

ANALYSIS OF PUBLIC POLICY
TOWARDS BIG DAMS IN INDIA
WITH SPECIAL REFERENCE TO THE
SARDAR SAROVAR PROJECT

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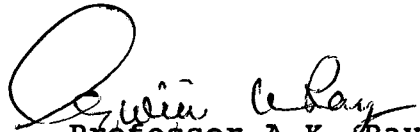
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Certified that this dissertation entitled 'Analysis of Public Policy towards Big Dams in India with Special Reference to the Sardar Sarovar Project' submitted by Randeep Kaur in partial fulfillment of the requirements of the award of the degree of Master of Philosophy (M.Phil,) of this university, has not been previously submitted for any degree of this or any other university. This is her own work.

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


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CHAPTER I

INTRODUCTION

Every policy has to be seen within a certain context. Only then, is it possible to understand the origin of any such policy. Thus, the public policy towards Big Dams in India has to be seen against the larger backdrop of the development strategy that was adopted in India after 1947.

The Indian economy at the time of independence was essentially rural and agricultural in character. Seventy percent of its working population was engaged in agriculture and despite this, the country was not self sufficient in food grains. There were severe problems like illiteracy, very high mortality rates due to lack of a public health system and the standard of living of people was very poor due to extreme poverty and low personal incomes.

It was felt by the leadership of free India, especially, Nehru that the main aim was to provide a better life to the Indian people. This could be achieved by undertaking a massive programme of development, whose benefits would go towards raising the standard of living of the majority of the people.

Development was viewed as the need of the hour. But question arose as to what constituted development. How did one achieve such development? What were the pre-requisites for such development?

Most third World countries' including India's conception of development was influenced by the existing development literature at that point of time. Theories of development in the 50's and 60's were essentially what were called economic theories of development. They emphasised on the fact that the right quantity and mixture of saving, investment and foreign aid were all that was necessary to enable the Third World nations to proceed along an economic growth path that historically had been followed by the more developed countries. The stress on achieving a pattern of growth akin to the western countries at this moment seemed particularly attractive to the Third World. This was because as opposed to instability, inter ethnic rivalry, low economic development, the countries of Western Europe had stability and a relatively better standard of living for their people. Thus development became synonymous with rapid economic growth.

During this period, influential scholars like A. Lewis, Rostow, Harrod and Domar were responsible for promoting an economic growth oriented view of development. According to Rostow, the transition from under development to development can be described in terms of a series of steps or stages

can be described in terms of a series of steps or stages through which all countries must proceed. He maintained that all societies depending on their stage of evolution could be classified into five distinct categories. They were the traditional economy, the transition, the take off, the stage of a self sustained growth economy and finally the high mass consumption economy.

According to Rostow the second stage of growth which he categorises as the transition is the period when the pre-conditions for the take off are developed. The transition has many dimensions. It provides conditions whereby necessary changes in the social, political and economic sectors occurs in a traditional economy. For example a society with 75% or more of its working force engaged in Agriculture would develop in such a manner in this stage so as to allow it to have a predominance of industry, communications, trade and services. Similarly societies' whose social and political arrangements are built around the life of relatively small-mainly self sufficient nations would orient its commerce and its thought to a still larger international setting. Men would come to be valued in the society not for their connection with clan or class or even their guild, but for their individual ability to perform certain specific, increasingly specialized functions (Rostow, 1960). Further the concept of nature as given would change and men would come to believe that the physical

environment was rationally ordered and could be manipulated in ways which would yield productive changes. Further in the economic sphere, the pre-requisites for take off were three (1) there ought to be a rise in the rate of productive investment from 5% or less to over 10% of national income or net national product. (2) there should be development of one or more substantial manufacturing sector with a high growth rate. (3) there should be a considerable capacity to mobilise capital from domestic sources, once these conditions are achieved in traditional societies, they would take off into a stage of self sustained growth. Finally this stage would give way to the high mass consumption society.

The theory was essentially linear in form and prescriptive in nature. The primary idea was that all the advanced countries had passed through the take off stage historically and were now in the stage of self sustaining growth. If under developed countries wanted to attain a similar economic lift off all they had to do was to fulfill these conditions and they would in turn also take off into a stage of self sustaining growth.

The Harrod Domar model emphasised that there should be a certain amount of savings of the national income to replace worn out capital goods like equipment and machinery. For the growth of an economy mere replacement of capital goods was not enough there had to be net additions to the

capital stock. Therefore the premise was that the more an economy could save and therefore invest, the faster it could grow. 'Capital accumulation become if not the necessary and sufficient condition for development at any rate the main strategic variable' (quoted in Colloquium, 1979 : 24).

Similarly according to Sir Arthur Lewis's model the necessary and sufficient condition for development was that there should be an increase in the investment ratio from about five percent to fifteen percent.

He also maintained that if the ambition of these countries* was to grow as rapidly as the countries of Europe and North America, then the growth rate had to be about 2 per cent per head per annum. Allowing for population growth in these countries the national output had to grow by about 4 per cent per annum.

To achieve this growth rate, there had to be some capital formation and this was to be achieved through taxation.

Development was then seen primarily as a matter of economic growth, and secondarily as a problem of securing social changes necessarily associated with growth. It was taken for granted, that organising the march along the development path was the prime concern of the government (Leys 1971). Further policies on the issue of development, were dominated by the experience of the rapid recovery from

* Countries of the Third World.

the war of the industrial countries of Western Europe, supported by Marshall Plan aid. Therefore, priority was given to industrialization and infrastructure (power and transport) which came to be held almost synonymous with development. The savings ratio and the capital output ratio together were thought to determine the rate of growth of output, which was the main objective of development. It was believed that the spin offs after a time lag would benefit the poor. "The goals of development were defined narrowly in terms of GNP and its growth and other goals such as equality, eradication of poverty, meeting basic human needs, conservation of natural resources, abating pollution, enhancement of the environment were neglected or not emphasised sufficiently". (quoted in Streeten, 1977: 46-47).

By the 1970's this notion of growth as defined in narrow economic terms was changing. The claimed benefits under the trickle down theory had not percolated to the masses.* Growth in many countries remained concentrated on a

* The underdeveloped countries in comparison to the Western nations continued to remain poor, with unabated problems of poverty, hunger, malnutrition and disease. This led to the formulation of the dependency theory, by persons like A.G. Frank, Prebisch, Singer and others who maintained that the existing international system of rich-poor relationships maintains the underdevelopment of the poor countries. According to such theorists certain groups in the developing countries, entrepreneurs, salaried officials, and employees enjoy high incomes, wealth and other status. Since they comprise the ruling class they perpetuate the international system of inequality and conformity.

narrow enclave of modern, urban industry. Governments were often unwilling or incapable of using taxes and services to offset growing inequalities and there was an increasing concentration of income in the hands of the rich. Also it was noticed that the expected absorption of the rapidly growing labour force from the agricultural to the industrial sector was considerably slower than expected.

The emphasis after the 1970's, therefore was not on growth alone, but on growth with equity, justice and redistribution. The emphasis now shifted to meeting the basic needs of the majority of people in the Third World countries. Commenting on the inadequacy of the narrow growth model which had guided policies for development in Third World countries till the late 60s. Mahbubul Haq had noted that "Developing countries have no choice but to turn inwards.... and to adopt a different style more consistent with their own poverty". Development goals should be "the elimination of malnutrition, disease, illiteracy, squalor, unemployment and inequality. They should not be concerned with how much is produced but what is produced and how it is distributed ... this requires a redefinition of economic and social objectives of truly staggering proportions" (quoted in D'monte, 1985 : 4).

Similarly Streeten (1977) had maintained that meeting the basic needs of the billions of poor people in Third

World countries would require changes not only in income and distribution, but also in the structure of production, including distribution.

Further attention was called to the need for paying adequate attention to agriculture where the majority of poor persons live in the Third World. Priority has to be given to growing food for mass consumption, and there was a need to increase the purchasing power of the masses. Thus the whole process was now centered to include in its ambit human, social as well as economic development.*

India's development strategy was thus influenced by two factors (i) the prevailing, socio-economic and political conditions in the country (ii) International influences especially in the form of such development literature.

Immediately after the attainment of independence the Government's main concern was to control persistent and severe inflationary pressure. Also the government had to remedy the acute food shortage that had come about due to the partition of the country in 1947 " The Industrial policy resolution of 1948 marked a departure from the earlier policy of laissez faire. According to the new, policy

* This concern with the deteriorating quality of life as distinct from physical and money indices has led over the past dozen years or so to the examination of the relationship between development and environment, which shall be examined in more detail in a later chapter.

resolution, the government was to have a major role in initiating and regulating development in the key sectors of the economy. The Directive principles of state policy, incorporated in the constitution mentioned the right of citizens to an adequate means of livelihood, regulation of ownership and control of the material resources of the country to subserve the common good and the avoidance of concentration of wealth and means of production. Finally the concept of co-ordinated planning was accepted and the Planning Commission was set up.

At this point of time-development in India aimed at securing higher productivity all round. This was to be achieved by stepping up the rate of capital formation.* Mahalonibus also maintained that economic development meant increasing the total net production of goods in the country. This increase had to not only keep pace with the growth of the population, but had to grow at faster rate. Thus economic development would ultimately depend on the amount of new physical assets that are created (like factories, transport, communications).

* Capital comprised the amount of land per capita, productive machinery available, factories, power installations and communications. Growth of capital then leads to technological innovations and improvements which in turn leads to better productivity. Higher productivity in turn leads to more capital formation and so on.

Nehru (1954) had also noted the need for laying the foundation of India that was strong economically, and to do this ^{he felt that} there should be a concerted effort to develop heavy industries.

Therefore by the middle of 1954 a clear set of priorities for the development of the country was emerging, however a sense of strategy came to the force only with the second plan. "It was necessary to increase the supply of energy and machinery and tools of production to create more employment, the only way to do this in India was to establish as rapidly possible, the basic heavy machine building, heavy electrical and chemical engineering industries. This would make it possible to produce, capital and producer goods of all kinds and thus expand industrial investments, increasingly out of domestic resources. (quoted in Bose, 1985 : 216).

Apart from this emphasis on creating a base of heavy industries, agriculture was given a similar emphasis. The leadership recognised that if the agricultural foundation is not strong then industry would also not have a strong basis. Talking about the food situation in the country in 1952, Nehru noted that the situation was such "if our food front cracks everything else will crack up too".

Mahalonibus with whom Nehru shared many similar views also noted that the production of an agricultural surplus is

the key to industrialization. Indian agriculture and manufacturing industries are interlocked. Economic progress depends on the advance of both. An advance of one step in agriculture would supply goods and raw materials for advance of one step in manufacturing industries, which again in its turn would speed up irrigation and increase the supply of fertilisers and pesticides, and help in the promotion of scientific research which would lead to further advances in agriculture. This sector was emphasised because although blessed with fertile soil and a good climate, Indian agriculture was heavily dependant on the monsoons. This dependence had over the years led to low and erratic yields. The remedy lay in developing the water resources for irrigation through adequate technology.

The industrial sector too was in no better a condition, at the time of independence. Since India had been ruled by a colonial power for almost 200 years, industrialisation such as it was, was guided by Britain's interest rather than her own. Uptil 1914 the modern industrial sector consisted mainly of cotton and jute (jute industries were exclusively British). During the Second World War there was slight development of new industries, but textiles, tea and sugar cane were still at the top. Then in a very limited manner some metallurgical and engineering industries came up. Thus, there were simply no capital goods industries worth the name.

Therefore, at independence there was no industrial base to speak of, at the same time, there was no infrastructure available to meet the energy needs of industry.

In order to meet the demands of the Industrial and Agricultural sector, one of the methods adopted was the construction of large multipurpose projects. (or Mega Dams). A large dam has been defined as such on the basis of certain specific criteria, as per the International Congress on large Dams.

1. A dam above 15 m in height measured from the lowest portion of the general foundation area to the crest or:

A dam between 10 and 15 meters in height provided it complies with at least one of the following conditions.

- i) the length of the crest of the dam to be not less than 500 meters.
- ii) the capacity of the reservoir formed by the dam to be not less than 1 million cubic meters
- iii) the maximum flood discharge dealt with by the dam to be not less than 2000 cubic meters/second.
- iv) the dam has specially difficult foundation problems or the dam is of unusual design.

Such large Dams were expected to play an important role

in the economy of the country. They were expected to bring about multifaceted benefits of irrigation, flood control and power generation. These would in turn lead to increase in irrigated area, and therefore availability of foodgrains. The role of power generation in an economy is vital as it is the basis on which the industrial sector functions. Apart from these direct benefits it was expected that there would be certain indirect benefits too. According to Dhawan (1990) there is a close relationship between water resources development and the structure of the economy. The development of water resources in specific areas was expected to provide linkages between different areas, and lead to multiplier effects. For example, it was thought that the increase in irrigation facilities would lead to an increase in personal incomes. Those would in turn create a demand for services like transport, communications and recreation. An increasing preference for consumer durables like cars, scooters, refrigerators would also need services for their maintenance and repair.

Further, the building of mega projects based on Hydro power was guided also on grounds of water being a renewable and non-polluting source of energy.

Large projects also had an advantage in terms of economies of scale. "Economies of scale render production cheaper and investment more profitable above a certain

minimum level of output and productive capacity". (quoted in Scitovsky, 1964 : 104).

According to Dhawan (1990), detailed studies have indicated that the cost of one KW of installed capacity increases three fold in a small dam as compared to a large dam. He notes further how in the Chenab Basin a number of hydro schemes have been planned through river diversions. It is also proposed to construct one major Dam at Bursar in the upper reach, with that single storage and regulated releases therefrom, the hydro power from a series of downstream projects gets doubled from 10,000 MW to 20,000 MW.

In keeping with these policy motivations, even before the First Five Year Plan had started work had commenced on the multipurpose projects of Hirakud, Bhakra and the Damodar valley corporation.

PLAN PROGRAMMES

The First Five Year Plan had an outlay of 29% on irrigation, power and flood control schemes, and put on the anvil schemes like the Chambal, Kosi, Rihand and Koyna.

Similarly the Second Plan's General Aims and Objectives stated that the country had large resources of water that could be used for hydro electric and irrigation projects. Planning had to aim to utilise these resources, to increase rapidly the level of production and thus of national income.

It also aimed at increasing productivity in agriculture, and also talked about eventual establishment of a super grid to meet the electricity and power needs of India as a whole. This grid would seek to combine both thermal and hydel power stations. Therefore the second plan placed multipurpose projects based on hydel power firmly within our development strategy.

The third plan noted in a similar vein that major and medium schemes* benefit large and extensive areas and give more assured protection in years of scarcity and can often be designed to serve a multiplicity of purposes.

The Fourth Plan had an outlay of approximately 140 crores, where 1/3rd was for medium irrigation schemes and the rest for major schemes. Further the plan recommended that long term plans for development of inter state rivers should be prepared. The plan also envisaged that all power stations should be interconnected to form state, zonal or super grids so that generation capacities could be pooled for best results. Further under the plan a country wide operation for carrying out a pre investment surveys of hydro electric sites was implemented.

* When planning started in 1950-51 irrigation schemes were divided into three categories; major costing more than 5 crores each; medium costing individually between Rs. 10 lakhs and 5 crores and minor costing less than Rs. 10 lakhs each. According to a revised classification since 1978 projects having a culturable command area (CCA) of more than 10,000 hectares each are classified as major projects, those having a CCA between 2000 and 10,000 hectares as medium schemes, and the schemes having a CCA of less than 2000 hectares each are classified as minor schemes according to the Sixth Plan.

