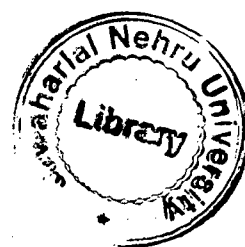


FORESTS, PEOPLE AND ENVIRONMENT: DYNAMICS OF INTERACTION AND DEVELOPMENT

Dissertation submitted in partial fulfilment of
the requirements for the award of
the degree of
Master of Philosophy
in Applied Economics of
Jawaharlal Nehru University, New Delhi

A. RAVINDRA



**CENTRE FOR DEVELOPMENT STUDIES
TRIVANDRUM**

1989

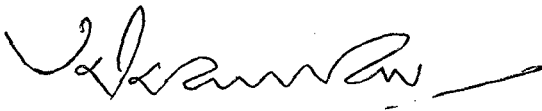
Certificate

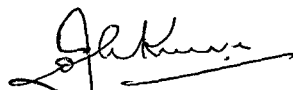
I hereby affirm that the research for this dissertation titled, "Forests, People and Environment : Dynamics of Interaction and Development" being submitted to the Jawaharlal Nehru University for the award of the Degree of Master of Philosophy was carried out entirely by me at the Centre for Development Studies, Trivandrum.

Trivandrum.


A. Ravindra Babu

Certified that this dissertation is the bonafide work of Sri. A. Ravindra Babu and has not been considered for the award of any other degree by any other University. This dissertation may be forwarded for evaluation.


Dr. K.P. Kannan
Associate Fellow


Sri. John Kurien
Associate Fellow.

Supervisors


Dr. P.S. George
Director
Centre for Development Studies.



ACKNOWLEDGEMENT

I am grateful to my advisors Dr.K.P.Kannan and Sri.John Kurien for their comments and suggestions at various stages in the preparation of my thesis. I am also benefited from my discussions with Dr.G.N.Rao who gave me insights into the economic history of Andhra Pradesh.

My visit to the Centre for Ecological Sciences, Bangalore, was of great help to me. Thanks to Prof.Madhav Gadgil for accommodating me in their 'visitors programme'. Also, thanks to Dr.Ramachandra Guha (who was with Centre for Ecological Sciences) and Prof.M.V.Nadkarni, Institute for Social and Economic Change, Bangalore, who provided me with some of their works.

I wish to express my gratitude to Dr.N.V.M.Unni, Dr.Kushwana and other staff of the Department of Forestry and Ecology, National Remote Sensing Agency, Hyderabad who received me patiently at NRSA. Discussions with them helped me in understanding an Ecological Scientist's perception of the problem.

I am grateful to Dr.A.V.R.G.Krishna Murthy, I.F.S., Forest Department, Hyderabad for giving me access to their library. Thanks to Smt.Anuradha, Librarian who helped me patiently in locating various reports.

I am also thankful to the Director and Librarian of Tribal Cultural Research and Training Institute, Hyderabad for permitting me to use their library.

I am also benefited from my discussions with Dr.Ravi Chopra, Director, People's Science Institute, Dehradun, who clarified me on various issues regarding the Chipko Movement.

I wish to acknowledge the Andhra Pradesh State Archives, Hyderabad, for permitting me to use the historical material.

I am indebted to Sri.B.Soma Sekhar Reddy, I.F.S. (who was the D.F.O. of Saw Mill Division, Rajahmundry), Mrs.Reddy, Shilpa and Ravi for their warm reception and kind hospitality. I am greatly benefited from the brotherly help of Sri.Reddy who made my stay at Rajahmundry comfortable.

Thanks also to Sri.Sudhakar Reddy for the interest he has shown in me.

CONTENTS

	PAGE
CHAPTER 1 : INTRODUCTION	1
CHAPTER 2 : STATE FORESTRY IN HYDERABAD	36
CHAPTER 3 : STATE FORESTRY IN ANDHRA PRADESH	66
CHAPTER 4 : TRIBAL-FOREST:DYNAMICS OF INTERACTION	97
CHAPTER 5 : CONCLUDING OBSERVATIONS	131
BIBLIOGRAPHY	143

LIST OF TABLES

Table.1.1	Conversion of forest area in India	10
Table.2.1	Growth of forest revenue in Hyderabad State.	43
Table.2.2	Structure of forest revenue, Hyderabad state	43
Table.2.3	Agency wise exploitation	45
Table.2.4	War period: revenue and expenditure:	55
Table.2.5	Structure of forest Expenditure	61
Table.2.6	Area under different systems of working	63
Table.3.1	Five Year Plans (Andhra Pradesh): Outlays and expenditure	72
Table:3.2.1	Expenditure on forestry schemes: (Plan periods)	73
Table:3.2.2	Expenditure on forestry schemes, proportions to total:	73
Table:3.3	Growth rates of forest revenue, expenditure and surplus:	75
Table:3.4	Structure of forest revenue in A.P.	77
Table:3.5	Species composition of total area planted.	79
Table:3.6	Area planted with different species under sixth plan and proposed under seventh plan.	80
Table.3.7	Whole sale prices of important timbers:	81
Table:3.8	Supplies of raw-materials to forest based industries:	84
Table:3.9	Capacity utilisation in paper industry in A.P.:	84
Table.3.10	Performance of Integrated Saw Mill, Rajahmundry.	86
Table.3.11	Royalty rates of bamboo and hard woods	88
Table.3.12	Classified forest area, A.P.	88
Table.3.13	Area under forest cover in A.P.	91
Table.3.14	Area under different categories of wasteland in A.P.and India:	92
Table.3.15	Forest area de-regularised (lost) for various schemes:	93
Table:3.16	Structure of forest expenditure, A.P.	94
Table.4.1	Decennial growth rates of rural population in Adilabad district	101
Table.4.2	Taluk-shares of decadal change of rural population of Adilabad	101
Table.4.3	Schedule Tribe population of rural Adilabad dt.	102
Table:4.4	Growth rates of classified forest area: Adilabad dt.	107
Table.4.5	Area under principle crops in Utnur taluk	111

Table.4.6	'Illicit cultivation' in Adilabad district . . .	112
Table:4.7	Revenue and expenditure from beedi leaf trade	117
Table.4.8	Schedule Tribe population and work force of rural Adilabad.	119
Table.4.9	Occupational pattern of S.T.'s: Adilabad district 1981	120
Table.4.10	Work force in Utnur taluk	121
Table.4.11	Employment generation in forestry, Adilabad circle:(1971)	123
Table.4.12	Expenditure on raising teak plantations	124
Table.4.13	District wise no.of villages, and tribal and non-tribal families affected in A.P.	126

LIST OF GRAPHS

1.1.	Land use in Europe	26
1.2.	Land use in Latin America	26
1.3.	Land use in South Asia	27
2.1.	Forest revenue and expenditure 1887-1899, Hyderabad state	37
2.2.	Forest revenue, Hyderabad state	42
2.3.	Forest lands given for cultivation Hyderabad state and Adilabad dts.	47
2.4.	Revenue and expenditure, Hyderabad state	55
2.5.	Classified forest area, Hyderabad state	59
2.6.	Structure of forest expenditure, Hyderabad state	62
3.1.	Revenue and expenditure of Forest Department, Andhra Pradesh	76
3.2.	Relative growth of various components of forest revenue	78
3.3.	Classified forest area, Andhra Pradesh	89
4.1.	Classified forest area, Adilabad dt.	107

LIST OF ABBREVIATIONS

1. FD : Forest Department
2. A.P. : Andhra Pradesh
3. AAR : Annual Administration Report of the Forest
Department
4. F : Fasli Year (F+590= A.D.)
5. TCR&TI : Tribal Cultural Research and Training
Institute, Hyderabad
6. MFP : Minor Forest Produce

Chapter 1

INTRODUCTION

Degradation of the world's forests, particularly the mounting rate of tropical forest degradation has brought about crisis situations at various levels from green house effect to rural energy crisis. These crises are not uniformly perceived across various strata of population. This complexity of tropical forest resource system severely constrains the extension of conventional models of natural resource economics to the study of tropical forests. "In its full complexity", Dasgupta (1982:181) observes, "...determination of the social value of a forest is probably an impossible task". The general tendency in such a situation is to study forest in isolation i.e. 'forest as a collection of trees' and thus, follow the 'sustainable yield models', yield perceived in terms of wood. These models are developed in the specific context of temperate forest resource system with low species diversity and relatively uniform stands of high wood converting trees.

Inappropriate extension of these models to the highly diverse tropical forests can be traced to the historical context of the colonial exploitation of tropical forests. For the colonial nations of the temperate zones were the first to organise tropical forest exploitation, mainly for timber. These models continued to be the basis for forest resource management in the tropical nations even after their independence and became one of the primary sources of conflict over forest resources. We shall argue that the problem of tropical forest conservation or degradation cannot be understood without duly appreciating the

specificities of tropical forest ecosystem.

At the outset it is important to briefly outline the specificities of tropical forest ecosystem which condition the forest - people interaction in the tropics as against that in temperate regions.

1.1. The Tropical Forests¹

In a North-South gradient we can see three distinctly different forests: the evergreen conifers with low species diversity, often one or two species of trees forming pure stands; temperate deciduous forests with relatively greater species diversity seen in the moist-temperate regions and the tropical forests ranging from the broad - leaved evergreen rain forests in regions of high and well distributed rainfall, to the tropical deciduous forests. The vines and epiphytes (air plants) make up a conspicuous portion of the biological structure of the tropical forests. Species diversity is high in tropical rain forests.²

There is a process of natural selection favouring high biological diversity in tropical ecosystems. If 'r' is used to designate the potential growth rate of population and 'k' for the equilibrium level of population size i.e. the capacity to live in a crowded world of limited resources, the temperate region favours 'r' selection while 'k' selection is favoured in the tropics. For example a few species of conifers with luxuriant growth characterises the temperate forests, the tropical forest ecosystem on the other hand favours a wide ranging species at

¹from Odum (1975)

²There may be more species of plants and insects in a few acres of tropical rain forests than in the entire flora and fauna of Europe.

different strata with optimum population sizes.³

The ratio of leaf to new wood production is about 1:1 for the tropics and up to 1:6 for the temperate zone which means tropical trees put proportionally more of their net production into leaves than into wood. Another important characteristic of tropical forests is the mineral recycling, having important implications for the conversion of forests for agriculture. In the temperate zone a large portion of organic matter and available nutrients is at all times in the soils and sediments while in tropics a much larger percentage is in the biomass, and is recycled within the organic structure of the system, not in the soil i.e. the nutrient cycling in the temperate zone is more "physical" and in the tropics more "biological".⁴

These three specific characteristics of tropical forest ecosystem viz. high species diversity, low wood conversion and 'biological' mineral recycling have conditioned the human interaction with these forests.

1.2. Forest - People Interaction

The high diversity of the tropical forest ecosystem give rise to varying levels of interaction and dependency of the interacting population on forests.

³ Same is the case with marine fisheries. In temperate waters one finds a relatively smaller number of species which grow to larger sizes and each specie is available in teeming millions. In tropical seas one can see multitude of species attaining varying sizes at age of maturity, each specie available in relatively small quantities. (Kurien J and Achari T (1989)).

⁴ However, the tropical forest ecosystems are not uniform and may contain undulating slopes with relatively fertile plains or valleys which can sustain intensive agriculture, depending on the topography of the region concerned.

At the primary level, forests are ecological niches of the plural tribal communities ranging from partly food-producing shifting cultivators to food gathering communities. The shifting cultivation systems are better adapted at any point in time to the tropical forest specificities.⁵ The long fallow periods allow for the recuperation of soil nutrients. Here, the nutrients replenished in the soil by the forest fallows are important forest products. Various food sources in the forests (owing to the species diversity) carry them through lean months when the grain stocks exhaust. On the other hand the hunting and food gathering tribes depend solely on forests for their sustenance.

At the next level, the rural population depend on forest for manurial needs, grazing lands etc. The more distant populations depend on forests for timber, fuel wood and so forth. At a more general level the services forests provide are critical in some ecological processes that maintain ecological balance of the biosphere.

The point we are driving at is - the high diversity of tropical ecosystem translates into the high product diversity of the forest resource system which becomes a means to achieve different ends to different populations. The dependence of various populations at the same time on forests for different sets of products makes it much more complex than just a problem of 'multiple uses'. It is at this point, Nadkarni (1989:20-1) argues, that the problem transcends the optimality criteria of neoclassical economics and transforms itself into a problem in the political economy of resource use. Also, many of the forest

⁵ Boserup (1965:19-20) however contests this proposition. But here, we are only concerned with a static situation.

products are intangible and lack a common scale of measurement. Markets for all these products do not exist as the 'dependence' at any point of time has a historical dimension which conditions the nature of demand, even if the interacting populations have adequate purchasing power.

In addition, an important dimension of the problem is that these sets of forest products cannot be produced at the same time ie. 'use exclusivity' of different sets of products is pronounced, although the degree of exclusivity vary. Timber and grass production⁶; timber production - soil conservation; wild life conservation - human habitation etc are a few examples, an extreme case being the forest land as a product in itself. Also, unlike other resource systems like mineral resources, the forest ecosystem is inherently dynamic in human time scale. The natural 'k' selection pressure further reinforces the complexity and any attempt to maximise the rate of growth of any particular product, against the natural preference for a diverse population at equilibrium size brings in the question of natural dynamics of the forest ecosystem. This natural process germane to the dynamics of a forest ecosystem also translates itself into the arena of social dynamics of resource use.

The equally diverse interacting populations are also dynamic and hence their interaction with forests. The foregoing observations can be summarised as follows. Various strata of population interact with forests for different sets of products that cannot be produced at the same time. The interacting

⁶Burning of forests is an important technique practiced by the ranchers and grazers while the forest bureaucracy closes the forests for grazing to produce quality timber.

population and the resource are inherently dynamic. One can construe an array of forces both social and natural⁷, conflicting to assume dominance over the forest resource.

The social dynamics of various strata of the population interacting with forests at different levels condition the forest use. The forest use at any point of time would therefore be determined by the historical patterns of interaction of the population in question with forests. This in turn is determined by the social dynamics of these populations in the historical process of development. The internal dynamics of the forest ecosystem above all is a limiting factor of the over all forest use.

Given these dimensions of the problem specific to a tropical forest resource system, an objective decision making is impossible. This fact renders the 'sustainable use models' inappropriate to a tropical forest situation mainly because the 'use' is not just physical but has a pronounced social dimension and is determined by a process of conflict rather than an objective judgement.

'Forest use' is specific to an interacting population. An extant forest use pattern i.e. the dominant product structure at any point of time, is a reconciliation of the conflicting forces where in a particular product structure assumes dominance over other conflicting uses which is but a short run equilibrium. State control of forests is one of the ways, in fact the most predominant way, the conflicting forces are reconciled. The long

⁷ Manipulating a resource system against the natural processes and preferences is a long drawn conflict between man and natural forces!

run sustainability of the product structure that has assumed dominance is an indication of a long run equilibrium between contending forces. Thus, sustainability or otherwise of the resource system is more a symptom of a wider problem of reconciling the conflicting forces than a problem by itself. The problem may well lie in the way the conflicting forces are reconciled (or whether they are reconciled at all!) rather than in the technicalities of the resource use. This in effect, is questioning the status quo itself for possible sources of the problem.

In this context we attempt to study the historical process in which the present forest use pattern was shaped. Before stating the problem, we present our understanding of the problem in a brief over view of the literature on various aspects of the problem.

1.3. Review of Literature

Many studies locate the problem of tropical forest degradation in the broader context of development problems of the third world, mostly in the conversion of forests for agricultural expansion. Such conversions may be sponsored by state or undertaken spontaneously often involving large scale immigration into the sparsely populated forests. Eckholm (1980:163) thus observes, " The spread of farming in one form or another is by far the major cause of outright forest loss today, as it has been throughout most of the human history". Dasgupta (1982:180) observed that 'the greatest cause of global deforestation today is not the market for wood products but rather the need for wood fuel and agricultural land'. This pattern can be observed in many

tropical countries.

The 'Trans-Amazon High way' project of the National Integration Programme, 'Polonoroeste' programme to develop the Rondonia state and the heavily subsidised cattle ranching projects in Brazil exemplifies the state sponsored immigration. The phenomenal growth of population at an annual rate of 6.3 per cent in the Amazon region as compared to 2.3 per cent of Brazil during 1970-80 was mainly a result of this immigration. In Rondonia, the target state of 'Polonoroeste' programme, population increased by 34.2 per cent per year. The very purpose of the Trans-Amazon High Way was proverbially stated as to 'bring men without land to land without men' thereby 'alleviate chronic poverty in the drought stricken Brazilian North East'. (Browder 1988; Linden 1989).

The 'Transmigration' programme in Indonesia was aimed at encouraging shift in population away from densely populated islands of Java, Bali and Madura to the thinly populated outer islands. Primary forests provided 80 per cent of transmigration sites. This state sponsored programme and the spontaneous transmigration were found to be the major sources of deforestation. (Gillis 1988)

In Ivory Coast Repetto (1988) observed a high annual population growth rate of 4.6 per cent largely contributed by immigration into the forest regions and the concomitant acceleration in the rate of deforestation from 2.4 per cent per year to 7.3 per cent. In Ecuador, Eckholm (1980) observes, "over population and unequal land tenures are driving peasants down both sides of Andes". Similar patterns can be observed in Ghana, Philippines etc.

Shifting cultivation has significantly contributed to tropical deforestation. In Indonesia by 1980, Gillis (1988a:48) cites, "... shifting cultivation has transformed 16 million ha. of forest land nation wide into degraded land covered mostly by the pernicious 'alang-alang grass' (*Imperata cylindrica*)". Also, the 'agriculture fires' started by shifting cultivators were 'the prime cause of devastating forest fires' in drought stricken East Kalimantan and in the East Malaysian state of Sabah in 1983. Destructive logging, agriculture conversion and shifting cultivation were found to be the major sources of deforestation in Malaysia. (Gillis 1988b)

In Philippines the major persistent causes of forest loss are identified as 'destructive logging and shifting cultivation'. Boado (1988) observes that the influx of 'kainginaos' (shifting cultivators) into forest lands is due largely to the Government's inability to provide economic alternatives for rural populations. (Boado 1988:166) According to FAO (1978), Ivory Coast lost more than 30 per cent of its forest cover during the decade 1956-66 to shifting agriculture. Similar pattern can also be seen in West African states of Liberia, Ghana etc. (Gillis 1988c).

India is no exception. Agriculture conversion and shifting cultivation accounts for a greater share of forest land conversion as is evident from Table.1.1.

Immigration into the forested regions following their opening, (consequent) land alienation and marginalisation of the tribals is a common phenomenon in most of the tribal belts in India⁸ except in some North Eastern States where state's

⁸For various studies in the subject see Singh K.S. (1982).

policies like 'inner line policy' guarded these areas from immigration even after these regions were physically opened up.

Table.1.1: Conversion of forest area* in India
(area in '000 ha.)

PURPOSE	AREA	%
1. River Valley Projects	479.1	11.6
2. Agricultural purposes	2506.1	60.6
3. Construction of roads	57.1	1.4
4. Establishment of industries	127.2	3.1
5. Misc. purposes	956.4	23.3
TOTAL	4135.8	100

Note: *.legally classified forest area (not necessarily forest covered.)

Source: from Krishnamurthy (1988)

However, shortening of rotations i.e. increased cropping frequency was observed even in these regions largely owing to the internal population pressure. (see Haimendorf (1982); Nair (1987)).

It is a largely accomplished fact that in the tropical forests most of the nutrients are held in the biomass rather than in the soils which are relatively poor. (see Section.1.2.; Redclift (1984:26); Repetto (1988:7)) The hostile environment and the low productivity of the lands often prove these conversions illusive.⁹ Lack of necessary input endowments to sustain productivity, the limited access to good lands and the population growth often force the native shifting cultivators and the immigrants towards extensive margin further clearing forests on their way and occupying mountain slopes. Observes Eckholm (1980:164-5), "Many of the "shifting cultivators" causing the

⁹For ex. the land colonisation schemes of Amazon basin, Linden E (1989); Gillis (1989a)

greatest 'forest destruction today are not traditional practitioners of this art at all. They are rootless, landless people struggling to make what living they can amid unfamiliar ecological conditions". (also Redclift (1984:26)) Also, the population growth in itself would bring further pressure on forests in 3 ways, according to Fearnside (1985), viz. increased demand for subsistence products increase the demand for farm land, increased size of agriculture labour force enhance the capacity to clear forests and opening of forests gives further impetus to immigration.

The Task Force on Tropical Forest Action Plan (TFAP (1985)) also identifies the 'real causes' of tropical deforestation as "poverty, skewed land distribution (due to historical patterns of land settlement and commercial agriculture development) and low agriculture productivity". Incongruous to its diagnosis, the solutions were sought elsewhere in the wood markets and investment programmes while the 'real problems' were given a cursory treatment. The World Rain Forest Movement though it has taken up a strong stance against TFAP, failed to place its emphasis in the right place. It accuses the World Bank and other international agencies of their projects that contributed to tropical deforestation and identify the industrial and commercial use of tropical forests as the major sources of deforestation, at the same time denying people's role in deforestation. The alternatives are utopian and not clearly spelt. (see Shiva, 1987) On the other hand as Barbara Ward (1980) remarks, "The solution to such problems are increasingly seen to involve reforms in land tenure and economic strategy, and the involvement of communities in shaping their own lives".

However, it is not our intention here to posit the land problem as the sole causal factor of tropical deforestation but only as a significant factor that needs to be understood and analysed. Apart from the land problems the commercial and industrial uses of forests is widely identified as major factors contributing to tropical deforestation. Here, we give a brief overview of various studies on the industrial orientation of tropical forestry.

1.3.1. State Forestry and Industrialisation

Around 80 per cent of the closed forest area in the third world countries is public land. (Lanly 1982). Dasgupta (1982:181) opines that the 'pervasive externalities' the forests provide that throughout the world much forest land is under government jurisdiction'. This mark the significance of the role of state in shaping forest use in the tropics. Repetto and Gillis (1988) based on the studies conducted by World Resource Institute illustrates the impact of various redundant Government concessions to the stock holders and timber companies that encouraged 'mining' of timber stands thus leading to rapid deforestation. The logging roads, they observe, open the interiors of forests along which large scale immigration occurs.

The tropical forests being vested with the state were primarily managed for logging and industrial uses mainly to cater to the internal and external wood markets and is influenced to a considerable extent by the thinking in the international agencies. Industrial approach to forest sector development was advocated as an attack on under development during the sixties by forest economists of which Westoby (1962) was prominent. Westoby identifies a high degree of sectoral interdependence between

forestry and industrial sectors. The strong forward and backward linkages and the multiplier effects in terms of employment and foreign exchange earnings - all these factors made a strong case for industrial orientation of forestry. Interestingly, he excluded fuel wood from consideration altogether suggesting that 'it is of secondary importance from the point of view of economic growth'. (Douglas, 1983) Following the same trend National Commission on Agriculture (NCA) (1976) in India perceived the production of industrial wood as 'the raison d'etre for the existence of forests'.

This optimism over the positive role of forest industrialisation soon withered away. Recanting his views Westoby (1978) later argued that the growing interest in forestry projects was "...a result of rich countries' needs for raw material, and the opportunities offered to obtain it in under developed areas.." and he illustrates.. " as the exports of tropical hard wood rose from 3 million to over 40 million cu.mt. between 1950 and 1976, nearly all of which went to affluent industrialised nations". Japan is one such country. Remarks Richardson, " There can surely be no justification for poor countries borrowing scarce capital at concessionary interest rates to subsidize the provision of raw material for Japan". Repetto (1988:26) illustrates that the higher tariffs set by various industrial countries on the imports of processed wood products compared to that on logs allowed their protected industries to compete successfully even if their labour and capital costs were much higher. On the other hand the log exporting countries have had to struggle to establish local wood processing industries, even though processing reduces the weight

of raw material and economises on shipping costs.

Contrary to the perceptions of high potential of forestry in generating employment, Gillis and Repetto (1988) observed, "...policy makers have usually over estimated the employment and regional development benefits associated with timber industries". The timber sectors in tropical wood exporting nations, they observed, 'have typically provided jobs for less than 1 per cent of the labor force .. and stress on forest based industries has also lead to tax and credit incentives..for various industries that are inappropriate for short fibred tropical hard woods'. Citing a study on the employment generation potential of forestry Roy Burman (1986) contradicts 'the NCA's claim that development of forestry will automatically generate employment'. Also, selective logging and conversion to mono-cultures deprived the local communities of the multitudinous benefits provided by tropical mixed forests. (Eckholm 1980:167-9)

Westoby himself later stressed the need for poor countries to concentrate on 'producing an agricultural surplus'. The role of forests, he observed, "... must be to support the traditional rural sector and in effect must be carried out by rural people themselves. FAO (1980) also identified the problem raised by Westoby. Douglas (1983:87-88) observed a reorientation in the World Bank lending criteria towards the new role of forestry in development. The shift towards the now popular community forestry can be traced to these developments. On the other hand, as Douglas (1983) argues, this involves many trade-offs since the developing countries "...have in the past established (very often on the advice of FAO and other large international assistance agencies) forest growing and processing sectors which, they are

now being advised, are inappropriate for their development aspirations".

However, one can't overlook the increasing 'awareness' of the 'ecological role' of tropical forests, (mainly as a sink to the wastes, the CO₂ produced in the industrial nations) which in effect brought an 'effective demand' (considering Nature-debt swaps) for the services tropical forests provide to maintain eco-balance. The new emphasis on the tropical forest conservation and the persistence of the international organisations may be looked in this context and the xenophobic reactions in the South (Anon,1989) placed in the over all context are understandable.

Given sufficient time to recuperate, forests have a natural tendency to re-occupy the ground. But as the unsustainable commercial and industrial uses degrade the top canopy i.e. they remove marketable wood, the concomitant pressures of grazing and fuel wood collection accentuate the degradation of the lower canopy and furthers the over all degradation of the forests. It is in this context especially the fuel and fodder crises significantly contributes to tropical forest degradation. Here, we give a brief over view of various studies on this aspect.

1.3.2. The Fuel-Fodder Crisis

After the expansion of farming, fuel and fodder crises are the most acknowledged factors actuating forest degradation. The Task Force on TFAP, perceiving the problem at a more broader level in the demand-supply frame work, sought for technical and market solutions to this problem. Clark (1974) has shown a 'very definitely convex demand function' for wood indicating that 'the commodity is one which finds a wide range of uses when cheap, but

a wide range of substitutes when expensive'. A market solution both on demand side and also on the supply side is comprehensible. However, in the words of Eckholm (1980:157), "...In a world of extreme income disparities the adjustments of the market take a heavy toll among the under class, many of whom will have no good substitutes for writing paper in school or for fire wood on the hearth". A greater portion of this demand is basically non-market demand. Also, the access to biomass-based energy was dependent on either access to or ownership of two basic resources: land and cattle. (Agarwal and Narain (1989:v)) Instead of locating the crises in the demand-supply gap, the problem, therefore, has to be posed, "...not in terms of whether or not there is an energy crisis but rather whose energy crisis it is". (Gamser 1980)

The solutions to these crises were generally sought by many in the social forestry with community participation i.e. regenerating wood resources in the commons. Despite their diagnostic value, surprisingly, no study questions the legitimacy of the existing use patterns of natural forests i.e. its management for exclusive production of market goods without duly accommodating the non-market and low value market demands within the existing legal frame work. People's Forestry in its true spirit has to seek for people's participation not only in resource regeneration (and its use) but also in natural resource use.

1.3.3. The Indian Context

The 'Dashauli Gram Swarajya Mandal', under the leadership of Chandi Prasad Bhatt, that pioneered the now famous Chipko Movement in India, raised this important question in the early

seventies. The modest successes of the Mandal's efforts to end the exploitation of forest labour convinced them that 'forest resources held the key to the economic salvation of the local people'. (Misra and Tripathi (1978:3)) This had led to the establishment of rural factories for making resin and turpentine from pine sap ('Lisa', as locally called). These ventures gave birth to the Chipko Movement in the course of their struggle against the FD to end the contractor system of forest working, to have their 'legitimate share' of the forest produce (whether Lisa or Ash trees) etc. The dichotomy between the local - commercial use of natural forests first manifested in this movement, paving the way for a sustained debate on forest issues, on rights of locals in the (sustainable) use of the forest resources in particular. The movement had also taken up the works of regeneration of forests not only for protecting the hill slopes but also for a sustainable supply of their basic requirements.

However, this basic aspect of the movement seems to have been sidelined in many studies, and writings of more vocal sympathisers (and activists) of the movement like Sundarlal Bahuguna. The 'ecological environmentalism' (after Sandbach (1980:22)) permeated this literature.¹⁰ 'Preservation' of forests thus, became an unquestioned principle and the interaction of locals was perceived as 'harmonious' with the forests.

An extreme case of this idealism can be seen in Sundarlal Bahuguna and in the works of Shiva V and Bandopadhyay.

¹⁰This type sees the importance of sustaining a viable physical and biological environment as the first priority, and any technological or economic changes are to be determined by this principle.

Exemplifying the role of forests as 'the source of soil water and air' (in the famous catechism: 'What do the forests bear; soil, water and air.') Bahuguna reproaches the commercial use of forests for "undermining the basic capitals of Mankind" and emphasises the need for 're-defining development' towards a 'development that ensures sustained availability of essentials to all'. Having a strong belief in the 'harmonious relationship' of forest dwellers with forests, he attributes the dislocation of this harmony to the commercial use. Re-establishment of this harmony, he observes, "...is only possible if they are assured that the forest belong to them as much they belong to the forests". The role of FD should be 'of a technical advisor rather than the owner of the forests'. (Bahuguna, 1985). However, it seems he did not have any answer to the question asked by a woman on his tour to Agartala that "If you cannot give us land for cultivation, what to eat?". (Bahuguna (1986))

The original message of the Chipko Movement ie. the role of forest resources as a 'key to the economic salvation of the local people' thus, failed to travel down to the Western Ghats though the movement seemingly had succeeded.

As we shall later see, this idealistic perception of tribal harmony with nature is essentially a static concept and this perceives tribal economy as an 'idealistic economy' self sustained and free from the extractive social relations and market forces. Once this presumption break down, the 'environmentalism' ingrained in their approach would practically narrow down the range of issues that it could accommodate and may become even antagonistic, in principle to 'tribal development' in so far as accommodation of the cause of agrarian tribes is

concerned which may involve some compromises even with conservation of forests.

