	4899	5064
DHANBAD	95	94	100	102	101	208	205
SINGHBHUM	4599	4599	4602	4558	4526	4751	4846
ORISSA	**47205**	**47145**	**47107**	**46941**	**47033**	**48374**	**48855**
SAMBALPUR	6174	6174	6162	5759	5758	5807	5845
SUNDARGARH	4013	4013	4013	4011	4011	4047	4063
KEONJHAR	3730	3730	3691	3543	3546	3225	3229
MAYURBHANJ	4062	4062	4058	3852	3942	4019	3990
BALASORE	371	371	371	323	324	318	325
CUTTACK	1059	1059	1058	952	955	1065	1130
DHENKANAL	3666	3666	3666	3592	3574	3940	4013
PHULBANI	5957	5957	5965	6426	6428	6736	6739
BOLANGIR	1068	1068	1078	1185	1195	1259	1258
KALAHANDI	2766	2766	2766	3062	3063	3489	3543
KORAPUT	7314	7314	7313	7553	7551	7947	8134
GANJAM	4698	4698	4706	4610	4605	4457	4450
PURI	2327	2267	2260	2073	2081	2065	2136
CHATTISGARH	**57495**	**57484**	**57410**	**56435**	**56693**	**55863**	**55870**
BASTAR	22394	22394	22387	23138	23359	22478	22491
DURG	4702	4703	4697	4478	4593	4913	4903
RAIPUR	6859	6854	6850	6239	6228	6409	6434
BILASPUR	6939	6939	6922	6407	6405	6008	6009
RAIGARH	4495	4488	4476	4630	4563	4744	4752
SURGUJA	12106	12106	12078	11543	11545	11311	11281

Source: Compiled and computed from *State of Forest Reports*, 1991 to 2007, Ministry of Environment and Forests, Government of India.

Appendix: VI B

Dense Forest Cover in the Resource Region (in sq. km.)

DISTRICTS	1991	1993	1995	1997	1999	2005	2007
JHARKHAND	**11036**	**11115**	**11113**	**11065**	**11051**	**11622**	**12489**
SANTHAL PARG.	282	282	282	282	281	628	1213
PALAMAU	2686	2686	2690	2726	2754	2890	2868
HAZARIBAGH	2962	2958	2955	2942	2962	3082	3221
RANCHI	2004	2087	2096	2095	2083	2357	2461
DHANBAD	7	7	7	7	7	45	50
SINGHBHUM	3095	3095	3083	3013	2964	2620	2676
ORISSA	**27349**	**27151**	**27163**	**26101**	**26073**	**28194**	**28467**
SAMBALPUR	4635	4543	4545	3678	3672	3727	3739
SUNDARGARH	2724	2724	2724	2634	2634	2787	2820
KEONJHAR	2033	1933	1933	1739	1739	1710	1718
MAYURBHANJ	3325	3325	3325	3237	3223	3009	3051
BALASORE	258	252	252	175	173	170	159
CUTTACK	506	506	506	482	482	491	512
DHENKANAL	2392	2392	2392	2268	2252	2219	2234
PHULBANI	2973	2973	2973	3295	3302	4146	4122
BOLANGIR	534	534	546	573	573	540	497
KALAHANDI	1392	1392	1392	1592	1592	1742	1679
KORAPUT	3119	3119	3119	3308	3305	3391	3698
GANJAM	1891	1891	1889	1894	1895	2842	2807
PURI	1567	1567	1567	1226	1231	1420	1431
CHATTISGARH	**47465**	**47459**	**47396**	**39860**	**39557**	**38728**	**39200**
BASTAR	18893	18893	18886	15851	15687	15178	15224
DURG	3824	3825	3822	3307	3173	3508	3594
RAIPUR	5115	5115	5115	4518	4492	4439	4578
BILASPUR	5825	5825	5826	5091	5093	4293	4509
RAIGARH	3320	3313	3312	2945	2969	3463	3440
SURGUJA	10488	10488	10435	8148	8143	7847	7855

Source: Compiled and computed from *State of Forest Reports*, 1991 to 2007, Ministry of Environment and Forests, Government of India.