The Fifth Five Year Plan (1974-79) represented a quantum jump in terms of the amount of investment that was proposed on major and medium irrigation projects. The outlay for the first 3 years was Rs. 1474 crores. For the remaining two years Rs. 1621 crores was indicated. The aim was to create an additional potential of 5.8 million hectares for irrigation.

The Sixth Five Year Plan's outlays on irrigation also shows the importance given to major and medium irrigation projects, 8448.36 crores was for major and medium irrigation.

The Seventh Plan maintained that optimisation studies stressed that without adequate hydel back up, the overall cost of meeting power demand was more expensive. "Since the hydel thermal balance at the end of the Sixth Plan was 33.7: 66.3, it would therefore be necessary to take corrective measures during the course of the Seventh and successive plans towards a better hydel thermal balance (quoted in Planning Commission, 1985: 141) The plan maintained that due to increase in technological knowledge, old units would be renovated wherever possible and would provide an additional 858 Mw of energy. Further this new technology could be used to design better and more compact generating units to obtain higher output. Although the Plan did talk of small hydel schemes-yet it did not recommend any new schemes under it. Although in terms of installed capacity and targets that

were to be achieved in the 7th Plan, thermal tops the list with 40444 MW, followed by hydel energy 17592 MW and then followed by 1880 MW of nuclear energy. Despite the importance given to development of thermal power the following table shows that the benefits from hydro power generation are substantial.

TABLE 1: BENEFITS FROM GENERATION SCHEMES DURING THE SEVENTH FIVE YEAR PLAN IN MW.

SUMMARY	STATES	U.T.	CENTRE	TOTAL
HYDEL	4865-75	10.5	665	5541.25
THERMAL	8032	17	7950	15999
NUCLEAR	--	--	705	705
TOTAL	12897.75	27.5	9320	22245.25

Source: Planning Commissions, Seventh Five Year Plan, 1992: 156, Vol. 2.

The Eighth Five Year Plan emphasised the importance of our limited sources of energy due to the growing demand for it. The goals in the energy sector envisaged elimination of power shortages in different parts of the country, and the achievement of a minimum hydel share of 40 per cent in the total installed capacity by the end of the Ninth Plan. "This is necessary because the total generation requirement in India would soon be 798 BKWh. Therefore emphasis should be laid on increasing hydel generation, which is necessary for affording more power availability, especially for meeting system peak load demand and improving the overall plant load factor (PLF)". (quoted in Planning Commission, 1992: 34).

Thus the trend from independence till to-day has been towards a strong emphasis on the development of Multipurpose projects. THE TABLE BELOW LISTS THE NUMBER OF NEW MAJOR SCHEMES TAKEN UP WITH EACH PLAN:

Plan	Year	Major Scheme
First	1951-56	24
Second	1956-61	23
Third	1961-66	27
Annual	1966-69	10
Fourth	1969-74	33
Fifth	1974-78	73
Annual	1978-80	15
Sixth	1980-85	41
Seventh	1985-90	18

Source: Planning Commission Eighth Five Year Plan 1992: 58.

Source: Report of the working Group of the Eighth Five Year Plan on major and medium irrigation.

The Sardar Sarovar project is part of this tradition, of Multipurpose Projects. Speaking on the Sardar Sarovar Project - the Chief Minister of Gujarat - Chiman Bhai Patel in 1990 September said "Sardar Sarovar is a multi state, multi purpose project which would usher in an era of prosperity to the entire region. It is amongst the most thouroughly investigated and well planned projects which has

stood the test of scrutiny by national expert bodies as well as international institutions such as the world Bank.* This is the first major river valley project which has been designed to be built with adequate safeguards and concerns for the environment as well as rehabilitation measures".

In a similar messages Keshubhai Savadas Patel who was Minister Narmada and Water Resources Department in Gujarat stated. "The project inter alia aims at providing extensive rather than intensive irrigation to cover as much of the drought prone areas as possible in Gujarat and Rajasthan. The positive impact and benefits from Sardar Sarovar far outweigh the negative impact. The Government of Gujarat is however determined to take all compensatory and precautionary measures to minimise even the small negative defects".

The government of Gujarat maintains that 'Sardar Sarovar - is the lifeline of Gujarat (Mehta, 1990). The Government maintains that 1.8 million hectares spread over 12 districts, 62 talukas which include 3393 villages (total population 4.5 million) would get benefits of irrigation. Apart from this 131 towns and urban centres and 4720 villages both within and outside the command area and a total population of 32.5 million would get drinking water supply. This according to Raj will solve the problem of drinking

* Reference to the World Bank was of key importance because of the aid that was being given for the project.

water supply of all no source villages of the arid areas of North Gujarat Kachch and Saurashtra.

The project is expected to benefit 75,000 hectares of the arid area of Jalore and Barmer districts of the adjoining state of Rajasthan. It will have an installed capacity of 1200 Mw in river bed power house and 250 Mw in the canal head powerhouse; which would be shared by three states of Madhya Pradesh, Maharashtra and Gujarat, in the ratio of 57:27:16.

The project would also benefit the flood prone area of riverine reaches measuring 30,000 hectares, having a population of about 3.0 lakh including Bharuch city.

ESTIMATES : The project is estimated at the 1986-87 price level to cost Rs. 6406 crores. The World Bank had agreed in 1985 to give assistance of credit totalling \$ 450 U.S. Further the Bank in April 1990 offered additional credit assistance of U.S. \$200 million for rehabilitation, resettlement and environmental protection measures for the entire Narmada basin.

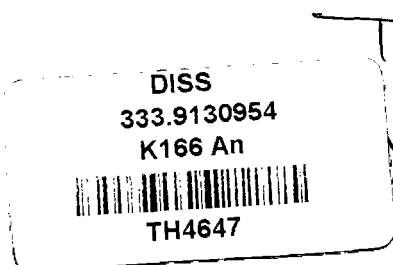
The government however in April 1993 rejected the loan by the World Bank and announced that it would undertake construction of the Dam through its own resources. To this effect the Finance Ministry has made a commitment to cover this cost.

We may now examine briefly the origin of the Narmada Valley Project of which Sardar Sarovar is a part.

The genesis of the Narmada Valley project as we know it can be traced to 1946. The Government of the Central Provinces, Berar and the government of Bombay requested the Central Waterways, Irrigation and Navigation Commission (CWINC) to take up investigations on the Narmada river system for development of the entire basin, with emphasis on schemes for flood control, power generation and extension of irrigation. The study revealed that from the engineering and geological points of view; there existed certain very good sites for the construction of storage reservoir in the basin. The CWINC recommended investigations to be done at seven sites.

In 1948 the Ministry of Power appointed a three members ad-hoc committee consisting of A.N.Khosla Chairman of CWINC, J.L. Savage and M.Narasimhaiya to go into the CWINC recommendations. This committee recommended that due to financial constraints, detailed investigations should be at only four sites - Bargi, Tawa, Punasa and Broach.

By 1960 project reports on the four sites were completed by CWINC which had by now been renamed the Central Water and Power Commission (CWPC). Meanwhile in 1955 the CWPC had carried out a study on the hydro electric potential of the basin and had identified 16 sites which could



ultimately generate upto 1.3 million KW of energy. In 1957 at a meeting of the representatives of Madhya Pradesh and Bombay the CWFC, Chairman informed the states of the potentialities of the basin.

At this meeting it was decided that the CWPC would carry out detailed investigations at three intermediate sites, between Punasa and Broach i.e. at Baswaha (now known as Omkareshwar) Harinphal and Keli, which were not among the seven identified by the CWINC. The cost of investigations at this site was to be shared equally between the states of Bombay and Madhya Pradesh. During the inspection of investigations being carried out at Broach the Inspector suggested further investigation for the Gora site which was incomplete and also at the site of Navagam, one and a half miles upstream of Gora, where there were lateral rock supports jutting out of the main rock formation which would be useful in raising the height of the dam.

THE SARDAR SAROVAR PROJECT IS BORN

In 1959 the Central Water and Power Commission submitted a project proposal to the Bombay government for its consideration. This was the beginning of the Sardar Sarovar Project.

In its 1959 form Sardar Sarovar (known as the dam at Navagam) was to be built in two stages. In stage I the full reservoir level was to be restricted to 160 Feet above Sea

level and in stage II its height was to be increased to 300 Feet above sea level.*

In January 1959 a panel of consultants were appointed by the Ministry of Power and Irrigation to review the Navagam Dam. These experts recommended that instead of two stages of Dam building and raising its height it should be done at a single stage upto 320 Feet. These experts felt that a high level canal would make it possible to give irrigation to Kachchh and Saurashtra.

With the bifurcation of the State of Bombay into Maharashtra and Gujarat the Broach project was transferred to Gujarat. In August 1960 the planning commission sanctioned stage I of the Dam to be at a height 162 feet with a provision for raising the Dam to 320' feet later. Stage I was an irrigation project while stage II it was hoped would create 625 MW of power.

In April 1961 the project was inaugurated by Pandit Jawaharlal Nehru. In 1961 the Gujarat Government undertook a survey with regard to potentialities of a high level canal; to see if irrigation could be provided in the area of little Rann of Kachchh. On the basis of these studies the Gujarat Government felt that if the height of the Dam could be increased to 460 feet then full utilization of water below Punasa was possible.

* Cost of stage I was 33 crores then.

In November 1963 - Union Minister for irrigation and Power held a meeting with the Chief Ministers of Gujarat and Madhya Pradesh at Bhopal. Gujarat claimed that among other points that had been agreed upon, Navagam Dam should be built upto 425 feet and the entire benefits should be enjoyed by the State of Gujarat. But by late November Madhya Pradesh said it was not in agreement on this issue. This was because the government of Madhya Pradesh felt that it would be more beneficial if the height of the Dam could be kept at 162 feet; But the Gujarat Government submitted a report to the planning commission in 1964 February which envisaged the Dam as having a height of 425 feet.

To resolve these differences-the Khosla committee was set up. The committee was to draw up a master plan for the integrated and maximum development of Narmada waters.

In the meantime Madhya Pradesh and Maharashtra signed an agreement which called for hydel power generation at Jalsindhi between Navagam and Harinpal. The cost and benefits were to be divided between Madhya Pradesh and Maharashtra.

The Khosla committee submitted its report in September 1965 and recommended among other things - a Dam to be built at Navagam in Gujarat and its height should be raised to above 500 feet. It for the first time recommended that water

should be allocated to Rajasthan too. The committee stressed more on tapping of Narmada water for irrigation over power.

The states of Madhya Pradesh and Maharashtra rejected the report. Madhya Pradesh felt it was losing out on power generation potential due to the projected submergence area of the Navagam Dam and wanted compensation in the shape of extra power.

The differences between the states continued and eventually the Gujarat Government moved the Government of India to appoint a tribunal. It was set up in October 1969 as the Narmada Water Dispute Tribunal and it gave its decision in 1979. Under it the height of the dam was to 455 feet and the allocation of water between 3 states was as under:

Madhya pradesh	-	18.25 Maf (Million Acre Feet)
Gujarat	-	9.00 "
Maharashtra	-	.25 "
Rajasthan	-	.50 "

		28.00 Maf

Source: Raj - in the Indian Journal of Power and River Valley Development : September 1990, page 121

The reformulation of the project and various clearances from the Government of India took another decade. In the interim the World bank had agreed to give a substantial loan to build the Sardar Sarovar Dam.

In 1986-the Ministry of Environment and Forests circulated a note for restricted circulation entitled "Environmental Aspects of Narmada Sagar and Sardar Sarovar multi-purpose projects."

The Ministry of Environment and Forests was not too happy with the project because it felt that environment impact assessment for the two projects was not complete and it would take a further 2-3 years. The ministry further felt that land capability surveys of land identified for rehabilitation had not been done. Of the total land required less than 1/3rd had been identified.

As a response to this the Ministry of Water resources also came up with a note. In the note they maintained that although certain studies which should have been completed as a pre-requisite to environmental sanction had not been done, the projects ought to be sanctioned because large amount of money had already been spent; and the projects were going to provide large benefits.

In June 1987 the Ministry of Environment, and forests gave a conditional sanction for the Project. Although the world Bank was critical of this the government went ahead & the Sardar Sarovar project was cleared, for implementation.

In the next few pages an attempt would be made to analyse public policy towards Big Dams in India with special reference to the Sardar Sarovar Project. We would focus on

whether big dams have helped in fulfilling the basic needs of food and energy of the majority of Indians. We would also examine issues of resettlement and ecology that have come to the fore as a result of adherence to a policy promoting Mega dams. Finally we would also try and evaluate whether the adverse consequences of such a policy are equal to or more than its benefits; and place the policy promoting large dams in the context of the larger process of development in India.

CHAPTER II

FULFILLING BASIC NEEDS

In this chapter we will try to examine whether a policy that has promoted such multipurpose projects as the Bhakra, Hirakud, Koyna and now Sardar Sarovar fulfills the basic needs of food, water and energy of the vast majority.

Proponents of Mega Dams argue that by supplying hydro electricity, dams supply the power to progress, and by providing water for irrigation, they will help boost food production and thus enable more people to be fed.

"Given that food and energy are the two commodities in shortest supply within the third world, is it any wonder that so many developing countries, now see large scale dams as the touchstone of future prosperity". (quoted in Goldsmith and Hildyard, 1984 : 13).

Scholars like Goldsmith and Hildyard (1984), Paranjpye (1990), do not agree with the view that such large dams fulfill the needs of food of the majority of local persons.

They maintain that a majority of irrigation projects are not used to grow food for local consumption, but are used to cultivate cash crops for export. The reason behind it is that large scale irrigation schemes often require a lot of money running into thousands of crores to be set up. When such scheme are financed usually by more developed countries or multilateral lending agencies like the World Bank such money has to be returned. Government and development agencies alike claim that cash crops offer the only means of enabling large scale irrigation schemes to achieve a satisfactory rate of return on investment.

As we saw, most Third World countries including India believed that development can only be achieved through Industrialization. To industrialize these countries needed to earn foreign exchange in order to import the technology which would enable them to achieve what Rostow called an economic lift off. For these countries like India which did not possess either mineral or oil wealth, foreign exchange could only be earned by exporting the produce of their land. Hence the need to grow cash crops. A 1973 report from the U.S. department of Agriculture revealed that 36 of those nations classified as 'Most seriously Affected' by hunger and malnutrition were exporting food nonetheless to the United States. A study by Dinham and Hines (1983) shows that in Kenya (Pan African Vegetable Products) a company set up by Brueker Werker of West Germany and financed by among others

Barclays overseas Development grows some 18,000 tons of vegetables a year on irrigated land. Five thousand outgrowers supply the company with another 18,00 tons a year. Ninety percent of all those vegetables are dehydrated and exported to West Germany and other European countries.

Elsewhere the Sulmac Company in which Brooke Bond has a 75 per cent interest is growing carnations, ferns, chrysanthemum cuttings and vegetables. Both these examples are representative of a phenomenon whereby such multi-nationals enter these third world countries, owing to cheap labour, and with ready to invest capital use scarce land in these countries to grow food to supply a market overseas.

An outcome of such large tracts of irrigated land going under the cultivation of cash crops is that obviously the local need for food gets a secondary place. According to Mankodi (1992) in the case of the Ukai project there has been increasing emphasis on cash crops at the expense of food crops.

For the rural poor the problem gets compounded by the fact that the tendency of cash crop cultivation is to push up the price of even locally grown foodstuffs, thus increasing further the gap between the peasant and his next meal.