Imbued with the same idealism and averse to the market economy, Shiva and Bandopadhyay (1989), perceive what they call 'survival economy' - the economy of forest dwellers, as an idealistic 'self sustained' economy in harmonious interaction with forests. Successfully raising the 'Eucalyptus debate' with their pioneering Kolar study (Shiva et al 1981), they attribute the forest crisis exclusively to the commercial and industrial uses. However, in a recent study on tribals of Bastar PUCL (1989:21) concludes, which is as well true even in other places with a relatively harsher human ecosystem:

" The permanent state of transition feeds the romantic images in which adivasis are often perceived. To outsiders it appears that the adivasis are in 'perfect harmony with nature'. But hard labour in adverse terrain is no harmony. cruel poverty has no romance in it."

Agarwal and Narain (1989) made use of the rich experience of various voluntary rural development programmes in developing an eco-system specific 'strategy for greening of India in an equitable and sustainable manner with people's participation'. They attribute lack of people's participation in regenerating the biomass to the expropriation of village commons by British state and the consequent alienation of people from their commons. This study is more concerned with regeneration of forests and advocates complete preservation of the natural forests and even forest lands.

The debate on the Draft Forest Bill, 1980 following the Chipko movement brought out some important issues. (Fernandes and Kulkarni (1983), D' Abreo (1982)) Their 'historical reconstruction', following Guha (1985), can be broken down into

three stages as follows:

" i) careful documentation of the social and cultural institutions which traditionally regulated the utilisation of natural resources and ensured an 'ecological steady state', ii) the intervention of British colonialism, its usurpation of resources and concomitant denial of village rights, iii) the continuation of the process albeit with variations in the post 1947 period, when mercantile and industrial interests have dictated state policy".

Though, the same idealist perception of tribal harmony persisted. this debate traces the forest problem to the colonial model of forest management and questions the legitimacy of the state's monopoly rights over forests. (This case in its complete form was laid by Guha (1983)) The solutions range from an alternative model with communal ownership of forests to a greater participation of 'people' in forest management i.e. recognition of rights and concession of the local populations. This debate successfully brought out the conflicts germane to state forestry. Commercial and industrial uses were identified as the principal causes of deforestation. Although the motives of colonial state in usurpation of the forests were clearly brought out, these studies fail to look into the question as to why the exclusion of local use of forests was necessitated when the 'valuable' timber species were already reserved. This question, as we shall see, would facilitate understanding the inherent disjunction/ conflict between the nature of local use and commercial use. The conflicts manifested in the process of state appropriation of forests would provide some clues into this aspect.

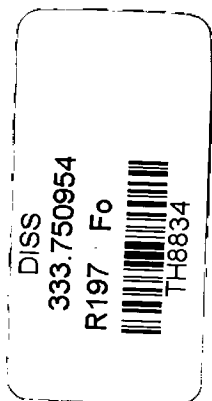
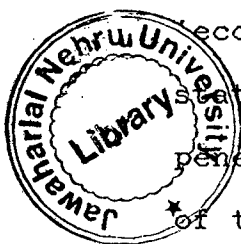
Guha and Gadgil (1989) surveys various 'social conflicts' in British India manifested in the context of 'changes in the patterns of natural resource use' in an impressive 'Study in the Ecological Bases of Agrarian Protest'. However, attributing the

state regulations on the usufruct rights of local communities over forests as the prime source of these conflicts is myopic. For, as succinctly brought out by Singh (1986) in his 'Agrarian Dimension of Tribal Movements' and various other studies, most of these conflicts were centered round the problem of land and the problems pertinent to the administration of these regions such as introduction of intermediaries in rent collection etc. (ex. Rampa rebellion) Restrictions on usufruct rights had played at the most a supportive role.

Majority of the tribals in India were agrarian and the major dislocations in their economy were a sequel to the peasant immigration and the concomitant land alienation on one side and curtailment of their access to forest land on the other side. Discussing the rebellions of the aboriginal tribesmen of the Peninsular India (Santal, Bhil, Rampa etc rebellions) Haimendorf (1982:36) observes, "All these uprisings were defensive movements; they were the last resort of tribesmen driven to despair by the encroachment of outsiders on their land and economic resources". The affect on food gatherers was essentially social i.e. exploitation of their labour than 'ecological'. Also, one cannot perceive the tribal economy as a static one. Singh (1986), documents the earlier systems, penetration of market forces and transition and/or transformation of tribal economies in colonial and post colonial India.

The singular lack of a dynamic perspective on tribal economies constrained the 'structural explanations' that prepared a historical ground for the 'ecological movement' in India. The classical example is the interpretation of shifting cultivation systems. Though, the institutional mechanisms of conservation

TH-8834



embedded in this system is well brought out in many studies, no study attempts to see it in a dynamic perspective i.e. the viability of these mechanisms in a tribal economy integrated with the exploitative market system. Any realisation of these aspects would in a way improve the 'social relevance' of these movements and as Redclift (1984) points out, -would facilitate -"..to use environmental dangers as levers to promote fundamental social change" where in essence the basic problem, as we have identified earlier, lies.

Nadkarni (1989:13) questions the 'unqualified populism' (i.e. the popular argument for devolution of state's ownership rights on forests) in his study on 'Political Economy of Forest Management' and opines, 'it could lead to a disaster'. In the study on class character of local dependence on forests they observed 'a high positive correlation' between income and forest dependence. 'Contrary to the common belief, people in rural households', they remark,

"..are not yet alienated from forest dependence in spite of the regulations governing the access to forests... The irony of the situation is that even this substantial dependence and stake in forests has not stimulated significant efforts at regeneration".

The real factor leading to the alienation of people from forests, if and when it finally comes, they continue, "...will be the degradation caused by this apathy rather than the lack of access". But for the fact that this study was placed in a relatively problem-free rich plantation crop eco-system of the western ghats in Uttar Kannada and Shimoga districts which has but little semblance else where in India, this study in itself is a constructive critique of the idealistic perceptions that are looming large over the eco-debate in India. (The region has meagre tribal population and practically no shifting cultivation)

In an earlier study of the same districts, Nadkarni and Samuel (1984) observed the 'negligible role played by primary forestry' not only in the development of these two districts but also in the state and even in the country as a whole.¹¹ On the contrary, agriculture and horticulture provided the bulk of employment. In a forest region with bulk of area reserved for the FD, though the per capita income generated from the district is relatively high, they pointed out..

"the local people themselves are poor.. since, the forest income hardly reaches them. The situation is such that they can neither extend area under cultivation, nor adequately depend on the forests as a source of livelihood or employment. It should not be surprising if the vast area under forests ..is looked upon more as an obstacle than as an asset by the local population". (p.392)

The historical struggles on forest issues witnessed in this area, Nadkarni (1989:82) observes, were not marked by an environmental consciousness and were mainly aimed at gaining more benefits from forest areas. Although these villages were in the vicinity of the 'Appiko Movement', a movement ostensibly parallel to the Chipko Movement, they remark, "...there was not much zeal for regeneration of degraded forests". (p.153)

1.3.4. Ecological Environmentalism

The 'environmental consciousness' pervading the national conscience is in fact, a welcome feature. Although, there is no dispute about the 'ecological role of tropical forests', what is perturbing is the level of its generalisation. A note of caution against these reductionist paradigms is therefore imperative.

In India forests range from the Tropical ever greens to the thorny scrubs, and even to the 36 million ha. of tree less forest

¹¹Singh K.S (1982:ix) also observes the marginal ('..to the primary activity of cultivation) tribal population engaged in hunting, fishing and plantations.

lands under the control of FD. The Forest Survey of India (1982:37) reveals that less than 6 m.ha. of the 35 m.ha. of area under tree cover retain their primary character. Also, in a study Gadgil and Homji (1982:24) observes that 'even with the better preserved ever green forest types only about 10 to 30 per cent retains its primary character. In other words nearly 82 per cent of well covered forests are non-pristine, let alone the 36 m.ha. of tree less forests. It follows that 82 per cent of the tree covered forests in India do not have a strong logic of conservation on the grounds of preserving biological diversity.

There are conflicting views on effects of forests on the occurrence of rainfall. Contrary to the popular views Hamilton while reviewing various studies on the subject observes,

"..for most hydrometeorological situations of Asia and Pacific.. there is no corresponding evidence as to any effects of forests on the occurrence of rainfall' and suggests the foresters and watershed professionals '..not to make unrealistic claims of mythical or questionable soil and water benefits". (Hamilton, 1988:101)

Be that as it may, one cannot extend these claims at least to the vast areas of scrub forests.

Role of forests in soil conservation depends on the site quality and proneness of the area to erosion and of course, on the nature of forest vegetation. Also, proper soil conservation technology aided with optimum pressures of grazing and extraction may minimise the erosion losses. On the other hand the tree plantations are prone to much more erosion hazards. The site preparation for reforestation and subsequent intercultivation to reduce competition in the early establishment phase causes soil erosion. (Hamilton and Pearce 1988) Significant erosion problems

were observed in the pure Teak plantations.¹² (Bell (1973))

This 'unqualified environmentalism' is to be taken with caution because it may also serve as a legitimising principle of the dominant interests and thus, may reflect in the way the conflicts are resolved. The FD raising this 'bogey of 'environment protection' to get rid of encroachments' is but one example. (Bhuskute 1989)

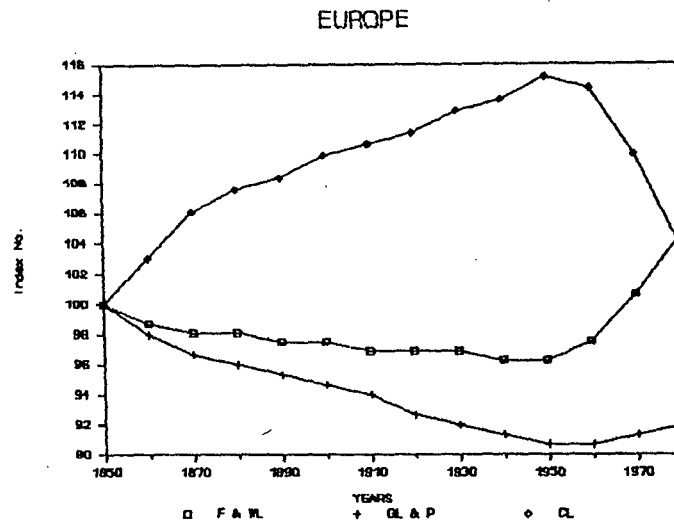
Also, as Blaikie (1985:145) observes,

"..small - scale land-users often directly cause soil erosion, because they are forced to do so by social relationships involving surplus extraction. Conservation under these circumstances tends to undermine the security of their livelihood in the short and perhaps medium term" that may effect their 'individual survival strategies'. He arrives at a conclusion that "soil erosion in lesser developed countries will not be substantially reduced unless it seriously threatens the accumulation possibilities of the dominant classes".

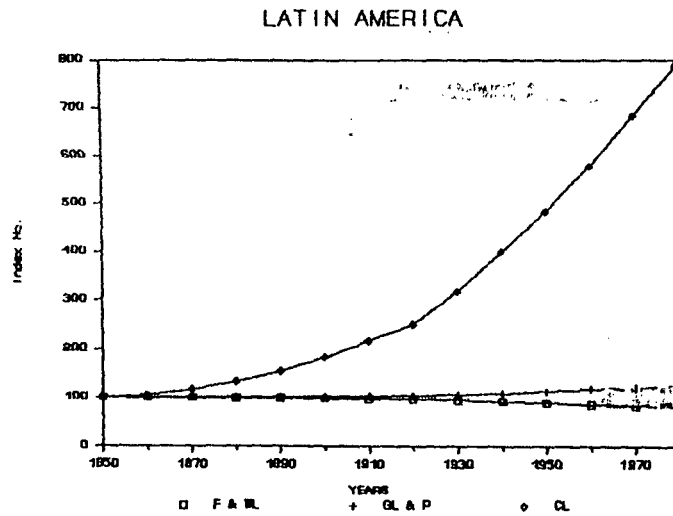
The Global 2000 study (Barney (1980)) projects that the deforestation in the tropics would be stabilised by 2020 A.D, and also the world's forests. There are signs of optimism: the experience of China, Korea etc have shown that the resource after all is renewable. The increase in the area under forests, albeit marginal, in the developed countries was generally taken in an optimistic note. This is attributed to the 'awareness of the political leaders of the negative effects of deforestation', out migration of people from the country side to the cities and efficient management of forest and agricultural resources etc. (TFAP (1985:3); Repetto 1988). Graphs 1.1, 1.2 and 1.3 illustrate these arguments. While the forest area in Europe increased after 1950, the same was declining in many developing countries for example South Asia and Latin America. This might be the base for

¹²For a detailed discussion also see Hamilton and Pearce (1988) and Hamilton and Pearce (1987))

CHANGING LAND USE



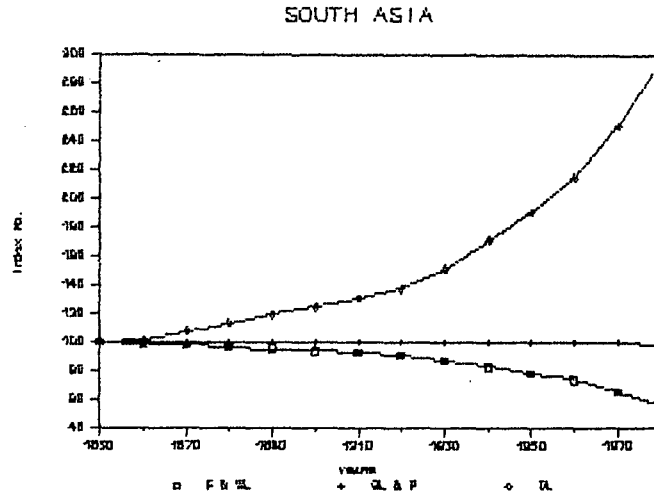
Graph.1.1. Land Use in Europe



Graph.1.2. Land Use in Latin America

Note: F&WL: Forest and Wood Land
 GL&P: Grass land & Pasture
 CL : Crop lands

Source : Repetto and Gillis (1988)



Graph.1.3.Land Use in South Asia

Notes: F&WL, GL&P, CL: as above.

the prognostic 'stabilisation of world's forests'. However the reality seems to be not that optimistic. Agarwal and Narain (1989) argue that the Western countries are net importers of biomass products from the Third World, mainly through the colonial extraction in the past and the present unequal exchanges through market system. A study in the Netherlands, cited in the same work, calculates that, 'for every one hectare of land that a Dutch person uses in the Netherlands, that person uses about 5 hectares outside, and most of it in the Third World'. The case of Japan and other countries conserving its own forests by exploiting the cheap wood raw material from elsewhere by manipulating the tariff rates is already discussed. The social structure in the tropical economies is no less exploitative. The experience of developed nations therefore, is no basis for optimism.

In the Introduction we have outlined the general frame work of the study. We maintained that the tropical forest resource system is a diversified and internally dynamic ecosystem (unlike the mineral resource systems) and is a means to achieve different ends for different sections of the population. The use-exclusivity of production of different sets of products reinforces this complexity giving rise to various conflicting forces both social and ecological, interacting at the same time. A given forest use pattern is therefore, a compromise between these conflicting forces that could accommodate and/or eliminate other conflicting claims¹³. On the other hand, the natural forces within the forest ecosystem and the efficacy of the particular use pattern to accommodate and/or eliminate the conflicting claims determine the sustainability of the dominant product structure i.e. resource use. The problems of tropical forest conservation therefore, cannot be perceived in isolation from the social dynamics of the resource use. Also, there is a time dimension to the problem which brings about changes in forest use technology and also changes in the structure of interacting populations and hence in their interaction with forests. The problem may well lie in 'the way the conflicting forces are reconciled' itself, which necessitates an examination of the present use pattern and the historical process in which it was shaped. This forms the broad objective of the study.

¹³Giving due recognition to the rights of local population like nistar rights, integrating the local economy with the exploitation of forests (ex. labour) etc can be cited as examples for accommodating the conflicting uses while the tribals selling 'aphrodisiacs' in the cities is a striking example of eliminating the same.

interacting with forests at different levels viz. the tribal economy living within the forests, the peripheral rural economy and the larger economy relatively distant from forests and above all lies the state with its own revenue maximising interests. While the first two economies depend on forests in a non-market framework, the latter's dependence is in a market-framework. The dependence of peripheral rural economies on forests would be at a lower level relative to the tribal economy and thus, for analytical simplicity we include this in the larger economy (perhaps, in the lower strata of the larger economy). This simplistic analytical classification however, was a situation at the starting point of our study but not necessarily be the same over time. Sections of population at various integrating levels of forest resource to the markets may also be conceived but we include these sections in the larger economy.

The tropical forests are mostly state owned. As we have already noted this is essentially one of the ways the conflicting forces are reconciled (but not necessarily the best way of doing so). The forest use therefore, is determined by the state and state forestry would be the dominant forest use. The state, is primarily guided by its revenue maximising interests, serving the interests of larger economy i.e. production for markets, being a natural corollary of it. However, the state is not a neutral body and to that extent forces other than its own revenue interests also impinge upon the state as a force in itself. The use-exclusivity of these products vis-a-vis the product structure internalised by the tribal economy and the large scale immigration into the forested regions whether sponsored by the

state or spontaneous, following the opening of these regions bring about large scale dislocations in the tribal economy. Forced sedentarisation of shifting cultivators and land alienation can be cited as examples, respectively. Conflicts therefore, manifest in this process. The problem conceivably has two dimensions: the way a particular use assumed dominance over others and secondly, the social process of accommodating and/or eliminating the conflicting claims. In other words: changes in the forest use patterns, and its impact on the tribal economy and its responses. Accordingly, two specific objectives of the study are..

1. to study the changing forest use patterns
2. to study the impact of these changing forest use patterns on the tribal economy and their responses.

The first objective in effect, is studying the state forestry for reasons explained already. Here, we attempt to document, and also to analyse historically, the changing forest use patterns for the plausible motivating factors. We have already noted that the state forestry was largely motivated by the prospects of maximising forest revenue. In other words it started with the process of commercialisation of forests. not of forests per se but of a range of forest products which may include forest land itself. This commercialisation is also an important dimension of the study. In the first place we attempt to analyse the advent of state forestry in its complete form i.e. the policy of forest reservation then proceed further with our analysis of state forestry both in the erstwhile Hyderabad state and the present state of Andhra Pradesh.

The second objective is to study the dynamics of tribal-forest interaction and the dislocations brought about by the changing forest use patterns in the tribal economy. Given the fact that the tribal economy is dynamic in itself, the impact of any external forces would be at two levels: firstly direct impact at a given space and/or time and secondly, impingement upon the natural dynamic of the economy in question. This natural dynamic of the tribal economy, as we understand, is a process of 'transition' in the tribal - rural continuum which in the case of agrarian tribes has also a geographical dimension. This necessitates the isolation of the second objective from the first for presentational problems though, the impact and responses would be simultaneous to the changes in state forestry. We shall have an opportunity, in the course of our study, to analyse and understand various contemporary forest issues in the historical context in which they emerge. We shall also, albeit in a limited way, attempt to see the implications of the study to the contemporary forest issues.

1.4.2. Some Concepts

a. Ecosystem: If the term 'population' is used to denote groups of individuals of any kind of organism, a 'community' includes all the populations of a given area and the community and the non-living environment functioning together forms an 'ecosystem' and finally all the earth's ecosystems functioning together forms a 'biosphere'. (Odum 1975:4)

b.Resource system: The concept of 'resource system' is used in a purely utilitarian sense. The 'natural dynamics' or the ecological process of a resource system, for the purpose of the study, is separately considered under the concept 'ecosystem'.

c.Forest use:

We understand 'Forest Use' as the production of that particular set of products (product structure) as is determined by the way the conflicting claims on forests are reconciled.

d.Forest conservation:

The concept of 'forest conservation' is specific to one's perception of 'forest'; so as the concept of 'sustainable use' is germane to the particular 'use'. The 'harmonious interaction' of a particular community with forests is essentially judged by the sustainability of the particular forest product structure internalised by the interacting population. Thus, the shifting cultivation systems with longer fallows may be sustainable in terms of sustaining the soil productivity and to an extent in providing the minor forest produce (MFP) but are not sustainable in terms of producing 'valuable' timber stands (if the fallow period is below, say, 30 years) i.e. conservation as perceived by the FD. Also, the forest fallows would not result in the same biological composition as of the forest prior to reclaiming i.e. secondary successions set in. Thus, the concept of 'forest conservation' is not an uniform concept across interacting populations and depends on the interacting population in question. Where as the 'population' in itself is dynamic, it follows that the concept of 'forest conservation' is not a static concept in time.

The dynamic concept of 'forest conservation' changes from time to time responding to changing forest use patterns. It is therefore, functionally interpreted to serve as a legitimising principle of the extant forest use pattern i.e - conserving the dominant product structure.

1.4.3. The Region

The study has to be organised at two levels viz. at the state level to study the dynamics of state forestry; secondly, at the level of a tribal economy for other objectives.

Given the practical limitations, we limit our study by choice to the erstwhile state of Hyderabad and the present state of Andhra Pradesh. Geographically these two are not totally identical but as the state forestry was organised in all states of India during the pre-independence period on the lines of colonial forestry this would not be a limitation to our study.¹⁴ This also became imperative as we limit our study at the secondary level, to Adilabad district of present state of Andhra Pradesh which was a part of the erstwhile Hyderabad state. Adilabad district was once predominantly tribal populated district and of course, with large proportion of area under forests. The selection of the district was largely keeping in view the extensive anthropological studies available at various points of time, the periodical works of Prof.Haimendorf in particular. The Adilabad forest ecosystem and its problems are similar in many respects with the rest of the central high lands. (Grigson W.V.(1945))

¹⁴In fact, the results of this study by itself give evidence to this.

1.4.4. Data Sources

Lack of an organised, consistent and reliable data source on forestry greatly constrained our study. However, we tried to make use of all the relevant data available on the subject and germane to the nature of the problem, this ranges from the archival material to the Remote Sensing data, and qualitatively from intensive anthropological studies to the ecological studies. The Administration Reports of Forest Department for various years ('AAR' here after) of the Forest Department of Hyderabad state and Andhra Pradesh ('FD' here after) were greatly made use of in the study. As we are interested in analysing the state forestry itself this would form an adequate base for our analysis. We tried to make use of all these reports available, from the first report of 1894. There are gaps in between particularly after the 1937 report because of the re-organisation of the structure of the reports. The starting and end points of data throughout the study were mostly determined by the availability of data. The study period is from mid nineteenth century to the contemporary period. The forest area given in these reports is the legally classified area under the ownership of FD that ranges from the primary forest cover to barren lands.

The works of Prof.Haimendorf forms the primary source of our understanding of the tribal economy of Adilabad. Prof.Haimendorf made periodical studies on the Adilabad tribals starting from 1940s; the latest was during 1970s. He is an active witness to the changing tribal economy of Adilabad. Wherever we made use of the comments of forest bureaucracy on tribals we cross checked them with the available anthropological studies.

The tentativeness at places is more due to the lack of adequate and/or reliable supportive data and we believe, this would not constrain us from understanding the over all problem.

1.4.5. Scope and Limitations

The study does not attempt to quantify the rates of deforestation nor does it attempt to look into the relative importance or magnitude of various factors contributing to the same. The scope is but to capture the dimensions of the problem. Also, we attempt to study the problem more in a social context rather than as a pure environmental problem. We endeavour to approach the problem in an alternative framework duly incorporating the ecological dimensions of the resource use which are crucial in understanding the problem of tropical forest degradation.

Data constraints as explained earlier, severely constrained our analysis. The data constraints do not prevent us from understanding the problem in general. But on some issues, our analysis only provides some insights but do not make any conclusive observations owing to data limitations.

1.4.6. Organisation Of the Study.

The above first chapter presented the context, review of literature, objectives and methodology etc of the study. The following two chapters forms the core of the study. The analysis of state forestry in Hyderabad state is presented in the second chapter while that in Andhra Pradesh is presented in the third chapter. The fourth chapter presents the dynamics of tribal-forest interaction. In the final (fifth) chapter we attempt to make some concluding observations taking insights from our study.

Chapter 2

STATE FORESTRY IN HYDERABAD STATE

The inception of FD of Hyderabad State in 1867 might well be an emulation of the colonial forestry than a measure to meet the exigencies of forest exploitation. For the timber markets that lured the colonial state (Guha 1983) to such an action remained too distant for the native state to exploit. This might as well account for the inordinate delay (for 27 years) in laying out the policy of forest reservation, what its counterpart in Colonial India could accomplish within 13 years after its inception in 1864.

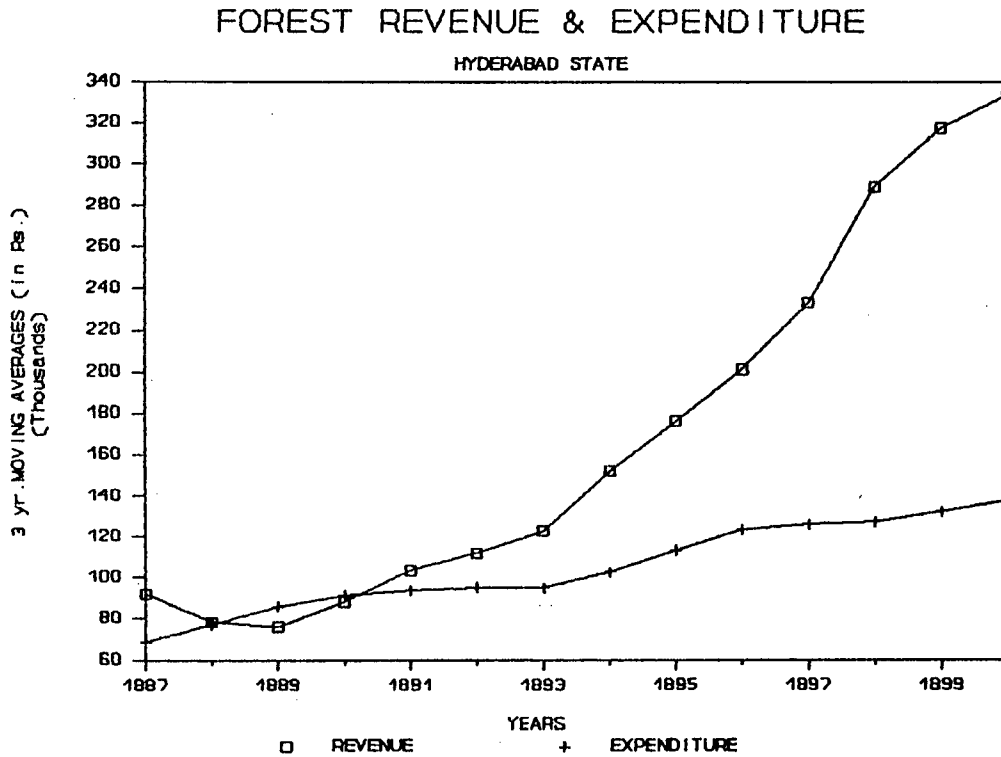
For nearly two decades since its inception the FD had to contend only with reserving some valuable timber species for its exclusive exploitation while the remaining forests were in the control of the Revenue Department. The local people were free to remove any gyrie species (of non-descript type) but had to pay for the reserved species while a marginal grazing cess was charged for grazing in forests. The FD in essence remained a 'collecting agency' with no systematic forest exploitation-/conservation works being undertaken. (AAR, 1304 F¹) It was only in 1894 that a policy of forest reservation was finally pursued.

2.1. Forest Reservation

The increasing prospects of realising a stable and growing revenue from forests in the early 1890s might have probably motivated the FD to take up reserves. The forest revenue had

¹ Annual Administration Report of the Forest Department of the Hyderabad state; F: Fasli Year; AD= F + 590.

grown consistently at a rate as high as 7.87 per cent during this period until 1900 (Graph.2.1.). As the revenue from timber exploitation constituted the bulk i.e.77 per cent of the total revenue in 1894, the timber markets were presumably, the major source of growth in forest revenue.



Graph.2.1. Forest Revenue and Expenditure, 1887-1899, Hyderabad state

While those valuable timber species being already reserved, the need for forest reservation, an act essentially meant for complete restriction on the local use, can only be understood in the light of exclusionary use conflicts between local use and timber production which we shall discuss here.

2.1.1. Exclusionary Use Conflicts - Forest Reservation:

'The destruction of valuable forests' perceived as the destruction of valuable teak and other species was mainly attributed to the pastoral communities while the agriculturists as a class were found not so much responsible for the wanton damage. Thus, the AAR, 1894 remarked, "...incendiary Dhangars and Lambadies (pastoral communities) wantonly set fire to the withered grass and fallen dry leaves in the hot season, with the object of securing a fresh growth of green grass with the advent of monsoons and hack down branches for fodder ..ruining vast number of trees annually".² (AAR, 1304 F) The indiscriminate grazing was believed to be harmful to the regeneration of timber species. The Inspector General of forests recommended in 1894 that all teak forests included in some villages be strictly closed to grazing "...as this will in itself greatly reduce the number and frequency of forest fires and consequent destruction of teak seed: for if the Lambardies and Dhangars are not allowed to indiscriminately graze and browse their herds and flocks all over the forest, the inducement to turn up the forest will be gone, because even when a fresh crop of grass springs up the forest will still be closed to them". (AAR, 1304 F) The presence of large number of goats and cattle and 'the thing that the foliage of all the most valuable species, Bijasal, Satin, Sheeshum, Yeppa, teak etc is greedily eaten by cattle or goats' was seen 'unfortunate' and a 'burden' on forests. (AAR, 1305 F) The bamboo cutters and Gulmohwa collectors often set fire to the

²In his work on Chenchus, the food gathering tribes, Haimendorf observes, "...Another aspect of the general lack of vision is the Chenchus's wasteful attitude towards the jungle in which he lives. He will lop off branches in order to pick up the ripening fruits...". Haimendorf (1943)

under growth so as to facilitate easy access to the respective produce. (AAR, 1305 F, 1307 F)³

In the wake of these exclusionary use conflicts it was felt that "...Forests can only be maintained and reproduced by a conservancy which will ensure protection from encroachment and fire as well as the regulation of grazing and of exploitation, such a conservancy must necessarily impose a certain degree of restriction on the neighbouring villages." (AAR, 1304 F, emphasis added) The conflict between state interests in timber revenue and the local use was thus reconciled by 'forest conservancy' which in principle was 'protection' of forests from local use or exclusion of local use.