Appendix: VI C

Forest Cover (as % of total geographical area) in the South East Resource Region

DISTRICTS	1991	1993	1995	1997	1999	2005	2007
JHARKHAND	**27.32**	**27.28**	**27.25**	**27.21**	**27.15**	**28.34**	**28.72**
SANTHAL PARG.	10.23	10.19	10.23	10.34	10.52	13.25	14.35
PALAMAU	37.91	37.91	37.74	37.67	37.63	39.09	38.37
HAZARIBAGH	34.58	34.51	34.56	34.61	34.46	32.49	32.39
RANCHI	24.93	24.85	24.73	24.70	24.65	26.82	27.72
DHANBAD	3.17	3.14	3.34	3.40	3.37	6.94	6.84
SINGHBHUM	34.22	34.22	34.24	33.91	33.68	35.35	36.06
ORISSA	**30.32**	**30.28**	**30.25**	**30.15**	**30.21**	**31.07**	**31.38**
SAMBALPUR	35.25	35.25	35.18	32.88	32.87	33.15	33.37
SUNDARGARH	41.32	41.32	41.32	41.30	41.30	41.67	41.83
KEONJHAR	44.92	44.92	44.45	42.67	42.71	38.84	38.89
MAYURBHANJ	38.99	38.99	38.95	36.97	37.84	38.58	38.30
BALASORE	5.88	5.88	5.88	5.12	5.13	3.06	5.15
CUTTACK	9.50	9.50	9.50	8.54	8.57	9.56	10.14
DHENKANAL	33.86	33.86	33.86	33.18	33.01	36.39	37.06
PHULBANI	53.70	53.70	53.77	57.92	57.94	63.99	60.61
BOLANGIR	11.98	11.98	12.09	13.30	13.41	23.16	14.12
KALAHANDI	23.50	23.50	23.50	26.01	26.02	29.64	30.10
KORAPUT	27.13	27.13	27.12	28.01	28.01	29.47	30.17
GANJAM	37.42	37.42	37.48	36.72	36.68	35.57	35.51
PURI	22.85	22.26	22.20	20.36	20.44	20.28	20.98
CHATTISGARH	**42.53**	**42.52**	**42.46**	**41.74**	**41.93**	**41.32**	**41.33**
BASTAR	57.25	57.25	57.24	59.16	59.72	57.47	57.50
DURG	23.91	23.92	23.89	22.77	23.36	23.57	23.53
RAIPUR	32.27	32.24	32.22	29.35	29.30	30.15	30.27
BILASPUR	34.87	34.87	34.79	32.20	32.19	32.09	32.10
RAIGARH	34.78	34.73	34.63	35.82	35.31	36.71	36.77
SURGUJA	54.20	54.20	54.07	51.68	51.69	50.64	50.51

Source: Compiled and computed from *State of Forest Reports*, 1991 to 2007, Ministry of Environment and Forests, Government of India.

Appendix: VII A

Proportion of Tribal Main Workers in Industrial Categories in the Resource Region, 1971 (in %)

DISTRICTS	I	II	III	IV	Va	Vb	VI	VII	VIII	IX
JHARKHAND	**60.59**	**27.47**	**0.87**	**2.14**	**1.56**	**2.29**	**0.61**	**0.25**	**1.05**	**3.15**
PALAMAU	59.10	35.49	1.50	0.37	0.86	0.25	0.09	0.12	0.46	1.77
HAZARIBAGH	56.18	28.46	1.53	7.58	1.48	1.11	0.51	0.18	0.83	2.13
RANCHI	70.10	19.90	0.50	0.32	1.84	1.67	0.22	0.27	0.88	4.29
DHANBAD	42.10	24.86	0.53	14.57	2.19	4.75	5.91	0.13	2.55	2.42
SINGHBHUM	53.15	34.78	1.05	1.62	1.34	3.51	0.52	0.29	1.27	2.47
ORISSA	**53.67**	**35.56**	**1.70**	**1.43**	**1.20**	**1.22**	**0.23**	**0.47**	**0.66**	**3.87**
SAMBALPUR	45.77	41.81	1.45	0.41	2.51	2.81	0.39	0.54	0.96	3.33
SUNDARGARH	57.22	20.83	1.67	4.30	1.07	5.65	0.38	0.85	1.68	6.35
KEONJHAR	50.34	29.97	2.00	9.00	0.72	0.86	0.23	0.58	1.57	4.73
MAYURBHANJ	46.26	44.76	2.74	0.19	1.32	0.28	0.11	0.19	0.34	3.81
DHENKANAL	36.43	53.65	4.27	0.45	0.74	0.25	0.73	0.19	0.24	3.05
PHULBANI	68.73	25.84	0.75	0.01	0.83	0.12	0.11	0.33	0.16	3.14
BOLANGIR	57.04	36.24	1.19	0.07	1.36	0.45	0.14	0.51	0.28	2.71
KALAHANDI	55.38	37.17	1.00	0.01	1.29	0.33	0.09	0.40	0.16	4.15
KORAPUT	60.21	33.13	1.11	0.10	0.80	0.25	0.18	0.51	0.41	3.29
CHATTISGARH	**70.37**	**25.19**	**0.65**	**0.50**	**1.10**	**0.32**	**0.19**	**0.25**	**0.20**	**1.22**
BASTAR	78.34	18.87	0.53	0.20	0.59	0.14	0.11	0.18	0.13	0.92
DURG	72.95	20.97	0.55	1.17	0.74	0.90	0.14	0.37	0.54	1.59
RAIPUR	55.86	40.03	0.48	0.02	1.59	0.30	0.11	0.39	0.13	1.09
BILASPUR	63.30	31.29	0.71	0.52	1.86	0.29	0.40	0.23	0.36	1.04
RAIGARH	70.61	25.02	0.58	0.09	0.91	0.29	0.21	0.30	0.14	1.86
SURGUJA	71.63	22.77	1.00	1.25	1.35	0.35	0.21	0.17	0.13	1.14

Source: Computed from Census of India Special Tables for Scheduled Tribes, 1971.