Secondly the increasing cost of production - an inevitable fallout of modernising agriculture, must mean that food prices rise to meet those extra costs. "Expensive technology will produce expensive goods - including higher priced food. Someone is going to pay the cost of items like spare parts, imported fertilizers, if you want to then keep food prices down for urban consumers you will have to reduce the prices and wages you pay to rural producers and labourers". (quoted in George; 1977: 39). Further George maintains that if food prices are determined on the basis of market price, it is out of the reach of the majority.

The growing of cash crops like peanuts, tea or coffee has led to over exploitation of soil. These cash crops are grown incessantly without any fallow period, since the major motivation is not the health of the soil but the health of the company measured in its profit making ability. Therefore very soon the soil becomes poor in humus and loses its cohesiveness. For example where land is under peanuts experts maintain that a minimum period of six years fallow ought to be there if the soil is not to degenerate. Without that fallow, such essential minerals as potassium, phosphorous and magnesium do not have sufficient time to build up in the soil. According to Franke and Chasin (1981) as the soils organic matter diminishes the soil's capacity to retain water is lessened and there is more susceptibility to drought. Further without reserves of moisture the soil

dries out. Lappe and Collins (1977) maintain that soil deterioration leads to declining crop yields and consequently to an enormous expansion of cultivated land often onto marginal soils.

However, there may be some justification for this trade off if the majority of the poor actually benefit. But this is not so. The foreign exchange earned by developing countries by the export of food goes on luxury items that only the elite can afford. Lappe and Collins observed in 1977 that much of the foreign exchange is used to enable Government bureaucrats and other better off urban workers to live an imported life style with refrigerators, air-conditioners, refined sugar, alcoholic beverages, tobacco etc. which are just not available to the majority. In 1974, about 30 percent of the foreign exchange earned by Senegal went for just such items.

Further, proponents of Mega dams argue that dams provide a cheap source of electricity.* This was expected to help in the process of industrialization, whose trickle down benefits would help in improving the life of the majority. The projections of the working group on energy policy show that by 1979 the household, commercial, industrial and agriculture sectors had their own increasing demands for energy in MkwH.

* As long as one does not translate into economics the social and ecological problems they give rise to.

TABLE 2.1

PROJECTED DEMAND OF ELECTRICITY IN INDIA IN MkWh

Consumer	1982-83	1987-88	1992-93	2000
Household	11.4	15.5	28.0	35.8
Commercial	8.1	10.3	14.7	23.9
Agriculture	16.8	22.2	29.2	30.0
Industry	83.8	121.4	173.5	302.6
Transport	3.2	4.0	5.4	8.7
Other	5.2	8.2	11.9	19.5
	128.5	181.6	256.7	428.5

Source: Planning Commission Report of the working group on energy policy New Delhi - 1979 : 119

From : Bandhopadhyay - 1986 : in Goldsmith and Hildyard's vol. 2 (eds.).. The Social and Environmental Effects of Large Dams : page 210.

The Planning Commission had in the Eighth Five Year Plan also projected that by the year 1996-97 energy requirements would be 416274 MkWh.

Ostensibly, this demand when supplied would lead to economic development and would give India's millions a better life. The working group on energy policy of the Planning Commission in 1979 had observed that the rapid increase in the number of towns and villages electrified has given an impression that the number of unelectrified houses is fast diminishing. Facts prove that this is not the case. In the seventies the number of new electricity connections

to houses had increased at the rate of about one million households a year, while the number of new households has been increasing at the rate of about 2.2 million per year. Studies also show that in any electrified village only 10 to 14 per cent of the houses have electricity for household purposes. The rest of the houses do not switch to electricity as the householders are not able to pay for the initial investment required to set up the switch board, wiring arrangements to receive electricity (Planning Commission: 1979 : 28). Infact about 70% of the available energy is expected to be utilised by the Industrial sector.

One outcome of the goal of rapid industrial growth is that often there is a loss of land to industry and urbanisation. Agricultural land will of necessity be lost and has been lost to housing estates, factories, shopping centres, office blocks, roads, motorways and the rest of the physical infrastructure of an industrial society. Therefore the amount of land that is available for growing food is decreasing and food not industrial goods is the commodity most needed by the rural poor in the Third World. "Therefore any project that destroys agricultural land and pastures on a very large scale deserves to be treated with caution" (quoted in Dogra, 1993:5).

The irrigation sector, which is the largest consumer of water has received so much water that the other equally

important demands on water have been neglected, Irrigation and Hydel power generation together consume 80-90 percent of total water utilised today. Among the other demands are water for industrial requirements, requirements for inland and estuarine fisheries, minimum fresh water flows for keeping river mouths free of silt., keeping the saline water of oceans away from arable lands on the estuarine coast, drinking water supply. Each one of these is important in its own right. Drinking water is as important if not more so than water for purposes of irrigation and power generation Paranjpye (1990) notes that only the irrigation and* hydel power uses have been regarded as legitimate by project planners and engineers. This mind set gets reflected even in documents like the National Water Policy of 1987. This was to provide a blueprint for the comprehensive development of water resources available in India.

The policy recommends the following water allocation priorities.

- i) Drinking water
- ii) Irrigation
- iii) Hydro power
- iv) Industrial and other uses.

But the problem with the policy document is that it suggests no way for implementing these priorities. For example in spite of drinking water being higher in priority, investments and outlays as well as actual performance in this area remains abysmally low and big dams continue to guzzle 80% of all outlays on water resources.

Paranjpye (1990) describes the National water policy as "A highly superficial and toothless document of 15 odd pages which merely lists out the nice things which should be kept in mind, while developing water resources. It is a typical strawberries and cream document and an example of what a policy document should not be". The policy does not suggest measures that would help in the implementation of priorities for water use. Neither does the document suggest any kind of legislation or organizational structure or changes, which would make it possible to implement its objectives. It also does not say what is to be done if project authorities flout these considerations.

The development of our water resources is guided by an economic rather than a social cost - benefit analysis. According to Chaturvedi (1990) "There is little concept of water being viewed as a crucial environmental vector and scarce resource, which has first and foremost to be conserved and developed in terms of such objectives".

According to Paranjpye, (1990), Iyer (1991) What does happen is that engineers inevitably select a dam site and then go on to prepare detailed project reports expressly with the objective of building up economic and social justifications. Further it is pointed out that once a good engineering site for impounding of water is found, then only is the utilisation of water which the project will make available is considered. "The sequence is from project to utilisation and not from identified needs to a project to meet those needs. (quoted in Iyer, 1991:73). Stressing this point B.B. Vohra a former civil servant in the Agriculture Ministry said "one of the reasons why the irrigation departments have become almost compulsive builders of dams and latterly (because dam sites are becoming increasingly scarce) the dreamers of Garland Canals, water grids and other similar fantasies is the fear that they would find themselves out of work when existing projects get completed". (quoted in Dogra, 1986 : 207-208). Elsewhere he testifies to the "extreme reluctance of the irrigation departments to touch anything which is not big in size. For them he says Big is beautiful. It is also immensely profitable and prestigious. For politicians Big Dams bring notes and international kudos, for local contractors and foreign engineers it means money and for those involved in planning and implementing the project it frequently means kickbacks." Also it has been seen that very

often to build or not to build a dam is usually a politically determined decision which comes first and then it is exceedingly difficult to nurture the informed and dispassionate debate requisite to assessing long term costs. Often because of the high publicity surrounding a projects' projected benefits, there is a tendency to under estimate cost factors and overplay the benefit factors. Paranjpye (1990) therefore maintains that without exception the proposals submitted to the technical advisory committee of the central water commission or to the planning commission for scrutiny and appraisal have had benefit-cost relations, which are overwhelmingly greater than standard requirements, namely 1.5:1.

An Indian Government committee that analysed 64 dam projects had found that the percentage rise in revised costs over initially estimated costs turned out to be an average of 100 per cent.

The above point is substantiated by the fact that The Public Accounts Committee which had been appointed by the Lok Sabha in its 81st report submitted in 1986-87 had noted on abnormal cost over runs that "Not a single project in the irrigation, power and flood control sectors had been completed within the time schedule and within the cost estimates. The Committee considers this highly unsatisfactory." (quoted in Paranjpye, 1990 : 72).

With each plan, the number of incomplete dams has been rising. Thus in 1989-90 there were 168 major dams that are yet to be completed. According to figures found in the Eighth plan document - "At the end of the seventh plan there were as many as 182 major, including the mega projects like Sardar Sarovar, Indira Gandhi Nahar and the Indira Sagar projects, and 312 medium on going irrigation projects requiring according to latest estimates a huge amount of Rs. 39,044 crores at the (1990-91) price level to complete them.

TABLE 2.2

LIST OF ON GOING MAJOR & MEDIUM IRRIGATION PROJECTS IN THE EIGHTH FIVE YEAR PLAN (1992-97) ALONG WITH THEIR COST, SPILLOVER COST, ULTIMATE BENEFITS AND SPILLOVER BENEFITS IN EIGHTH PLAN.

S.No	Name of the State	Latest Cost	Spillover cost to 8th plan	Ultimate irrigation potential	Likely spillover benefit of 8th Plan	
					pot.*	Utl.*
1	2	3	4	5	6	7
1.	Andhra Pradesh	6136.07	3029.49	2168.39	971.33	1083.28
2.	Bihar	5044.19	3081.21	1334.87	977.87	1111.67
3.	Gujarat	11900.86	9123.53	2356.09	1983.83	2356.40
4.	Haryana	1440.68	542.39	509.00	301.40	423.40
5.	Himachal	112.70	98.28	3.33	0.92	2.12
6.	Jammu & Kashmir	373.66	202.79	109.11	55.29	61.97
7.	Karnataka	4627.77	3362.89	1375.63	341.75	410.51

8.	Kerala	1073.46	325.68	373.56	177.00	177.00
9.	Madhya	5871.30	3404.16	2655.30	1627.40	2080.70
10.	Maharashtra	8215.09	4920.45	2491.82	1862.02	2265.24
11.	Manipur	252.00	107.83	48.67	44.67	44.97
12.	Meghalaya	16.30	15.03	3.49	3.49	3.49
13.	Orissa	4592.57	3777.25	1380.80	1349.59	1364.84
14.	Punjab	682.06	275.99	971.75	294.26	331.87
15.	Rajasthan	3529.17	2135.85	2063.24	912.73	1151.37
16.	Tamil Nadu	286.47	36.75	186.71	10.30	10.57
17.	Tripura	105.59	53.17	25.52	23.52	23.52
18.	Uttar Pradesh	6208.02	3370.66	3857.64	2380.78	3059.25
19.	West Bengal	1521.73	882.20	1909.66	654.36	730.56
20.	Pondiceray	17.00	13.51	***	****	*****

* (pot - potential); (utl - utilisation)

Source: Eighth Five Year Plan, 1992 ; 74-85.

It has been noticed that from 1970 onwards the cost of creating irrigation potential has been continuously rising and has been more so in the case of large projects rather than minor projects. Added to this problem, is underutilization of irrigation potential created by major and medium dams, as can be seen in the next table.

TABLE 2.3

POTENTIAL CREATED AND UTILISED BY MAJOR
AND MEDIUM PROJECTS IN MILLION HECTARES

At the end of	Potential	Utilisation	Percent of utilisation
Pre plan -	9.70	9.70	100.0
First Plan (1951-56)	12.19	11.00	90.2
Second Plan(1965-91)	14.33	13.30	92.8
Third Plan(1961-66)	16.57	15.20	91.7
Annual Plan(1966-99)	18.10	16.80	92.8
Fourth Plan(1969-74)	20.71	18.70	90.3
Fifth Plan (1974-79)	24.72	21.20	85.8
Annual Plan (1978-80)	24.72	21.20	85.3
Sixth Plan (1980-85)	30.01	25.33	84.4
Seventh Plan(1985-90)	31.52	27.77	84.7

Source: Report of the working Group in the Eighth Five Year Plan on major and medium irrigation.

From: (Eighth Five Year Plan, 1992 : 59)

The public accounts committee in 1986 also pointed out that the cost benefit analysis was faulty and needed to be made more scientific. It noted - "The present practice of imputing net increases in the yields in the command areas to irrigation alone is incorrect" and that all inputs that go into increasing yield like agricultural research, extension services, concessional agricultural credit and ayukta

development should be taken on the cost side. The cost benefit analysis should necessarily be preceded by a socio-economics survey of the command area. (Paranjpye, 1990).

The case of Sardar Sarovar :

In the case of the Sardar Sarovar Project (SSP) the questions that need to be examined are - will the project actually deliver what it claims to? Will it help in the removal of tribal poverty? will the benefits accrue to the Jalore district of Rajasthan? and will drinking water facilities, be available to millions of thirsty people in Gujarat ?

Areas of North Gujarat, Saurashtra, Kachchh and Rajasthan face severe shortages of drinking water and the situation is getting worse. Large expensive relief measures are becoming common* and there are problems of salinity and high fluoride levels in the water. One of the principal justifications of the Sardar Sarovar project is the provision of drinking water to these rural and urban areas.

The Sardar Sarovar Project aims at solving the drinking water problems of approximately 32 million people according to Government figures of 1983. In 1991 the figure that the

* Paranjpye (1990) noted that large amounts of drinking water are carried to these thirsty regions by rail often leading to expenditures running into lakhs per day.

SSP was expected to serve reached 40 million according to the Morse Committee report.

Despite the increase in demand, the amount of water that has been allocated remains the same. According to a report of the Narmada Control Authority (1991), the Narmada waters would be available for municipal and industrial uses, 11 months of the year from an irrigation system designed on a 75 per cent dependability. However the Morse report (1992) maintains this is considerably less than the standard required for urban water supply. Storage plans are not yet available, and water rates are undecided. A comprehensive domestic and municipal plan was still under preparation in 1992 April. Other discrepancies that have arisen are that though the SSP claims to solve the drinking water problems of a number of villages in Kachchh and Saurashtra - "The chairman of the Sardar Sarovar Nigam acknowledged that the number of villages to be served in Saurashtra and Kachchh are statistical figures which include 236 uninhabited villages." (quoted in Morse, 1992: 319).

The validity of other claims of the project - to eliminate drought and poverty also need to be examined. The government claims that the Sardar Sarovar project with its canals and distributaries will solve the problem of drought once and for all. However, these claims are rejected by various scholars and their interpretation of benefits that would accrue to various districts appears in the table below.