Forest reservation was also a matter of administrative convenience in protecting the forests. For 'it was impossible at that level of revenues to provide sufficient expenditure for adequate supervision by the FD of both open and reserved forests'. (AAR, 1305 F)

The rapid 'disappearance' of private forests due to over exploitation provided an opportune time for the FD to extend its reserves as "...within measurable time, the Government reserves will be the only forests left and should, under proper management, bring in a large annual revenue to Government..." (AAR, 1304 F) There were instances where the state appears to have intervened as a genuine corrective factor for the

Some studies, for ex. Nadkarni (1989), tend to argue that the local use was a 'squander' or 'extravagant' and is conditioned by the perception of 'abundance', and the state intervention as a necessary corrective factor. However, burning of forests is the technology available to the local users to maximise the production of the particular products internalised in their economy like grass, MFP etc.

unsustainable local exploitation of common property resources. While reserving forests of certain villages in Medak district it was observed that

"..the formation of which (reserves) is more important, otherwise the disappearance of the forest is only a matter of time and the people will then suffer the same trouble from want of fuel and timber which they do now in Jamikunta, where from the impossibility of procuring fuel Hindu corpses often lie unburnt for days". (AAR, 1305 F)

But the fact that these very timber and fuel deficient regions were the potential markets for the demand constrained state forestry and weighed against the later day shifts in forest use patterns even against the 'agricultural needs', vitiate any such legitimisation of state forestry.

The forest reservation was thus, primarily motivated by the prospective wood markets and necessitated by the exclusive conflicts with the local use but in no case was a corrective intervention to the local mis-use of common property resources. It was rather a step in the process in which the product structure internalised by the larger economy assuming dominance over that of local use. The status of the FD had changed from a 'collecting agency' to 'policing agency' with the advent of the forest reservation following commercialisation of forests.

2.2. State Forestry in Hyderabad State

Here, we study the state forestry in Hyderabad state. As the state forestry is the dominant forest use, the state's strategic reactions to the changing forest product markets in essence, determine a particular forest use. The trends in the revenue returns from forests and its composition therefore, reflects the changing market situations and the state's strategic reactions. This is to say that the revenue returns are a function

of both the market forces and the state's attempts to maximise revenue by changing the product composition of the forests in response to the market forces. Thus, an analysis of the revenue returns from forests would bring home the changing forest use patterns. Data on physical quantities and prices of forest products are not available which is a constraint to the analysis.

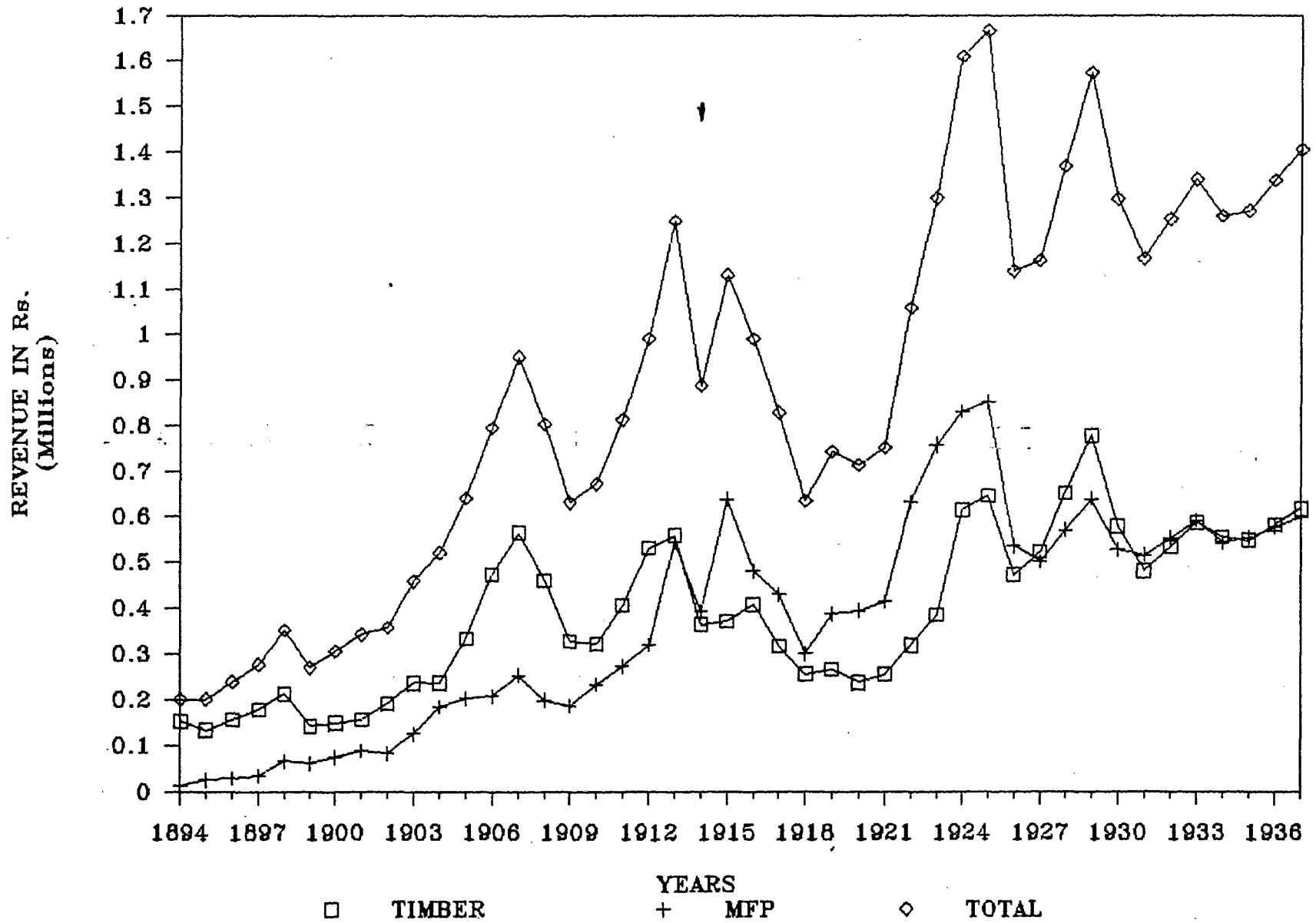
State forestry in its complete form was started with the policy of forest reservation taken up in 1894. This forms the starting point of our analysis. Consistent data is available only upto 1937 and thus, our analysis after 1937 is based more on qualitative information. Trends in the revenue from timber, MFP (the two products that dominated the structure of forest revenue), and the total revenue can be seen from Graph.2.2. The growth rates were presented in Table.2.1. and the structure of forest revenue in Table.2.2.

2.2.1. Periodisation

As can be seen from Graph.2.2. four distinct stages can be discerned in the over all growth in forest revenue. The period of growth from 1894 to 1913, a period of decline from 1913 to 1921 where in the revenue from MFP dominated the structure of total revenue, the period of recovery and further growth starting from 1921 to 1925, and a period of stagnation (from 1925 onwards) in the forest revenue largely effected by the Great depression in the late 1920s. The revenue from timber again assumed dominance in the total revenue structure during the last period. The changing state's policies that we shall discuss in the following part of this chapter, were also considered in arriving at this periodisation.

FOREST REVENUE

HYDERABAD STATE



Graph: 2-2-

Table.2.1 Growth of Forest Revenue in Hyderabad State.

(exponential growth rates in %s.)

Period	Timber	Fuel wood	Bamboo	MFP & Grazng	Others	Total
1894-1913	7.69 (8.21)	15.04 (5.28)	2.41 (3.41)	15.97 (13.78)	6.39 (4.42)	9.17 (13.81)
1913-1921	-9.29 (-5.51)	-12.57 (-5.06)	-11.00 (-3.46)	-4.27 (-1.67)	-0.06@ (-0.50)	-6.61 (-3.61)
1921-1925	25.08 (7.91)	10.29@ (1.09)	30.70 (3.68)	17.10 (3.86)	18.75 (17.59)	20.10 (6.58)
1925-1937	-0.06@ (-0.06)	3.76@ (1.91)	1.51@ (0.82)	-0.87@ (-0.86)	0.84@ (1.74)	-0.25@ (-0.28)

- Note: 1. figures in brackets are the 't' values
 2. @ - these growth rates are insignificant and all others are significant at more than 90 per cent level.
 3. Others..consist of fines and forfeitures etc.

Table.2.2. Structure of Forest Revenue in Hyderabad state:

(as a % of total forest revenue)

YEAR	Timber	Fuel Wood	BAMBOO	MFP & GRAZING	OTHERS	GD.TOTAL
1894-1913	53.52	7.41	5.06	28.85	5.17	100.00
1914-1921	37.00	4.65	2.00	51.45	4.90	100.00
1922-1925	34.81	3.13	2.72	54.51	4.83	100.00
1925-1937	44.37	3.80	2.45	43.08	6.30	100.00

2.2.2. Stage.I: The period of growth: (1894-1913)

A perusal of the Graph.2.2. and Table.2.1. shows an over all increasing trend (at a rate of 9.17 per cent) during this stage in the total forest revenue, albeit with variations particularly after 1907. A consistent increasing trend until 1907, a declining trend from 1907 to 1909 and an increasing trend there after can be seen. Timber revenue dominated the total forest revenue

structure. (Table.2.2.) Though the revenue from MFP and grazing had shown the highest growth rate (15.97 per cent) during this period, as can be seen from Graph.2.2 much of it had taken place only after 1909. By the end of this period growth in the revenue from MFP and grazing surpassed that of timber, and almost equalled latter's proportion in the total revenue. Weighed against the qualitative information available from the AARs, these trends reflect the changing market forces and state's strategic reactions.

Substantial forests were under the feudal estates of Jagirdars, Maktadars etc, widely interspersed with the state forests. The prospective timber markets that gave the primary impetus to the state forestry also allured these feudal estates to mine their forests. The timber contractors competed with the FD so much so that they monopolised all the export markets and it was remarked that the FD had to 'patiently wait till all these forests were exhausted'. This large scale mining of the forests against the limited market demand soon glutted the markets and thus, followed a decline in the timber revenue after 1907.

In the face of a glut in timber markets the state reacted strategically to consolidate non-wood revenue from MFP and grazing which was next only to the timber revenue in importance. These efforts also included opening of forests for cultivation to augment the agricultural revenue. This new emphasis on MFP explain its growth after 1909. Also, there was a qualitative shift in the timber demand. The quality timber markets being glutted, the demand existed only for 'small poles and logs of small dimensions' in the rural areas. The scale of mining of forests can be gauged through the fact that the timber markets

did not substantially recover till late 1930s when again it assumed dominance in the total revenue.

Although, the FD had taken up exploitation works initially by itself a decisive shift towards contractor agency had taken place and the departmental exploitation became insignificant by the end of this period. (Table.2.3.)

Table.2.3: Agency wise Exploitation
(% of total revenue)

Year	AGENCY	
	Govt.	Private
1894	81.00	19.00
1895	59.21	40.79
1896	47.48	52.52
1897	35.74	64.26
1898	39.36	60.64
1899	25.44	74.56
1900	20.23	73.13
1901	15.03	71.70
1902	18.48	73.16
1903	18.11	76.56
1904	7.26	87.61
1905	4.08	91.95
1906	0.90	96.30
--	--	--
1927	0.46	95.27

Plantations of Babul (Acacia arabica) were taken up in the early years of this period in the drier Karnatak region where the demand was high. Babul was considered the 'tree of the country' for its preferred uses in cart building, housing, making of agricultural implements etc. This can be understood as the agricultural sector constituted the major source of demand. The principle guiding these plantations, the Conservator of forests explained, "...confining Babul Bams to the immediate vicinity of the big towns.. where there is great demand for wood.. and no

jungle is available near at hand". (AAR, 1304 F) The plantation programmes thus, had a strong 'market logic' and was a part of the over all strategy of maximising revenue.

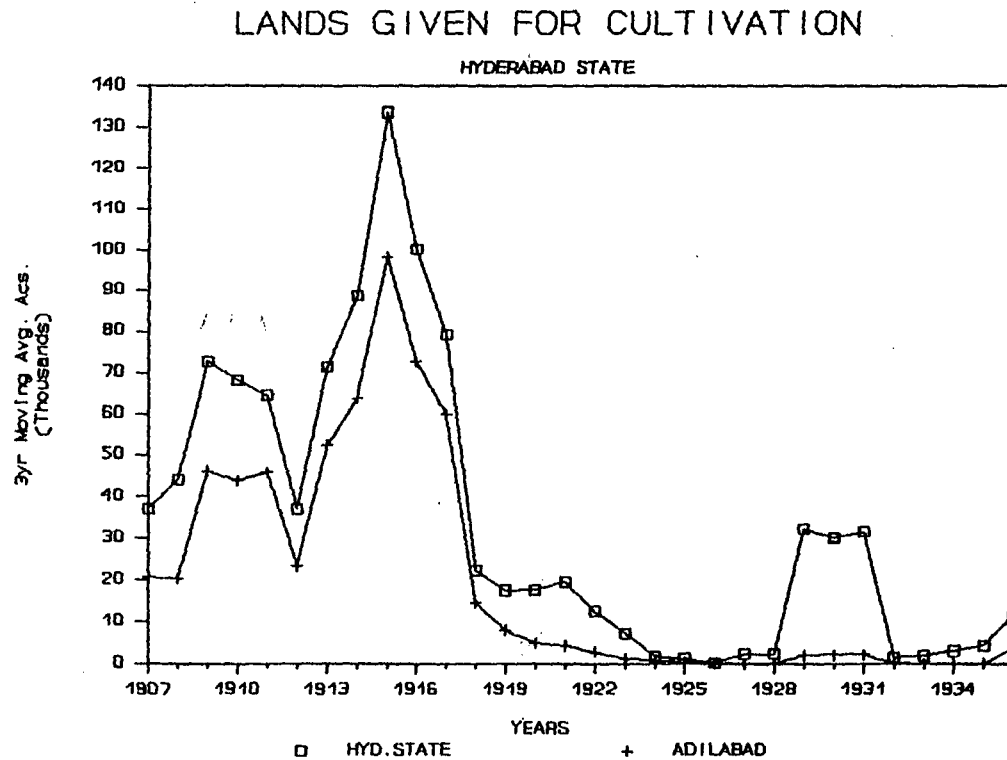
Contrary to the popular opinion in some quarters that the establishment of FD was a 'concern for long-term interests' or 'to ensure sustainable use of forests by regulating the unsustainable local uses' or 'to safeguard environmental balance'; the foregoing analysis brings out the commercial motives underlying the state's initiatives in organising forestry. Also, the concern for agriculture was mainly because it was the primary source of demand but in no way can be attributed to the state's interest in 'sustaining the needs of agriculture where the unrestricted local use failed'. As the forest management in the state was modelled after the colonial model, this might well be the case even in colonial forestry.

This mis-understanding basically stems from the fact that the objectives of large and regular revenue realisation were consistent with the objectives of productive and sustainable forestry, in terms of which the state forestry was always legitimised.

2.2.3. Stage II: The period of decline: (1913-21)

In spite of all round efforts to compete with the feudal estates in the timber markets by way of reducing rates even to the extent of 1/4th to 1/8th of the prevailing rates, the revenue from timber sales could not sustain the growth of forest revenue and led to a significant decline in the total revenue (-6.61 per cent) during this period. As we have already noted this stage started with a strategic shift towards consolidating the revenue

from MFP and grazing as a reaction to the glut in the timber markets. The strategic reaction of the state was two fold: firstly, opening up of these forests for extension of cultivation and secondly, to dispense with all fellings in state forests and consolidate the revenue collection from grazing.



Graph.2.3. Forest lands given for cultivation, Hyderabad state and Adilabad district

Graph.2.3 shows the forest lands extended for cultivation. The extension of forest lands for cultivation started in the late years of the first period, reached its peak around 1916 and gradually declined towards the end of this stage. Forest lands mostly in the open forests, were excised to be given out in large

blocks as 'Ijaras', the task of populating and reclaiming these areas being taken up by the Ijaradars.⁴ Such a shift in the state policy was motivated by the relative revenue yields per unit of land from agriculture and forestry as would be vindicated by the large scale colonisation schemes that followed. Also, individual applications for pattas in the forest areas were liberally entertained.

The system of conferring ownership rights on the forest areas extended for cultivation which in essence opened up these areas for outsiders would merit some discussion here. Mr. Partidge, then conservator, explained this system..

"...when ever a poor ryot applies for a bit of land, his application is immediately followed by others, such as from Patel or Patwari (Revenue bureaucracy) who are bound to know of the previous application and consequently the area has to be put upto auction and in most cases some outsider secures it. The result is bound to be that in a very short time fresh excisions will be required from the reserved forest areas." (AAR, 1325 F)

This system of auctioning and grant of pattas had set the pace of immigration of the enterprising farming communities and/or feudal elements into the forest areas. In effect this process had left .."the Forest Department in charge of long narrow strips of hill slopes with cultivation above and below", making it all the more difficult to protect. (AAR, 1323 F) Though the FD in general, opposed the extension of cultivation into forests, at places, for example in Warangal and Karimnagar districts, it welcomed the

⁴ The programmes of colonisation of forests was not new and dates back to distant history of the state. Rewarding the people with feudal rights who took the task of 'reclaiming' forests and making it arable was well known. (for ex. see Rajagopal (1976:25)) Interestingly, even 'the chiefs of all the Dravidian tribes, the Gond, Nagbansi and Chero encouraged settlement of non-tribal peasant communities such as Kurmi, Koeri and Kumbi who along with their superior agricultural technology, could generate the agricultural surpluses that the new states needed'. (Singh K.S. (1982:viii)). Forests were always looked upon by the state, as waste lands to be reclaimed to extend productive agriculture.

extension of cultivation as "...it would lead to increased demand for forest produce in these tracts, which are at present largely un-worked on account of lack of any demand". (Mason 1931)

The act of dispensation of timber fellings from state forests was the commercial foresight of FD that

"...when the more accessible forests are exhausted the others will be available and by that time it is probable that road or railway communication will have improved. The system of reduced rates should therefore, be confined as it practically is now, to parts where it is desired to clear land for cultivation". (AAR, 1317 F) Exhaustion of forests worked was thus, seen as some thing imminent.

This being so, on the other hand, concerted efforts were made to consolidate non-timber revenue. Firstly, the FD had dereserved the reserved forests and included them in the protected category wherein they could be opened up for grazing. Secondly, though fully aware of the 'disadvantages with respect of control of heavy grazing', the contract system of revenue collection was preferred to the Government agency and was extended to many parts of the forests. Thirdly, new grazing regulations were introduced in the Telengana districts, under which all village cattle were taxed indiscriminately and the grazing fees was charged not according to the number of cattle grazed, but at rates varying from 2 pies to 6 pies per rupee on the total revenue assessment payable by each individual ryot. (AAR, 1318 F, 1319 F)

2.2.3.1. Colonisation scheme: The state's efforts to open up the forest areas reached its peak with the establishment of a new department styled 'Development Department'. In addition to laying down the principles of colonisation this department was empowered to make roads and communications and to open out the areas which would be selected for colonisation. Placed under the Development

Department, the FD was instructed to "...investigate and ascertain forest areas more suitable for or which would yield more revenue under the colonisation scheme than under forest management". (AAR, 1331 F) Evidently, this scheme was founded on a pure commercial logic, relative economics of the alternative uses being the guiding criterion.

Initially around 35 to 40 lakhs of acres of forest area i.e. around 60 per cent of the total forested area of the dominions was estimated to be available for colonisation, which was later brought down to 3 and 4 lakh acres owned by FD and Revenue Department respectively after 'much persuasion' by the FD. Thus, the 'gairons' and other common lands, forest lands in the forest scarce Maharashtra and Karnatak regions, timber producing areas and forests close to Railway lines as well as those under working plans were spared. Unmindful of the protests of the FD, 1,30,000 acres of 'virgin forest land' in Adilabad district were given away to some Sir Fazalboy under colonisation rules in 1921 for a paltry sum of Rs.520000 i.e. at Rs.4 per acre. Might be as a result of 'constant vigorous land protests of the FD', the colonisation scheme was finally abandoned in 1926 and the FD was again placed under Revenue Secretariat. Interestingly, the forest land given to Sir Fazalbhoy was purchased back in 1928 for a sum of Rs.14 lakhs (at Rs.10.75 per acre) and was annexed by the Government. (AAR,1338 F). But the question of what exactly had prompted the state to give up the scheme needs to be pondered. The answer might well lie in the high rates of growth of total forest revenue and that from timber sales during the third stage. (Graph.2.2, Table.2.1.).

2.2.4. Stage III: The period of recovery: (1921 - 1925)

The colonisation scheme was promoted in 1921 i.e. at a time when the revenue from timber reached its trough during the period of decline in forest revenue. Since then the forest revenue recovered and grew promisingly. According to its own economic logic, presumably, the colonisation scheme was given up. (AAR, 1333, 1331, 1332 F; Statistical Year Book, 1349 F)

As can be seen in Graph.2.2 the forest revenue had recovered during 1920s and registered high growth rate (20.10 per cent) till the depression crippled its growth in mid 1920s. Both the timber and non-timber revenues registered promising growth rates (25.08 and 17.10 per cent respectively).

2.2.4.1. Sources of growth: While on one hand the measures taken to consolidate revenue realisation from grazing came to fruition, on the other, the expansion of N.G.S.Railway came as a watershed both in creating additional demand for railway sleepers and in linking up of the valuable forests, particularly that of Adilabad district (by Kazipet-Ballarshah railway line), with consumption centres. Exhaustion of the sources of fuel and timber supply, particularly in the open forests also had contributed to the growth in demand. (AAR, 1338 F)

This stage marked the beginning of an organised forest management. The growing demand along with the increased transport network facilitated systematic working of the forest coupes while on the other hand concerted efforts were made to find new sources of demand for forest products. These efforts include ventures into the Bamboo markets in England, setting up of an Industrial Research Party to take stock of timber and other raw materials available in the forests etc. (AAR, 1332 F, 1334 F) So anxious was

the state at finding new markets, that it tried to pave the roads of Hyderabad with wooden blocks of Yeppa (Hardwickia binata) and tried gas generators using wood in lorries to organise 'cheaper' transport. These attempts being found futile, were later abandoned. A fuel depot was also established at Hyderabad on contract with some private agency to sell fuel at cheaper rates than the prevailing market rates. (AAR, 1330 F)

2.2.4.2. Forest based industrialization

Also, this stage witnessed the advent of forest based industrialization. Firstly, two saw mills each at Mancheri in the Godavary valley and Jannaram in Adilabad district were established mainly to convert unsound teak logs unsalable in the round and to deal with a large number of teak windfalls in the adjoining forests. (AAR, 1347 F) Secondly, monopoly rights were sanctioned for 10 years in favour of one Mahaboobia Match Factory to be set up at Mahaboobabad in Warangal district to exploit specific woods at privileged rates of Rs.1 per cart load for Match making. (AAR, 1352 F) Steps were also initiated during this period to establish a paper mill in Adilabad district using Dendrocalamus strictus which had finally materialised in 1942. As the Government working of these industries was found uneconomical these industries were given to private agencies. (AAR, 1348 F)

2.2.4.3. Impact on forests

The commitments made by the FD to supply raw materials to these industries were later found to be unsustainable and had considerable impact on the forests of the region. Thus, commenting on the Jannaram saw mill, Lawrence Mason, then advisor to the FD, observed that "...in order to fulfil its guarantee to

supply the mill with 1,80,000 c.ft. of timber per annum, the FD will find itself having to run the forests for the mill instead of the mill for the forests..". (Mason 1937) As a result of exploitation of Bombax malabaricum for match industry it was found later that the 'limited supply of B.malabaricum in the Warangal district had almost disappeared'.(AAR, 1352 F) Interestingly, though the FD was fully aware of the disincentives of the system of grazing revenue assessment towards controlled grazing, this system was allowed to continue, presumably, because it was the prime source of forest revenue.

2.2.5. Stage.IV : Depression and after

The steep fall in forest revenue from 1925 onwards can be explained by the general slump in economy during this period owing to the Great Depression which "drastically reduced the purchasing capacity of the rural population and proportionately reduced the demand for forest produce".(AAR, 1340 F) The coupe contractors suspended fellings in their coupes as they could not dispose off the material felled. The timber depot in Hyderabad was also closed down as it was found that the local fuel dealers were selling at the same rates owing to the fall in prices. (AAR, 1341 F) Thus, the impact of depression reflects the level of integration of the forest economy with the over all economy.

The system of grazing cess was finally abolished in 1930. but no data is available as to facilitate us understand the motivating factors. Cattle were permitted to graze in all the forests under individual permit system excepting in the exploited coupes which were entirely closed to grazing. The problem of restricting grazing had again surfaced. As "...a light grazing rate is a hindrance and not a help to the improvement of cattle",

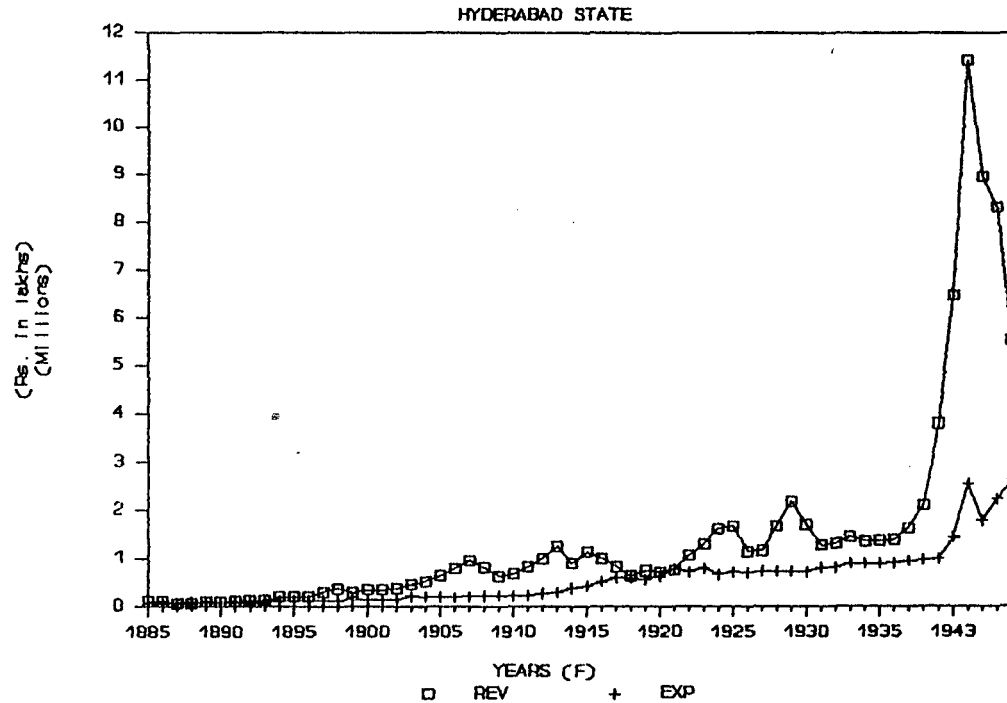
Mason suggested that "...the most practicable method is .. by making them realise that it does not pay them to graze more cattle than the forest can stand by touching their pockets". (Mason 1931, emphasis added) Also, there was a gradual but definite change in the nature of demand for wood i.e. from one of low quality timber and small poles to the valuable teak logs and other quality timbers. Thus, the demand from the local population (for grazing, low value wood and even land) which had contributed major share to the total forest revenue during the period of decline and recovery, gradually gave way to the demands from the larger economy, itself becoming insignificant.

Given the conflicting claims of these use exclusive products and revenue interests of the state, presumably, the reconciliation would be one of organised phasing out of local use and thus, the prime source of conflict manifested during this stage. The period that followed was a period of consolidation of state's forest estate by survey and demarcation of its boundaries and settling disputes over ownership rights on forest land.

2.2.4.1. Second world war and forest exploitation:

If the revenue returns were any indication, the war period had seen an unprecedented plunder of forest resources. The forest revenue starting from a low base in 1940 reached its peak in 1944 and gradually declined. (Table.2.4) (Graph.2.4). A new post of Forest Utilisation Officer was created for the duration of the war. Good deal of timber was exported to Delhi, Poona and other centres under war supplies. It was observed later that "...during the World war.II most of the forests under systematic working had to be over worked in order to cope up with the supplies". (Wadhvani 1956)

FOREST REVENUE & EXPENDITURE



Graph.2.4. Revenue and Expenditure, Forest Department, Hyderabad state

Table.2.4: War Period: Revenue and expenditure

(Rs. '000)

Year	Revenue (1)	Expen. (2)	%of (1) (1)/(2)
1940	1626	945	58.1
1941	2088	963	46.1
1942	3792	989	26.1
1943	6445	1434	22.2
1944	11406	2549	22.3
1945	8940	1780	19.9
1946	8296	2227	26.8
1947	5522	2621	47.5

Importantly, this stage had brought out the vulnerability of the forest system to the exigencies of time and/or the lure of quick money.

The political disturbances during the transfer of power to the Government of India and later day efforts to annex the private forests of Jagirdars and Zamindars also had fostered large scale deforestation. During 1948-50, taking full advantage of the prevailing political unrest in Telangana '...the public had mercilessly hacked the forests' -indulging in large scale illicit fellings. The Jagirdars and Zamindars foreseeing the move of the Government to annex private forests a few years before it was enforced, disposed off their forests, even the immature ones and/or entered into long/short term contracts. As a result 'such forests were taken charge of in an over worked and dwindling condition'. Thus, the period from 1949-51 as stated, "...will always be remembered for the strenuous work which the department had to undertake in giving a legal status to 2272 sq.miles of such forests". (Wadhvani 1956) Finally, with the formation of the state of A.P. the forests of Telengana region were vested with the FD of A.P., along with the forests of Andhra region.

One important observation has to be made from the foregoing discussion. Natural forests never seemed to be the property of coherent village communities.⁵ Instead, their rights were mainly on sufferance. With the commercialisation of forest produce, mainly wood, the forests were gradually usurped by the state and/or the private feudal estates who on slight prospects of realising revenue, mined their forests. The 'valuable' forests

⁵ However, one has to make a distinction between the natural forests and forests of the village commons.

are not immune from the machinations of social forces!

2.3. Forest Villages

The scarcity of labour, largely owing to the unhealthy and depopulated state of the Dominions, had always constrained the forest works- mainly road and exploitation works. Thus, remarked a conservator while laying out roads in Amrabad plateau in 1910, "...we are paying at present 6 to 8 annas per cooley, while to say the least is nearly double the wages paid in Hyderabad. As people are very indolent, even with further increase of wages coolies would not turn up..".