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

Appendix: VII B

Proportion of Tribal Main Workers in Industrial Categories in the Resource Region, 1981 (in %)

DISTRICTS	Main Workers	I	II	Va	OT
JHARKHAND	**1451376**	62.8	21.5	1.7	14.0
PALAMAU	130293	59.3	32.9	0.7	7.0
HAZARIBAGH	136220	57.9	18.7	1.7	21.8
RANCHI	641692	72.8	15.3	1.7	10.1
DHANBAD	62100	39.4	15.8	2.4	42.4
SINGHBHUM	481071	54.7	28.3	1.7	15.2
ORISSA	**2074316**	54.0	34.6	1.5	9.9
SAMBALPUR	249520	42.9	43.5	3.2	10.3
SUNDARGARH	228364	51.3	24.0	0.9	23.8
KEONJHAR	179077	50.7	29.8	0.6	18.9
MAYURBHANJ	383774	50.2	39.5	2.3	8.0
DHENKANAL	77424	33.3	51.3	1.1	14.3
PHULBANI	117940	69.0	25.0	1.0	5.0
BOLANGIR	105318	54.0	38.7	1.4	5.9
KALAHANDI	162573	54.6	38.7	2.0	4.8
KORAPUT	570326	62.9	31.1	0.7	5.3
CHATTISGARH	**2145441**	69.6	23.9	0.9	5.6
BASTAR	575602	80.6	15.5	0.4	3.4
DURG	294878	68.2	22.7	0.7	8.3
RAIPUR	296596	56.5	35.9	1.4	6.2
BILASPUR	324426	60.6	31.2	1.2	7.0
RAIGARH	291870	66.9	27.1	1.0	4.9
SURGUJA	362069	74.3	19.1	0.9	5.6

Source: Computed from Census of India Special Tables for Scheduled Tribes, 1981.

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.

Appendix: VII C

Proportion of Tribal Main Workers in Industrial Categories in the Resource Region, 1991 (in %)

DISTRICTS	I	II	III	IV	Va	Vb	VI	VII	VIII	IX
JHARKHAND	**64.71**	**21.41**	**0.26**	**2.28**	**1.36**	**1.76**	**0.60**	**0.57**	**0.69**	**6.36**
PALAMAU	60.42	31.99	0.63	0.39	0.93	0.31	0.22	0.34	0.27	4.50
HAZARIBAGH	55.08	23.63	0.45	10.05	1.77	1.51	1.09	0.57	1.21	4.63
RANCHI	75.04	13.29	0.16	0.35	1.30	0.61	0.35	0.52	0.47	7.90
DHANBAD	38.48	21.03	0.26	16.86	2.78	8.93	2.01	0.79	1.94	6.93
SINGHBHUM	58.76	28.29	0.21	1.13	1.25	2.84	0.71	0.67	0.77	5.35
ORISSA	**36.18**	**37.09**	**0.76**	**1.52**	**1.68**	**1.62**	**0.41**	**0.81**	**0.58**	**3.14**
SAMBALPUR	28.44	45.02	0.97	1.01	3.29	2.64	0.41	0.96	0.77	3.77
SUNDARGARH	20.74	23.76	0.61	4.84	0.95	6.45	0.98	0.98	1.68	6.72
KEONJHAR	26.40	33.59	1.23	8.42	0.69	1.54	0.53	0.86	1.03	3.41
MAYURBHANJ	33.03	37.62	0.76	0.25	3.15	0.84	0.23	0.74	0.50	2.68
DHENKANAL	26.28	58.67	1.14	1.21	1.69	1.91	1.71	0.47	0.32	3.26
PHULBANI	31.75	29.66	0.70	0.01	1.17	0.35	0.12	0.45	0.24	3.00
BOLANGIR	19.64	39.84	0.73	0.52	1.86	0.92	0.36	0.87	0.44	2.69
KALAHANDI	23.77	42.19	0.62	0.08	2.16	0.58	0.13	0.85	0.20	1.95
KORAPUT	58.72	36.12	0.60	0.07	0.59	0.47	0.24	0.80	0.24	2.16
CHATTISGARH	**71.42**	**21.36**	**0.74**	**0.74**	**0.76**	**0.97**	**0.47**	**0.60**	**0.43**	**2.52**
BASTAR	82.27	13.22	0.53	0.27	0.42	0.34	0.33	0.30	0.18	2.14
DURG	69.14	20.45	0.81	1.37	0.83	2.31	0.68	0.97	0.75	2.70
RAIPUR	57.14	34.31	0.96	0.24	1.47	1.45	0.48	1.15	0.68	2.12
BILASPUR	63.81	26.82	1.16	1.08	0.84	1.40	0.78	0.81	0.65	2.66
RAIGARH	70.74	22.88	0.60	0.08	0.89	0.57	0.34	0.43	0.33	3.13
SURGUJA	74.45	18.76	0.57	1.66	0.53	0.49	0.34	0.26	0.25	2.70

Source: Computed from Census of India Special Tables for Scheduled Tribes, 1991.

* Note: Only those districts of Jharkhand, Orissa and Chattisgarh which are part of the South East Resource Region of India are included here.