TABLE 2.4

LIST OF DROUGHT PRONE & DESERT TALUKAS IN GUJARAT WHICH ARE LIKELY TO GET BENEFITS FROM THE SARDAR SAROVAR PROJECT

S.No.	Talukas	District	Percent areas covered under command of the Sardar Sarovar project
1.	Kakhpat	Kachchh	Nil
2.	Abdasa (Nalia)	"	Nil
3.	Nakhatrana	"	Nil
4.	Bhuj	"	Nil
5.	Mandvi	"	Nil
6.	Mundra	"	20
7.	Anjad	"	40
8.	Bhachau	"	50
9.	Rapar	"	20
10.	Suntalpur (Varahi)	Banaskantha	100
11.	Vav	"	100
12.	Tharad	"	20
13.	Deodar	"	50
14.	Shirohi (Kankrej)	"	30
15.	Radhanpur	"	100
16.	Viramgam	Ahmedabad	100
17.	Dasuda (Patdi)	Surendranagar	100
18.	Drangadra	"	70
19.	Halvad	"	80
20.	Lakhtai	"	100

21.	Wadhwan	"	40
22.	Chotila	"	Nil
23.	Sayla	"	Nil
24.	Muli	"	Nil
25.	Limdi	"	Nil
26.	Jasdan	Amreli	Nil
27.	Wankaner	Rajkot	Nil
28.	Botad	Bhavnagar	Nil
29.	Gadhada	"	Nil
30.	Umrالا	"	Nil
31.	Vallabhipur	"	Nil
32.	Shibor	"	Nil
33.	Ghobha	"	Nil
34.	Gariyadhar	"	Nil
35.	Palitana	"	Nil
36.	Savakundla	"	Nil
37.	Mahuva	"	Nil
38.	Talaja	"	Nil
39.	Babra	Amreli	Nil
40.	Vadia	"	Nil
41.	Amreli	"	Nil
42.	Lathi	"	Nil
43.	Lilia	"	Nil
44.	Khambha	"	Nil
45.	Rajula	"	Nil
46.	Jajrabad	"	Nil

47.	Dwarka (Okhamandal)	Jamnagar	Nil
48.	Kalyanpur	"	Nil
49.	Lunawada	Panchamahar	Nil
50.	Santrampur	"	Nil
51.	Shehera	"	Nil
52.	Limkheda	"	Nil
53.	Jhalod	"	Nil
54.	Godhra	"	Nil
55.	Deoadbaria	"	Nil
56.	Dohad	"	Nil

Sources: (1) Seventh Five Year Plan, 1950-90, Government of Gujarat, January 1986.

(2) Economic Appraisal of Sardar Sarovar Project, TECS Report for Narmada Planning Group, Gujarat, May 1983.

From - Paranjpye - High Dams on the Narmada, 1990: pages 141-142.

The details of this table indicate that a large portion of Kachchh and Saurashtra will not get any water at all. The only true drought stricken areas which will benefit are the districts of Banaksantha and Surendranagar and four talukas in Bhavnagar districts. The really dry areas like central and western Kachchh and the whole of southern, central and western Saurashtra will not benefit. These areas will have to have a drought alleviation plan even after the Sardar Sarovar Project is completed. Out of the 56 talukas

identified, only 8 talukas will get 80-100 % cover from the SSP and 12 will get 20-50 % cover. The total number of desert or drought prone talukas that would benefit by the SSP would be only 20, and even out of these, 4 talukas of Kachchh will benefit only marginally as there will be no water once in 4 years.

This analysis is rejected by the advocates of the SSP who maintain that this particular mode of analysis is faulty. Scholars like Raj (1990) are critical of what they call academic Numerical analysis of the number of particular regions coming under the command area. This they claim does not give the real picture. Thus they feel that analysing the project by the distribution of benefits among the tribal areas, central fertile plains and the arid areas of Kachchh, Saurashtra and Rajasthan is not a proper yardstick. The district wise distribution of benefits would be as under :

TABLE 2.5
SHOWING DISTRICT WISE DISTRIBUTION OF SSP BENEFITS

S.No.	District	Lakh hectares
1.	Baroda	3.50
2.	Ahmedabad	3.30
3.	Surendranagar	3.04
4.	Banaksantha	3.13

5.	Broach	0.98
6.	Mehsana	1.50
7.	Kaira	1.16
8.	Panchmahals	0.10
9.	Gandhinagar	0.10
10.	Bhavnagar	0.48
11.	Rajkot	0.34
12.	Kachchh	0.37
	Total	18.01

From - Raj, 1990 - Sardar Sarovar Project present status and facts on important live issues under debate in the Indian Journal of Power and River Valley Development, page 135.

According to this table the lions share goes to the 4 districts of Baroda, Ahmedabad, Surendranagar and Banaksantha. Further Raj (1990) maintains than 90 % of the area of Ahmedabad is Drought Prone Area. He maintains that even in Baroda out of 8.0 lakh hectares 3.0 lakh hectares are desert prone.

In the remaining districts the benefits are practically evenly distributed except for Broach, Mehsana and Kaira where the benefits are about 1.0 lakh or more.

Thus the differences in interpret action of the proposed benefits may be said to be based on the fact that both researchers used different units of analysis. This lack of

uniformity in assesment often leads to a situation where data seems contradictory.*

Another claim made by the proponents of the SSP is that the project will benefit large areas and populations of the tribals. Data proves otherwise.

TABLE 2.6

PERCENTAGE OF BENIFITS DERIVED BY THE BACKWARD TRIBAL TALUKAS AND TRIBAL POCKETS FROM THE SARDAR SAROVAR DAM

Sl. No.	List of Tribal talukas	district	Percentage of area of the talukas benefited by the Sardar Sarovar dam
1.	Vijanagar	Sabarakantha	Nil
2.	Kedbrahma	"	Nil
3.	Bihiloda	"	Nil
4.	Meghraj	"	Nil
5.	Jhalod	Panchmahal	Nil
6.	Dahod	"	Nil
7.	Santrampur	"	Nil
8.	Limkheda	"	Nil
9.	Devgadhdaria	"	Nil
10.	Chotoudetur	"	Nil
11.	Naswadi	"	20.64
12.	Tilakwada	"	100
13.	Bediapada	"	Nil
14.	Sagdara	"	Nil
15.	Valia	"	Nil
16.	Nandod	"	8.0
17.	Shagadia	"	Nil
18.	Uchchhal	Surat	Nil
19.	Vijara	"	Nil
20.	Mahuva	"	Nil
21.	Mandvi	"	Nil
22.	Nizar	"	Nil
23.	Songdh	"	Nil

* Although both the interpretations do show that districts of Kachchh, Rajkot, Bhavnagar will receive least benefits, of course Raj (1990) maintains that these areas will have some benefits, while Paranjpye maintains talukas of Kachchh and Rajkot will have no benefits.

Sl. No.	List of Tribal talukas	District	Percentage of area of the talukas benefited by the Sardar Sarovar dam
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24.	Valod	Surat	Nil
25.	Mangrol	"	Nil
26.	Bandoli	"	Nil
27.	Dhrampur	Valsad	Nil
28.	Dansda	"	Nil
29.	Chikhli	"	Nil
30.	Pardi	"	Nil
31.	Umbargaon	"	Nil

Sl. No.	List of Tribal pockets	District	Percentage of area of the talukas benefited by the Sardar Sarovar dam
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32.	Dangs	Dangs	Nil
33.	Ankleshwar	Bharuch	Nil
34.	Kamrej	Surat	Nil
35.	Palsana	"	Nil
36.	Palej	Valsad	Nil
37.	Algam	"	Nil
38.	Rombal	"	Nil
39.	Saisodganesh	Navsari	Nil
40.	Vadoli(Sanikheda)	Vadodara	69.0
41.	Bhatput(Sanikheda)	"	69.0
42.	Kareli(Jambugaon)	"	4.8
43.	Kathoda(Halol)	Panchmahal	Nil
44.	Mora(Dodhra)	"	Nil
45.	Amirgadh(Palanpur)	Banaskantha	Nil
46.	Danta	"	Nil
47.	Bhikhapur	Vadodara	4.8

- Source: (1) Regionalization of Narmada Commands, Operations, Research Group Baroda May 1982.
- (2) Seventh Five Year Plan, 1985-90 Government of Gujarat.
- (3) Economic Appraisal of Sardar Sarovar Project, TECS Report for Narmada Planning Group Gujarat May 1983.

From - Paranjpye 1990 High Dams on the Narmada pages-144-145.

Inferences of this table are - 'of the total irrigation benefits, the tribal areas will receive only 6.5 % benefits (Paranjpye 1990). Even proponents of the SSP maintain that the tribal areas under the command are 2.8 % and not 6.4 % (Raj, 1990). He maintains further that it is not possible to cover the tribal areas, which are outside the command and at much higher elevations by economical 'gravity irrigation.

According to the Table we may infer that out of the 32 tribal areas and 15 pockets, only Tuakwada gets 100 % benefits, Sankheda gets 69 %, Naswadi 20 %, Nandod 8 % and Jambugaon 4.8 %.

This leads us to note that adequate attention has not been paid to alternatives of development, especially for water development projects in the tribal areas.

According to persons involved with voluntary organisations in the area like the Sadguru Water and Development Foundation (SWDF) 218,020 hectares of land can be irrigated in the Panchmahal area without constructing a single large dam. A few medium dams could be constructed with a height of less than 20 meters.

They (SWDF, Paranjpye) recommend that the length of the irrigation canals should be kept to the minimum possible and deep rock cutting should be avoided. They should have several lift irrigation schemes installed on them as these would be relatively cheaper. A series of check dams or bandharas and wherever possible barrages could also be constructed, each having a height of 3-4 meters which could be constructed without submerging the arable land of the tribals. Water so impounded can be lifted by pumps.

In the Panchmahals specifically, this would economise on the use of water, reduce losses and thereby make possible, the irrigation of double the area by way of canals and gravity irrigation. It is possible to construct 500-750 structures in the Panchmahal area. Each of these structures would cost an average of Rs 4,00,000. Thus 500 bandharas would require approximately Rs 20 crores and each of these structures would be able to irrigate an average of 100 hectares by way of lift irrigation.

These lift irrigation schemes have been tried out in the Panchmahal area and have shown good results. The taluka wise potential for Lift irrigation schemes, their approximate cost, estimated irrigation potential and approximate number of beneficiaries can be seen in the Table that follows.

TABLE 2.7

POTENTIAL FOR IRRIGATION BASED ON LIFTS ON CHECK-DAMS

TALUKA	PROBABLE NO. OF SCHEMS (INCLUDING NEW CHECK-DAMS)	ESTIMATED COST (IN LAKHS)	EXPECTED IRRIGATION IN ACRES IN ONE SEASON.	NUMBER OF BENEFICIARIES FAMILIES (APPROX)
DAHOD	80	560	20,000	10,000
JHALOD	95	665	23,750	11,500
LIMKHEDA	100	700	25,000	12,500
BARIA	100	700	25,000	12,500
SANTRAMPUR	125	875	31,250	15,500
TOTAL	500	3,500	1,25,000	62,000

From : Paranjpye, 1990, High Dams on the Narmada, page - 260.

"500 of these Lift Irrigation schemes will benefit 62,500 tribal families, which is 54 % of the total tribal households in the area. These 125,000 acres of irrigated land will generate an additional income of about Rs 25 crores at Rs 2,000 per acre in one season. Even at 75 % of irrigation, it will give an additional Rs 18.75^{crores}. The project will have a positive impact on more than 3 lakh people of the region" (quoted in Paranjpye, 1990 : 260).

It is obvious that alternatives do exist and have been tried out, but development of such schemes has been hampered by a lack of financial resources, mindset of policy formulations focussing primarily on the notion of Big is Best, and a lack of adequate research in these areas.

According to the Narmada Nigam, the district of Kachch will get 170 MCM* of water for domestic and industrial use and an additional 230 MCM for irrigation use from the Sardar Sarovar Project. The idea is to transport the water of the Narmada through 700 Km to Kachch for this purpose. As the Kachch command area is at the tail end of the distribution system, the cost per hectare of irrigation water supplied would be the highest among all the districts. 'The government therefore recommends the growing of high value crops like groundnuts, cotton, fruits, palms dates. It is expected that this would facilitate agro-based industries on a cooperative basis' (quoted in Paranjpye 1990: 264).

The implications of the government policy can be described as leading to a situation where the main beneficiaries will be the urban and industrial residents of the Kandla - Gandhidham complex. Out of the 9 talukas of Kachch only four namely Mundra, Anjad, Bachhau and Rapar will be serviced. But even here, Mundra is likely to get irrigation facilities for 20 % of its area, 40 % in Anjad, 20 % in Rapar and 50 % in Bachhau. Lakhpat, Abdasa, Nakh Gana, Bhuj and Mandvi will get nothing from the project. Further the growing of cash crops would also reduce the amount of land under food crops.

* Million Cubic Meters

The canal water once it reaches the Kachchh border has to be lifted 780 feet and this will consume a large amount of money and electricity. Therefore coupled with the distance of the Kachchh command area the cost of irrigation per hectare estimated in 1990 by Paranjpye is likely to be about Rs 50,000 per hectare. That means the cost of irrigating is Rs 286.5 crores for 57,300 hectares.

The Kachchh region has sufficient water resources to satisfy the drinking water, irrigation and industrial needs of population projected upto the year 2020. In fact the Technology Mission REport (1988) suggested that instead of the conventional canal irrigation method there should be a "Total Catchment Management Approach". The report recommends that ground water (of which Kachch had 942.55 million cubic meters that were available in 1988) can be recharged through contour bunding, field bunding, and other techniques of rain water harvesting. The programme would need adequate support in terms of detailed topographical and geological surveys. The programme would help to recharge ground water, improve productivity of dryland cropping, pastures and forests, reduce erosion of soil thereby minimising the silt load of reservoirs. The report further recommends a series of check dams and underground dams with tidal regulators for major streams. Also the report suggests the use of local material, such as kankar, lime, yellow stone so that local resources may be harnessed in the interest of the economy.

Further a simple rule that is to be followed when any project is being implemented is that the already existing economy has to be built upon; and due consideration given for its development. In the Kachchh region animal husbandry has been the mainstay of the economy. The area has been a classical grazing area, with the livestock population far exceeding the human population. Kachchh cows are adept at surviving in erratic and uncertain rainfall conditions. The cowherds or the Maldharis have developed the Kankrej and Thani breeds of cattle which yield good milk.

Since this sector is so vital, it has to be given importance in any development plan being devised for Kachchh. Unfortunately the Narmada project completely ignores this sector. What is therefore needed today is ~~therefore~~ a re-prioritization of objectives. The first priority should become providing drinking water supply for every one of the 887 villages and 10 towns in Kachch. Within this 51 of the worst affected villages must be given top priority, because they have been identified as no source villages.

Second priority must be to serve the needs of the cattle population. Thirdly water intensive crops like banana and sugar cane must be banned. Fourthly the scrub jungles and rakhals need to be protected since they offer protection against flash floods, and are a source of fodder for livestock during times of great hardship.

Therefore what is needed is not what the policy formulators think a region needs but what the local populace actually needs. These reprioritization of goals constitute the conception of development that is sustainable.

The question now arises that if sustainable development is so important and necessary why have we not fashioned our objectives in accordance with it. The main reason can be found in the lack of dialogue between the formulators of policy and the persons actually affected by such policies. This lack of interaction leads to policies formulated by bureaucrats who have no knowledge of existing ground realities, like the demand for water, traditional systems of harvesting rain water, the needs of the soil.

Apart from these issues the SSP brings up legal questions too. The law is basically concerned with whether justice and equity is being sustained or achieved in whatever is taking place. If this is the concern of law then is the SSP securing justice and equity for the people?

Article 38 demands welfare of all people and Articles 39 (b) and (c) requires that the material resources of the community should be used for common good. Also article 46 of our constitution clearly states that the state must protect the scheduled tribes from injustice and all forms of exploitation.

Today in the year 1993 - the question that we need to ask is, these Directive Principles which were enshrined in the Constitution to bring about welfare - how far have they been realised.

"The constitution permits the use of the community's resources only for a public purpose. No law defines public purpose.*

In traditional Hindu and Islamic law, natural waters such as rivers and lakes belong to the people, not to the state, king or sovereign. No king could transfer the ownership to another king in treaty or defeat. Customary rights of the people in natural waters were and have been recognised throughout including rights of the riparians (those who live close^{to} the river banks and use the river water). Water right as natural rights have been accepted as such by the judiciary much before Independence.