Had had found it impossible to enlist coolie labour for road work, the FD often resorted to 'rich contractors capable of importing labour from outside'. (AAR, 1319 F, 1320 F) Owing to the indifference of the native tribals towards forest works, their 'indolence', 'unruly conditions' and importantly, their physical stature being unsuitable for heavy forest work, the FD could not extract any work from the native tribal communities. (1307; 1319; 1348 F)

It was in this background in fact, that the idea of forest villages was mooted and provisional rules were laid down in 1935. While being contemptuous of the tribals and their needs of forest land, who were of but little use to forest works, the FD perceived the policy of clearing some more forest areas for establishing forest villages. Though this policy was stated to be for the 'upliftment of jungle tribes', in practice it was a blatant attempt to extract labour from the tribals and other settlers so as to 'secure a permanent supply of labour' for forest works. (AAR, 1356; 1345 F) This seems to be the general interest underlying establishing forest villages in other parts

of India also.⁶

The experiment of establishing a forest village (Vitavalla pally) of Chenchus in Mahboobnagar division failed as the settlers 'absconded' on account of acute malarial conditions and their indifference to forest works. However, the later attempts did succeed as the FD established some 19 villages in 14076 acres of freshly excised forest land. (AAR, 1348 F, 1349 F)

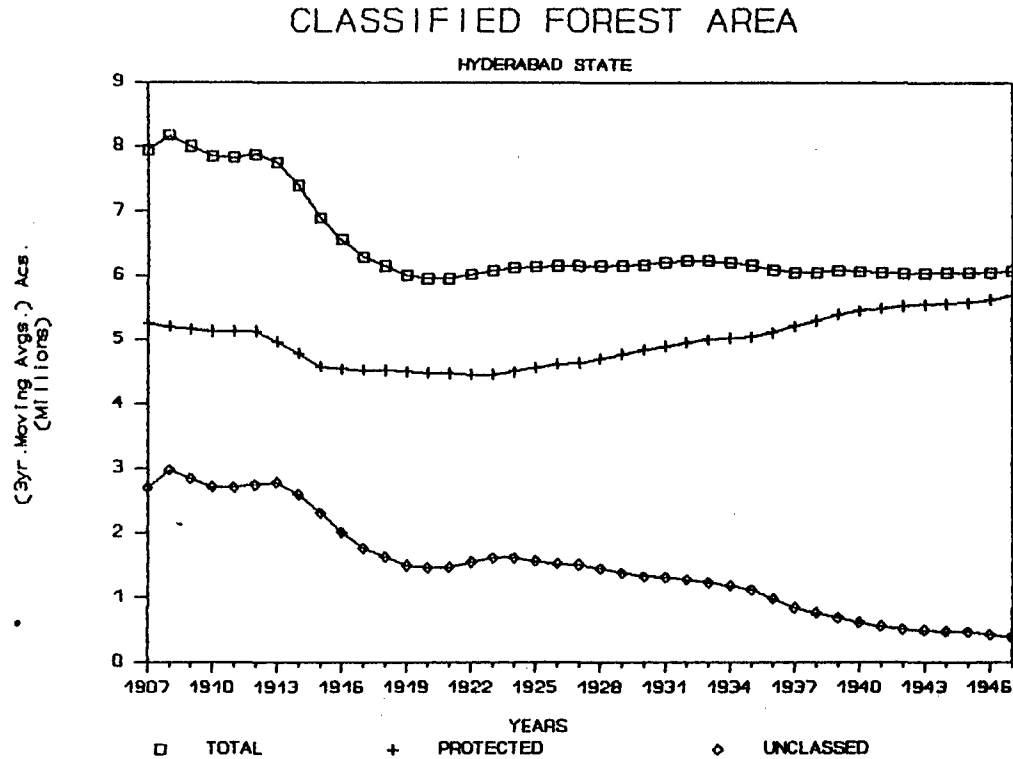
2.4. Village Forests

The idea of village forests in line with the experiment of Panchayat forests in the Madras Presidency was first contemplated in the Hyderabad Forest Act of 1916. However, the unclassified open forests, for all practical purposes, were considered parallel to village forests. The area to be left under open forests was decided as a certain proportion of the cultivated area in the earlier period but later this criterion was given up and they were defined as "... the leavings of the FD after they have made their selection of the area for reservation". (Mason, 1931) The stated objective of the open forests was "...to ensure that sufficient area was left outside the reserves for the future expansion of the villages and for the supply of the ordinary nistar needs of the villages in the matter of forest produce". (Mason 1931)

The dual control of these forests by Revenue and Forest Departments with conflicting self interests led to much friction between these two departments. While the Revenue Department granted patta rights for extension of cultivation in these areas,

⁶ for ex. Chakravary M (1984) in case of Tripura.

the control over these forests was considered necessary by the FD to exchange for and thus to 'get rid of lands given on patta inside the reserves'. (Mason 1931a) Also, parts of these forests were gradually annexed by the FD.



Graph.2.5. Classified forest area, Hyderabad state

As a combined effect, the area under open forests declined consistently at rate of 4.6 per cent. (Graph.2.5), a process that continued even during the post-independence period, despite the inclusion of large gairon/ village common lands in the state forests from time to time. Encroachments on both forest lands and its produce by Jagirdars and other influential sections,

unsustainable local exploitation and above all the quality of forests set aside for this use led to the gradual degradation of the open forests. Availability of the gyrie species was found scarce even as early as 1910. As the inclusion of any valuable forest land in villages was considered an 'extraordinarily wasteful policy' and also as per its own definition, only the poorly stocked, low value waste lands were set aside under open forests. (Mason 1931)

Though a digression here, it is nevertheless important to note the outcome of an experiment on Panchayat Forests carried out in Madras Presidency. Referring to this experiment, Mason, while commenting on the idea of village forests observed that "...the experiment in Madras has not been a success even from the ryots' point of view and so far from removing discontent, the ryots are now requesting that Government will resume control. They explain that the Panchayat have greatly increased the fees and they have less equitable treatment at their hands than when they were directly under Government management" and thus, he remarks "...forests handed over to village committees are doomed to destruction". (Mason 1937, emphasis added)

The above discussion on village forests makes two important observations. Firstly, the definitional changes of open forests, their annexation into the reserves and the appropriation of village common lands adduce the more pragmatic considerations subservient to the revenue interests of the state that guided the policy of open\ village forests, a concept which had been carried on to date with marginal changes in its nature and content. Secondly, the encroachments by the influential sections and Mason's observations on the Panchayat forests mark the

vulnerability of the forests to the existing social structure.

2.5. Note on forest management:

Patterned itself as a 'protecting' and 'revenue collecting' agency, the exploitation works being vested in the hands of contractors, the FD had paid but little heed to ensure renewability of the resource system. Though, conservancy works were constrained by the scarce financial resources during the early period but later it was mainly due to "...the lack of interest or energy on the part of FD.. as the full (budget) allotment is never spent". Also, Mason observed, "...the staff appears to be quite content to confine its energies to the sale of the standing timber and to leave the rest to the contractor, who work the coupes". (Mason 1931)

The structure of expenditure (Table.2.5.), (Graph.2.5) was broadly in conformity with those immediate practical objectives of forest management.

Table.2.5: Structure of Forest Expenditure

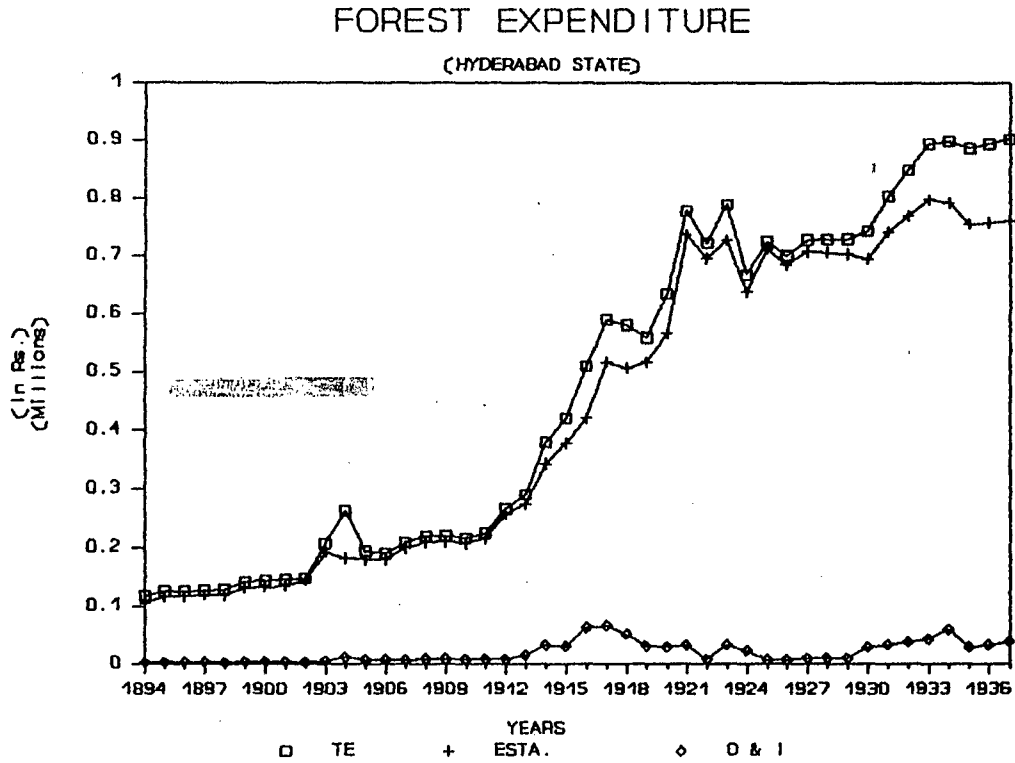
Proportion of Total Expenditure (Decennial Average):

Year	Total Expend	Esta.	C & B	O & I	% of O & I			
					Sur.	Der.	F.P.	TOTAL
1894-1900	100	92.6	1.2	2.3	0.7	44.9	32.6	100
1901-10	100	91.5	0.4	3.6	55.0	12.3	21.6	100
1911-20	100	89.7	0.2	7.6	76.8	11.0	9.4	100
1921-30	100	95.8	0.1	2.3	51.2	12.1	33.4	100
1931-37	100	87.7	2.7	4.5	9.6	18.6	30.4	100

Note: Esta.: Establishment; C & B: Communications and Buildings; O&I: Organisation and Improvement; Sur: Survey; Der: Demarcation; F.P: Fire Protection.

In addition to the low proportions of total revenue spent on forest works, the expenditure on real conservancy works was insignificant. Of the total forest expenditure, around 90 per

insignificant. Of the total forest expenditure, around 90 per cent was spent on establishment while that on organisation and improvement of forests was a meagre 2 to 7 per cent.



Graph.2.6. Structure of Forest Expenditure, Hyderabad state
 Note : TE: Total Expenditure, ESTA: Expenditure on establishment, O&I: Organisation and Improvement

Further break up of the expenditure on organisation and improvement shows that major proportion of it was spent on survey and demarcation works which in essence serve the interests of exploitation more than that of conservation. This pattern remained more or less same over the period. During the last decennium however, considerable proportion of the expenditure on organisation and improvement was spent on compensation for lands

included under forests.

The following Table.2.6. gives the area under different systems of working in 1941 and 1942. Although, clear felling was shown to be inexistent, in reality it was the most prevalent system of forest working.

Table.2.6.Area under different systems of working

S.N	System of working	1941	1942
1.	Simple coppice	16881	18421
2.	Coppice with standards	21257	21695
3.	Coppice with reserves	13300	18927
4.	Selection cum improvement felling	4873	5046
5.	Clear felling with artificial regeneration	7	8
6.	Clear fellings	519	694
	Total:	56837	64791

Source: AAR, 1352 F

The chief conservator of forests remarked in 1942,

"..It is tragic to note that Hyderabad foresters do not know of any system of managing their forests except clear felling... the main reason why clear felling or its modifications became so popular is that under this system the staff has to do no marking work beyond demarcating the coupes".

In the auctions of 1943 it was found out that 'in some cases coupes had not been demarcated and in most cases those that were sold were not inspected by D.F.O's'.(AAR,1352 F)

In addition to the reservation policies and the 'neglect of local ryots' needs', another factor that estranged people was the public relations of the forest subordinates. That, this at times was even embarrassing to the Department itself was evident from the following remarks by Mason.. " ..we have two conflicting interests-on the one hand we require the most skilled management and on the other hand we desire to keep the forest subordinates

away from contact with ryots". (Mason 1937) The frequent exactions of these subordinates had built up a hostile environment between FD and the people, the tribals in particular.⁷ Though, the reaction of the tribals to this tyranny was one of acquiescence, at times it turned violently as they resorted to armed confrontation which we shall discuss in the fourth chapter.

SUMMARY:

The use exclusionary conflicts between local use of forest and conservation of 'valuable' timber following the commercialisation of forest wood led to forest reservation by the state as a way of reconciling the conflicts in which the local use was restricted and at places eliminated. The larger economy represented by the market forces assumed dominance. The short run revenue maximising interests of the state were brought out. In accordance with this prime objective the state responded to the changing market situations duly changing its strategies. In the absence/slump periods of the potential wood markets, state encouraged colonisation schemes to 'reclaim' forests for extension of cultivation and consolidated revenue collection from local use which formed the major source of forest revenue. When the wood markets grew, the production of 'valuable' timber conflicted with local use and state again resorted to restricting or eliminating the local use through its policy of forest reservation. Thus, the changing forest use patterns were in broad

⁷ However, the corruption at the lower level bureaucracy was a necessary adjustment between the draconian laws of the state and the subsistence needs of the people.

conformity with the revenue generating potentials of the particular use. The concept of 'sustainable use' was understood as 'sustainability of the revenue yields' and the forest management was geared towards this end. The pattern of forest expenditure also corroborates this point.

The technological changes in the use of forest products was brought about more by the initiative taken by the state in its bid to find new markets for the forest produce.

Chapter 3

STATE FORESTRY IN ANDHRA PRADESH

Forestry in the post-independent India is broadly organised in a national policy frame work which from time to time set the objectives of forest management. The changing forest policies and its priorities would therefore, reflect the changing forest use patterns and thus, we organise this part of our study in the broader frame work of National Forest Policy. The international context in which these policies were shaped was briefly discussed in section.1.3.1. and the integration of tropical forestry with the exploitative international market economies was also brought out. These linkages have significant say in determining the objectives of tropical forestry. However, further analysis of these factors is out of the scope of the present study.

This chapter was presented in two sections; section.I gives a brief analysis of the state's forest policies which provides a frame work for our analysis of the available data presented in section.II.

3.1. Section.I

Three distinct stages can be identified in the development of post-independence forest policy viz. the relatively conservative¹ National Forest Policy (NFP),1952, the aggressive industrial orientation of the forest policy, ardently followed after the recommendations of National Commission on Agriculture (NCA),1972 and thirdly, the recent trend towards the 'people's

¹we mean restrained

forestry'.²

3.1.1. Stage.I: National Forest Policy (NFP), 1952

This policy modelled after the Colonial Forest Policy, 1884, upheld the 'fundamental concepts' underlying the colonial policy. 'Realisation of maximum annual revenue in perpetuity' consistent with the objectives of conservation was stated to be the principle objective of this policy. This policy however, marks at least one important departure from the colonial policy. While the colonial policy perceived forestry as subservient to agricultural needs, at least in principle, the NFP, 1952 repudiated the notion that forestry be 'permitted only on sufferance on residual lands not required for any other purpose' and emphasised the need for an adequate share of land that forestry was entitled to. Thus, a minimum of 20 and 60 per cent (on an average of 33%) of total geographical area was targeted, in the plains and hills respectively, to be the area that should be brought under forests. Also, the forest management was reoriented towards 'meeting the requirements of defence, communications and industry' on the principle of 'progressively increasing sustained yield'. On the other hand, despising the local use, this policy observed .."the use of forest products by the village communities in the neighbourhood of a forest should in no event be permitted at the cost of national interests"..(emphasis added, NCA 1976:45); national interests identified as the needs of defence, communications and industry. Despite of this popular rhetoric, the forest management remained relatively conservative with

² Chambers et al (1989) identifies one more phase termed 'The Environment and People Phase' from 1985 onwards where in the 'importance of non-market ecological benefits from forests' were recognised. However, these developments do not seem to differ significantly from the third stage.

modest outlays and expenditure on forestry.

Thus, articulating the interests of larger economy, the NFP, 1952 had further carried out the process of organised phasing out of local use. Significantly, forestry by itself became a competitor for productive land.

3.1.2. Stage.II: Industrial Orientation of Forestry:

(National Commission on Agriculture, 1972)

The Interim report on production forestry submitted by the NCA marked the advent of a dynamic production forestry geared towards industrial wood production. The recommendations of Von Mon Roy (1960) and the work of Westoby (1962) provided the basic frame work of NCA.

Carried away by its optimism over the positive role of forestry in fostering economic growth and development through forest based industrialisation, the NCA had contrived a two pronged strategy to break up the vicious circle of low productivity and to augment the industrial wood supplies. The first element of the strategy was 'production forestry supplemented by adequate forest based industries' and the second one-wide spread adoption of social forestry. The production forestry was a dynamic input intensive commercial forestry geared to meet the industrial raw material requirements, to be carried out in the forest areas functionally classified as 'production forests' consisting of mixed quality, valuable and inaccessible forests (classified on the basis of revenue yield potential). The objective of social forestry to be carried out in the minor forests, waste lands and village commons, was 'to meet in full the small timber, fuel wood and grazing needs of the rural population and there by lighten the burden on production

forestry. Thus, while the former was meant to promote industrialisation, export growth and import substitution, the latter was, in essence, a strategy contrived to phase out the conflicting local use from natural forests as it was believed that "...the free supply of forest produce to the rural population and their rights and privileges had brought destruction to the forests".

Apart from the populist social forestry, employment generation in production forestry and its multiplier effects were 'offered as alternative to the rights of local users'. The state's forest policies never seemed to have acknowledged the genuine agricultural land needs of tribals, especially those of shifting cultivators. Keeping up with this tradition NCA (1976:22) observed..

"Tribal welfare should also be ensured by satisfying their domestic needs and by recognising the priority need of their direct employment in forestry operations. Settled and permanent agriculture need not necessarily be the only policy in regulating shifting cultivation for several reasons. The cost of terracing and preparing the land is very high. The same amount, if invested in the programme of plantation crops, like rubber and coffee, production forestry and development of MFP, can create the requisite level of employment and hence provide an alternative to shifting cultivation".

Thus, the concept of 'tribal welfare' inherently perceived in the production forestry was one of marginalisation of the tribal peasant to the status of forest labour.³

3.1.2.1. Production Forestry

Consistent with the recommendations of Von Mon Roy and the objective of 'maximising net income' from forests, the production forestry was aimed at replacing the traditional conservative

³In an article the I.G. of forests, Sri.Srivatsava admits that the 'FD tend to look upon the tribal as wage labour' only. (Cinemart 1984:121)

selection cum improvement felling with an aggressive clear felling followed by forest plantations. The relative profitability of the pure plantations over the natural mixed forests (NCA 1976:8-9) was the operational principle underlying this commercial venture. Though the objective of production forestry was to produce industrial wood, as we see later in this chapter, large scale plantations of coffee, cashew etc which are prone to erosion hazards were also taken up under this scheme. Also, teak, a luxury timber, dominated the plantation schemes. These points though conflicting with the industrial orientation of forestry, were consistent with the objective of 'maximising net income' from state forests. But later (during the third stage) when the industrial use dominated the non-timber wood consumption, shortages in the fuel wood and construction timber markets effected by the shift in state's priorities gave primary impetus to the private wood plantations mainly of casuarina and eucalyptus. The infrastructure created under social forestry significantly contributed to this development.

Making the forest a 'concurrent subject' by the 42nd constitutional amendment in 1976 and the Forest Bill of 1980, vesting magisterial powers with the forest bureaucracy, that replaced the Indian Forest Act, 1927, furthered the cause of consolidation of state's forest estate.

3.1.3. Stage.III: 'People's Forestry'

The experience of industrialisation approach to forest development in the LDC's forced its proponents (FAO (1980) and Westoby (1978)) to recant their views toward people's forestry and village level industry etc. (Douglas 1983:83). Also, this stage marked the growth of eco-conservation movement in India:

the Chipko Movement, the debate on the proposed Forest Bill, 1980 etc. Criticising the state forestry for its anti-people policies this movement made a case for 'people's forestry'. The colonial model adopted in the post-independence forest policy (both in its form and content) and the collusion of the state with the mercantile and industrial interests in particular were subjected to much criticism.

This criticism failed to bring forth any radical transformation in the nature of state forestry. Instead of restructuring the objectives of production forestry, the state reacted in its characteristic way to strengthen the populist social forestry by channeling more funds within the existing frame work and by restricting its own exploitation to certain extent. However, the industrial use remained dominant in the over all consumption pattern of forest wood resources.

Thus, the 'people's forestry' remained a populist disguise with the forest based needs of people, the rural poor, tribals etc, retained at the periphery of the core of industrial oriented forestry. The social forestry programmes by its very objective are urban biased, far from meeting any demands of the tribal economy.

In the recent period, particularly after 1985, attempts are being made to restrict exploitation of natural forests and many a study viewed this development as a sign of an 'enlightened stage' (Nadkarni 1989) or an 'Environment and People Phase' (Chambers et al 1989) in offing. However, along with this policy further restrictions are being imposed on the local use which brings home the nature of these policies.

3.2. Section.II

This section attempts to analyse forestry in A.P. during the post-independence period to corroborate our analysis of forest policies presented in section.I and to make some important observations on the nature of state forestry.

3.2.1. Five year plans (FYP) and forest use:

The plan outlays and expenditure on forestry reflects the changing patterns of forest use. While the period under I,II and III FYPs correspond to the stage.I; the IV and V plans mark the industrial orientation of forestry i.e. stage.II and the VI and VII plans correspond to the stage.III detailed in section I.

Table.3.1. gives the outlays and expenditure on forestry in A.P. vis-a-vis total state outlays and Tables.3.2.1 and 3.2.2. presents the break up of the plan expenditure under various FYPs.

Table.3.1: Five Year Plans (Andhra Pradesh): Outlays and Expenditure

(Rs. in lakhs)

FYP (i)	Year (2)	State outlays (3)	Total Forest		%of Fort. Outlay to State (6)/(3)	Forest out lay per ha of RF (Rs./ha.)	Forest out lay per ha. of TF	Forest expend. per ha. of RF (Rs./ha.)	Forest expend. per ha. of TF
			out lay (6)	Expend (7)					
I	1951-56	9678	26.64	26.24	0.28	0.64	0.40	0.63	0.39
II	1956-61	18236	118.3	112.83	0.56	2.84	1.78	2.78	1.78
III	1961-66	31266	161.61	172.3	0.41	3.87	2.43	4.13	2.59
IV	1969-74	48561	304.47	303.51	0.54	6.74	4.69	6.72	4.68
V	1974-78	103993	454.6	421.94	0.37	9.57	7.85	8.88	6.55
VI	1980-85	310000	1070	n.a.	0.32	21.50	16.77	n.a.	n.a.
VII	1985-90	750000	9700	n.a.	1.28	194.89	152.01	n.a.	n.a.

Note: RF:Reserved Forest; /TF: Total Forests; n.a.:Not available

Source:Facts and Figures, 1984, FD, Andhra Pradesh.

Table:3.2.1:Expenditure on Forestry Schemes: (Plan Periods)

(Rs.inlakhs)

Particulars	I †	II †	III †	1966-67‡	1967-68‡	1968-69‡	IV †	V †	1978-79‡	1979-80‡	VI †
1 Forest Exploitation / utilisation	4.73	11.08	20.88	0.36	0.58	0.63	0	0	0	0	0
2 Infrastructure	5.84	44.5	8.69	2.01	1.41	7.24	11.47	9.762	6.93	5.87	95.9
3 Organisation	7.57	4.16	13.41	3.44	0.9	1.07	5.39	27.373	3.34	0.06	4.2
4 Regeneration/tending	3.49	8.77	1.44	1.74	0	0	0	0	0	0	0
5 Plantations	3.18	8.84	39.64	21.94	20.56	28.12	213.1	215.57	6.92	0	383
6 Farm forestry	1.70	2.00	0.41	0	0	0	0	35.2	17.4	41.51	341.2
7 Research	0.13	0.60	1.39	0	0.27	0.32	2.52	0.125	4.77	2.1	25.6
8 Others	0.0	0.57	6.59	0	0	0	0	50	47.79	39.75	6.6
9 Wild Life	0.0	14.69	46.18	5.76	2.27	5.25	30.61	10.91	10.49	2.2	120.5
10 Other conservancy	0.0	0.0	0.06	0	0	0	0	0	3.15	0.82	23
Total	26.64	95.21	138.69	35.25	25.9	42.63	263.09	356.94	100.79	91.51	1000

Note: † : Five Year Plans; ‡: Annual Plans

Source: Compiled from Facts and Figures, 1984, FD, A.P.

Table:3.2.2 Expenditure on Forestry Schemes, Proportions to Total:

(fig. in %)s)

PARTICULARS:	I	II	III	1966-67	1967-68	1968-69	IV	V	1978-79	1979-80	VI
1 Forest exploitation / utilisation	17.76	11.64	15.06	1.02	2.24	1.48	0.00	0.00	0.00	0.00	0.00
2 Infrastructure	21.92	46.74	6.27	5.70	5.44	16.98	4.36	2.73	6.88	5.54	9.59
3 Organisation	28.42	4.37	9.67	9.76	3.47	2.51	2.05	7.67	3.31	0.07	0.42
4 Regeneration/tending	13.10	9.21	1.04	4.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Plantations	11.94	9.28	28.58	62.24	79.38	65.96	81.00	60.39	6.87	0.00	38.30
6 Farm forestry	6.38	2.10	0.30	0.00	0.00	0.00	0.00	9.86	17.26	45.36	34.12
7 Research	0.49	0.63	1.00	0.00	1.04	0.75	0.96	2.28	4.73	2.29	2.56
8 Others	0.00	0.60	4.75	0.00	0.00	0.00	0.00	14.01	47.42	43.44	0.66
9 Wild life	0.00	15.43	33.30	16.34	8.76	12.32	11.63	3.06	10.41	2.40	12.05
10 Other conservancy	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	3.13	0.98	2.30
Total	100	100	100	100	100	100	100	100	100	100	100

Though the forests constitute around 23 per cent of the total land use in A.P., plan outlays on forestry sector constituted a meagre proportion of the total state outlays ranging from 0.28 per cent in the first FYP to a maximum of 1.28 per cent in the seventh FYP.

During the first stage of relatively conservative forestry, the outlay on forest sector increased modestly from a base as low as Rs.26.64 lakhs in the first FYP to 161.61 lakhs in the third plan. As can be seen from Tables 3.2.1; 3.2.2, major proportion of the plan expenditure during the I and II FYPs was made on infrastructure development, organisation and forest exploitation (around 60%). Plantation forestry started assuming significance during the III FYP by attracting considerable proportion of total expenditure. Efforts were also initiated towards wild life conservation during the second and third plans. However, the modest total plan expenditure and its structure were consistent with the nature of forestry during this period.

The IV and V plans mark the advent of aggressive industry oriented forestry with all round emphasis on production forestry. Accordingly, the total plan outlay on forestry was nearly doubled with 81 per cent of the total expenditure was to be spent on plantations. Though the proportion of expenditure on plantations declined during the V plan over that of IV plan, it increased marginally in absolute terms.

The expenditure pattern during the sixth plan brings home the new emphasis given to social forestry. Though, the plan outlay on forestry as a proportion to total state outlay declined marginally, the total outlay and expenditure registered a big 162 per cent increase over that of the fifth plan. Major proportion

of the increased expenditure was made on social forestry, plantations and wild life. The seventh plan registered even higher growth rate of total outlay on forest sector not only in absolute terms but also as a proportion to total state outlay. A perusal of Table.3.2. reveals the importance social forestry had assumed during this period. While 65 per cent of the total outlay (1775 per cent increase over the expenditure during VI plan) was to be expended on Social forestry, around 13 per cent (239 per cent over the expenditure during VI plan) was earmarked for plantations.

3.2.2. Forest revenue and expenditure

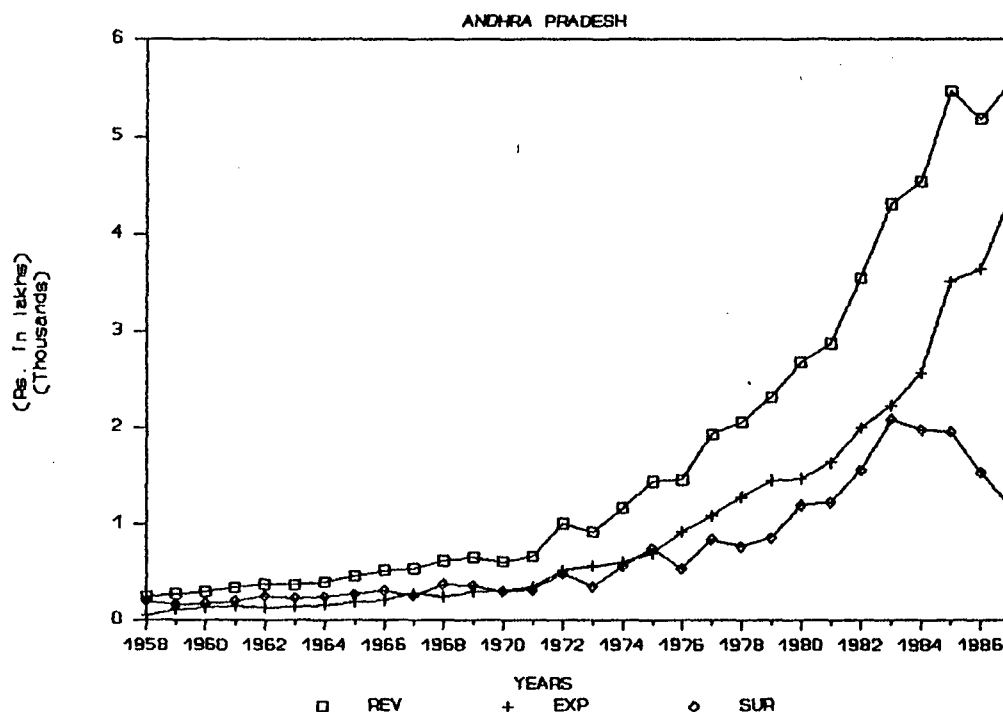
The forest revenue grew modestly at an average rate of 8.29 per cent during the first stage while the expenditure, starting from a very low base, had grown at a relatively higher rate of 15.95 per cent and the surplus at a modicum rate of 3.7 per cent. The proportion of revenue expended on forests thus, increased from 19.8 per cent to 57.8 per cent. (7.15% growth rate) Striking growth rates however, were registered since 1972-73, the year broadly coinciding with the submission of Interim Report by NCA till 1980. (Table.3.3.), (Graph.3.1.)

Table:3.3. Growth Rates of Forest Revenue, Expenditure and Surplus:

(in %s)

Stage	Period	Revenue	Expend.	Surplus
I	1958-72	8.29	15.95	3.69
II	1973-80	15.23	14.65	15.99
III	1981-87	10.49	15.59	-0.23
	1973-87	13.02	15.09	8.42

FOREST REVENUE & EXPENDITURE



Note: Rev: Revenue; Exp: Expenditure; Sur: Surplus
 Graph.3.1. Revenue and expenditure of Forest Department, Andhra Pradesh

The growth rate of revenue even with a higher base, surpassed that of expenditure while surplus marked the highest growth rate of 15.99 per cent. The proportion of revenue ploughed back into forests had shown varying trends. The third stage marked perceptible increase in expenditure on forests both in absolute terms and as a proportion to total revenue. Increased expenditure on social forestry explains this growth in forest expenditure. The revenue growth slowed down to 10.5 per cent

A perusal of Table.3.4. reveals the dominance of revenue from timber in over all forest revenue structure. Whereas the receipts from plantations constituted a meagre proportion i.e. around 3 per cent; that from timber (mostly from teak, as it constituted around 40 per cent of total timber harvest) dominated the revenue structure constituting around half of the revenue followed by beedi leaf and bamboo. These proportions more or less remained the same during this period but for a marginal increase in the proportions of bamboo and fuel wood and decline in beedi leaf.

Table:3.4. Structure of Forest Revenue, A.P.

(%of total forest revenue)

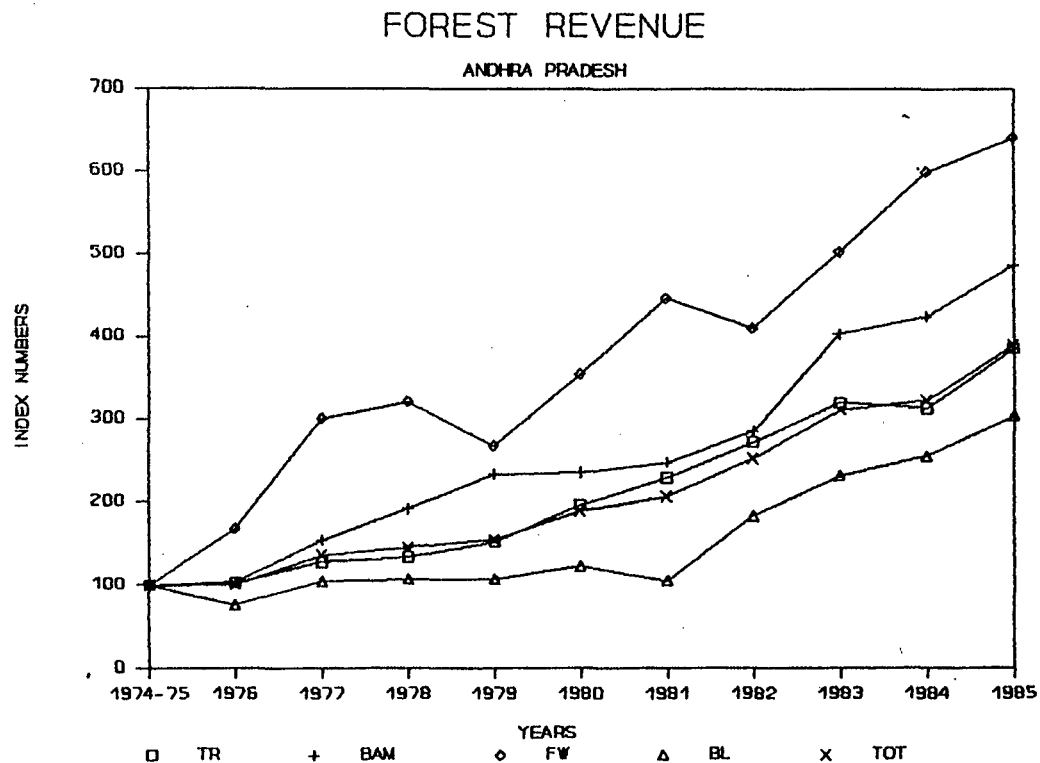
YEAR	TIMBER	BAMBOO	FW&CL	OTHERS	BD.L	TOTAL
1974-75	46.5	10.4	5.6	2.7	26.4	91.6
1975-76	47.0	10.6	9.2	3.8	19.8	90.4
1976-77	43.8	11.8	12.4	3.4	20.4	91.8
1977-78	43.0	13.9	12.5	3.1	19.7	92.1
1978-79	46.5	16.0	9.9	2.5	18.7	93.6
1979-80	49.9	13.4	10.9	2.6	17.7	94.4
1980-81	52.5	12.7	12.3	2.1	13.7	93.3
1981-82	51.4	12.1	9.4	1.4	19.7	94.0
1982-83	49.2	13.9	9.3	1.6	20.2	94.3
1983-84	45.7	13.9	10.6	1.5	21.2	92.8
1984-85	46.8	13.2	9.4	2.8	20.9	93.1
1985-86	46.8	15.1	6.9	.A	21.7	-
1986-87	41.9	19.2	7.2	.A	21.5	-

Note: FW&CL: Fuel wood and Char coal; BD.L: Beedi leaf. Miscellaneous were not shown.

Source: compiled from AAR and Facts & Figures.

The revenue from fuel wood and charcoal registered the highest growth rate (16.9%) followed by bamboo. (Graph.3.2.) The growth in the fuel wood revenue may probably be the result of large scale clear fellings in the forests to be converted to plantations and/or due to the soaring fuel wood prices actuated by its scarcity. The increase in the industrial use of bamboo and

the revision of royalty rates may explain the increase in revenue from bamboo.



Note: TR: Timber; BAM: Bamboo; FW: Fuel wood; BL: Beedi leaf; TOT: Total revenue

Graph.3.2. Relative growth of various components of forest revenue.

Taking the forest revenue structure as proxy for structure of forest production, it can be observed that the production structure remained more or less the same despite the impressive growth in over all production. Thus, if the structure of forest revenue is any indication, the industrial orientation of forestry, in spite of the overwhelming importance given to it, didn't bring about any significant shift in the over all

production towards non-timber wood, industrial wood in particular. However, this observation is constrained by the fact that the soaring prices of forest produce, timber and fuel wood in particular, were not accounted for in our analysis, mainly owing to non-availability of reliable data.

However, the species composition of the forest plantations under taken during this period corroborates the above observation.

3.2.3. Forest Plantations

Forest plantations constitute 5.56 per cent (in 1986-87) of the total forest area. Table.3.5. presents the species wise area planted (cumulative) from 1975-76 to 1986-87.

Table:3.5: Species Composition of Total Area Planted (cumulate)

(in %s)

YEAR	TEAK	EUCAL.	CASUR.	CASHEW	BAMBOO	MISC.
1975-76	36.2	7.2	6.4	9.3	19.4	21.5
1976-77	36.9	7.9	7.0	7.8	18.1	22.2
1977-78	33.4	7.6	5.7	8.3	15.0	30.0
1980-81	31.4	7.1	8.1	9.2	13.9	30.2
1981-82	32.4	8.2	5.6	8.6	13.1	32.1
1982-83	31.8	9.6	5.7	8.1	12.2	32.5
1983-84	31.0	10.7	5.6	7.7	11.4	33.6
1984-85	30.3	12.1	5.5	7.2	10.7	34.2
1986-87	27.7	16.7	5.1	6.3	9.3	34.9
*1984-85	24.8	17.0	4.5	11.4	12.0	29.4
*1986-87	23.3	21.1	4.3	10.2	10.6	29.7

Note: *. Total area planted including by APFDC.

Though, teak constitutes major proportion of the total planted area, its proportion was gradually declining giving way to eucalyptus, particularly in the eighties. Keeping with the emphasis given for industrial plantations, 684 sq.km area (27.1%)

was planted with eucalyptus while teak follows with 17.8 per cent. Surprisingly, considerable area was planted with cashew (10.6%) which was even more than that under bamboo, the prime forest raw material for wood based industries. Table.3.6. shows the area planted with different species under sixth plan and that proposed under seventh plan. Pulp wood plantations constituted major proportion of the total area planted under sixth plan closely followed by teak. Interestingly, Cashew and coffee plantations occupied 26 per cent of total area planted by Andhra Pradesh Forest Development Corporation (APFDC) during the sixth plan and 43 per cent of the proposed area to be planted by APFDC during the seventh plan.

Table:3.6: Area Planted with different species under sixth plan and proposed under seventh plan

PARTICULARS	AREA PLANTED/ PROPOSED(ha.)	% to TOTAL
1. Under VI plan:		
I. By Forest Department:		
a. Teak	21000	34.8
b. Silver oak	1500	2.5
c. Acrocarpus	500	0.8
Total	23000	38.1
II. By APFDC:		
a. Pulp wood	21820	36.1
b. Cashew	13210	21.9
c. Coffee	2344	3.9
Total	37374	61.9
Total under VI plan	60374	100.0
2. Proposed under VII plan: (under APFDC)		
a. Pulp wood	8500	45.8
b. Cashew	8000	43.0
c. Coffee	71	0.4
d. Fuel wood plant- ations for HYD	2000	10.8
Total	18571	100.0

Source:Seventh FYP, 1985-90; Andhra Pradesh, Govt. of A.P

The predominance of teak in the plantation forestry in spite of its proneness to erosion hazards, long gestation period involved (around 40-60 years) and low employment generation (vis-a-vis short duration intensive plantations like eucalyptus) can only be understood in the context of over all revenue structure predominated by timber revenue. Teak serves the purpose of a luxury timber, it's price being more than twice that of its nearest wood substitutes.(Table.3.7.) Also, prices of teak registered the highest rate of growth. Thus, given its commercial objectives, teak became the natural choice of plantation forestry.

Table.3.7.Whole sale prices of important timbers:

(Rs.per cu.mt.)

Year	Teak	Nalla-Maddy	Bandaru	Bijasal
1965-66	476	163	180	228
1969-70	525	195	210	276
1982-83*	2810	833	1050	1203
Growth rate%	12.9	11.2	12.4	11.3

Note: *.average of all circles and all girth and quality classes.

Source:Facts and Figures, 1970, FD, Govt. of A.P.

*..Compiled from Facts and Figures, 1984; R&D circle office of CCF, FD, Hyderabad.

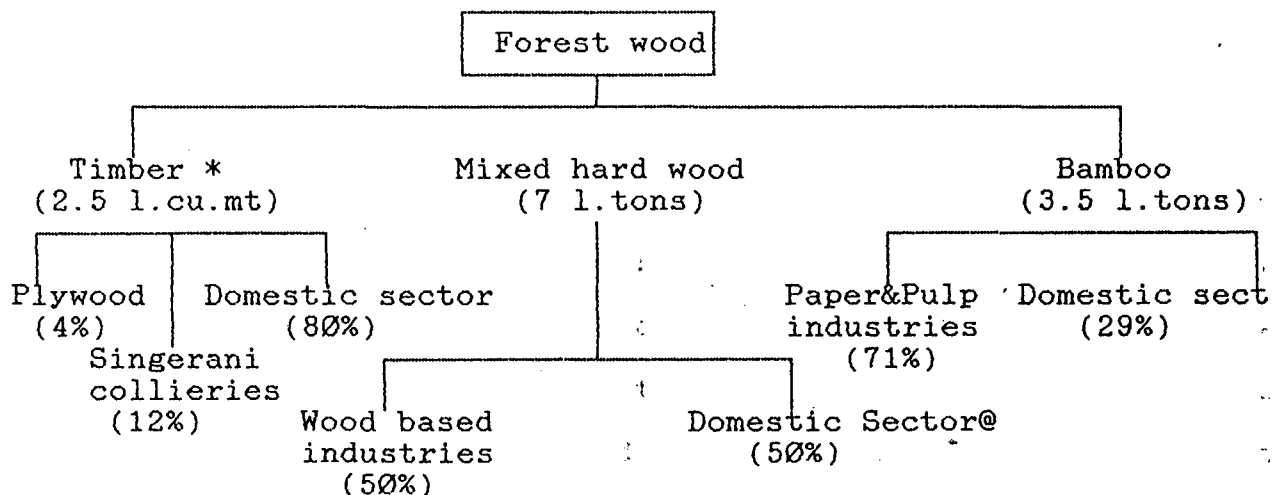
Also, the FD and APFDC undertaking large scale non-forest plantations, cashew, coffee etc, which least have the functional attributes of a 'forest cover' may well be a commercial venture to spin off revenue by "...replacing miscellaneous forest growth with valuable species..", than a forestry geared towards achieving 'ecological balance' or 'industrial growth'.

The aggressive production forestry was often legitimised by frequent references to its positive role in economic growth

through industrialisation. In practice however, the timber and non-forest commercial plantations were the choice species, at least till late 1970s. It was mainly after the forest raw material crisis during the eighties that loomed large over the industries that were encouraged and sponsored as a part of the over all strategy of industrial orientation, that efforts were diverted to pulp wood plantations, eucalyptus in particular. Setting up of forest based industries significantly altered the over all consumption pattern of forest wood.

3.2.4. Consumption pattern of forest wood

Figure:3.1 Consumption pattern of forest wood



Note: *.. teak timber constitutes 40 per cent of total timber production.

@.. Includes fuel wood consumed in industries like Khandasari sugar industries etc.

l.cu.mt: lakh cu.mts; l.tons: lakh tons.

Source: VII FYP, Govt. of A.P.

As can be seen from Figure.3.1. major proportions of mixed hard wood and bamboo produced were being used in the industrial sector while substantial part of the same was going to domestic sector prior to wood based industrialisation. (Seventh FYP :91) The luxury teak timber constitutes around 40 per cent of the

total timber production of which only 80 per cent was consumed by domestic sector. The timber in the reach of common man therefore, would constitute a minor proportion.

While the supply position stands thus, the demand as per the projections of NCA far outstrips the supply. As per its projections the domestic sector in A.P. needs annually about 30 l.tons of fuel wood, about 9 l.cu.mt of round wood and the industrial sector needs about 11 l.cu.mt of pulp wood and 17.5 l.cu.mt of sawn wood by 1990. However, the recorded removals from the state forests account for hardly 20% of the total demand for fuel wood in the non-industrial domestic sector. Thus, unauthorised removals from the forests meet substantial part of the total domestic fuel wood market which, as widely recognised (even by the FD), is one of the prime sources of forest degradation. (Seventh FYP, Govt. of A.P.)

3.2.5. Forest based industries:

Out of the main eight forest based industries currently in production in A.P. which consume substantial proportion of total industrial wood produced, only two were established prior to 1970. (Table 3.8.) Substantial capacity was installed in the paper and pulp industry during the second stage. The capacity installed grew at 8.19 per cent from 1979 to 1983. On the other hand the capacity utilisation had shown a low and decelerating trend (-5.46%). (Table.3.9)

Table:3.8. Supplies of raw-materials to forest based industries:

S.No	Name of the company	Installed capacity (000' tpa)	Raw-material required	
			Bamboo	Hardwood
^1.	A.P.Paper Mills	75	100000	75000
^2.	Sirpur Paper Mills	61	75000	45000
3.	Sri Rayalaseema Paper mills	42	45000	45000
4.	Bhadrachalam Paper Boards	50	60000	74000
5.	A.P.Rayons Ltd.	27	10000*	75000
6.	Novopan India Ltd.	20	-	38000
7.	Godavary plywoods(m.sq.mt)	2.2	-	10000#
8.	Hyderabad Plywoods(l.sq.mt)	0.18	-	2400@

Note: ^.. established before 1970

*.. eucalyptus; #.. cu.mt of non-teak; @..cu.mt. non-teak & teak.

Source: Annual Administration Report, FD, Govt.A.P.

Table:3.9 Capacity Utilisation in Paper Industry in A.P:

(lakh tonnes)

Year	Capacity	Production	Capacity utilisation %
1979	13.80	10.47	75.90
1980	15.38	11.12	72.30
1981	16.56	12.35	74.60
1982	18.17	12.36	68.05
1983	19.15	11.68	60.99

Source: Paper Industry in A.P.; Commerce, Apl 6, 1985.

Chronic shortages of forest raw materials was one of the reasons attributed for the poor capacity utilisation of these industries. (Anon 1985). While alternative sources of raw materials are being sought by these industries, the over all emphasis has now been shifted towards non-conventional raw-material (like agro-wastes) based mini-plants.

The A.P.paper mills at times had to resort to the wood markets of far off places such as Assam, Andamans etc, and to the open markets within the state. Same was the case with Sri Rayalaseema Paper Mills, which ventured into the wood markets of

Maharashtra in addition to the open markets.⁴ Paradoxically, even the industries under the FD itself were facing serious raw material problems. The case of Integrated Saw Mill, Rajahmundry would substantiate our point.

3.2.5.1. Integrated Saw Mill, Rajahmundry:

Established during 1964 with an objective of popularising the use of secondary non-teak timber after processing, this mill was facing a serious raw material crisis notably during post-eighties. Some coupes in East Godavary district were earmarked for supplying raw materials to this industry. Evidently, the estimates of the working plan were on the higher side. Raw material actually supplied from these coupes as a proportion of the working plan estimates were drastically declining, from 78.2 per cent to 32.1 per cent by 1988. Though, the working plan forecasted the availability at 10,000 cu.mt of timber to this unit, the actual quantity made available during 1987-88 was only around 3200 cmt. The management was pessimistic of future availability of even this quantity. Consequently the capacity utilisation declined by around half. This unit, particularly during the eighties, was consistently incurring losses. (Table.3.10.)

To secure a minimum quantity of 5,500 cu.mt. of raw material to run the unit at break even point, the management was contemplating to import raw material from adjoining states or even from Malaysia, Burma, Papua New Guinea etc countries as the

⁴ Personal interview with the raw material manager, A.P.Paper Mills, Rajahmundry and see 'Sri Rayalaseema Paper Mills (undated) 'Notes on problems faced by Sri Rayalaseema Paper Mills'.

system of importing the woods was liberalised.

Table.3.10. Performance of Integrated Saw Mill,
Rajahmundry

(Rs.in lakhs)

Year	% of timber availability*	Capacity utilisation%	Profits
1976-77	78.2	100.15	3.82
1977-78	74.3	95.24	3.50
1978-79	60.5	77.60	7.03
1979-80	42.0	53.89	3.59
1980-81	38.4	49.21	(- 8.13)
1981-82	39.4	50.50	(-16.67)
1982-83	34.3	43.91	(-16.47)
1983-84	35.2	45.07	(-16.66)
1984-85	43.4	52.42	(-28.31)
1985-86	37.8	48.42	(-19.33)
1986-87	34.7	23.33	(- 6.05)
1987-88	32.1	52.58	(- 7.20)

Source: Primary Survey.

Note: *.. % of timber availability w.r.t. management plan.

However, there are substantial reasons to doubt the existence of a genuine 'raw-material crisis' in the paper and pulp industry. Two points would make our point clear. Firstly, substantial efforts were not being made by these industries to the lands allotted to them.⁵ Secondly, the price paid for wood by these industries in the open markets was substantially low as to encourage the entrepreneur farmers to go for industrial plantations.⁶ The cheaper forest raw-materials made available from the natural forests might be the reason for this poor response from the industries. Though, the royalty rates were substantially revised particularly during the third stage, they

⁵The Conservator of Forests, Logging Project Circle, Rajahmundry, points out that the area leased to A.P.Paper Mills Ltd., in Diwancheruvu Reserve Forest 'is not being maintained and the mills are also not improving the resources raised there..'. (Anon 1988)

⁶the A.P.Paper Mills pays around Rs.500 per ton of wood which when compared to the economics of casuarina (Ravindra 1987) was not very remunerative.

remain much below the open market prices. (Table.3.11) The consumption of wood from the private plantations was meagre.

Also, as we shall see shortly, these industries were largely benefited from the large scale farm forestry taken up by individual farmers with the subsidies provided under social forestry.

The forest based industries emerged as the prime consumers of the non-timber forest wood even to the neglect of the domestic markets for fuel wood and cheap timber. Previously, these markets were mainly catered to by the large scale unauthorised fellings and removals from the forests often with the connivance of the forest officials. But later during the third stage with the FD strengthening its protective machinery and probably with the infrastructure created and encouragement given under farm forestry there is a gradual shift towards the fuel wood plantations. Thus, one can see casuarina and eucalyptus poles replacing bamboo in the construction industry; and their wood replacing the fuel wood from natural forests. The growth in area under wood plantations was due to the stimulus given by the fuel wood and prop-wood markets and the role of markets of industrial raw material in stimulating wood plantations was insignificant.

The two observations viz. the dominance of quality timber in the over all forest production and the increasing dominance of the non-timber industrial wood consumption brings out the pattern that emerged with the industrial orientation of forestry. Thus, while the production for the prospective timber markets continued unhampered, the industrial orientation had only brought about a re-structuring of priorities of the relatively unremunerative non-timber wood consumption, favouring the industries.

Table.3.11. Royalty Rates of Bamboo and Hard woods

(Rs. per m. ton)

Year	Bamboo	Hard wood
1970-71	35.00	-
1980-81	210.00	100
1981-82	233.00	111
1982-83	258.00	123
1983-84	287.00	137
1984-85	318.00	152
1985-86*	352.98	218.67
1986-87	391.80	242.50
1987-88	434.89	269.17
1988-89	482.72	298.22
1989-90	536.71	331.63

Note: *.w.e.f. 01.10.'86.

Source: Compiled from various sources.

3.2.6. Social Forestry

At the outset, we attempt to analyse the trends in the area under different forests classified on the basis of the degree of rights and concessions permissible i.e. reserved, protected and unclassified forests.

(Graph: 3.3)

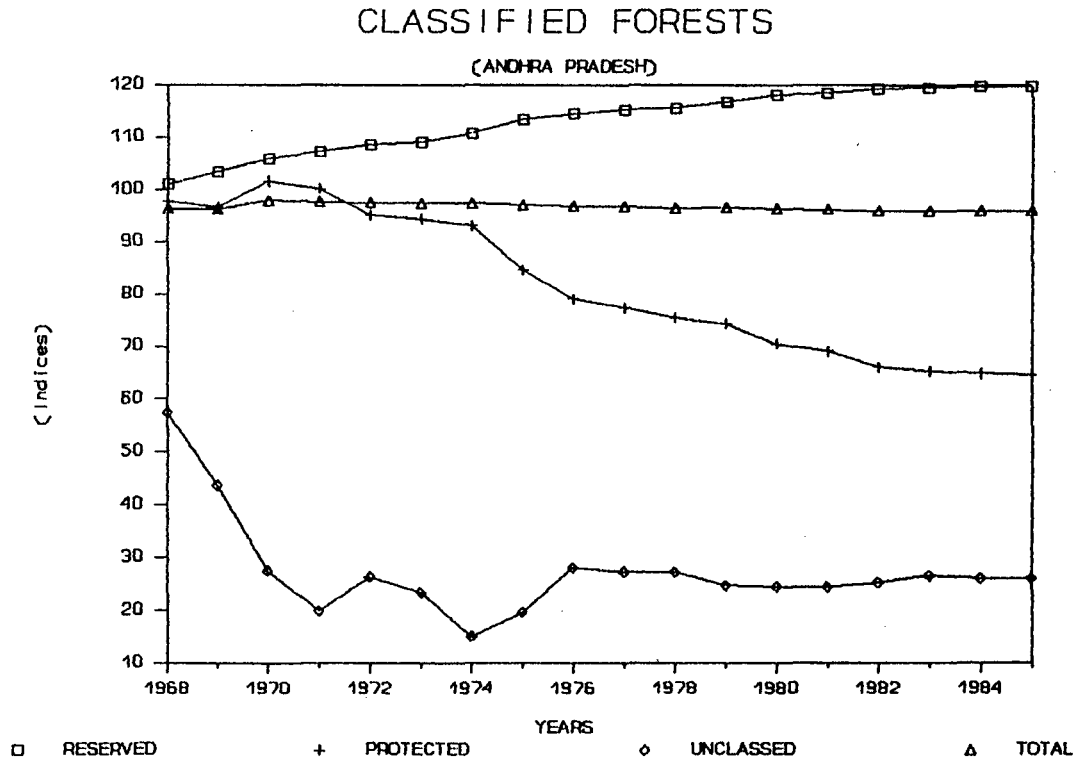
Table.3.12. Classified forest area, A.P.
(Area in sq.kms.)

Year	Reserved	Protected	Unclassed	Total
1967-68	41714	19014	5778	66506
1986-87	50100	12245	1431	63776
Change:	+8386	-6769	-4347	-2730
%change:	(20.10)	(-35.60)	(-75.23)	(-4.10)
Growth rate.% :	0.96	-2.32	-7.34	-0.22

Source: Statistical Abstracts of A.P.

The process of gradual conversion of the protected and unclassified forests into reserved category is evident from Table.3.12. As we have noted earlier, vast areas of village commons were annexed by the FD in the erstwhile Hyderabad state which were mostly included in the open/unclassified category. The

process of gradual inclusion of these unclassified and protected forests into the reserved category was in essence, an attempt towards gradual exclusion of the usufruct rights and concessions which were previously extended to the local populations in lieu of state taking over the village commons.



Graph. 2.3. Classified forest area, Andhra Pradesh

Thus, 75 per cent of the unclassified forests and 35 per cent of the protected forests were converted into reserved category. This would as well bring enormous pressure on the remaining common lands plausibly leading to their degradation. Also, we have noted the shift in consumption pattern of forest wood towards industrial use. All these factors against the growing human and

livestock populations, presumably, have led to the large scale shortages in timber, fuel wood and fodder which was perceived to be "...serious impediment in the practice of production forestry". (NCA 1976:120) It is mainly against this background that the programme of social forestry was contrived during the sixth plan and taken up with substantial plan outlays and also with foreign aid.⁷ The natural corollary of this would be the spatial concentration of the programme in the wood deficit areas, presumably, away from the forested regions.

Of all the constituent programmes under social forestry, according to various evaluatory studies conducted across the country, the farm forestry attained 'phenomenal success' while the community forestry marginally succeeded, if not failed. The main reason for this success, the studies observed, was "...the response to the commercial incentive of rising prices..", whether in the markets for construction poles, fuel wood or for the industrial raw material. In the process 'big farmers emerged as the prime beneficiaries' on the production side; and the urban fuel wood consumers and industry, the construction and wood pulp industries in particular, on the consumption side. Thus, the larger economy on the whole was the prime beneficiary of the social forestry programme. (Shiva et al 1981; Agarwal 1985)

The social forestry that was offered 'as an alternative to the rights of local users' only succeeded in creating infrastructure for the growth of private wood plantations.

⁷In A.P. one such project was taken up with financial aid from Canadian International Development Agency to plant an area of 1380 sq.kms.

3.2.7. Sustainable Forest Use

We now attempt to analyse the implications of changes in forest use for the sustainability of resource base, the much coveted objective of forest management. We take the changes in true 'forest cover' as an indicator of sustainability of forest use rather than the 'sustainable flows' from forest capital. Two sources of data on forests would be made use of: the forest area statistics of the FD and the Remote Sensing data. Conceptually, while the FD data gives the area under its legal control, the Remote Sensing data classifies the area under forests according to the density of forest cover.⁸ The Remote Sensing data is available for two points of time i.e. 1972-75 and 1980-82, approximately separated by 7 years, broadly coinciding with our second stage.

Table.3.13. Area under forest cover in A.P.

(Area in sq.kms.)

Year	Closed forest	Open/ degraded	Mang-roove	Total forest	% of geo-graphic area	Inter-pretation accuracy
1972-75	40280	8447	322	49049	17.72	94.26
1980-82	31852	8384	202	40438	14.61	94.75
*Change						
Est:	8428	63	120	8611	-	-
Max:	-	-	-	11080.2	-	-
Min:	-	-	-	6142.2	-	-

Note: Est: Estimated; Max: Maximum possible; Min: Minimum possible
Source: National Remote Sensing Agency, Hyderabad.

⁸ 10-20%: open forests; 20-30%: closed forests.

Table.3.14. Area under different categories of wasteland in A.P. and India:

Area in sq.kms.

Category	A.P.	India
I. <u>Culturable waste land</u>		
1. Salt affected	660	39032
2. Gullied or ravenous	2068	43289
3. Water logged/marshy	713	8809
4. Undulating up land (with/without scrub)	16676	107980
5. Jhum/forest blank	112	24016
6. Sandy area		105304
II. <u>Unculturable waste land</u>		
1. Barren hill-ridge or rock outcrop	4040	27502
2. Snow covered Glacial area	-	177070
TOTAL WASTE LAND	24673	533003
% OF GEO.AREA	8.91	16.21

Source: Mapping of Wastelands in India from Satellite

Tables.3.13. and 3.14. show the area under forest cover and wastelands computed from satellite imageries. Evidently, even assuming that all the culturable wasteland would be brought under forest cover and that the forest degradation could be completely arrested, hardly 22.06 per cent (in India 24.09%) of total geographical area could be brought under forest cover far from the coveted 33 per cent; let alone the financial feasibility of such a venture! The global average of forest cover was only 22 per cent while that of China was 12 per cent. (Li Jinchang *et al* 1988). Thus, the 'optimal area under forests' around which centres most of the arguments of forest bureaucracy is founded on an utopian ideal which is neither possible nor seem to be a necessity.

As per the above data, A.P. lost 17.56 per cent of its total forest cover and an alarming 20.92 per cent of closed forests, whereas the reported loss in forest area as per FD (area disreserved) was 1031 sq.kms i.e.1.59 per cent of the area in

1972-73. Thus, the annual compound growth rate amounts to 2.75 and 3.35 per cent of total and closed forests respectively. As can be seen in Table.3.15., agricultural purposes account for major proportion of forest area de-regularised.

Table.3.15. Forest area de-regularised (lost) for various schemes in A.P.

PURPOSE	A.P.	ADILABAD
1. Projects & Rehabilitation	66759	16250
2. Agricultural Purposes	87289	1343
3. House sites, other- Depts., Industries, Instits.	18816	494
4. Singereni Collieries	5461	2848
5. Encroachments regularised	29160	27053
Total:	207485	47987

Source: Facts & Figs, 1984, FD, A.P.