* In the *Humabhai Framjee Petit vs. Secretary of State of India* - the judicial committee of the Privy Council asserted that the purpose must necessarily concern the interest of the community. *Petit* has been repeatedly followed by the Supreme Court quoted in *Kameshwar Singh* and later in *Thambiran Padauachi vs. State of Madras*. However none of the judgements define public purpose. The Mulla Committee's report on the Land Acquisition Act considers the notion briefly. It enlists various purposes which the courts have declared public, but like the judgements does not go into the question of who this public is or ought to be." (quoted in Singh, 1991: 16)

But the Legislative process has been different. The British recognised people's right in water in the earlier Easement Act. In the Land Acquisition Act, they agreed to recognise the rights of people and give them compensations, this was in 1874. By 1927, when it came to forests, they agreed to recognise some rights, but there was no question of compensation. By the 1930s, when the Water Laws were formalised, they forgot all about rights and compensations - the state invested in itself absolute rights over all natural waters and hence absolute ownership.

Such laws are totally violative not only of the customary laws and what is recognised by the Easement Act, but also of the Constitution namely Article 13, which says that all laws violating people's fundamental rights must be declared void.

Big Dams therefore and specially Sardar Sarovar do not fulfill many of the objectives for which they were set up. Apart from this there is also a violation of the basic rights of the people as enshrined in the constitution.

CHAPTER III

ISSUES OF ECOLOGY

India has a number of policy announcements, laws and a separate Ministry of Environment and Forests to address issues relating to ecology and the environment. It also has its own regime of laws and guidelines for formulation and clearance of multi-purpose projects.

India's Fourth Five Year Plan (1969-74) was the first to state in an official policy document that 'planning for harmonious development is only possible on the basis of a comprehensive appraisal of environmental issues'.

In the year 1972, India established a National Committee on Environmental planning and co-ordination, an advisory body attached to the Department of Science and Technology. Under this Committee, chaired by the Prime Minister, special task forces addressed controversial environmental issues. In 1980, the Government of India appointed the Tiwari Committee to make recommendations on ways to improve measures for environmental protection. In November that year the Department of Environment was set up with the Prime Minister as the Minister responsible. In 1985, it became a part of the Ministry of Environment and Forests. The main activities of the Ministry included environmental clearance of selected development projects on the basis of environmental impact

assessment and environmental management plans, prevention and control of pollution, conservation, eco-regeneration measures, assistance to non-governmental organisations, implementing environmental and forestry programmes, promotion of environmental and forestry research, extension, education and Training, collection, collation, storage and dissemination of environmental information.

At the time that the Department was created there was growing alarm about the loss of forests nationwide in India. The Forest conservation Act of 1980 was passed and under it all projects for which forest land is required needed the prior concurrence of the Government of India through the Ministry of Environments and forests.

Among various reports published - The Ministry of Irrigation and in 1980 published a three volume report entitled-'Guidelines for preparation of detailed project report on Irrigation and multi-purpose projects. It dealt with issues of displacement and with environmental aspects which it felt were assuming greater and greater importance. Guidelines for making environmental analysis are provided in volume II. This volume covered issues of site selection, physical aspects, resource linkages, public health and socio-cultural aspects.

By 1985, we see that the Central Government required an environmental impact assessment for all major irrigation

projects, multi-purpose river valley projects and hydroelectric power projects. The impact assessment responsibility rested with the sponsors of a project. Four documents were to be submitted for ministerial approval, a detailed project report, dealing with technical and financial subjects, a questionnaire response on environmental aspects of the proposed works, an environmental impact statement assessing the likely effects on air, water, lands, flora, and an environmental management plan that proposes mitigative measures, re-settlement and rehabilitation plans and environmental monitoring programmes. The guidelines for environmental impact assessment of River Valley projects were first prepared in the 1970's and then updated in 1985 and 1989 are especially important with reference to the Narmada project.

Apart from this, there is the Ministry's Impact Assessment Division which examines the documents and consults with experts and projects sponsors as needed. Apart from this there are several laws that are relevant for issues of environmental protection. e.g. the Indian Fisheries Act 1897, Indian Forests Act 1927, Inter State water Disputes Act 1956, wildlife protection Act 1972, Forest Conservation Act - 1980.

Thus by looking at policy pronouncements alone, India should have a glowing record of a development that is

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Thus by looking at policy pronouncements alone, India should have a glowing record of a development that is

sustainable.

However, data available shows that in the case of large Dams enough attention has not been paid to environmental issues at the policy formulation level. In fact the policy adhered to has led to consequences that have had damaging environmental consequences.

As a dam is closed, the waters of its reservoir begins to rise submerging vast tracts of land. This often includes good agricultural land as well as forests. "It is estimated that between 1950 and 1975 India lost 4,79,000 hectares of forest land to various river valley projects." (quoted in Goldsmith and Hildyard, 1984:51). Usually officials involved in the implementation of such projects see the loss of forests only in terms of economics-that is in terms of actual valuable wood lost, like timber or mahogany. Officials totally ignore the intangible benefits that forests provide. Among these are important ways in which forests help in soil preservation, water replenishment, climatic stabilisation, air purification and wildlife shelters. Apart from this forests help in the prevention of drought and desertification and are the repositories of rich biodiversity. In the early 1970's an epidemic of grassy stunt virus destroyed more than 160,000 hectares of rice in Asia. A single sample of wild rice *Oryza nivara* from Central India provided the only known genetic source of resistance

to the disease. This rare plant was used to produce the resistant culture IR-36 which has become the most widely cultivated variety of rice in South East Asia. Wild rice occurring in the Silent Valley and adjoining regions has contributed some 20 major genes for disease and pest resistance. Yet only a very small proportion of the world's plants and animals have been investigated for their value as medicines and other pharmaceutical products. Therefore destruction of forests can have unintended and unmitigated consequence.

For example, the Bhopalapatnam and Inchampalli hydro electric projects are likely to disturb the forest area that lies within their submergence zones. The area to be affected by the Dams supports tropical deciduous forests. Also the Abugh Madh Hills have forests which are almost untouched, unmanaged and unsurveyed. Much of the area is not even administered for its revenue. As such it is considered one of the only truly wild eco-system in peninsular India.

Once a dam is filled with water the major concern then is that the lifespan of the Dam should be adequate. That is the extent of sedimentation should not be too fast. Failure to protect the ecology of the Dams catchment area especially its forests has led to soil erosion problems and rapid silting up of reservoirs.

Rapid rates of siltation have been the norm rather than the exception in large scale projects. The Nizam Sagar Dam's annual rate of siltation in acre feet was expected to be 530 while the observed siltation rate has been 8725. "This silt load has reduced the reservoirs carrying capacity by as much as 60% from its planned capacity of 27.72 ton/feet to 11.88 ton/feet" (quoted in Dogra, 1986: 201)

Heavy sedimentation also means a corresponding loss of flood control capacity. This is not in the interests of the nation where floods cause tremendous amount of damage every year.

The table below shows the extent of damage caused by floods between 1953-1981 in India.

TABLE 3.1 : DAMAGE CAUSED BY FLOODS IN INDIA, 1953 TO 1981

Year	Cropped area affected (100,000 hectares)	Total damage (million rupees)	
		At current prices	At 1952-53 prices
1953	9.3	540	520
1954	26.5	580	590
1955	54.0	1190	1340
1956	21.0	510	510
1957	4.5	240	220
1958	14.9	510	460
1959	15.4	790	680
1960	26.5	670	550
1961	18.3	320	260
1962	35.6	930	750
1963	19.7	380	300
1964	24.7	670	450
1965	2.5	60	30
1966	16.1	650	340
1967	33.0	1370	620
1968	26.9	2030	950
1969	43.4	3330	1490
1970	48.5	2870	1210
1971	62.4	6320	2630
1972	24.4	1580	630
1973	76.0	5690	1790
1974	33.0	5690	1400
1975	38.5	4710	1190
1976	76.8	8890	2390
1977	82.5	12000	2820
1978	100.5	14550	3420
1979	20.0	5970	1400
1980	54.1	8300	1950
1981 (as on August)	54.1	8300	1950

Source (a) Report of the National Commission on Floods, Vol. 1, Department of Irrigation, New Delhi 1980

(b) Replies to Rajya Sabha Unstarred Questions 109 (17 November, 1980), 1906 (11 March 1981) and 836 (26 August 1981).

From - Centre for Science and Environment. The State of India's Environment 1982. New Delhi, Page - 62.

Even Eighth Plan Figures of 1992 shows about 8 million hectares of land is affected annually by floods. Dams have not proved adequate for flood control. Often the goals a multipurpose project seeks to achieve are in contradiction to each other for purposes of flood control the water level in the reservoir must be kept as low as possible, for purposes of generating hydro electricity or for irrigation the opposite is the case. There is thus a trade off between the containment of floods on one hand and the provision of electricity and irrigation water on the other. Most often than not the latter uses have priority "the high short term value of water for irrigation or hydropower, would be too strong an argument not to sacrifice some flood mitigation benefits in favour of increased supply benefits" (quoted in Windstrand, 1980:95).

Mukherjee (1978) describes how operations at a Dam of the Damodar Valley Corporation in West Bengal led directly to widespread flooding in 1978. In their eagerness to generate the maximum amount of hydro-electricity, the Dam authorities maintained the reservoir practically full even during the rains of May and June. The rain that year were particularly heavy and as a result the flow of the river was greatly increased. With the reservoir full, the river's flood waters could not be contained and vast areas of West Bengal were flooded.

Despite problems like the trade off between goals of flood control and generation of electricity, mega Dam building has continued; with even more distressing problems such as salinity of soils and water logging coming to the fore in India to-day.

All soils contain salt, it is only when the concentration of salts in soil reaches .51.0 percent that land becomes toxic to plant life. Therefore if land is not to become salinised it is clearly essential that the water, salt balance of the soil is maintained. That is the amount of water leaving the soil, must be atleast equal to the amount entering it. The water should not be allowed to accumulate. In areas where irrigation water is provided by large scale Dams, seepage from canals tends to occur. It is through seepage that ground water levels rise. Once the ground water table has risen to about 2.5 meters below the top soil, it is pulled up the rest of the way through capillary action; adding still further to their own salt burden on the way by dissolving the salts, near the surface. ^{Soil thus} becomes waterlogged with increasingly saline water. The problem becomes worse when this new saline groundwater reach the surface. This water evaporates very quickly, and the salts it contains are left behind to accumulate on the surface. Under such conditions then the whole area gets covered with a saline crust.

The Eighth Plan had noted that the National Commission on Agriculture in 1976 estimated that almost 6 million hectares of land was affected by water logging, 3.4 million hectares due to surface drainage problems mainly in West Bengal, Orissa, Andhra Pradesh, Uttar Pradesh, Tamil Nadu, Kerala, Gujarat, Punjab and Haryana and 2.6 million hectares were affected due to a higher water table particularly in Punjab, Haryana, some parts of Rajasthan and Maharashtra. About 4.5 million hectares were estimated to be affected by salinity and 2.5 million hectares by alkalinity. The alkali soil problem is mainly in Uttar Pradesh, Punjab and Haryana.

The problems described above are ~~exacerbated~~ ^{increased} by lack of proper drainage facilities. In India in the middle of the last century when the construction of a massive canal network was undertaken in Punjab: (According to Dogra (1986), it was realised that the new water courses were causing water logging and salinity. As much as a third of the water transported in the canals was seeping out into the subsoil, raising the water table over vast areas at the rate of one or two feet a year. But once the water reached the surface, a high rate ^{of} evaporation tended to raise the salt content (in the top three feet of the soil). After just twenty years, as the saline groundwater invaded the root zone, crop yields started to fall. Even when the groundwater was moderately salty, it still damaged the roots by cutting off their oxygen supply.

In post independent India, too this problem of salinity has been shown to have a direct correlation with excessive water seepages from schemes of surface irrigation.

A case in point is - one of the feeder canal from the Sharda Samayak project. In 1977, it first brought canal water to a village cluster near Varanasi. The people thought it would end drought in the area. But actual experience proved otherwise. Within three years of the canal opening, the villagers found that previously where the water lay at a depth of 60-70 feet it had reached the surface of their fields.

The rise of the ground water level and high rates of evaporation have led to a high salt content in the soil. Due to this there is inadequacy of drinking water since most of the wells have become polluted with salt. The growth of crops in the area is stunted and they tend to shrivel up before achieving maturity.

Similarly the problem of waterlogging is acute, and is best seen from the case of the Tawa project. According to a report of the Indian Council for Agricultural Research in 1978, the Deputy Director General has maintained that even though irrigation had been provided only two years ago a number of villages have been affected by water logging. The report also noted that the seepage rate of the canal (about

60%) coupled with high rainfall and deep cotton soil is likely to lead to serious conditions of waterlogging.

The project had been designed to irrigate about 45 thousand hectares of maize and jowar, 'However' it was noted that it would be nearly impossible to attain this cropping pattern. Maize and jowar in this area need no irrigation during the kharif seasons instead they will need drainage. The unirrigated jowar is already endangered due to a higher water table and water logging.

Even the comparative yields per acre under various crops before and after irrigation showed a decline of yield, in the Hoshangabad district.

TABLE 3.2

AGRICULTURAL YIELDS BEFORE AND AFTER IRRIGATION IN THE HOSHANGABAD DISTRICT THAT LIES IN THE TAWA COMMAND AREA

Crop	Before irrigation	Avg. yield/acre after irrigation	
		77-78	78-79
Paddy	4.00	20.98	3.83
Jowar	2.82	3.64	2.74
Maize	4.81	4.07	4.01
Wheat	3.14	3.30	3.06
Gram	2.43	1.96	2.08

From : Paranjpye - High Dams on the Narmada 1990, New Delhi, page - 101.

Another outcome of building big dams is that there is an upsurge in water borne and other diseases affecting men and animals. A study on the effects of the Dantiwada Dam on Banas river in Banaskantha district of Gujarat points out that the death rate among buffaloes was higher in irrigated than non irrigated areas. The study found cases of infestation with liver flukes, foot and mouth disease and other intestinal diseases in areas affected by water logging.

According to the Sixth Five Year Plan (1980), the construction of large reservoirs can result in changes of levels of fluoride, Calcium and trace metals in the soil. This leads to diseases like fluorosis among the people who are forced to use such water. Other diseases that can be transmitted by water are skin infections, trachoma, guinea, ^{and} worm, schistosomiasis. The price for the lack of recognition and control of these environment related diseases is paid not only in terms of human health but also in terms of costs of pest control and medical care.

Other environmental consequences of big dams have been reservoir induced seismicity and issues of Dam failures too. One of the most publicised cases of seismic activity in a multi-purpose projects' vicinity is the case of the Koyna Dam. The Koyna Dam is 103 meters high and its reservoir has a maximum volume of 2780 million cubic meters (mm)³. Filling

started in 1962 and ended in 1964. When the reservoir was less than half filled, in 1963 there were some shocks and their epicentres were all found to be either in the neighbourhood of the Dam, or under the reservoir. In 1964 the volume of water in the reservoir was brought up to 2000 m³ (million cubic meters). In the next few years, there was very little seismic activity, and by 1967 it was assumed that everything had settled down and that the tremors would no longer come. However on 13th September 1967 there were two shocks. The first of these occurred at Koyananagar causing great damage to the village, killing 177 people and injuring 23,00 others. There were numerous after shocks, one of which attained a magnitude of 5.4, its epicentre being calculated either in the vicinity of the dam or under the reservoir itself. On December 20th 1967, another shock of magnitude 6.4 occurred. J.P Rothe maintains that the Basaltic shield on which the Koyna Dam is built is one of the least seismic of the pre-cambrian areas of the world; and there are no known faults here (quoted in Goldsmith and Hildyard, 1984: 110).

There are also cases of bad designing and poor quality construction leading to dam bursts. One of the worst dam disasters in India was the bursting of the Machhu Dam in Gujarat in 1970. Several hundred people were killed and the town of Morvi along with several villages was destroyed by the flood waters. According to the Consumer Education and

Research Centre (CERC) Ahmedabad, the dam was designed according to an outdated empirical formula. The Central Water and River Commission had thrice asked the State Government to use a more scientific formula. At the other end the State Government maintained that the dam failed due to extremely heavy rainfall and floods in the spillway. In March 1981, the Government of Gujarat wound up the inquiry commission that had been set up to look into the causes of the disaster. The CERC filed an appeal in the High Court that the public had a right to know the findings of the Commission.

This brings up two issues - (i) A government in a welfare state is accountable for its actions to the public, the very decision of the Gujarat Government to wind up the inquiry commission and then make an attempt to prevent the disclosure of such findings is not in the best tradition of democracy and open government. (ii) At the level of policy implementation it shows up those concerned with the project in a poor light. The managerial levels of government had obviously been unable to exercise adequate supervision and may have themselves suffered from a lack of technical expertise, which may or may not have been the fall out of not having a technocrat but a generalist in charge.

Growing hydro industrialization has led to pollution. The impact of such pollution on crop growth has been

show that it documented to [^] leads to a decline in crop yields. Further it affects not only crop production but leads to a reduction in fish yields too affecting the livelihood of those dependent on fishing. In India according to the National Environmental Engineering and Research Institute (NEERI) as much 70% of available water is polluted. This impact is felt both by animals and men "It was found that in polluted stretches of the Hoogly River, for instance, the annual fish catch in 1982 was only 129.4 tons, by contrast in unpolluted stretches, it was 719.4 tons - over five ~~and many~~ times higher." (quoted in Centre for Science and Environment Report, 1982:25).

The report maintains further that - one of the major tributaries of the Yamuna is the Chambal river. The Chambal is Rajasthan's biggest and India's most polluted river. On its banks are cities like Kota which has a fertiliser complex, an atomic power station, a thermal power unit and other industrial units. These units add toxic effluents including urea, ammonium chloride, lead, mercury and other metals ^{to the river}. Aquatic life has been destroyed and the Chambal's waters are unfit for consumption as evidenced by a large number of cattle deaths.

Apart from this the report draws linkages about how such pollution affects the health of the population - it was estimated that two thirds of all illness in India are caused by contaminated water. This broad overview therefore

highlights the multifaceted ecological problems that are being created by Mega Dams on an All India level. We now move to the Environmental issues specific to the Sardar Sarovar Project.

THE CASE OF SARDAR SAROVAR

As we have seen in chapter I, in 1983 both the Sardar Sarovar and Narmada Sagar project were before the Department of Environment for clearance. Environmental clearance was not granted because the Ministry felt that additional studies on the projects were required; before any decision could be taken. Simultaneously discussions were being held by government officials with the World Bank on the issue of a loan to help finance these two projects. In 1985, the Bank approved the credit and loan agreements for the Sardar Sarovar Dam and canal projects. The Bank's loan and credit agreements for the Sardar Sarovar plan did cover certain environmental clauses. The government of India agreed to release forest lands reserved by the forest conservation act of 1980, if required to aid the state governments to implement the project. The three state governments agreed to collaborate to prepare a work plan by December 31, 1985 to deal with environmental effects of the dam.

In 1985 and 1986 there was increasing pressure for approval to be given to the Narmada Sagar and Sardar Sarovar

projects. The Bank's prior approval of the Sardar Sarovar projects which included environmental considerations was a factor in these discussions. The proponents of the Dam told the Ministry of environment and forests that it was necessary to begin construction since (a) a lot of time had been lost (b) the bank's loan and credit were in hand.

Due to increasing pressure from the state government of Gujarat, Maharashtra and Madhya Pradesh a conditional clearance for the projects of Sardar Sarovar and Narmada Sagar was given and complete details of environmental impacts had to be submitted by 1989. These details would include a phased catchment area treatment scheme, compensatory afforestation plan, command area development, survey of flora and fauna, and impact on health due to these projects. The Narmada Control Authority was expanded to ensure that environmental safeguard measures would be planned and implemented in depth along with work on the projects. Lastly the Department of Environment was to be kept informed of the progress.

In September, 1987 the central government gave approval for the diversion of over 13,000 hectares of forest land under the project. The breakup of forest land to be submerged in the three states is as under:

TABLE SHOWING FOREST LAND DIVERTED IN DIFFERENT STATES
UNDER THE SARDAR SAROVAR PROJECT

State	Area in hectares.
Gujarat	4165.91
Madhya Pradesh	2731.00
Maharashtra	6488.54

Source: Paranjpye 1990, High Dams on the Narmada, page-136.

This approval was subject to certain conditions in all three states (1) detailed compensatory afforestation plans would have to be submitted by September 30 1987 (ii) a proposal for non-forest areas for rehabilitation of oustees would have to be submitted by November 30 1987. (iii) Compensatory afforestation ^{was to} ~~would~~ be double in the area of degraded forest lands in addition to the afforestation of equivalent non-forest land and a scheme for this was to be submitted by November, 30 1987. (vi) a catchment area treatment plan was to be prepared by November 30th, 1987 failing which a central government team would be appointed for the same at the cost to the project. (v) No forest land was to be utilised for the rehabilitation of oustees. (vi) that tree felling would be permitted in the submergence areas only upto 4 meters below the full reservoir level.

Data shows that upto the end of 1991, Madhya Pradesh had reported to have achieved 20% of its goals Gujarat 35% of

its goal, while Maharashtra was having difficulty with the planning and execution of its afforestation programmes' (Figures from the Independent Review, 1992).

In Gujarat the compensatory afforestation is being done in the arid district of Kachchh. However, there is a problem with this approach. By undertaking compensatory afforestation in an entirely different ecological zone, the forest created will have no resemblance to the one that is submerged. Gujarat maintains that it selected Kachchh because it was the only substantial area available, and needed reforestation too. The problem with this kind of approach is that if marginal forest land like in Kachchh is replanted in compensation for better lands lost elsewhere, productive forest lands will be constantly replaced with less productive ones, mainly because such land is cheap and easily obtained. The amount of forest land then may be maintained on paper but it will be diminished in value.

Uptil December 1991, the MEF was waiting for details on plans for afforesting 1900 hectares of non-forest lands in Maharashtra. Despite problems, a ray of hope can be seen in the programme being developed in Jhabua district of Madhya Pradesh ^{where} ~~were~~ there is a system being developed of mixed planting and regeneration of existing varieties. This is a step in the right direction, and may have the potential to reproduce a reasonable approximation in composition of the

natural forest in the catchment area, that is threatened with submergence.

The catchment area of a river is an extremely important factor in the design and maintenance of a river valley project. It includes within its ambit a general understanding of problems of soil erosion, drainage systems and sedimentation problems of reservoirs. This forms the base on which the next step of taking adequate measures for soil conservation and provision for watershed management to minimise problems of waterlogging and salinity can be built.

The importance of the Sardar Sarovar catchment area treatment was recognised in India when the first environmental clearance was being sought from the Ministry of Environment. In 1984, the Government of India set up an independent committee headed by Dr. M.L. Dewan to study measures to minimise soil erosion and sediment transport in the Narmada catchment area (i.e in catchment area of SSP and NSP).

The report emphasized the need to demarcate priority water sheds, update soil surveys and land use data, to resolve inter-agency/inter state information discrepancies, to initiate an integrated soil conservation and water shed management programme, support pilot projects and to involve tribal people and others in the programme.

The committee recommended that the work should be done within 5 years in Gujarat and Maharashtra and within ten years in Madhya Pradesh. According to a Government of India Report (1985) the cost for the projects over ten years was estimated to Rs. 5200 million.

India's forestry clearance required (a) the plan for catchment treatment by November 1987 it recommended that (a) relevant areas be demarcated on the basis of aerial photographs, satellite inventory and ground checks (c) that a chain of nurseries be created of suitable species for biological treatment of the catchment area (d) and that a phased action programme for engineering treatment of the catchment area be prepared.

Although the Independent Review maintains that the World Bank was concerned with catchment area treatment right from, 1985 Bank documents present a different picture "In a March 1990, office memorandum two senior officials say "if the rules of the Department of Environment and Forest (DOEF) were followed strictly, reservoir filling could not commence until 100% catchment treatment was completed. This is not only unrealistic, but probably uneconomic. At the unit costs being considered the treatment could cost about US 1 billion." (quoted in Morse, 1992: 265) Then again the minutes of a January 1991 meeting of the Narmada Control Authority noted if the entire catchment is to be treated at

project cost, the project will become unviable, and this part has to be executed under the National Watershed Development Programme of the Ministry of Agriculture.

There are several problems with the catchment area treatment programme. The problems of how much to treat, and when and who will pay, all need to be resolved.

Further no measures are being taken or have been recommended to reduce the already existing destructive tendencies in the area. For example the Nepa paper mill in Khandwa district of Madhya Pradesh produces 15% of India's newsprint requirement. As raw material it uses mainly bamboo, and the hardwood salai alongwith small amounts of thermo mechanical pulp, agricultural wastes, waste paper and the weed ipomea. Annually 75,000 metric tonnes of bamboo 60,000 tonnes of salai and 40 million litres of fresh water is used (Kalpvriksh 1986). The effects of the the mill on the surrounding countryside have been catastrophic. Khandwa bamboo which was considered a weed until the early twentieth century is hardly seen within a 200 Km radius of the mill, Salai trees which are ecologically important and can withstand drought and fire have been substantially eroded. Today the fate of these mills hangs in balance because there is hardly any wood left. Although now the Nepa and Orient Mills are trying to acquire plantations so that they may have raw material for the mill it is doubtful if these man

made large scale plantations can (a) stem the tide of ecological destruction that they have caused* (b) these plantations cannot serve the same ecological functions as the natural forests in the catchment area. (c) nor will these forests solve the problems of the local people especially the tribals who are critically dependent on bamboo and other native trees of the area and are already facing serious shortages (d) as a consequence many tribals have turned and are turning to ecologically destructive occupations like selling headloads of firewood in towns.

Another important area for concern is the question of sedimentation in a reservoir. The life span of a dam depends upon its storage capacity, which in turn depends on the silt load and the water flow patterns of the river. If due to destruction of the catchment eco-system the silt load exceeds the amount calculated during planning stages, the storage capacity is diminished, reducing the life span of the dam.

In such a situation there is excess water inflow during the monsoons, and the reservoir is in danger of overflowing, and causing floods downstream. ^{and in} In the dry season water level falls below the anticipated mark. Since

* for example the salai tree according to Kalpvriksh (1986) is facing genetic isolation and has negligible regeneration capabilities.

the underground aquifers have not been recharged due to excess run off in the monsoons, this leads to an inadequacy in the supply of electricity and water when they are most needed. "It is imperative therefore that the catchment area forests are properly conserved" (quoted in Kalpvriksh, 1988: 5).

The Sardar Sarovar dam has a dead storage* capacity of 2,95 MAF available for the accumulation of silt before it encroaches on the live storage of the reservoir. The Central Water Commission in a submission to the Independent Review in February 1992 maintained that the reservoir life would be greater than 100 years. In 1991 the Chairman of the Sardar Sarovar Narmada Nigam Limited, Dr. C.C. Patel had stated that "the rate of siltation in the Sardar Sarovar will depend upon the construction of 29 reservoirs on the Narmada basin as planned especially Narmada=Sagar. All the assessments show that if these upstream reservoirs are built in reasonable time the life span of the Sardar Sarovar Dam will not be less than 233 years. In the worst case of the Narmada Sagar Project being delayed for 25 years after the Sardar Sarovar Dam is completed the lifespan of SSP may be reduced to 180 years" (quoted in Morse, 1992: 273).

* Dead storage is the part of the reservoir, below the lowest level of the spillway or penstock or whatever is designed to take the water out. The usable volume of water is in live storage which is above the dead storage.

According to Kalpvriksh (1988) even an assumption of a life span of 100 years is unrealistic because (a) there is rapid deforestation in the Narmada catchment areas (b) the rate of siltation of the river and consequent sedimentation of the dam reservoirs may well in the future be higher than presently estimated thereby cutting the life span of the dams. (c) Such an assumption would be realistic only if deforestation were arrested and reversed.

Another likely impact of this sedimentation process is the likely effect it is going to have upstream. Deposits of sediments in the upper reaches of the reservoir may result in significant increase in water surface profile along the river above the reservoir.

Water surface elevations upstream may endanger upstream installations and developments particularly during periods of high water inflow. There would be significant impacts - lands situated above the present submergence area will be inundated. Forest areas will be affected, and people's use of land will be affected.

Studies on rates of sedimentation are lacking and are constrained by certain factors. Sediment erosion varies from year to year, large quantities may be carried with major floods complicating evaluation of mean annual deposition rates.

The Independent Review also maintained that studies that were carried out by the government of Gujarat's Irrigation Department in 1982 June were not without error. "The sediment concentrations used in these calculations are based on grab samples of the suspended sediment. The problem is that these grab samples themselves are highly selective and may not be representative of the entire stream" (quoted in Morse, 1992 : 273).

The catchment area plan needs to take into consideration certain other factors. As of now there is no estimate made of the present and future demands on the catchment forests from industries, ~~forests~~, urban areas and villages. Therefore, there are no recommendations on how to meet this demand to avoid further deterioration of the catchment. The fact that proposed dams will themselves lead to a rise in the demand by accelerating urban and industrial growth has been ignored.

It has been noticed that impounding of water and the spread of surface irrigation generates conditions which are favourable to water borne diseases. "The combinations of circumstances as an encounter between the ignition wire of construction related stagnant water and the gunpowder of immigrant labour creates an explosion of Malaria." (quoted in Kalra, 1992:8).

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A World Bank Staff appraisal report had in 1985 identified malaria, schistosomiasis and filaria as the three principal diseases that could jeopardise public health. A 1988 report prepared for the World Bank by Levenhagen reviewed the health aspects of Sardar Sarovar. The report maintained that there was potential for the increase of malaria, filaria and schistosomiasis as a result of the project. The report warned that malaria presented a serious threat because of possible proliferation of the Anopheline mosquito in the reservoir canals and drains.

Paranjpye (1990) maintains that according to the reports of the university of Baroda the incidence of snails which are associated with Schistosomiasis are proliferating rapidly at the Ukai reservoir which is very close to Sardar Sarovar and is connected through water streams. The disease is also known to be present in Junagadh in Saurashtra near the main source of cement used for the project.

On filaria the same report maintained that it has been reported in Surat and spreads in small dirty and stagnant bodies ^{of water}. It is therefore, likely to be prevalent more in the command areas susceptible to water logging.

Kalra (1992) found that the S.S.P. has been planned, designed and executed without proper health safeguards. The project area and villages in its vicinity have a high level of malaria with one killer type (P.falciparum) exceeding 30

per cent. Deaths from malaria have been reported since 1990. He maintains that the construction of rock filled dykes was carried out in violation of established principles of malarial control. As a result the dykes have created a tremendous potential for the increase in malarial mosquito and this may lead later on to Japanese encephalitis. Further water storage and delivery system for domestic users at Kevadia colony have been built in such a way as to offer breeding sites for malarial mosquitoes in household premises.