In an earlier study we observed that the degraded forests were an intermediate stage between closed forests and non-forest land which logically implies: (unsustainable) non-industrial pressures on even the degraded lands leading to further degradation. (Raju et al 1988) Thus, hypothetically one may attribute the degradation of closed forest cover to industrial uses but there is no way one can explain the further degradation and/or conversion of degraded forests to non-forest lands without accounting for the unsustainable pressures from the non-industrial uses.

The unauthorised fellings, both non-industrial and industrial, were admittedly, much higher than the reported data. But as most of these unauthorised fellings primarily cater to the unsatisfied market demand (effected by the shift in consumption pattern of forest wood) and the non-market demand from rural poor; the blame rests on FD for leaving this demand unplanned in

the over all model of industrial oriented forestry. Social forestry obviously is no solution, given the magnitude and nature of the problem.

The raw material problems in the wood based industries on the other hand, might indicate excess capacities installed and unsustainable harvests, targeted. A perusal of the structure of forest expenditure (Table.3.16.) reveals the poor investments made on the real forest works that ensure renewability of the forest resource.

3.2.7.1. Forest expenditure - sustainable use

The total expenditure was re-grouped into that which facilitate exploitation or organisation of forestry (category A) and that expended on protection and regeneration of the resource (category.B) presented in Table.3.16.

Table:3.16. Structure of Forest Expenditure in A.P. (in % s)

Particulars	1980-81	'82-83	'83-84	'84-85
CATEGORY:A				
1. Direction & Administration	29.83	27.63	27.92	25.54
2. Survey & Demarcation	14.87	15.88	15.22	14.26
3. Exploitation	28.20	22.05	21.28	16.36
4. Infrastructure	1.67	1.47	2.10	1.26
5. Others	3.33	3.19	3.40	2.22
Total	77.70	70.22	69.92	59.64
CATEGORY:B				
6. Research & Education	2.16	2.03	2.22	1.45
7. Plantations	8.70	5.85	5.61	7.09
8. Farm Forestry	5.58	15.27	14.97	25.33
9. Soil & water conservation	1.86	1.62	1.42	1.48
10. Forest Protection	1.79	2.16	2.98	2.30
11. Wild life	2.09	2.28	2.53	2.59
Total	22.18	29.21	29.73	40.24

Source: Compiled from Annual Administration Reports, FD.

Two observations follow from the above Table viz. minor proportion of the total expenditure was spent on category.B and secondly, this proportion was increasing consistently.

Expenditure on farm forestry was increasing rapidly which in fact, was the major source of growth in expenditure on category.B. Expenditure on plantations follows that on farm forestry.

Given the species composition of plantation programmes, one would genuinely doubt whether the expenditure on plantations is an investment or disinvestment. Also, its all the more reasonable to question whether subsidising big farmers in taking up commercial tree plantations is 'forestry' and whether planting trees would suffice and supplant the ecological functions of natural forest cover. Therefore, whether the investment on farm forestry is 'sustainable' or not, would to a great extent depends on one's perception of 'forests'. However, the low investments and high rates of degradation of forest cover suggest that even the 'forest resource' as conceived by the FD were not been managed on a sustainable basis.

SUMMARY:

The quality wood markets continued to be the major source of forest revenue. However, one major departure from the state forestry in Hyderabad was integration of forests with the broad national economy where in the 'national objectives' like industrialisation etc also played an important role in shaping the state forestry.

In accordance with the changing objectives, forest management techniques had also been changed from one of 'sustainable management' of natural forest growth to augmenting production with input intensive techniques. This also necessitated structural transformation of the resource itself,

given the high species diversity of tropical mixed forests. Though 'regeneration of a resource base for industrialisation' was the stated objective, revenue interests also determined the over all programme. (ex.cashew plantations) This increased investment intensive forestry, and the increased 'value' of forests necessitated increased protection which led to further strengthening of the protective machinery for ex. Draft Forest Bill, 1980 and the consequent exclusion of local use. Also, forest land by itself has assumed significance and any encroachments were despised. Populist programmes like 'social forestry' were contrived to mollify the resentment over the loss of local access to the forests. Far from being a 'positive sign' towards an 'enlightened stage' (Nadkarni (1989), the 'people's forestry' essentially remained a populist disguise for the status quo.

No concerted efforts were however, made to accommodate the contending pressures mostly emanating from the local use. The non-market and low value market demands were left unplanned. While the industrial wood and quality timber dominated the production structure of state forestry, the other (local) uses continued to be significant perhaps, in an 'illegal' framework. The large scale forest degradation is a manifestation of these conflicts along with the ecological forces that are internal to the forest ecosystem.

The crises these changing forest use patterns inflicted upon the tribal economy and their responses are brought out in the following chapter.

Chapter 4

TRIBAL-FORESTS : DYNAMICS OF INTERACTION

Having discussed the dynamics of state forestry in the earlier chapters in this chapter we attempt to study the impact of changing forest use patterns on the dynamics of tribal economy. The subject under discussion here has mainly two dimensions: 'transition' of the tribal economy and its 'integration' with the larger economy. The scope of this chapter is but limited to the study of relevant aspects of the problem that condition the tribal - forest interaction.

The tribes of India were predominantly agrarian tribes at various levels of 'transition'. We conceive the 'transition' of an agrarian tribal economy as a transition in the farming system from a relatively self-sustained extensive forest fallow system to an annual/intensive cropping system integrated with the larger economy. In anthropological literature it is generally understood as a transitory process in the tribal - rural continuum. In common parlance it is -- transition from the shifting cultivation to settled cultivation. This process has a geographical dimension also. The shifting cultivation systems are largely practiced in the slopes of high lands. As this marginal agro-geography cannot sustain intensive cropping, the transition involves movement of the population towards the relatively fertile valley lands.¹

¹ For a detailed discussion on this theme see Boserup E (1965:15-39). However, this may not be necessary in the case of rich forest ecosystems like that of western ghats which can be transformed into vibrant plantation agriculture systems; and also in areas where the adoption of soil conservation technologies like contour bunding etc are viable.

Integration of the tribal economy with larger economy followed mainly on two accounts viz. commercialisation of forest resource i.e. tribal economy as a link between forests and forest product markets in the larger economy, and secondly, integration of tribal economy with the larger market economy i.e. penetration of market forces into the tribal economy on both production and consumption sides. For presentational convenience this chapter is organised in three sections. Section.I gives a brief account of the study region i.e. Adilabad district. Section.II mainly deals with the exclusionary use conflicts centered around forest land while section.III deals with other aspects of the problem.

4.1. Section.I: The Study Region

Adilabad district is one of the two most backward districts of Andhra Pradesh and is the least densely populated. The district was formed in 1905 with the head quarters at Adilabad and was re-organised mainly in 1956 under the States Reorganisation Act when it lost its principally Marathi speaking taluks to Maharashtra and gained Mudhole taluk. Wankadi taluk with predominantly tribal population was subsequently carved out of Asifabad taluk in 1979. However, owing to data problems we would only consider the former Asifabad taluk.

4.1.1. Geography

Adilabad district is situated between $77^{\circ}46'$ and $80^{\circ}0'$ of the eastern longitudes and $18^{\circ}40'$ and $19^{\circ}56'$ of the northern latitudes. The Satmala ranges traverses the district from the north-west to the south-east for about 281.5 kms. The district can be broadly divided into three physiographic tracts namely,

the central high lands and hill ranges, the rolling downs of the east and the south-east and the gently undulating plains of the Penganga valley in the north, the Godavary valley in the south, and the Godavary and Pranahita valleys in the south-east. The high lands were densely forested. (NCAER 1970)

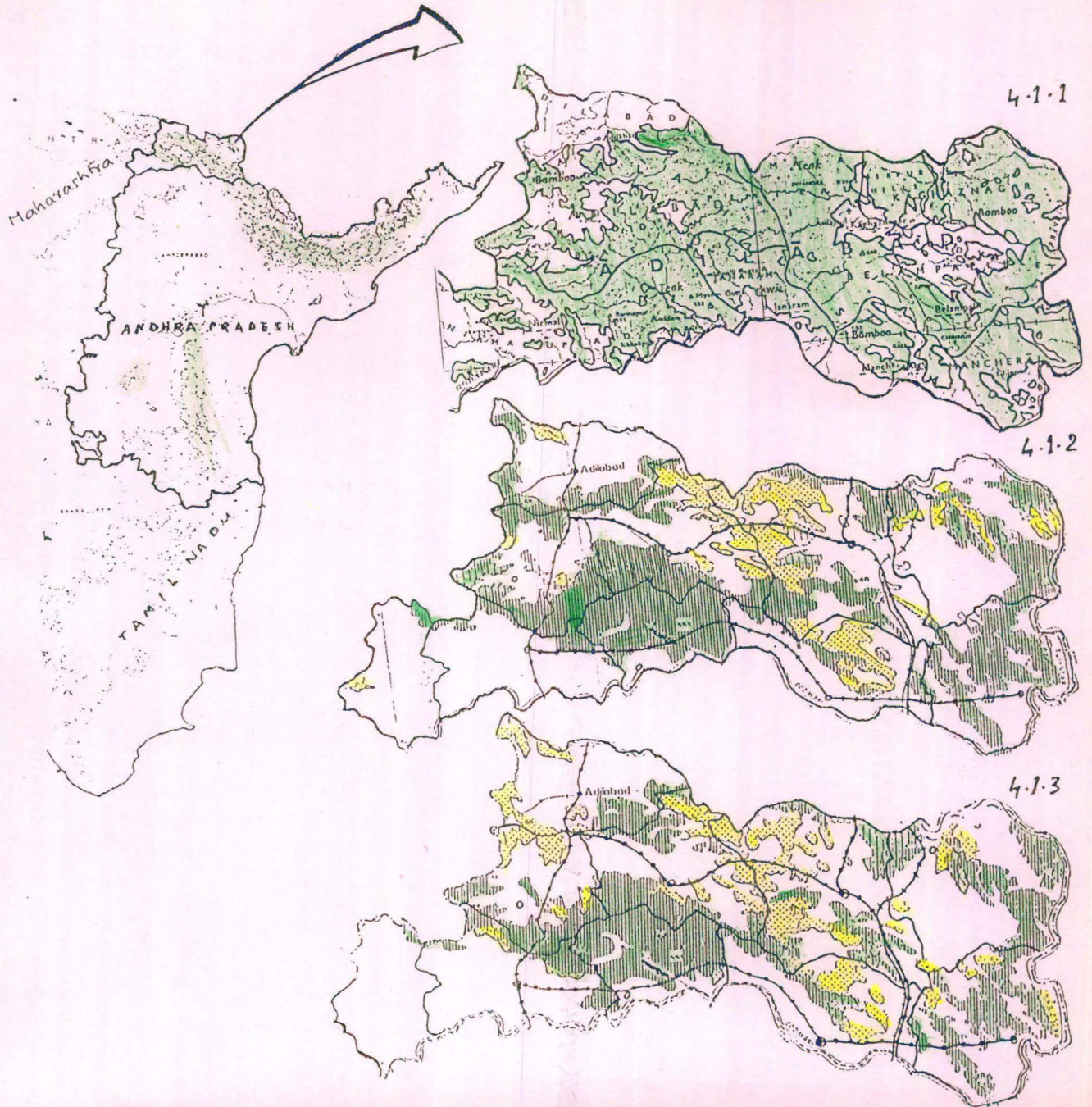
Godavary river system drains most of the district which forms the southern boarder of the district while Penganga, Pranahita and Wardha flow through other boarders. The district had the highest annual rainfall in the former Hyderabad state at 39.04" against the state's average of 30.37". (avg. of the 40 years preceding 1940).

4.1.2. Growth of population

Adilabad was a predominantly tribal populated district even during the late nineteenth century with poor communications and rich in forests. It was in the early years of the twentieth century that the district was opened up with the development of communication network linking Mancherial and Rajura on the eastern side and Nirmal and Adilabad on the western side. (see Map.4.1.2) This opened the gates for land hungry peasantry in the adjoining areas. Linking of Nirmal and Mancherial later, encouraged Telugu cultivators from the neighboring district of Karimnagar to settle in the riverain tract and acquire land on the left bank of the Godavary; and the Maratha peasantry acquiring larger parts of northern plains. (Haimendorf (1982:52)

As can be seen from Table.4.1. the rural population growth rates in the district and its constituent taluks were far higher than that of Andhra Pradesh state as a whole suggesting large scale immigration into the district. The immigration into the

ADILABAD DISTRICT



Map.4.1. Map showing Andhra Pradesh and Adilabad districts

NOTES : See next page

Notes:Map. 4.1.

1. (Remote Sensing) Map showing Andhra Pradesh and (Adilabad district)
Green patches - the forest cover
No distinction made between closed and degraded forests
Source: National Remote Sensing Agency, Hyderabad.

2. ADILABAD DISTRICT:
 - 4.1.1. Green shaded area shows the (forest) area under the legal ownership of FD
Source: National Atlas of India, Survey of India, Calcutta.
 - 4.1.2. (Remote Sensing) map showing forest cover in Adilabad district in 1970-75.
Green shaded area: Closed forest cover
Yellow shaded area: Open/degraded forest cover
Source: National Remote Sensing Agency, Hyderabad.
 - 4.1.3. -do- for the year 1980-82

INDEX: 4.1.

: Roads linking
a. Adilabad - Nirmal
b. Nirmal - Lakshettipet - Chinnur
c. Mancherial - Asifabad
d. GudiHatnur - Utnur - Kerimeri-Asifabad

: Railway line

: Taluk boundary

2. : Taluk Head Quarters

- | | |
|---------------------------------|-----------------|
| 1. Adilabad (also District H.Q) | 2. Boath |
| 3. Mudhole | 4. Nirmal |
| 5. Khanapur | 6. Lakshettipet |
| 7. Chinnur | 8. Sirpur |
| 9. Asifabad | 10. Utnur |

- Notes:
1. The difference between the 'forest' area under the FD and the actual forest cover. (4.1.1-4.1.2)
 2. Increase in the yellow patches showing increasing degradation of forest cover. (4.1.2-4.1.3)
 3. Expansion of the non-shaded area showing further degradation/enchroachments into the forests (4.1.2-4.1.3)
 4. Forest cover Khanapur taluk was relatively stable.
 5. See the pattern of opening of the district (Index:1.I)
 - e. While 1,2 and 3 were opened up early in this century, mainly opening the plains, 4, opened in seventies, exposing the central high lands of Utnur, Asifabad (present Wankadi taluk carved out of Asifabad)

district can be divided into two phases: the first destined to the riverain plains; and the second phase to the central high lands.

The first phase of immigration into the district (in the first half of the century) was of the peasantry of the neighboring districts into the plains as was explained earlier. As we shall later see, this was mostly encouraged by the state as a part of the over all strategy of 'reclaiming' the forests and populating the district. As can be seen from Table.4.2., the riverain plains of the taluks as explained earlier, account for bulk of the decadal change in rural population in this period. In the latter half of the century the central high lands mostly Utnur taluk received bulk of the immigrants following its opening by a road linking Utnur-Kerimeri-Asifabad. (see Map.4.1.2, Table.4.2.) Banjaras, the traditionally nomadic pastoral community who were superior in material and political infrastructure to the local aboriginal populations, constituted major proportion of the immigrants. Interestingly many studies point out that these people were settling as agriculturists, acquiring land.

Mudhole taluk was practically not a part of Adilabad district till 1956 and also do not share the general cultural and even material environment of the district. Khanapur, a Paigah taluk in the Hyderabad state also did not receive any significant immigrants.

As can be seen from Table.4.3. Utnur was the only predominantly tribal populated taluk in the district. While the decline in the proportion of tribal population between 1961 and 1971 shows the real trend of immigration of non-tribal

communities into these regions, the increase during 1971 - 1981 was due to inclusion of Banjaras in the scheduled tribes in 1977.

Table.4.1. Decennial Growth Rates of Rural Population in Adilabad District

(compound growth rates in % s)

YEAR	A.P.†	-----District-----		Adilabad Rural	Utnur Total	Asifabad Rural	Boath Rural	Lak'pet Rural	Sirpur Rural	Chinnur Rural	Khanapur Rural	Nirmal Rural	Mudhole Rural
		Total	Rural										
1901	-	-	-	-	-	-	-	-	-	-	-	-	-
1911	11.77	27.25	25.68	29.18	28.11	22.62	18.22	24.66	27.87	31.69	21.04	28.71	21.77
1921	-0.13	4.47	5.42	6.81	5.66	6.13	6.06	6.49	7.00	8.88	5.88	6.57	-4.37
1931	12.22	15.31	14.52	16.78	16.24	13.62	16.80	14.74	15.74	14.28	16.59	14.22	8.69
1941	12.00	8.42	7.09	5.02	8.00	1.68	11.30	7.88	4.36	8.10	8.24	7.00	13.28
1951	13.12	9.95	4.27	3.45	9.58	-4.87	5.14	1.54	-2.03	9.86	8.73	7.43	10.39
1961	14.54	21.37	19.08	14.15	60.15	19.06	32.67	27.33	21.89	11.69	20.90	13.95	8.23
1971	18.98	27.65	27.01	23.95	70.28	20.59	27.71	21.07	21.64	30.46	33.88	20.19	13.53
1981	20.78	27.22	22.04	18.46	27.18	28.14	21.62	26.83	13.52	18.22	24.27	23.51	20.85

Note: †. Andhra Pradesh state (Source: Census Atlas, Part.xii, Census of India, 1981, Series.2, A.P.
Source: Compiled from various Census Reports of A.P.

Table.4.2. Taluk-Shares of Decadal Change of Rural Population of Adilabad

(in %s)

YEAR	DIST.	ADILABD	NIRMAL	LAK'PET	CHINNUR	SIRPUR	ASIFABD	UTNUR	BOATH	KHANAPR	MUDHOLE
1901	-	-	-	-	-	-	-	-	-	-	-
1911	100	12.96	15.13	11.72	11.57	13.54	10.31	4.78	5.16	4.51	10.2
1921	100	14.74	16.81	14.49	16.1	16.39	12.92	4.65	7.65	5.76	-9.52
1931	100	13.73	13.71	12.41	9.98	13.96	10.78	4.99	7.96	6.88	6.4
1941	100	8.57	13.94	13.6	11.56	8.00	2.69	5.16	11.18	6.3	19
1951	100	9.6	24.33	4.44	23.6	-6.03	-12.35	10.26	8.78	11.21	26.15
1961	100	8.28	9.97	16.31	6.25	12.96	9.36	14.35	11.93	5.93	4.65
1971	100	10.36	10.65	10.37	11.78	10.11	7.79	17.38	8.69	7.52	5.35
1981	100	9.24	13.9	14.91	8.58	7.16	11.98	10.68	8.08	6.73	8.74

Note: see along with the Map.4.1.2.

Table.4.3. Schedule Tribe Population of Rural Adilabad Dt.
(Arranged in descending order of % of S.T.Popln.in 1981)

Taluk	% of S.T. Population			Rural Density 1981\$	% of cultivated area to total area @	% of irrigated area to total cultd. area@
	1961	1971	1981			
Adilabad District:	15.42	15.45	20.29	83	43.67	6.14
1. Utnur	59.81	58.18	62.89	63	39.59	0.52
2. Boath	24.78	22.40	31.54	75	47.63	1.15
3. Asifabad‡	25.22	23.87	26.49	77	58.61	3.89
3.a.Wankadi	-	-	-	47	58.01	0.05
4. Adilabad	19.09	18.90	21.92	95	47.30	0.63
5. Khanapur	8.49	8.95	17.18	102	18.80	32.76
6. Sirpur	16.02	17.11	15.61	65	40.89	3.05
7. Chinnur	7.03	8.80	10.61	75	34.59	0.00
8. Nirmal	3.30	3.67	10.54	120	43.46	16.22
9. Lakshettipet	0.51	7.63	9.88	92	44.39	16.20
10. Mudhole	0.31	0.67	7.25	117	65.15	3.66

Note: †.including Wankadi taluk in 1981.; @: in 1981.;\$: per sq.km.
Source: Census Reports.

4.1.3. The tribes of Adilabad

The tribal population of the district consists of an array of tribes at various points in transition. The Kolams, the most primitive of the tribes of the region, and also the Naikpods practiced shifting cultivation with hoes in the steeper slopes while numerically the most predominant Gonds usually cultivated the gentle slopes or plateau lands on a shifting basis with tillage.

4.1.4. Forests of Adilabad

The district is covered by the southern tropical dry deciduous forests (Champion's classification) which is a climatic climax type of forest of the region. A mixed type of vegetation is the characteristic of this type. However, presence of more pronounced dominant species like teak was attributed to the

frequent fires set up by the interacting populations and other local pressures like grazing. The fire resistance, heavy light demanding, vigorous coppicing and non-browsability etc characteristics of teak helped it to assume dominance. Thus, the 'value' of these forests increased with the increasing 'value' of the quality timber. (Rajagopal (1976:15) This is a striking example of the 'human factor' in the 'ecosystem development'.

The area under the control of FD is around 16,200 sq.kms. constituting around 45 per cent of the geographical area of the district (as against 22 per cent in A.P.). These forests are one of the most productive forests of the state yielding about Rs.25 per acre against Rs.10 in the State in 1971. (Khan 1971)

However, the actual forest cover is far less than the official figures as can be seen from Maps.4.1.1 and 4.1.2. Map.4.1.1. shows the forest area under the ownership of FD while Remote Sensing Maps.4.1.2 & 4.1.3 show the actual forest cover in 1970-75 and 1980-82 respectively. The vast areas of degraded forests can be observed. A visual overview of these Maps at two points of time gives a broad idea of the degradation of forest cover in the district. A comparison can also be made with Map.4.1.1. which perhaps was the forest cover at some point on time in this century. It can also be observed that the forest cover around the Khanapur taluk seems to have been relatively less affected when compared to the Utnur and Asifabad taluks. Khanapur taluk had the highest proportion of irrigated area in the district, with rice forming the single largest crop. (Table.4.3.) This taluk has meagre tribal populations and also, the immigration into this taluk was low, if at all. It was a Paigah taluk earlier. These factors may explain the relative

variation in degradation of forest cover. However, one needs to analyse it further at a primary level to have any insights into this seemingly interesting variation which is out of the scope of the present study.

4.2. Section.II

The geographical niches of the farming systems of Kolams, Naikpods, Gonds and the non-tribal communities epitomising various stages in the process of transition in a way suggest the natural course of evolution of the stable intensive farming systems in the valleys. Kolams and Naikpods, the more primitive tribal groups to the Gonds, cultivated the steep slopes with digging sticks and hoes while the Gonds, at a relatively advanced stage in the process, were found cultivating the gentle slopes and plateaux using plough. These farming systems were characterised by long fallow periods i.e. forest fallow system with around 12 years of fallow period alternating with 3 years of cultivation, commonly called 'shifting cultivation'. The tribals had a specific preference for the lighter soils of the high lands to the heavy black cotton soils of the valleys. (Haimendorf 1979:395; Haimendorf 1982:53) The general adaptation of the small millet and coarse cereal crops, characteristic of these systems, to the lighter and well drained soils and the ease in working these soils might explain this. Only the monsoon crop was grown consisting of a diversified crop mix. Though this was the scenario in the late 19th century and the early 20th century, in the later years extension of Gond cultivation into the valleys, with a stable two crop system i.e. kharif and rabi, was not uncommon. The higher water holding capacity of these harder soils

and the use of plough facilitated them to take up water logging resistant crops like rice and wheat in these soils during the winter period. Also, the interaction of tribals with the new settlers in plains led to the diffusion of technology. Population growth was also one of the factors that influenced this transition. Thus, observes Haimendorf, "Greater density of population, increased stability of settlements, and the general use of the oxen-drawn plough must have led to the extension of cultivation to the heavier black soils of the valley bottoms". (Haimendorf 1979:37,395) Though this seems to be the natural course of transition into a stable annual cropping system, the period that followed the organised state forestry witnessed large scale dislocations in the tribal economy which perhaps, hastened the process. During this period however, these highlands remained isolated, and the economy self sustained in minimal interaction with the larger economy.

The long fallow periods and burning of forest growth before cultivating the fields allowed recuperation of the soil nutrients and thus, sustained productivity of these marginal soils. (Haimendorf 1982:53).

As we have noted earlier, the policy of opening of the forest areas for cultivation was perceived by the Hyderabad state during the early years of this century. Major proportion of the forest land thus given away in the Dominions was from Adilabad forests. The area given away for cultivation in the district followed the same trend as we have observed for the state. (Graph.2.3.) This state patronage in addition to the improved transport network gave the primary impetus to the influx of experienced farming communities into the district and this in

turn attracted investments from the absentee land lord classes who began acquiring villages to be managed on a commercial basis. (Haimendorf (1982:54); Yorke (1982:204)) Timber speculators acquired large tracts of forests on the pretext of extension of cultivation, exploiting the cheaper rates of valuation of wood cleared on such areas. As much land was available in the valleys the tribals were not much affected in the early periods. Those displaced however, could retreat into the forested hills and reclaim it for cultivation.

4.2.1. Forest Conservancy

It was only when forest conservancy was extended into interiors of the district during 1920s that the actual problem had manifested. Adilabad was one of the districts looked upon by the FD as 'containing an excess of forest area' and in which FD was having "...the hardest struggle to save what little valuable forests there is left". (Mason 1931). The presence of valuable teak stands and proximity of the region to the potential markets of forestless tracts of Marathwada and the nearness to the Kazipet-Ballarsha railway line linking these areas with the markets in the British India, all these factors made the forest tracts of Adilabad so 'valuable' to the FD, especially after the revenue from timber seemed prospective in the early 1920's. The scramble for more fertile forest lands thus had taken shape, FD on one hand and the new immigrants on the other with conflicting interests. Thus, observed Mason, " The only area here (Adilabad), which carry forest growth of any value, are unfortunately just those which are required for agriculture, namely the valleys and the tops of the hills.." (Mason 1937). As we have seen already,

the colonisation schemes were given up in the early 1920s. But the numerous patta rights granted inside the protected forests were not demarcated "...nor beyond the payment of a small annual revenue assessment, have the pattadars taken possession of their lands". These pattadars later claimed their rights in the rich forest lands and thus, large forests were excised to regularise these pattas. Notwithstanding this, the area under forests registered an annual growth rate of 1.46 per cent; and the protected forests 2.6 per cent. (Table.4.4., Graph.4.1.)

**Table:4.4. Growth Rates of Classified Forest Area:
Adilabad District**
(compound growth rates in %s)

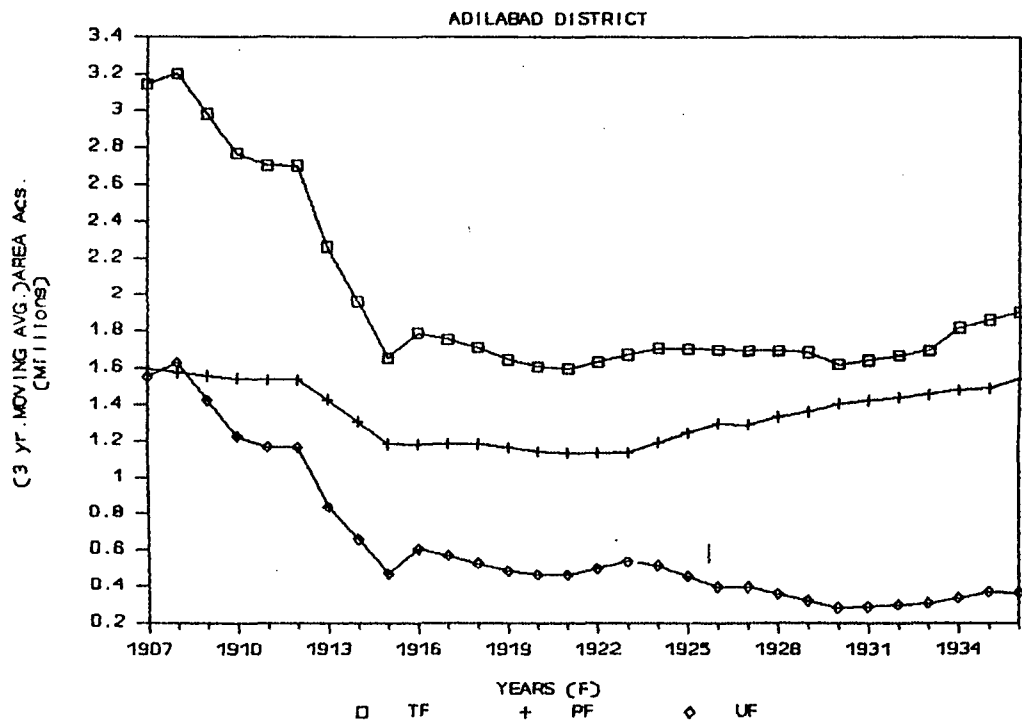
Period	Total	Protected	Unclassed
1905-21	-3.32	-2.20	- 5.45
1922-36	1.46	2.60	-2.50

Source: Compiled from AAR, various reports.

Part of this increase in the area of protected forests was contributed by the inclusion of unclassified forests under protection which registered a negative growth rate of 2.5 per cent. The sharp decline in the forest area before 1920s (-3.32%) can also be seen in Table.4.4.

Although the state didn't patronize immigration any more, the process continued unhindered, now the destination being the lands reclaimed and cultivated by the tribal peasants. The absentee land lords who secured villages in the auctions encouraged the experienced farmers of the plains to replace their tribal tenants. Also, the relatively advanced immigrant communities with all the means at their disposal, economical and political, could manipulate the revenue officials and the records to secure patta rights in the lands cultivated by the tribals

CLASSIFIED FOREST AREA



Note: TF: Total forests, PF: Protected forests,
 UF: Unclassified forests

Graph.4.1. Classified forest area, Adilabad district

under siwai-i-jamabandi² land tenures. Thus, the native tribals were alienated from their lands. A detailed exploration of this process however, is beyond the scope of the present study.