Problems of waterlogging and salinity are intimately connected with surface irrigation projects. Since a lot depends on the type of soil, its responsiveness to water, ^{and} its permeability, waterlogging and salinity arise when there is a mismatch between what a soil needs and what it gets. So the essential question is one of irrigability of soils. Since the Sardar Sarovar command area has such diverse agro climatic and socio-economic features, the government of Gujarat has divided it into thirteen regions. Ten of the thirteen regions are in the mainland region of Gujarat consisting of the alluvial plains of the Narmada, Mahi, Sabarmati and other rivers. Two regions are in peninsular Gujarat and one region is in Kachchh.

TABLE 3.4

REGIONS OF GUJARAT, THEIR SOIL TYPE, RAINFALL PATTERNS AND THE PROJECTED CONSEQUENCES AFTER THE INTRODUCTION OF IRRIGATION.

Regions	Soil type	Rainfall	Projected consequences after the introduction of irrigation
Region 1	deep black cotton	high rainfall above 850 mm	Region 1, 2 and 3 represented 24% of the total area to be irrigated. Canal irrigation is likely to result in serious soil degradation without adequate drainage, more than 50% of Region 2, 60% of Region 3 and 100% of Region 4 would become waterlogged.
Region 2	deep black cotton	high rainfall above 850 mm	
Region 3	deep black cotton	high rainfall above 850 mm	
Region 4	Saline	850 mm	Area has been recognised as a problem area for irrigation. To provide irrigation the plan is to fill dugouts with canal water. This can be achieved even without canal water in most circumstances.
Region 5	Alluvial	800 mm	Regions 5 and 6 constitute over 16% of the total area to be irrigated.
Region 6	Alluvial	880 mm high rainfall	
Region 7	Saline soil	710 mm	This area has been recognized as a problem area for irrigation, waterlogging and salinity would become worse in this area.

Region 8	Medium black	600 - 700 MM	Similarly region 8 and 9 which comprise 13% of the area to be irrigated, are likely to suffer from problems of water logging and salinity.

Region 9	Medium black cotton	600 - 700 mm	

Region 10	Alluvial coastal/ desert/ saline	500 - 640 mm low rainfall	Regions 10-13 representing about 15% of the total area to be irrigated. In all these 4 regions the nearness of the Rann of Kachchh will lead to problems for agriculture.

Region 11	Alluvial coastal/ desert/ saline with low moisture retention	500 - 640 mm low rainfall with low flooding	Since the area is vulnerable to waterlogging and liable to during the Monsoons it will result in degradation and lower agricultural produc- tion.

Region 12	Alluvial/ coastal/ desert/ saline, with low moisture retention capacity	500 - 640 mm low rainfall	

Region 13	Alluvial/ coastal/ desert/ saline, with low moisture retention capacity	500 - 640 mm low rainfall	

From - Morse, 1992. Sardar Sarovar, The Independent Review,
pages 311-315.

An executive member of the Narmada Control Authority in
1991 maintained that anti water logging and anti-salinity
measures were built into the planning, design, implementation

and operation of this gigantic project. These plans included soil surveys, concurrent installation of drainage works, conjunctive water use and monitoring programmes to minimise water wastage.

A reading of World Bank documents of that period (1989) shows that the potential for waterlogging and salinity was still being studied. This was a direct violation of Ministry of Forests and Environments requirement that environmental impact assesment of a project should be done by the sponsors before a project is submitted for clearance. By 1992, only 25 per cent of the area had been studied on soil ground water availability and irrigating of the region.*

According to the Sardar Sarovar Nigam Limited, to remedy drainage problems there would be development of ground water. Where the ground water is saline or area is water logged needing drainage, and not useful for irrigation, vertical drainage by pumping will be attended to by the Government". (quoted in Raj, 1990: 136)

Since the development of ground water is to be left in the hands of the individual farmers there are likely to be problems. "The farmer who does not have enough money to invest in the first place, but is expected to pay the water

* For the other regions, projections about the completion of the data is given tentatively as 1994.

charges for the surface water from the public system and also make capital investments for a bore well or a dug well may not respond or participate in most cases. The Indian farmer is now quite politicised and it will be almost impossible to make him pay even reasonable water charges, let alone making additional investments to counteract waterlogging. Unless the entire operation of draining excess sub soil water is taken up by project authorities massive water logging is inevitable" (quoted in Paranjpye, 1990: 130).

Even World Bank documents agree with this and have noted that the drainage benefit is not an incentive to individual farmers since ground water drainage problems are often not recognised, and more importantly since the benefit accrues to the community rather than to the individual.

Reservoir induced seismicity is a documented phenomenon and cannot be ignored. The project authorities of both Sardar Sarovar as well as Narmada Sagar claim to have done studies to assess the potential seismic impact of these dams separately. The authorities of the environmental planning and co-ordination organisation ^{of the Narmada project} and M.S. University Baroda claim that there will be no adverse impact.

However the National Geophysical Research Institute Hyderabad in 1987 claimed that these dams may trigger of seismic activity.

One essential point that is ignored is, considering that the various dams on the Narmada are coming up in the same valley it would be essential to study the seismic potential of the total project and not of each reservoir separately. Whereas any one reservoir may or may not trigger of seismic activity the combined weight of two or more reservoir might. Especially the Mega Reservoirs like the Sardar Sarovar Projects (SSP) and Narmada Sagar Project NSP. This point has to be studied and there is a lack of adequate studies on various aspects of seismicity in the Narmada Valley.

The main canal of the SSP is considered sufficient to irrigate 70,000 hectares of land in Rajasthan near the Gujarat border. This is likely to lead to an ecological collapse in Rajasthan. Past experience of building canals in Rajasthan has been alarming. The Bhakra Nangal Canal is an example. During construction of the canal, sand storms started making excavation work very difficult. There were no technological answers to the problem of shifting sand dunes. But despite this the construction engineers continued with the project. Today the position is such ~~now~~ that of 7000 sq. Km of the command area of the Bhakra Nangal Canal in Rajasthan 513 Sq. Km. (73.33% of the total area) has already become water logged and soil salinity is prevalent following arid land irrigation. This has dislocated pastoralists and disrupted the existing industry in Ghatsana and Khajurwala area. The livestock population has

decreased. Similar damage may occur in Digha, Nachana and Filwa pasture areas if an economically and environmentally sustainable programme is not launched. This canal which barely irrigates barely 30% of its potential command area is already a dead loss in economic terms. The potential to be created was 12,00,000 hectares. Today barely 5 lakh hectares are being irrigated. The waters of the Beas and Sutlej rivers have not as yet reached the tail end even after 30 years.

Detailed land capability surveys have not been conducted as yet in Northern Gujarat. And if past experience is any indication, Northern Gujarat will suffer the same fate of Rajasthan.

It has been universally accepted that there is no practical solution to the problem of sedimentation in reservoirs. This means that after 60-80 years when the live water holding capacity of the SSP reservoir starts declining the first region to bear the impact of this short fall will be Northern Gujarat which by then would have become thoroughly dependant on abundant surface irrigation. Non availability of water at this stage may result in a total collapse of agriculture in North Gujarat, and the South Rajasthan area.

During these 60-80 years projections point that human and animal population would have increased enormously, and

patterns of water use would have shifted from scarcity use to near wasteful levels, With the non availability of canal water the population here will have no option but to migrate southwards towards the plains to Central Gujarat, causing pressure on the scarce resources of land and water.

Project authorities argue that even if the canal system can provide assured water for 60-80 years the investment exercise would be worthwhile. This policy may be laudable if there is a permanent water supply source, but when water supply is largely uncertain, such plans may do more harm than good. This is because human population, animals and vegetation cannot respond easily to sudden contractions in water availability.

The building of a dam apart from having an influence on the plant life affects animal life too. It is no different in the case of the SSP. Once forests are eroded there is inevitably an impact on animal life.

According to a report of the Sardar Sarovar Nigam "Gujarat has some of the rarest wild life species such as the Gir Lion, Black Buck, Wild Ass, spotted deer, antelopes, migrant bird life at Nal Sarovar, Parrots of Surpareshwar, bear, chittal, sambhar" (quoted in Jhala, 1988:7). However in 1983 the Sardar Sarovar Authority had in a answer to a query from the Department of Environment said that' at

present there is no wildlife in the reservoir area of the proposed Sardar Sarovar Dam and its vicinity (quoted in Kalpvriksh, 1988:4).

Two questions are raised by the above statements of the SSP authorities (i) Before adequate studies had been undertaken the authorities simply stated that there was no wildlife (ii) But even if this was true surely wildlife is not just large animals which are found in large numbers, "what about insects, reptiles and birds? Yet in the 1986 work on forests and wildlife for the SSP there is no mention even of the word wildlife except on the cover much less a strategy for saving it." (quoted in Kalpvriksh, 1988:4)

In fact upto 1988-there was no detailed listing on the flora and fauna that was found in the submergence area. Studies had been initiated by 1988 but in the event of data not being available, the Department of Environment and Forest had stated that it was not possible to assess the impact of the loss of habitat on wildlife and the overall loss of biological diversity and genetic reserves. Nor would it be possible to develop alternative habitats for rare and threatened species, if any are found in the submergence zones.

However, the authorities of the SSP after maintaining that there is no wildlife in the reservoir area maintain-after construction of the Dam and the creation of the

reservoir it will be possible to develop a wildlife sanctuary or safari park in its vicinity. This has resulted in the proposal by the Indian states to expand existing wildlife sanctuaries of which Shoolpaneshwar is one.

The core area of what is now called the Shoolpaneshwar wildlife sanctuary was created in 1972 under Gujarat's wildlife protection Act, as the 1500 hectare Dumkhal Sloth Bear sanctuary. It lies adjacent to the area of the Sardar Sarovar Dam on the south side of the Narmada River. In January 1987 the size of the sanctuary was increased to 44,804 hectares and the name was changed to Shoolpaneshwar. In 1989 it was proposed to extend it so that it could cover a total of 60,765 hectares. The Independent review after visiting the sanctuary came to the conclusion that the protection offered by the sanctuary probably constitutes fair compensation for the wildlife lost (since it felt that (a) wildlife in the SSP Dam area was little (b) there was high floral diversity in the region of the sanctuary (c) the sanctuary had some interesting and unusual birds of prey.

The question is not whether it is a compensation or not for wildlife, or whether forests are degraded and have little wildlife or not, building the Dam will destroy the eco-system of the area. For example the Rajipla area will be affected. This area has a forest cover of about 650 sq. miles, and has tigers, panthers, civet cats, mongoose,

hyena, wolf, wild dog, foxes, jackals, otters and sloth bears, with parties of Bhils occasionally hunting deer and wild pigs.

As in the case of the Rajipipla area, where the ecosystem is disrupted or in the case of the shoolpaneshwar sanctuary area which is proposed to be an instrument of conserving biological diversity certain issues come up. According to a view held by certain government officials people and nature are pitted against each other. Biodiversity can be achieved and maintained only if human activities are restricted. This view if it continues to prevail would lead to a funny but sad situation. If the Shoolpaneshwar sanctuary is enlarged then the people's rights to use those resources around them will be curtailed. What is necessary is a reorientation of this concept because the destruction of an eco-system (like the Rajipipla area) does not mean only the loss of wildlife, but the loss of a way of life of people.

Presently 60,765 hectares of the proposed expanded sanctuary contain approximately 90 villages. The population of these villages is tribal and for them the forest is a major component of their economy (for food, fodder and fuelwood), and today there is a problem which has been best described as "Three of the needs of human society in the area are in direct conflict with the interests of the

sanctuary. They are the people's need of land for agriculture, their need for fuelwood, for daily consumption and their requirements of grazing areas for their livestock." (quoted in Morse, 1992:343)

Apart from the impact on wildlife there is going to be an impact on fisheries too. There are three type of fisheries in the area (i) Marine, (ii) Estuarine (iii) Fresh water. There are large varieties of fish like-Bombay duck, Ghol, Ravas, Cheval, Gari, Kantia, Prawns. Estuarine varieties include Hilsa, Sondia, Padocho, Maggi ~~are found~~ and fishing is practiced through out the year. In the monsoon fishing attains a special significance as the hilsa varieties that are caught supply the demands of Bombay when there is no other fish available at this time.

The key point is that the hilsa ascends the river in shoals for breeding. The fish migrates as far as Gora and Mukhadi close to the Sardar Sarovar Dam. Once the Dam is built the catch of the estuarine area and the upstream area will be seriously affected. This is because there will be a limited amount of flood water released to the downstream river as well as inadequate fresh water flows in the non-monsoon months.

The government feels this loss may be compensated through the development of fresh water fisheries in the

reservoirs. But the problem with this is that (a) it is not possible for the hilsa and the prawn to find alternate spawning areas. (b) the assumption of the government is faulty because there exists no such evidence in the estuarine rivers on which dams have been built.

Thus the projected impact of the SSP on the environment is massive and the problem lies not only with implementation but with policy formulation and the assumptions that guide it.

CHAPTER IV

ISSUES OF RESETTLEMENT

One of the inevitable consequences of flooding an area is that those who previously lived there have to be resettled.

Fernandes (1989) has estimated the number of persons displaced at 18 million. Other figures maintain that there were 21 million estimated oustees displaced due to large dam projects (Chakraborty 1986).

What has been the fate of these millions of oustees? Have they been resettled and rehabilitated? Has their standard of living been "restored to the original" since the Chamber's dictionary maintains that that is the meaning of the word resettled? Has there been any change in their lives? If so, has it been for the better as they define it and not as defined by our bureaucrats and politicians? Have there been any negative outcomes of such rehabilitation policies? Who is affected by these policies? Is it the indigenous peoples? What is the reaction of the host population to such rehabilitated persons? A more detailed understanding of the concept of resettlement and what it entails or should entail, would help us here.

Resettlement is designed to mitigate economic hardships that social and cultural changes may bring because of

dislocation. Therefore, it is and should be the process of helping the displaced families and communities to re-establish their residence, livelihood, cultural and social relationships, institutions and value system.

In the context of how we have defined resettlement, are government policies effective? Are they adequate? Is resettlement ethical or desirable?

These questions and others would be analysed at two levels: (1) at a broad macro level which makes generalizations on the basis of all India available data on oustees rehabilitation; and resettlement (2) at a more focused level i.e. the case of the oustees displaced, and due to be displaced by the Sardar Sarovar Project.

For the oustees "the trauma of displacement begins well before the process itself actually takes place. As soon as a project is announced all development work in the area comes to a halt. No one wants to invest in land that is to be submerged. Banks refuse to give loans, no new civic amenities like schools and health centres are constructed, even the withdrawal of existing facilities is not unknown" (quoted in Thukral, 1992 : 15). Since the gestation period of dams is much longer than that of other projects, the suffering of the people is all the more intense. The examples of Narmada and Tehri potential oustees are cases in point. 'I have been hearing about the

dam since my childhood. Since they have declared that a dam is to be constructed here, they have not built anything for us. No hospitals, no schools for our children, no roads and no buses to travel - Gobind Prasad a farmer from Bijapur who is to be displaced by the Indira Sagar Dam in Punasa (Madhya Pradesh) is quoted as saying' (quoted in Thukral, 1990 :15).

Under the Land Acquisition Act (LAA) 1894, the government can acquire land for public purpose in exchange for cash compensation. Yet no law has defined public purpose. To acquire such a land only certain steps have to be followed. "Following the publication of the initial notification a mandatory 30 days are allowed for interested persons to raise any objections. Once the objections are heard by the Collector or any other appropriate authority, a declaration is made by the secretary to the government. Once such a declaration is made it shall be conclusive evidence that such land is needed for a public purpose." (quoted in Paranjpye, 1990 : 178).