The effect of forest reservation on the aboriginal occupation of land was equally disastrous. This can be best understood in the words of Setu Madhav Rao, the Special Social Service officer in Adilabad in Nizam's Government. "When the forest lines were first demarcated, the peculiarities of the tribal area were not taken into consideration. In the first place, enclosure lines were drawn round those villages, situated within the forests, which had a considerable population, and then too, only round the lands which had legal and rightful owners. Lands which were held on Sivai-i-jamabandi were not taken into consideration at all and were included in the forests as being Government lands held illegally. The tendency, further was to have as few enclosures as possible in a particular block mainly with a view to introduce better management of the forests. As a result, small villages and hamlets were wholly included in the forests". The forest boundary lines ran so close to the villages as to leave hardly any room for further development and the villagers were not entitled to have any compensation as their possession of lands was not legal. (Rao S.M.R, 1949:87-88)

The impact of forest reservation on Kolams, Naikpods and other shifting cultivators was much more grave. The lands lying fallow at the time of reservation were claimed by the FD, pinning them down to the site which they happened to occupy at the time of forest reservation and this had virtually ended their

² Having no ownership rights on lands and the right to cultivate has to be renewed periodically.

traditional type of economy. (Haimendorf 1982:85,90). After very few years these slopes with marginal soils were utterly exhausted and as 'they were prevented from clearing any more forest, they had to move away unless they were able to obtain some level land and learn the art of ploughing'. (Haimendorf 1982:85) This process however, did not result in great hardship in villages with fair amount of permanently cultivated heavy black soils. (Haimendorf 1982:90) The capacity to bribe the forest settlement officers and others largely decided the ability to sustain this aggression. The immigrants succeeded in clearing large tracts of forests and establishing intensive cultivation. (Haimendorf 1982:87)

The 'transition' enforced on the forest fallow systems hindering the natural course of transition to the relatively fertile soils, destabilised the system to eventual degradation and contributed to social tensions.

4.2.2. Tribal Resistance

The repression of the FD in turn bred resistance that led to the first case of armed resistance in the tribal history of Adilabad, under the leadership of Kumra Bhimu. This struggle against evacuation by the FD was put down without much effort. It was followed by a series of rehabilitation measures mainly under the initiative of Prof.Haimendorf. These include regularisation of the lands cultivated under siwai-i-jamabandi tenures by issuing pattas, rehabilitating the landless Gonds from the taluks of Kinwat, Boath and some villages in Adilabad and those in Utnur taluk by allocating an average economic holding of 15 acres of dry land to each landless family in Utnur taluk etc. Considerable

area was excised from the reserve forests and restored to cultivation by tribals. By 1946, 1,60,000 acres had been assigned on patta to tribals and about 85 per cent of the tribals of Adilabad district were thus rehabilitated. (Haimendorf (1979:550) Various measures to protect the tribals against land alienation were also initiated.

The district experienced another wave of immigration during sixties and seventies following the completion of a road that opened up the interior tribal areas in Utnur taluk. Apart from some merchants, shop keepers and money lenders, majority of these migrants belong to the deprived communities (though better off than the native tribals) in the larger economy like Banjaras, Hatkars, Mahars, Muslims etc from Maharashtra, came with the intention of acquiring land. Large scale forest clearings by these immigrants and tribal land alienation followed. (Haimendorf (1979:554-5) While the consequences of this immigration broadly followed the same pattern as we have observed in the earlier period, there is one important departure i.e. penetration of the Naxalite movement into the tribal tracts. Another significant feature of this period is the commercialisation of tribal agriculture and the concomitant penetration of cash economy. Changes in cropping pattern towards non-food crops, cotton in particular, which led to the growth of commercial centres like Jainur in the tribal heart land, can be observed.³ (Reddy 1987) The following Table presents the changes in the area under principal crops in the predominantly tribal populated taluk of Utnur.

³ These 'growth centres' in fact, turned into an exploitative system of expropriation of tribal assets, land in particular. (Haimendorf (1982b:413)).

Table.4.5. Area Under Principle Crops in Utnur Taluk

Crop	1930	1950-51*	1954-55	1962-63	1975-76
Area in Acs.:					
Rice	67	2591	4059	9384	11380
Jowar	20500	11861	19553	32624	42280
Cotton	2291	7430	17608	20537	43682
GAS**	55940	32813	59639	89435	138077
% of GAS:					
Rice	0.12	7.90	6.81	10.49	8.24
Jowar	36.65	36.15	32.79	36.48	30.62
Cotton	4.10	22.64	29.52	22.96	31.64
GAS	100.00	100.00	100.00	100.00	100.00

Note: *.. Averages of the data in 1950 and 1951 ...

**.. Gross Area Sown

Source: Compiled from various sources.

Tremendous growth in rice and cotton in Utnur taluk can be observed from the above Table. This shows a relative shift in the cropping pattern towards the finer cereals like rice and commercial crops like cotton.

The changes in the consumption pattern mostly in favour of the finer cereals like rice and market goods which in turn brought in the demand for cash is also perceptible. However, the interlocking of the product and credit markets, and even the consumer goods market, largely controlled by the non-tribals proved contrary to tribal interests. Thus, Haimendorf (1982:109) observes..."..the very fact that land uniquely suitable for the growing of cotton is a magnet for advanced cultivators ...makes it virtually impossible for tribals to remain in control of the land and its produce". Instead of diversifying the tribal economy and taking off pressure on land there by, this development further increased the pressure on land. This may probably explain the large scale illicit cultivation in the 'forest' lands which became a major irritant to the state.

4.2.3. 'Illicit Cultivation':

Table.4.6. 'Illicit cultivation' in Adilabad district
(Area in acs.)

Year	Forest area excised for illicit cultn	Area covered by 'irregular' pattas
Prior to 1949	17046	3323
1949-64	57510	9710
1964-81*	32574	NA
1981-85*	43560	NA

Sources: A Note on Illicit Cultivation, CCF,FD.
* from Mukherji SD⁴ (1987)

The 'illicit cultivation' of the forest lands in Adilabad district was a cyclical process of illegal excision- pressure to regularise - proposals to regularise by the Government - further excision. Though there were attempts to regularise and consequently the areas were excluded from state forests and handed over to the Revenue Department, they were hardly been materialised. As can be seen from Table.4.6. there was enormous increase in the pace of unauthorised clearings for extension of cultivation during eighties which coincides with the spurt in the activity of Naxalites. Whereas an average of 3834 acres per year were excised during 1949-64, this has increased to 10,890 acres per year during eighties. A notable feature of this illicit cultivation is that all most all the area thus excised was from the 'productive forests of the plains' which constitutes around two thirds of total forests of Adilabad. (CCF 1971) This vividly brings out the pressure on the forest land of the productive plains.

⁴ S.D.Mukherji was the Chief Conservator of Forest, Adilabad Circle.

The penetration of Naxalites into this region and the protection extended by them gave further impetus to this struggle, decisively altering the balance in favour of the tribals. Under the protective cover of Naxalites the tribals burnt down large tracts of teak forests and brought them under cultivation. Thus, about 12,000 cu.mt. of partly burnt teak timber was salvaged from the forests of some blocks in Utnur taluk during 1985-86 alone which amounts to more than six crores of rupees at the market prices. (Mukherji 1987). When asked about the fairness of encouraging cutting of forests in the name of land struggle, Kondapalli Seetharamaiah, leader of CPI(ML) People's Was Group, that's spearheading the agitation, answered,

".. While indiscriminate eradication of forests is a loss, increase in agricultural land has several benefits. There is no meaning in saying one should not cut forests even when necessary. We will have to think of other methods to maintain ecological balance. Trying to prevent cutting of forests for agricultural purposes only means blocking the process of civilisation". (Anon 1988)

Another feature was the resentment of tribals towards teak plantations ardently taken up by FD in the very lands from which they were being evacuated. Teak plantations stand as a symbol of oppression - a form of concrete wealth amidst stark poverty. The forest plantations are in fact, programmes of creating wealth in which the locals have the least share, if at all. One can visualise the crores of worth of teak plantations ardently guarded by the state, standing out amidst the poverty stricken people marginalised by the very process itself! The resentment of tribals towards 'afforestation' is but natural.⁵ The nurseries were damaged in many places and the seedlings planted were

⁵ Interestingly, teak is the choicest species in the 'tribal area sub-plan' and even the afforestation programmes of the catchments.

uprooted by the tribals. (Mukherji 1987) The efforts made to introduce tree patta schemes were also proved in vain, so as the campaign for afforestation by the Integrated Tribal Development Agency (ITDA). The reaction of the FD to this growing 'menace' could be gauged from the following remark in the 'Note on Illicit Cultivation in Adilabad'..

" As far as encroachments after 1964 are concerned, the FD should be given a free hand to pull down huts, destroy the crops which is the one and the only effective method to stop encroachments both by the local tribals and Maharashtrais".

Keeping up the legacy of the Department, this reflects the mood in the other camp! However, its not our intention to claim this as the movement exclusively of the tribals and to lump all the non-tribals as an exploitative class without a class structure in itself nor to identify the movement with exclusive forest issues. In a survey conducted by ITDA many non-tribals were also found enjoying the land under illicit cultivation (cited in Mukherji 1987) and its regularisation was one of the demands of the Naxalites. Also, the tribals are now a minority community in all the taluks of Adilabad except in Utnur where also, but for the notification of the Banjaras as a tribe in 1977 the tribal population is not a majority. Thus, the pressure on forest land should be viewed in the over all context of the region rather than that emanating from the tribal problems alone.

Also, the pressure on land is further accentuated by the internal population growth. In a study on the genealogies of selected families in two tribal 'villages Haimendorf (1979:424) observed the declining mortality rates and no efforts to limit families. As 'farming is still the only occupation open to Gonds lacking other skills' and the limited scope for developing the productivity of these high plateaux lands by intensive

cultivation, the future appears grim. Also, the erosion of the hill slopes due to 'the destruction of forest cover' is further eroding the productivity of these soils. (Haimendorf 1979:424)

Even the shifting cultivation is more a necessity forced by insufficient land against the popular belief that it is conditioned by 'tradition and culture'. In an evaluatory study on the river valley projects Andhra Pradesh, and Maharashtra, it was observed that the religious and cultural beliefs contribute to a small per cent (8 per cent) for adopting podu cultivation. The main reasons were found to be 'insufficient land, inadequate crop production and the need to meet food requirements'. (Rao, Sitapathi et al 1987) The scarcity of podu land in one village in Visakhapatnam district forced the Khond tribals to cultivate the same land continuously by applying FYM without leaving any fallow period. (Anon 1988)

4.3. Section.III

Apart from the changes centering around forest land, the employment generated in the forest exploitation and development of a regular market for Minor Forest Produce (MFP) to an extent influenced tribal economy. Here, we make a few observation on these aspects.

4.3.1. Minor Forest Produce (MFP)

As we have noted earlier, collection of MFP in Hyderabad state was organised by the contractors who secure the right to collect forest produce in the auctions held by FD. In effect however, the interests of contractors were more of collecting levies from the aboriginals for their domestic consumption rather than organising the export of MFP. The tribals resented these

extortionate levies. (Haimendorf 1945:105) Although, the restrictions imposed on collection of forest produce by tribals did cause great hardship to them but it in no way matches the large scale 'dislocations' caused by the denial of their access to forest land.

The MFP, beedi leaf in particular, assumed greater significance in the tribal economies in recent years. Though MFP collection and selling is seasonal, it has become an important subsidiary occupation of the tribals contributing significant share to their total income. (Ramaiah 1981) The transition of Chenchus from gathering food and tubers etc, for self consumption to collection of MFP on a large scale for sale, perhaps, is one of the very few success stories of transition that integrated them to larger cash economy. Obviously, there is little inherent conflict between the non-cultivating tribes' and state interests. However, over exploitation of bamboo and other forests by the industries, especially Sirpur Paper Mills, degrading the very base of their economy always remains a potential threat to their survival. (Haimendorf 1982:83)

The importance of beedi leaf trade in the tribal economy is evident from the fact that around 1.75 crores of rupees were being spent by the FD on paying wages and around 1.5 crores by the purchasers on processing, all within 50-60 days, major portion of which goes for wage payments. (Facts & Figures, 1977). Beedi leaf trade was nationalised during 1971 season. The FD claiming d' jure ownership over beedi leaf through nationalisation of the trade. Balagopal (1988), observes that the 'wages' the FD was paying for collection of MFP were much lower than what the tribals had been getting from the contractors prior

to nationalisation of the trade and this led to 'smuggling' of the produce. The state in fact, was the prime beneficiary of nationalisation of the trade, appropriating far greater amounts (difference between net revenue and expenditure in Table.4.7.) for itself in the process. This is evident from the following Table.

Table:4.7. Revenue and Expenditure from Beedi leaf trade

(Rs.in Crores.)

Season	Revenue	Expenditure	Surplus
Prior to 1971*	na	na	1.12
1971	3.35	1.15	2.19
1972	4.26	1.39	2.86
1973	2.36	1.15	1.21
1974	3.72	1.54	2.18
1975	2.90	1.30	1.60
1976	3.97	2.02	1.96#
1977	4.06	2.3	2.03#

Source: Facts & Figures, 1977, FD.

Note: # .. provisional.

The average annual surplus revenue prior to nationalisation increased by around 96 per cent to 2.19 crore rupees immediately following the state take over of beedi leaf trade which is higher than the state expenditure on beedi leaf collection that goes as wages into the tribal economy. Juxtaposing this on the over all structure of forest expenditure, major proportion of which is spent in the larger economy and a part principally serving against the interests of tribals, one can see the drain of the surpluses generated in tribal economy.

4.3.2. Forest labour

Earlier in section.2.3. we have discussed the problems of labour availability constraining forest works in Hyderabad state and FD resorting to the contractors who could 'import' labour.

Also, we have noted the consistent efforts made by FD to secure permanent labour in the sparsely populated forested regions.

The indifference of tribals towards forest works was adduced to the 'unruly conditions', indolence etc. However, the labour demands of the podu coinciding with the season of forest works was in fact, one of the major factors that explain their indifference to forest works. The coercive methods adopted by the contractors and FD even during more recent periods to wean away tribals from podu so as to secure labour for exploitation/ plantation works would bear evidence to this.

As early as 1940s Haimendorf (1945) observed the transition of the Hill Reddies from podu cultivation to forest labour. Concluding this study he observes "...in addition to the forest reservation, the influence of timber merchants who prefer the Reddies to devote their time to bamboo cutting also contributed to the reduction in the amount of cultivation". More recently, one study on three tribal villages in Polavaram taluk of West Godavary district observed an occupational shift from podu cultivation to forest labour when the forest guards forced the shifting cultivators to desist from podu cultivation so as to achieve targets of teak plantations. Consequently this study observes, the area under podu dwindled and also the tribals of a nearby village vacated their village and settled on the other side of the hill to avoid such a situation. (Sastry 1985) The forest works are mostly seasonal and thus would not provide regular income to the tribals which in turn makes their dependence on podu cultivation a necessity and vice versa. Forest labour also introduced cash incomes, integrating it with the larger cash economy.

4.3.3. Work force changes in tribal regions

We have noted in section.3.1.2. that employment in forestry was offered as 'an alternative' to the infringement on tribal access to forest produce, as a part of the over all strategy of industrial orientation of forestry. Here, we make a few observations on this aspect based on our analysis of census data of Adilabad district

Table.4.8. Schedule Tribe Population and Work Force of Rural Adilabad
(Arranged in descending order of % of S.T.Popln.in 1981)

Taluk	% of S.T. Population			-----% of Total Workers -----					
	1961	1971	1981	Agriculture			Non-Agriculture		
				1961	1971	1981	1961	1971	1981
Adilabad District:	15.42	15.45	20.29	77.54	79.52	81.51	22.46	20.48	18.49
1. Utnur	59.81	50.18	62.09	89.85	92.17	91.66	10.15	7.83	8.34
2. Boath	24.78	22.40	31.54	86.31	84.32	85.71	13.69	15.68	14.29
3. Asifabad†	25.22	23.07	26.49	78.05	77.15	77.68	21.95	22.85	22.32
4. Adilabad	19.09	18.90	21.92	81.76	83.95	86.29	18.24	16.05	13.71
5. Khanapur	8.49	8.95	17.18	66.95	77.59	81.12	33.05	22.41	18.88
6. Sirpur	16.02	17.11	15.61	76.11	79.13	89.15	23.89	20.87	10.85
7. Chinnur	7.03	8.88	10.61	70.10	76.09	81.21	29.90	23.91	18.79
8. Nirmal	3.30	3.67	10.54	69.30	67.53	65.49	30.70	32.47	34.51
9. Lakshettipet	8.51	7.63	9.88	64.51	71.12	77.00	35.49	28.88	25.60
10. Mudhole	0.31	0.67	7.25	79.00	79.87	76.70	21.00	20.13	23.30

Note: Workforce engaged in Forestry was a meagre proportion of the Non-agricultural work force.

Source: Compiled from Census Reports.

It can be seen from Table.4.8. that the tribal populated taluks have high dependence on agriculture, and non-agricultural employment increases as we move away from the tribal populated taluks. The relatively high rate of non-agricultural employment in Asifabad taluk was mainly due to the industries located in the non-tribal areas of Asifabad i.e.in the present Asifabad taluk excluding Wankadi taluk. Another feature is that the proportion of non-agricultural workers has shown a general declining trend. As this was the over all trend, the agriculture dependence of the

tribal population is much higher. As Table.4.3. presents, the predominantly tribal taluks have meagre proportion of cultivated area under irrigation i.e. less than 1 per cent as against 6.14 per cent in the district as a whole.

Table.4.9. Occupational Pattern of S.T.'s: Adilabad Dt. 1981
(%of total workers)

Taluk	%of S.T. to Popln	Cultiva tors(a)	Ag.Lab (b)	Total (a+b)	H.H.Indy	Others
District	16.65	51.55	43.97	95.52	1.12	3.66
Utnur	62.09	64.98	32.88	97.86	0.26	1.88
Wankadi	48.45	64.32	32.13	96.45	0.52	3.03
Boath	31.54	55.43	42.39	97.82	0.73	1.45
Khanapur	17.18	40.53	55.29	95.82	1.09	3.09
Adilabad	16.63	42.63	52.14	94.77	0.72	4.50
Sirpur	11.34	40.44	56.84	97.28	0.37	2.35
Chinnur	10.61	25.77	65.92	91.69	1.67	6.64
Nirmal	8.59	45.94	40.36	86.30	6.15	7.54
Laxtipet	7.2	43.79	50.26	94.05	0.81	5.14
Asifabad	6.5	31.28	55.06	86.34	1.13	12.54
Mudhole	6.31	49.68	42.31	91.99	2.22	5.79

Source: District Census Hand Book, 1981, Adilabad district.

Table.4.9. shows the occupational pattern of Scheduled Tribes in Adilabad district in 1981. A detailed classification of the occupational categories was not available. The work force engaged in forestry was included in the 'Others' category along with Mining and Quarrying, Live stock, Fishery, other industries, trade etc of which forestry constitutes a minor proportion.⁶ It is strikingly evident from the above Table that agriculture was the primary occupation of tribals. The proportion of tribal cultivators was higher in the taluks with substantial proportions of S.T population i.e. Utnur, Wankadi, Boath and the contrary in case of agricultural labour. Also, the proportion of cultivators

⁶ The proportion of Mining, Quarrying, Live stock, Fishery and forestry of the workforce engaged in activities other than Agriculture and H.H.industry was only 22%.

was declining as we move away from the predominantly tribal regions. The tribal workforce engaged in activities other than agriculture was meagre particularly in the tribal regions as compared to non-tribal regions. The tribal workforce with forestry as their occupation would be far less, probably below one per cent.

Unavailability of the same data for earlier periods constrain us from analysing the trends. To obviate this and also to have a closer look at the question, we have analysed the village wise census data relating to Utnur taluk which is predominantly tribal region. The results are presented in Table.4.10.

Table.4.10. Work force in Utnur Taluk

(in %s)

Category %of S.T in 1961	Year	No.of- villges	Culti- vators	Ag.Labor	H.H.Indy	Others
=0	1961	4	42.60	47.13	5.14	5.14
	1971		47.23	38.94	1.28	6.17
	1981		41.84	49.49	1.28	7.40
0-25	1961	12	48.85	27.24	2.95	20.96
	1971		37.35	43.99	2.08	16.58
	1981		35.86	37.36	2.58	24.20
25-50	1961	17	56.06	33.23	3.35	7.35
	1971		61.20	38.36	1.85	7.55
	1981		48.82	42.47	1.56	7.16
50-75	1961	20	65.92	25.97	4.13	3.97
	1971		58.92	36.26	1.68	3.16
	1981		56.82	39.06	0.87	3.25
75-99	1961	61	78.10	17.09	1.28	3.53
	1971		70.36	24.11	0.62	4.91
	1981		66.18	29.36	0.50	3.95
=100	1961	44	85.10	11.85	1.15	1.90
	1971		71.10	26.78	0.11	2.01
	1981		68.87	29.25	0.39	1.49
Uninha- bited	1961	11	-	-	-	-
	1971		84.76	13.73	0.21	1.29
	1981		61.48	34.00	0.33	4.19

Source: Compiled from District Census Hand Book, Adilabad

The villages of Utnur taluk were arranged into seven groups according to the percentage of tribal population in total population in 1961 and the data was compiled accordingly even for 1971 and 1981. The increasing proportion of cultivators as we move away from non-tribal villages to purely tribal villages reinforces our earlier observation perhaps, much more strongly. The uninhabited villages during 1961 were occupied in the subsequent years. The workforce engaged in occupations other than agriculture was meagre and much less would be that engaged in forestry. Interestingly, the proportion of workforce engaged in non-agriculture declined from 1961 to 1981, albeit marginally, in all the groups except the second one. However, the category 'Mining, quarrying, livestock, fishing and forestry' constituted only 2.35 per cent of the total work force and 10.5 per cent of the 'others' category in 1961 for which this classification was available. At this proportion the case of second group would not be much different from other groups as far as forestry is concerned. Also, it can be seen from Table.4.10. that the proportion under 'others' was even smaller in the predominantly tribal villages as compared to the other categories.

It can be observed that the proportion of cultivators to the total population was declining faster in the tribal regions than in non-tribal regions and the consequent swelling of the agriculture labour force. These points in essence, reflect the lack of diversification of occupation structure in these regions, in tribal regions in particular. Also, despite of the large claims on employment generation through production forestry, it remained rather insignificant even in the densely forested tribal regions.

4.3.4. Employment generation = forestry

In a study on Koyas of Warangal district Ramaiah (1981:29) observed that the employment in forestry was 'mostly subsidiary' and that for females was 'very little'. (Ramaiah P 1981), (also see Roy Burman 1988)

Table.4.11. shows the employment generated in forestry in Adilabad circle in 1970-71. Such data was not available for more recent years. The Beedi leaf collection constitutes major proportion of employment in forestry.

Table.4.11. Employment Generation in Forestry, Adilabad circle:(1971)

Particulars	Person days of employment		Expenditure		Emp. as %of Exp
	Circle (1)	% of Tot (2)	Circle (3)	%of Tot (4)	(1)/(3)
I. Departmental:					
a.Normal conservancy	196326	6.76	513691	7.02	38.22
b.Development works	133352	4.60	446497	6.10	29.87
c.Beedi leaf	1131419	38.99	2890918	39.50	39.13
II. Contractors:					
a.Coupes etc.	927045	31.94	1861436	25.43	49.80
b.Bamboo extractn	332100	11.44	1152357	15.74	28.82
c.Tapping of M.F.P.	181845	6.27	454616	6.21	40.00
TOTAL	2902087	100	7319515	100	39.65

Source: Compiled from CCF,(1971), 'Adilabad and Its Forest Wealth'.

However, as we have noted earlier, beedi leaf collection is seasonal in nature, confined to 50-60 days in a year and thus, could not provide regular source of employment. The forest area of Adilabad in 1971 was 742123 ha, and the employment generated per ha. per year amounts to a meagre 3.91 person days, at a maximum possible wage rate of 2.53 rupees. However, this was a situation in 1971 before the advent of aggressive production forestry. The production forestry with clear felling and plantation programmes was expected to generate substantial

employment at the primary level. We have already discussed the question at a more general level. A closer look at the cost of raising teak plantations which can be taken as proxy for the potential for employment generation reinforces our earlier observation. Table.4.12. gives the average cost of raising teak plantations. These figures were arrived at by taking average of 52 teak plantation blocks in Kakinada Circle, total area amounting to 1493.69 ha.

Table.4.12. Expenditure on raising teak plantations (Rs.per ha.)

	Raising	I yr. cost	II yr.	III yr.	IV yr.	Total	% sur vival
Average	410.55	241.51	89.63	76.57	32.54	878.25	71.58
S.D.	81.06	55.63	15.79	14.00	24.10	216.42	11.06
C.V.%	19.74	23.03	17.61	18.28	74.06	24.64	15.45

Source: Compiled from 'Division information Book for Quarters ending 31-12-'79', Kakinada Division, Kakinada.

Total amount of Rs.878 were expended per ha. on raising and maintenance costs for four years which at a minimum wage rate of say, Rs.10 and assuming the entire amount would be spent on wage payments only, potentially generates around 88 labour days per ha. in 4 years or 22 labour days per year. These four years would be the peak period of employment generation in the course of teak plantations which extends to 30-60 years before final logging. More importantly, once planted with teak, the now 'valuable forest' would be closed for grazing at least till it establishes and as we have noted earlier, the local access to it would be curtailed. It might, in all probability reduce the MFP and fuel wood produce which as we have seen earlier in this section constitute significant proportion of total employment generated in forestry. Thus, the potential of plantation forestry in generating

employment at the primary level is marginal. The employment potential of short rotation plantations like eucalyptus, casuarina although higher than teak, lag far behind the potential of even the marginal dry land agriculture. The Kolar study estimates about 250 person days of employment loss per every ha. of food crops converted to eucalyptus. (Shiva et al 1981)

The salient observations of this section summarily reflects in the following statement made in a global review of World Bank financed forestry activities

".. The problem of creating viable employment for the landless is an issue which can only be resolved by general economic growth by movement of people out of the rural areas into industrial employment, by resolution of inequities in land distribution, by growth of the service sector, by development of markets for processed primary products and by other development oriented intervention. Forestry's role in this area remain marginal." (cited in Agarwal 1985, emphasis added)

4.3.4. Tribals - wild life conservation

The wild life, tigers in particular, posed a live threat to the tribals throughout their history. In one study on the geneologies of selected families in Utnur taluk Haimendorf (1979:424) observed that in the generation of the grand parents of the adults surveyed "...the survival of more than two sons in a family upto a marriageable age was rare, many falling victims to epidemics and surprisingly many to the depredation of man eating tigers..". Even as late as 1940s tigers were a serious menace to the tribals and it was not unusual for whole villages to be abandoned because the inhabitants could not stand upto the persistent depredations of man-eaters. (Haimendorf 1979:17)

Though, totemic clans claiming mythical affinity to animals was extant in the tribal culture, it can't be taken as 'living in

harmony with wild life'. For, as Haimendorf observed, "...the reverence for this totemic animal (tiger) was always tempered by fear and a very natural wrath over the depredations of man-eaters and cattle lifters". The almost disappearance of Tigers in the district therefore, is but natural.

The wild life (protection) Act, 1972 was extended to A.P. in 1973. Fourteen wild life sanctuaries were notified in A.P. following this Act. There are substantial tribal and non-tribal settlements even in the core areas of these sanctuaries. (Table.4.13).

Table.4.13. District wise no.of villages, and tribal and non-tribal families affected in A.P.

District	No.of villages affected	No.of families	
		Tribal	Non-tribal
1.Mahabubnagar	16*	2516	30933
2.Kurnool	9	340	-
3.Prakasham	22	446	-
Total	47	3302	-

Note: *These villages have around 49 thousand acres of area under cultivation.

Source: TCR&TI.

Apart from the dislocations caused by these projects, the development of wild life amidst their settlements brought many hardships to these tribal populations. Declaring the Tiger project in Nallamalai Hills effected the native Chenchus adversely. Restrictions were imposed on their food gathering and hunting, and the tigers pose a live threat to their lives and cattle. Also, as all forest exploitation works were stopped they could not secure employment. (TCR&TI). Asks one Chenchu elder, affected by the Srisailam Tiger Reserve, 'whether the Government is giving preference to tiger or the man?'. (Reddy (1987)

4.4. A Case for generalisation

To what extent one can generalise the experience of Adilabad? As we have discussed earlier, the problem has an ecological dimension and is specific to a particular eco-setting. Yet, the process of opening of forests, large scale immigration into the tribal heartlands and the concomitant land alienation etc cuts across the eco-regimes of India, albeit with little variations. An exception, however, is the North Eastern states (excepting Tripura) where the political initiatives like 'innerline policy' secured the tribal regions from immigration.⁷ But so far as the implications for forest conservation is concerned two factors mainly account for the variation: the forest ecosystem and the nature of immigration, which are interdependent. The contrast between western ghats and central high lands would illustrate our point. Whereas the prospective plantation agriculture was the main attractant in the western ghats which attracted considerable 'investments', the dry land for 'marginal' agriculture attracted mostly the marginal populations of the larger economy in the central high lands. The ecosystem specificity of these two regions explains the potentiality for the respective uses. The crucial point here is the capacity of these uses to accommodate and/or eliminate the tribal interests, which is critical for the sustainability of the dominant use. While the vibrant plantation agriculture seems to have more or less accommodated the marginalised tribal populations (in terms of providing

⁷ see Singh K.S. (1982); Singh K.S. (1978) (for an overview), Sacchidananda (1979) (for tribal Bihar), Kulkarni S.D. (1979) (for Maharashtra), Jahangir (1979) (for Chittogong hills of Bangladesh), Hardimen (1987), Upadhyay A (1986) (for Western India), Sivanandan et al 19??, Thekaekara (1989) (for western ghats) etc.

employment), the marginal agriculture, which is the mainstay for the population in central high lands further increased the pressure on land following economic integration of these economies with the larger market economy. The low potential for employment generation in forestry as against the plantation agriculture played an important role in the central high lands. This may perhaps, explain the myriad of forest based tribal agitations in the central high lands vis-a-vis those few in western ghats, excepting western ghats in Maharashtra. Though the problem of land alienation and depeseantisation of tribals is very much present in western ghats, the responses or manifestation of the problem is different and definitely milder in form than those of the central high lands.

All over the tribal India settled dry cultivation has emerged as the primary mode of food production well integrated into the larger economy and land is the major resource for the tribes. Tribal communitarian system of land control has disintegrated even in the 'enclaves' protected from the plain's populations. The breakdown of the 'Khuntkatti' system of land control in tribal Bihar is but one example. (Prasad A 1982) An anatomy of tribal movements both in the contemporary period and even those in the nineteenth century vividly illustrate the agrarian dimensions of the tribal economy.⁸ An interesting phenomenon in many of these struggles is the mode of expression of their discontent. The 'Jungle Kato' movement in Jharkhand, the burning of forests in Kumaon hills are but a few examples.⁹ Thus, Adilabad is no

⁸ Singh K.S. (1978;1982), Deshpande V (1975), Parulekar G (19??), Naidu N.Y. (1972) etc.

⁹ AS (1980) Pant G.B. (1922/19??)

exception and shares the wider experience of the tribal India. The burning of forests by the tribals under the protective cover of the Naxalites is also not an unique phenomenon. 'Tribals everywhere have been known as the best reclaimers of waste land to cultivation'! (Singh K.S. 1982: xiii) 'Land is the cherished possession of the tribal and the most important source of income'. (Pratap D.R. 1969).

4.5. SUMMARY:

Large scale immigration into the district and forest reservation were the two prime factors that brought about large scale dislocations in the tribal economy following the advent of state forestry. The opening of forests gave impetus to immigration which had taken place in two phases. The first phase, sponsored by the state, witnessed immigration of the land hungry peasantry into the fertile plains while the second phase destined to the high lands by clearing forests or by alienating the tribal peasants. The marginalised sections of the larger economy were the principal immigrants in the second phase. Forest reservation, in addition to displacing many shifting cultivators also affected the mobility of the tribal farms and settlements.

Alienation of tribal land and the forest reservation enforced the system of (intensive) annual cropping on the tribals in the marginal high lands. This forced sedentarisation of the tribals in the adverse terrain with forests no longer available for maintaining its productivity impinged upon the natural process of transition to the fertile valleys and pushed the tribals into a vicious circle of low productivity. Penetration of monetary economy concomitant to the integration of the tribal economy with

the larger market economy both on production and on consumption sides, and the natural population growth further reinforced this vicious circle. Given its low employment potential and as a principal competitor for land, forestry failed to accommodate these conflicting forces, neither could the FD 'eliminate' this conflicting force. The tribals had but little skills in diversifying to other sources of employment, and agriculture remained as their mainstay. The pressure on forest land thus manifested and became a prime conflicting force against the FD. This had manifested in the Naxalite movement where the tribals resorted to their age old practice of 'reclaiming' forests for extension of cultivation under the protective cover of Naxalites.

State forestry, the dominant use, could not assume complete dominance over the conflicting local use nor could accommodate it. It was rather a matter of opportune time that the conflicts manifested perhaps, much more forcefully taking the toll of Adilabad forests.

Chapter 5

CONCLUDING OBSERVATIONS

In the present chapter we make some concluding observations on the problem in general taking insights from our study. Firstly, we make some observations on the methodological issues in understanding the problems of tropical forests and then discuss the current issues in forest resource management.

5.1. IDENTIFICATION OF THE 'PROBLEM': A THEORETICAL FRAME

5.1.1. Tropical Forests - 'Sustainable Use' Models

The studies on forest resource economics are replete with 'sustainable use' models. We maintained that these are linear extensions of the models developed in the specific context of temperate forest ecosystem where the forest comprises of uniform stands of a few species with luxuriant growth, unlike the highly diverse tropical forests. This high species diversity of tropical forests gives rise to a wide range of products - from fuel wood to the services in 'maintaining eco-balance', which serve different ends to different strata of population. More importantly, all these products cannot be produced at the same time and involves varying degrees of 'exclusivity'. These specificities of tropical forest resource system makes it unique in the array of natural resources; and precludes the application of 'sustainable use' models mainly on one account: the 'forest use' is specific to a particular strata of interacting population. The ecological specificities of a tropical forest ecosystem thus, translates into the social dynamics of the use of the forest resource system.

5.1.2. The Problem of 'Perception'

These dimensions of a tropical forest resource system lead to a problem of 'perception'. The perception of a tribal is different from that of an industrialist or that of an environmentalist. The 'problem' of an interested group need not necessarily be a perceived 'problem' of others. This is evident from the fact that the degradation of tropical forests inflicted crisis situations ranging from energy crisis - industrial raw material crisis - to ecological crisis, upon different strata of population. Therefore, the problem cannot be uniformly defined and is determined by the immediate interests of the population in question. For example, burning of forests by shifting cultivators is perceived as unsustainable use or 'squander' by the industrialists and quality timber consumers, while conversion of forests into teak plantations is unsustainable in terms of a product structure internalised by an interacting tribal economy. Conflicts are germane to the nature of tropical forest ecosystem.

'Forest use' therefore, is not just a process of physical exploitation of a particular product but is a process involving intricate conflicts in the arena of political economy of resource use. Unsustainability or physical degradation of the resource base is a manifestation of these conflicts and is more a symptom than a disease in itself.

5.1.3. 'Use Conflicts' and the 'Dominant Use'

Forest use is specific to a particular strata of interacting population which in varying degrees conflict with other 'forest uses' owing to the mutual exclusivity of these products or sets of products. Any particular forest use at a given time is a

historical synthesis of these conflicts in which one particular use assumes dominance. State forestry is such an outcome that has assumed the status of a dominant forest use.

5.1.4. Sustainable Resource Use

Once a particular use assumes dominance or to say, the product structure is predetermined, it is quite relevant to see the sustainability or otherwise of that particular product structure. However, the assumption of 'dominance' would be the pre-condition for sustainability. In other words, elimination and/or accommodation of conflicting uses in a way consistent with the natural process of production of the particular product structure, determines the sustainability of the resource use.

The physical degradation of forests or the unsustainable resource use may well be a symptom of the inefficacy of the dominant forest use to eliminate/accommodate the conflicting forces. Practically, this boils down to questioning the status quo for the possible sources of the problem and to seek solutions in the 'base' for a sustainable 'forest use'.

5.2. TOWARDS IDENTIFICATION OF THE 'PROBLEM'

Given the range of perceptions of different interest groups, identification of the 'problem' becomes specific to an interest group and is conditioned by their perception of scarcity of a set of forest products. Now the question is who identifies the problem?

In the Indian context the forest question came to the fore during late seventies, brought to light first by the Chipko

Movement and later by the debate on Draft Forest Bill, 1980.¹ The concern for conservation of forests for maintaining 'ecological balance' perhaps, is the common thread that ran through the wide ranging issues debated. It is this common interest that cut across many interest groups (not necessarily all groups) and initiated dialogue. This debate mediating between various interest groups, questioned the 'dominance' of state forestry and put forward an accommodating solution to the problem. For example, granting the nistar rights to the tribal communities, people's participation in regeneration and use of the resource etc. However, this debate maintains mute silence regarding the issue of tribal access to forest land. Instead, it seems to have attempted to conceal the fact in the romantics of an antiquated cultural paradigm of 'tribal harmony with nature'. The environmentalism seems to be no independent ideology to mediate between the contending forces.

5.2.1. The Environmentalism

Although, ecological concern cuts across many interest groups and created a common forum for a sustained debate, it is in no way free from its own conflicts with other uses. Shifting cultivation systems vis-a-vis conservation of biological diversity is but one example. Thus, one cannot rule out the possibility of the environmentalism in itself becoming a contending force. This problem is further reinforced by the uncertainty regarding the role of forests in various ecological

¹ Paradoxically, the concern for forest conservation for environmental protection was the prime stated reason both for introducing the Bill by the state and for opposing the Bill by the activists. A glaring example of the 'perceptual problem'!

processes and the problem of isolating induced changes from natural changes. This makes the concept more flexible and thus, it can serve as a potential weapon in legitimising the forest use of an interest group. The state using the 'bogey of environment protection' to get rid of encroachment on forests is a case in point. The myth of bringing one third of land under forest cover, the unfounded logic of '33 per cent', being carefully nurtured by the state and repeated ad nauseam to legitimise itself competing for land, also illustrates our point. Another major problem is the environmentalism becoming an end in itself. This impedes the process of compromise between different interests in arriving at an 'accommodating solution' to the problem. The recent shifts in the state's priorities and concern for environment alongside further curtailing the rights of forest dwellers is also, a case in point.² Conservation of forests per se is not the problem neither a zero rate of forest degradation at a point of time is a sign of an 'enlightened State'. One has to identify the problem in a broader perspective.

One has to be aware of this unqualified environmentalism as the solution to the problem needs certain short term compromises even with the conservation of 'forests per se'. The case of Adilabad as brought in the study is a striking example to this.

5.2.2. The Adilabad Question

The plural tribal societies inhabiting the forested regions of the country have many economic problems in common: the crises and their responses. Adilabad is representative of majority of

²The new Forest Policy, 1988 etc, see Chambers et al (1989:204)

the tribal regions in India. State assuming control over forests following commercialisation of forests, large scale immigration into these regions, alienation of tribals from their fallow lands, the fertile lands of the plains and from the lands that were being cultivated, brought about large scale dislocations in the tribal economy. Integration of tribal economies with the market economy on both consumption and production sides, the marginal agro-geography and population pressure further reinforced this problem. The pressure on forest land thus, is manifesting in greater dimensions.

Many studies apart from the present study brought out the fact that forestry, as is practiced now, hardly has any potential for employment generation and/or for diversifying the economy. Forests freezed in the hands of the state are therefore, more 'an obstacle than an asset' to the development of local economy. The state forestry could not generate surpluses in the local economy, in fact it is a drain on their resources.

Many of the forest regions are an attraction for the land hungry population. The forest regions of the country and many other tropical countries are largely populated with people on the marginal edge of the nations's socio-economic fabric. Lack of development of these populace carries unavoidable environmental costs. Adilabad forests are a mute testimony to this fact.

Assumption of dominance over the conflicting forces, as was substantially brought out in the case of Adilabad, was far from success. The teak forests of Adilabad exemplifies this failure. The teak forests and plantations ardently taken up in the lands expropriated from the tribal peasants and closely guarded for many years, were soon ravaged by fires as soon as the power

balance tilted slightly in favour of tribals. Forests as a form of concentrated wealth are sensitive to social strife.

5.3. TOWARDS A SOLUTION

5.3.1. The Crisis and The Opportunity

An objective or rational solution to a 'perceptual problem' is difficult to conceive, if not impossible. Obviously, one has to take sides, and this precludes any neutral solution. However, there seems to be a need for conservation of what are all forests left for a common interest, whether immediately felt or not. The fact that the forested regions are largely populated by marginal sections of the population is both a crisis and an opportunity. A crisis, considering the environmental costs and an opportunity, considering the potentiality of forest serving as a resource base for their development. These two facts cannot be separated. More importantly, the environmental costs, both the degradation of forests and its services in maintaining the productive environment of the larger economy, threatens the accumulation possibilities of the dominant users. This can be a rallying point for 'using environmental dangers as levers to promote fundamental social change' or what may be called 'ecological socialism'. This seems to be a long term solution.

However, as discussed earlier, there are contradictions within the environmentalism which brings in conflicts within this strategy at a point. The populist argument for 'devolution of state's monopoly rights on forests' and its negative implications for 'conservation of forests' is a case in point. Wild life sanctuaries amidst the tribal villages is another example.

5.3.2. 'People's Forestry'

However, an immediate strategy within the 'status quo' is also important. By and large there is a consensus regarding the failure of the approach of 'dominating the conflicting uses', and the trend now, is towards accommodating the conflicting uses. The concept of 'People's Forestry' is thus, put forward which in India is popularly reflected in the importance given to social forestry.

5.3.2.1. Social Forestry - An Option?

Social forestry in India is a classic case of a mis-directed environmentalism. This in fact was contrived as a populist measure that further reinforces the dominance of state forestry to the exclusion of local use. It offers no compromise with the conflicting uses of the natural forests. Instead, it is a strategy contrived to isolate the local uses from state forestry and attempted to create a resource base to accommodate their uses which was proved elusive.

5.3.2.2. Tropical Forest Action Plan (TFAP): Mis-placed Emphasis

The TFAP is but an extension of the strategy of 'isolation'. Solutions were sought in the investment programmes and wood markets while advocating for further strengthening of the protective machinery to protect the natural forests from 'invasion' or encroachments. It is an attempt to treat the 'symptoms' in isolation from each other instead of getting at the 'disease'!

5.3.3. TOWARDS A PEOPLE'S FORESTRY

At the outset we make it clear that the following discussion is but an immediate strategy towards a sustainable use of the dominant forest use within the status quo.

The integration of the tribal economies with the market economy provides scope for accommodating the conflicting uses. The changing consumption patterns following market integration reduce local dependence on those forest products that conflict with the dominant product structure and make the forest use relatively uniform. The problem now is to generate surplus in the local economy and to diversify it so as to take off pressure on forests by changing the patterns of forest product consumption. Taking insights from our study, we conceive two approaches to the above problem: first, partly compromising on the forest conservation and forestry serving the cause of agriculture; secondly, integrating the tribal economy with the forest product markets. A combination of these two approaches can also be conceived. We shall explain our point.

5.3.3.1. Two Approaches

As we have observed in our study, forestry as is practiced now hardly has any potential for employment generation in the local economy and is more 'an obstacle' than an asset to the growth of the local economy. On the contrary, agriculture has the potential and is a felt need of the tribal economy in the historic transition from extensive fallow systems to intensive agriculture. Providing productive agricultural land to the tribals is therefore, a historic necessity and there is still scope for it. The 'scope' for this, we see essentially in the

fertile valley forests and plains, conservation of which do not have a strong ecological logic³; given the dismal scope for land reforms. A compromise of this sort seems to be less unsustainable, if the experience of Adilabad is any indication. Forestry, can be subservient to agriculture providing the natural input endowments for intensive agriculture like manures, fodder and small wood, which in a way insulate these farmers from the input markets. A planned development of live stock economy and its integration with markets may also help.

The second option is to integrate the tribal economy with forest product markets with necessary protection. The logic of organisation of beedi leaf production can safely be extended to other forest produce like fuel wood, small timber, industrial wood etc, of course with proper checks. This is to say that the tribals can organise collection of these produce and sale in the respective product markets. Also, the forest based industrial raw materials should be processed to the maximum possible extent within the local economy itself. The experience of Dashauli Gram Swaraj Mandal provides necessary insights into this aspect.

5.3.3.2. Accommodating Commercial and Industrial Uses

This strategy would certainly involve certain compromises not only with forest conservation but also with commercial and industrial uses i.e. with short run revenue interests of the state. The growing private wood plantations indicated a positive

³ As the expansion of agriculture into the marginal agro-ecosystems is not desirable, the production of wood in the fertile and more productive areas whether it be natural forests, that do not have a strong ecological logic for its conservation, is least desirable.

response to the market signals. But the fuel wood markets rather than the industrial demand, so far, have given the primary impetus to these markets which suggests the vast unexploited scope for giving a new impetus to these plantations. Revision of royalty rates for industrial raw material to stimulate the growth of these plantations and gradual shift in the supplies of raw material from forests to private wood plantations may be considered. Given proper selection of species these plantations have the dual advantage of improving the tree cover and lessening the burden on natural forests. The non-wood substitutes to quality timber would further reduce the demand for it given proper price adjustments.

In essence what we are suggesting is restructuring of priorities of the state forestry - i.e. reversing the current strategy of catering to the commercial (mostly quality timber) and industrial uses from the natural forests and leaving other uses to the unplanned market forces. This is rather correcting the mistake of exposing the users with low or no purchasing power to market forces and protecting the others with high purchasing power. There are some positive signs towards this direction in the recent policy changes.

'Use' based forest classification instead of 'value' based classification would facilitate fixing up priorities and developing models to maximise that particular use. Ecological fragility of a particular area should also be considered. However, the task of delineating these areas must be given to the environmental scientists for a rational decision making.

However, it is not our intention here to make a concrete case for an action programme but only to give a direction taking

insights from our study. Given the level of compromise one has to make even within the status quo, we are in no case optimistic of the state taking up this task without the conflicts manifesting on a far greater scale. But what we exhort is to give a pragmatic and positive direction to the eco-development movement in India.

BIBLIOGRAPHY

- Agarwal,A and Sunita Narain (1989), Towards Green Villages: A strategy for environmentally - sound and participatory rural development, Centre for Science and Environment, New Delhi.
- Agarwal,A et.al., (1985), India's Environment 1984-85. A Citizen's Report, Centre for Science and Environment, New Delhi.
- Anon (1985), "Paper industry in Andhra Pradesh", Commerce, April.6.
- Anon (1988), Project Report. Rehabilitation of Shifting Cultivation of Eastern Ghats of Northern Coastal Andhra Pradesh, Tribal Welfare Department, Government of Andhra Pradesh, Hyderabad.
- Anon (1988), Rehabilitation of Shifting Cultivation of Eastern Ghats and Northern Coastal Andhra Pradesh, Porject Report, Tribal Welfare Department, Government of A.P., Hyderabad.
- Anon (1988), "PWG Thesis:According to Kondapalli Seetharamaiah-II ", Frontier, Vol.20, No.42, June 4, 1988.
- AS (1980), "Bihar-II, Gua Massacre of Tribals", Economic and Political Weekly, September,20.
- Bahuguna,S.L (1985), "People's Response to Ecological Crises in the Hill Areas", in Bandopadhyay, J, et.al, (1985).
- Bahuguna,S.L (1986), "Forests and Tribals - The Chipko Approach", in Das Gupta, M, et.al, (Ed.), (1986).
- Balagopal,K (1988), Probing in the Political Economy of Agrarian Classes and Conflicts, (Hyderabad: Perspectives).
- Bandopadhyay,J, et.al, (1985), India's Environment: Crises and Responses, (Dehra Doon: Natraj Publisher).
- Barbara Ward (1980), Forward to Eckholm (1980).
- Barney,G.O (1980), The Global 2000 Report to the President of the U.S., Vol.I, (Newyork: Pergamon press).
- Bell (1973), Erosion in the Trinidad Teak Plantations, cited in Hamilton (1988).
- Bhuskute,R.V (1989), "Tribals, Dalits and Government Lands", Economic and Political Weekly, Vol.24, No.42, October 12.
- Blaikie,P (1985), The Political Economy of Soil Erosion in Developing Countries, (England: Longman Group Ltd).

- Boado,E.L (1988), Incentive Policies and Forest Use in the Philippines, in Repetto,R and Gillis,M (1988).
- Boserup,E (1965), The Conditions of Agricultural Growth, (Chicago: Aldine Publishing Company).
- Browder,J.O (1988), "Public Policy and Deforestation in the Brazilian Amazon", in Repetto,R and Gillis,M (1988).
- Burnyard,P (1989), "Brazil and the Amazonian Pact", The Ecologist, Vol.19, No.3.
- Chakravarty,M (1984), "Forestry in Tripura: Its Past and Present", Social Scientist, Vol.12, No.133, June.
- Chambers,R et.al., (1989), To the Hands of the Poor. Water and Trees, (New Delhi: oxford and HBH).
- Cinemart, (1984), Scenario of the 7 per cent. Research and Documentation Centre, Cinemart Foundation, New Delhi.
- Clark,(1974), Optimising the Supply and Use of Market timber through market prices, cited in Douglas (1983).
- D' Abreo (1982), People and Forests. The Forest Bill and a New Forest Policy, Indian Social Institute, New Delhi.
- Das Gupta,M, et.al., (Ed.), (1986), Forestry Development in North-east India, (New Delhi: Omsons Publications).
- Dasgupta,P (1982), The Control of resources, (Oxford: Basil Blackwell).
- Deshpande,V (1985), Struggle of the Deprived for Development:2. Adivasis of Thane, (Pune: Dastane Rama Chandra & Co.).
- Douglas,J.J (1983), A Re-Appraisal of Forestry Development in Developing Countries, (The Hague: Martinus Nijhoff/Dr.W.Junk Publishers).
- Eckholm,E.P (1980), Down to Earth: Environment and Human Needs, International Institute of Environment and Development, (London: Pluto Press).
- FAO (1980) Towards a Forest Strategy for Development, COFO- 80/3, cited in Douglas,J.J Op.cit.
- FAO (1978), The State of Food and Agriculture. 1977, FAO, (Rome).
- Fearnside,P.M (1985), The Causes of Deforestation in the Brazilian Amazon (cited in Browder, Op.cit., p.254).
- Fernandes,W and Kulkarni,S.D, (Ed.), (1983), Towards a New Forest Policy: People's Rights and Environmental Needs, Indian Social Institute, New Delhi.

- Forest Survey of India (1982), "Assessment and Delineation of Forests Retaining Primary Characters", cited in Gadgil et.al., (1983).
- Gadgil, M and Meher-Homji, V.M (1982), Conserving India's Biological Diversity, Indo-US Bi-National Workshop on Conservation of Biological Diversity, cited in Gadgil et.al., (1983)
- Gadgil, M (1983), "Forest Management and Forest Policy in India: A Critical Review", in Fernandes, W, Op.cit.
- Gamser, M.S (1980), "The Forest Resource and Rural Energy Development", World Development, Vol.8, No.4, October.
- Gillis, M (1988a), Indonesia: Public Policies, Resource Management, and the Tropical Forests in Repetto, R and Gillis, M (1988).
- Gillis, M (1988b), West Africa: Resource Management Policies and the Tropical Forest in Repetto, R and Gillis, M (1988).
- Grigson W.V (1945), in Forward to Haimendorf (1945).
- Guha, R (1985), "Eco-development Debate: A Critical Review", South Asian Anthropologist, Vol.6, No.1.
- Guha, R (1983), "Forestry in British and Post-British India: A Historical Analysis", Economic and Political Weekly, Vol.XVIII, No.144, October.29 and November 5-12.
- Guha, R and Gadgil, M (1988), "State Forestry and Social Conflict in British India: A Study in the Ecological Bases of Agrarian Protest", Technical Report No.51, Centre for Ecological Sciences, Indian Institute of Science, Bangalore.
- Haimendorf, C.V.F (1943), The Aboriginal Tribes of Hyderabad. vol.I. The Chenchus, (London: Macmillan & co ltd).
- Haimendorf, C.V.F (1945), The Tribal Hyderabad, Four Reports, The Revenue Department, Government of H.E.H., The Nizam, Hyderabad.
- Haimendorf, C.V.F (1979), Gonds of Andhra Pradesh. Tradition and Change in an Indian Tribe, (New Delhi: Vikas Publishing House).
- Haimendorf, C.V.F (1982), Tribes of India. The Struggle for Survival, (Delhi: Oxford University Press).
- Hamilton L.S (1988), "Forestry and Watershed Management", in Ives, J and Pitt, D.C, (Ed.), (1988).
- Hamilton, L.S and Pearce, A.J (1988), "Soil and Water Impacts of Deforestation" in Ives J and Pitt, D.C, (Ed.), (1988).

- Hardimen, David (1987), The Coming of the Devi. Adivasi Assertion in Western India, (New Delhi: Oxford University press).
- Ives, J and Pitt, D.C (Ed.) (1988), Deforestation: Social Dynamics in Watersheds and Mountain Ecosystems, (London: Routledge).
- Iyer, S.A (1989), "Failure of Social Forestry", Indian Express, Sept. 4
- Jahangir, B.K (1979), "Tribal Peasants in Transition, Chittagong Hill Tracts", Economic and Political Weekly, Mar. 17.
- Khan (1971), Adilabad and Its Forest Wealth, Chief Conservator of Forests, Forest Department, Adilabad.
- Krishnamurthy, A.V.R.G (1988), Forest Resources. in Energy Conservation Hand book, (Secunderabad: UPL publications).
- Kulkarni, S.D (1979), "Encroachments on Forest Lands: The Experience in Maharashtra", Economic and Political Weekly, November, 15.
- Lanly, J.P (1982), "Tropical Forest Resources", FAO, Forestry Paper No. 30, Rome, cited in Ripetto (1988).
- Li Jinchang, et.al., "Price Policy: the keys to revamping China's forestry resources", in Ripetto, R and Gillis, M (1988).
- Linden, E (1989), "Playing with fire", Times, Sept. 18, No. 38.
- Madhava Rao, S (1949), Among the Gonds of Adilabad
- Mason, L (1931a), Report on Forest Administration. Forest Department, Hyderabad State.
- Mason, L (1931), Tour Notes, Forest Department, Hyderabad State.
- Mason, L (1931), Report on Forest Administration, Forest Department, Hyderabad State.
- Mason, L (1937), Note on Progress made by the Hyderabad Forest Department, Forest Department, Hyderabad State.
- Mason, L (1937) Note on the Progress made by the Hyderabad Forest Department, Forest Department, Hyderabad State.
- Misra and Tripathi (1978), Chipko Movement: Uttarkhand women's bid to save forest wealth, People's Action, New Delhi.
- Mukherji, S.D (1987), "Tribal and the Forest", Paper presented in the seminar on 'Forestry and Tribal Development' organised by Tribal Welfare Department and Tribal Cultural Research and Training Institute (TCR&TI), Hyderabad.
- Nadkarni, M.V and Johnson Samuel, (1984), "Population and Workforce Changes in a Forest Region", Social Science Probings, Vol. 1, No. 3, September.

- Nadkarni, M.V (1989), The Political Economy of Forest Use and Management, (New Delhi: Sage Publications).
- Naidu, N.Y (1972), "Tribal Revolt in Parvathipuram Agency", Economic and Political Weekly, November, 25.
- Nair, Sukumaran (1987), Tribal Economy in Transition: A Study of Meghalaya, (New Delhi: Inter-India Publishers).
- NCA (1976), Report of the National Commission on Agriculture, Part. IX, Forestry
- NCAER (1970), Survey of Backward Districts of Andhra Pradesh, National Council of Applied Economic Research, New Delhi.
- Odum, E.P (1975), Ecology: The Link Between the Natural and the Social Sciences, (New Delhi: Oxford & IBH).
- Pant, G.B (1922), Forest Problems in Kumaon: Forest Problems and National Uprisings in the Himalayan Region, (Nainital: Gyanodaya Prakashan).
- Parulekar, G (1975), Adivasi Revolt: The Story of Warli Peasants in Struggle, (Calcutta: National Book Agency Pvt. Ltd.)
- Prasad, A (1982), "Land use and Settlements in Tribal Chota Nagpur", in Singh, K.S (1982).
- Pratap, D.R (1969), "Tribal Situation in Andhra Pradesh", paper presented in the Seminar on "Tribal Situation in India", held at the Indian Institute of Advanced Studies.
- PUCL (1989), Bastar: Development and Democracy, People's Union for Civil Liberties, Madhya Pradesh
- Rajagopal, M.V (1976), District Gazetteers: Adilabad, Government of Andhra Pradesh.
- Raju, V.T et.al., (1988), "Trends and Distributional Pattern of Forests in A.P.", Indian Journal of Agricultural Economics, Vol.43. No.3, July-Sep.
- Ramaiah, P (1981), Tribal Economy of India. A Case Study of Koyas of Andhra Pradesh, (New Delhi: Light and Life Publisher).
- Rao, Sitapathi et.al., (1987), River Valley Projects: Evaluation of Centrally Sponsored Soil Conservation Schemes. A Study in Machkund Sileru in Andhra Pradesh and Orissa. Pochampadu in Maharashtra, Administrative Staff College of India, Hyderabad.
- Ravindra, A (1987), Economic Analysis of Forests in Andhra Pradesh, unpublished M.Sc.(Ag) thesis, Andhra Pradesh Agricultural University, Hyderabad.
- Redclift, M (1984), Development and the Environmental Crisis: Red or Green Alternatives?, (London: Methven)

- Reddy, Prakash (1987), Politics of Tribal Exploitation (A Study of Tribal Unrest in Adilabad), (New Delhi: Mittal Publication).
- Repetto, R and Gillis, M (Ed.) (1988), Public Policies and the Misuse of Forest Resources, (Cambridge: Cambridge University Press).
- Repetto, R (1988), "Over View" in Repetto and Gillis (1988).
- Richardson (undated), Forestry and Environment in the South Pacific, cited in Eckholm. Op.cit.
- Roy, Burman (1986), Towards a people's Forestry in North-East India, in Das Gupta et.al, (Ed.) Op.cit.
- Sacchidananda (1979), The Changing Munda, (New Delhi: Concept publishing co.)
- Sandbach, F (1980), Environment, Ideology and Policy, (Oxford: Basil Blackwell).
- Sastry, V.N.V.K. (1985) Three Tribal Villages in A.P. India', TCR&TI, Hyderabad.
- Shiva, V (1987), Forestry Crisis and Forestry Myths: A Critical Review of Tropical Forests: A Call for Action, World Rain Forest Movement, Malaysia
- Shiva, V and Bandopadhyay, J (1989), "Development, Poverty, and The Growth of Green Movement in India", The Ecologist, Vol.19, No.3.
- Shiva, V et.al., (1981), Social, Economic and Ecological Impact of Social Forestry in Kolar, (Bangalore: Indian Institute of Management)
- Shiva, V and Bandyopadhyay, J (1988), "The Chipko Movement" in Ives, J and Pitt, D.C (Ed.) (1988).
- Singh, K.S (1986), "Agrarian Dimension of Tribal Movements" in Desai, A.R, (Ed.), Agrarian Struggles in India After Independence, (New Delhi: Oxford University Press).
- Singh, K.S (1978), "Colonial Transformation of Tribal Society in Middle India", Economic and Political Weekly, July.29.
- Singh, K.S (Ed) (1982), Economies of Tribes and Their Transformation, (New Delhi: Concept publishing Co.).
- Singh, K.S (1978), "Colonial Transformation of Tribal Society in Middle India", Economic and Political Weekly, July.29.
- Singh, K.S (Ed.) (1985), Tribal Movements in India, vol.I & II, (New Delhi: Manohar publications).
- Singh, K.S (1982), "Transformation of Tribal Society: Integration vursus Asssimilation", Economic and Political Weekly, Aug.14, and 21.

- Sivanandan et al (1986) Land Hunger and Deforestation: A Case Study of Cardomom Hills of Kerala, Economic and Political Weekly, XXI(13)
- TCR&TI (undated) Wild life conservation and problems of tribals in A.P.
- TFAP (1985), Tropical Forests: A Call for Action, Part.I., The Plan, Report of the International Task Force convened by the World Resource Institute, The World Bank and the United Nations Development Programme.
- Thekaekara, M.M (1989), "The Tribal Battle", Frontline, Jan.7-20.
- Upadhyay, A (1986), Colonial Economy and Variations in Tribal Exploitation: A Comparative Study in Thana and Khandesh Districts c 1818-1940.
- Von Mon Roy (1960), Report to the Government of India on Integration of Forest and Forest Based Industries, FAO, Rome, cited in Guha (1983).
- Wadhvani (1956), Questionnaire of the Forest Policy Committee Hyderabad, Government of Hyderabad.
- Westoby (1978), "Forest Industries for Socio-Economic Development", Guest speaker's address, 8th World Forestry Congress, Jakarta, cited in Douglas Op.cit.
- Westoby, J.C (1962), "Forest Industries in the Attack on Underdevelopment, in The State of Food and Agriculture", FAO, 1962, cited in Douglas, Op.cit.
- Yorke, M (1982), "The Situation of the Gonds of Asifabad and Lakshettipet Taluks, Adilabad District" in Haimendorf (1982).