The LAA which is the basis of land acquisition has several inherent lacunae which lead to problems in the resettlement process.

The Working Group on Development and Welfare of Scheduled Tribes in its report on the Rehabilitation of Displaced Tribals says that out of the 16.94 lakh people displaced by 110 projects about 8.14 lakh are tribals.

Therefore, any Act which affects the lives of such vast numbers of a particular group (here the tribals) must take into account their special requirements and needs when land is taken away from them. Logically even the compensation programmes offered should help eventually in the resettlement.

However this had not happened. Official legislation does not recognise the validity of traditional concepts of land ownership. According to a law passed in 1972, hunting territories are not even considered for payment of compensation. These tribals rely on forest produce too for the small money earnings that they require to pay their taxes and buy trade goods.

For example, in the Inchampalli and Bhopalpatnam area that is to be inundated, with the exception of the Raj Gonds the other tribes have traditional subsistence economies. "Their economies are more or less independent of the regional market economies except for certain trade goods like sugar, salt, cloth, etc.

Thus, we see that these indigenous people have a close and harmonious interaction with their natural environment and this includes the forest, land and water around them.

Therefore, when an Act such as the Land Acquisition Act talks of registered titles of ownership that are needed for

purpose of compensation, it is talking of a situation that does not exist for the tribals who constitute 40% of those displaced by development projects (Thukral, 1991).

Further decisions such as those taken in the Gadchiroli district of Maharashtra - a largely tribal area - in 1978 by the District Commissioner demand registration of individually cultivated plots at the tehsil level. Often the officials like tahsildar and the patwari who are usually non-tribals do create problems of inordinate delays by red tapism for the tribals.

Since the compensation paid has usually been in the form of cash for lands acquired it has been difficult for the tribals creating more problems for them. According to Colchester (1986) the process of buying land with the money provided as compensation is complex and difficult, and is particularly awkward for the tribals who are unaccustomed to money matters and whose traditions exclude the concept of land as a negotiable commodity.

Due to this factor, when the tribals get money they have no conception of how to operate in the market economy they are supposed to join. Often they have no idea of how to plan for the future. They tend to use the money on buying consumer items like watches, transistor radios or spend the money on gambling and liquor. When the money that they were awarded is over, they are left with just a few

colourful trinkets. The economic consequences for the tribals displaced by the dams are dire; it leads them to join the vast mass of India's rural poor. They eventually end up joining the vast ranks of landless agricultural labourers, construction workers or urban slum dwellers.

According to Chakraborty (1986) a problem with the LAA is that compensation is only to be paid to those who own land and whose lands will be submerged. This Act therefore, excludes all residents without land, landless labourers, sharecroppers, tenant cultivators and people living on collection of forest produce who together constitute approximately 50% of a village population generally.

In the case of the Srisaillam project on the Krishna river in the state of Andhra Pradesh, by the year 1980, 84671 acres had been taken over; and 19,228 houses were acquired which were going to be flooded. Only land which was privately owned was compensated, those who farmed the waste lands outside the villages received nothing. ("Fact Finding Committee, 1986 : 256.) In this case the Andhra Pradesh government opted to pay cash compensation to the villagers affected by the project. Compensation for agricultural land was in this case based on the market value of the land at the time of notification. The market value was based on the recent prices at land selling. However these prices did not reflect the true value of the land.

This was because the people were aware that the land would soon be taken over by the government, and therefore the land was greatly undervalued. Therefore the value of compensation was very low. The amount paid as compensation was five times lower than the average amount expected by the villagers.¹

In the case of the Pong Dam the landholders whose lands had been acquired were entitled to cash compensation for land, houses and trees. Land was graded into different categories to determine how much compensation was to be paid. The rate of compensation awarded for the highest class of land, i.e., Nehri-do-fasli (irrigated land yielding two crops) was Rs 140 per kanal in 1962-63, and others in downward ratio. The rates at which compensation was paid turned out to be even lower. Kishore Chand from Indira colony in Himachal Pradesh said "I was paid Rs 135 per kanal for the best irrigated land" (quoted in Bhanot, 1992 : 112).

Thus the basis of calculation of compensation to be awarded is often shoddy. The yardstick used though uniform on paper is not so when implemented, as seen from the cases

1. In a survey conducted by the Fact Finding Committee on the Srisaïlam project, they asked selected households to estimate a fair market price for their lands. The villagers valued the 1948 acres of dry land at Rs 98,06,080. The price for an acre of dry land was thus judged to be approximately Rs 5,000 and that for an acre of wet land at Rs 13,800. Yet the average compensation paid for an acre of dry land was Rs 932 and for an acre of wet land Rs 2,332.

above. The Fact Finding Committee on the Srisailam project has made a severe critique of the LAA. It says, According to section 9 of the Act landowners are required to state the amount and particulars of their claim for compensation. If a person fails to respond he is not entitled to claim any more than the sum set by the Land Requisition Officer. Any claimant who is dissatisfied with the amount of compensation awarded has to apply to the Land Acquisition Officer within 90 days of receiving the notice of the award. If such an application is made, the Land Acquisition Officer refers the case to the courts. "Even where claimants are satisfied ... they should nonetheless protest the award. Failure to do so means that they lose the rights to apply to the courts at a later date for a higher compensation. Thus the whole procedure demands a considerable knowledge of the Law. Yet most of the villagers affected by the Srisailam projects were not even aware of the Act's existence, because many were illiterate. Thus a law which was and is designed for the people is much too cumbersome and far off the realities of the ground.

Further in the case of the Srisailam project many were dissatisfied with the amount of compensation that had been awarded, and they appealed to the courts.¹ "There were 4172

1. There was also a lot of disparity between the compensation rates set by the Land Acquisition Officers and the compensation awarded by the courts.

appeals referred to the lower courts in Kurnool district and 5245 in Mahboobnagar district. Only 416 of those appeals actually came to court, all were decided in favour of the villagers. Unhappy with this the government appealed to the Higher Court in 358 cases out of 416, thus causing inordinate delays in the payment of compensation" (Fact Finding Committee Report, 1986 : 258).

Similarly in the case of the Hirakud dam, a handful of people (usually the literates) filed cases in the High Court on grounds of inadequate compensation. They won a compensation of 300 to 400 per cent more than the original award.

In the study of the Hirakud dam, Viegas (1992) had found, in Luabgoa village of Lakhanpur block in Sambhalpur district, one farmer had been given Rs 7000 for 26 acres of good cultivable land. In the same village another farmer was offered the same amount for 27 acres that also included a 2 acre orchard. But the latter, a farmer with high social and economic status refused to accept this unilateral decision of the Government. He filed a petition in the High Court pursued it to the Supreme court, where his appeal was upheld and was awarded Rs 3 lakhs.

Thus though in certain cases people have managed to get a certain amount of compensation after appealing to the Courts it is usually the better off landowners, literate upper class who benefit. This is because only those who had

a certain amount of money already could afford the lengthy litigation process and the lawyers' fees.

Another problem documented is that in many cases the oustees were not willing to move out of their land. In the case of the Nagarjunasagar dam the oustees thought that even if the waters did rise, it would not reach their village level because it was at a higher level than the river. Rammāni, one of the villagers displaced, said 'though we were informed about our displacement, we thought that it would never happen during our life time' (quoted in Singh, 1992:65).

As a result the people made little or no effort to identify alternative sites. When the waters finally began to rise and displacement became a reality, some villagers moved up to higher land while others had to be forcibly evacuated. This inability to accept displacement as a reality whether for psychological or social or economic reasons in one case at least led to an unfortunate situation.

In the submergence zone of the Srisaïlam project the authorities announced for the first time in 1981 that all villagers had to leave their homes. The authorities felt that the villagers would not move if their houses were standing and launched 'Operation Demolition'. Under heavy guard officers and staff from the Department of Revenue and

Irrigation and Power accompanied by hired labourers set about demolishing those villages which were to be flooded. Some 20,000 houses were destroyed leaving about 1,00,000 people homeless.

From the above examples it is clear that the government had in its desire to relocate the people did not and had not considered psychological preparedness of the people to move to a new site.

In the case of 'Operation Demolition', the procedure adopted was no doubt harsh but it has to be viewed in the totality of a given context. Owing to the fact that in such a situation responsibility for different tasks is broken up, people responsible for evacuation, would not have responsibility for relocation. People responsible for transportation of oustees would not have responsibilities to ensure that the new sites had at least minimum civic amenities. Thus the operation has to be viewed not as a problem but as a symptom of the problem, the problem being lack of close coordination between different departments, which eventually harms the persons ousted, needing resettlement.

Once there is dislocation of people, and there is transportation to the new sites the issue is where are these oustees rehabilitated. Has rehabilitation improved their income levels and social status? Have they been able to merge with the host population?

According to a status report (Government of Andhra Pradesh, 1989 : 8) 42,797.47 acres of land was allotted for rehabilitation in the Nagarjunasagar dam project. Of this 41,241.96 acres were given by the forest department. The report also mentions that the oustees have been rehabilitated in 24 main centres and 11 subsidiary centres in the two districts of Guntur and Nalgonda.

A team led by Mridula Singh and R.K.Samantray visited 10 centres where approximately 2,277 of the 5098 displaced families were rehabilitated. The oustees comprised 36% Scheduled Tribes (the Lambada tribe), 7% Scheduled Castes, and 45% belonged to other backward classes including Mangali, Gauds, Gohas, Erukalis. The remaining 12% belonged to the other caste groups like the Reddys.

The oustees lived in mud kuccha houses with thatched roofs which they had constructed themselves. According to the oustees almost 60 to 65% of the families, prior to displacement owned on an average 10 to 15 acres of land. Others had been tilling land they had encroached upon. The landless were either engaged in share cropping or worked as agricultural labour. Many of those oustees who had held land before displacement found that they were unable to sustain themselves on the small holdings allotted to them and were forced to migrate in search of daily wages. Apart from this there were other problems. The government order

stated that the oustees were entitled only to dry land as compensation, but this was not always followed in implementation.

Out of the 100 families rehabilitated at Prem Nagar, 15 families received 5 acres of wet land as they were the first to settle in the area. This led to non-availability of land for late settlers. Rammulamma a blind woman told Mridula Singh that she had lost 26 acres of dry land. In return she was allowed to purchase only 5 acres of dry land, which was not enough for her family. When she approached the officials for an additional 7.5 acres she was told that there was no more additional land to purchase. The massive cut in the size of her holding forced her to encroach upon government land.

Singh (1992) has noted that at times, apart from being inadequate the land allotted was very far from the resettlement sites. In the case of Muddavat Chenna along with 50 families from the submerged village Guvvalagutha was given a house plot in Mutkur. The 5 acre holdings given to these families were 25 to 30 km away in Mursa Penta hamlet of Kandiagunta. This made it difficult for them to protect their lands against encroachments by the local population. For six years they continuously pursued the matter with the tehsildar of Macherla and the Collector of Guntur. The ousted families spent their

compensation amount running from one office to another without being able to retrieve their encroached lands. Muddavat Chenna, and the other 50 families soon joined the vast category of landless labourers and now work for daily wages

The story of other dam projects is the same. Since there is lack of a national rehabilitation policy, such policy as there is project specific, ad hoc and made by the respective state governments; to suit the hour.

In the case of the Pong dam, an inter state project whose benefits were to be shared with Punjab, Haryana, Rajasthan and Himachal, the plight of the oustees is among the worst. The dam is located across the river Beas at the foothills of the Shivalik Range and is located at village Pong in Dehra Gopipur, tehsil Kangra of Himachal Pradesh. The construction of the dam began in 1961 and was completed by 1971, and the reservoir submerged a population of 1,50,000 spread over 94 villages.

However, today almost 28 years after their displacement, the majority of the Pong Dam oustees continue to be condemned to a homeless existence with the promised land still eluding them.

Since the project was an inter state one, a committee comprising Chief Ministers of all the three states

(initially Himachal Pradesh had not been formed) was constituted to suggest a plan for rehabilitation. Subsequently, the Chief Minister of Himachal also became a member. Discussions at this level were obviously time consuming and the decisions to be taken depended on the political leanings of the different parties who ruled the states, which caused more problems and delays in the process of resettlement.

Eventually the Committee laid down that each landowner oustee regardless of the amount of land he had lost would get 15.625 acres of irrigated land in the Rajasthan Canal area. The landless oustees and artisans would not get land but would only get house plots. But the oustees would have to pay for the houses that were to be constructed by the government. The Rajasthan colonisation department on its part was expected to provide housing, roads, water supply.

There were various rules laid down for the allotment. An oustee had to have proof of being an oustee from Himachal and had to show an identity card. Once this was done his claim was scrutinised and land allotted. He had to take possession of the land in 45 days and till the land with his own labour.

Yet, despite this provision which stated land of 2.25 lakh acres had to be reserved and was to be given to the oustees, a large part of this land was used for purposes other than allotment.

In reply to the question raised in the Lok Sabha on 16 May 1985 and again on 17 April 1990 regarding reservation of 2.25 lakh acres of land, the Ministers in charge claimed that this total had been earmarked by 1970. These replies are in total contradiction to the reports of the Additional Colonisation Commission, Bikaner and reports by independent researchers which also show that although the Rajasthan government was supposed to reserve land to the tune of 2.25 lakh acres in the command area before the displacement of all oustees in 1972-73 it had not done so; allotment of such land continued till 1982.

Today due to enhanced rates of land where irrigation has arrived the Rajasthan government is not willing to allot land to the oustees at subsidized rates as was agreed upon. Further, although till 1982-1985 allotments had been made only 2594 could retain their land because of harsh rules like possession within 45 days.

In many cases the oustees maintained that they were not assured of even basic civic amenities like drinking water, primary health centres, electrification of villages, post office facilities, etc. The Rajasthan officials on the other hand maintained that these facilities would be provided only after the oustees had started living there because the expenses involved were quite a lot.

In the case of the oustees settled in Rajasthan there are severe problems. Some oustees have been murdered by anti-social elements. There are instances of land grabbing done in the know of local officials like the patwari. Further, certain cases have come to light where non-oustees are forging land documents for the oustees allotted lands.

"In the absence of legislation drawn up for rehabilitation at national level the LAA has been the basis on which rehabilitation programmes in several parts of India have been based. Though several ad hoc orders were issued to respond to the demands of rehabilitation, the initial thrust of the programme was conditioned by the LAA which has created several structural bottlenecks that are yet to be overcome in a comprehensive and integral manner" (quoted in Fernandez, 1989 : 38).

Thus, an overview of resettlement policies shows that resettlement programmes are faulty to say the least. There is a lack of an appropriate resettlement policy at the national level. "Generally rehabilitation policies are made up by the state governments, most often as knee jerk reactions to the existence of dissatisfaction of populations whose land is acquired for public purpose (quoted in Mankodi, 1984 : 16).

Rehabilitation, since it concerns largely the marginalised tribals and scheduled castes who usually do not have

an organised lobby, is underfinanced. Further, the attitude of the bureaucracy is shortsighted, they regard welfare of oustees as secondary to development - a process they feel would lead to trickle down benefits. In some cases, since a sizeable portion of the bureaucracy is composed of non-tribal high castes, they tend to view themselves as superior to oustees, the majority of whom are of tribal and scheduled caste origin (Kalpvriksh, 1986).

Another scholar notes that "Instead of encouraging popular participation in the development process, such ad hoc measures have embittered the public, impaired social welfare and even attracted hostility towards the government (quoted in Chakraborty, 1986 : 40).

With the rise in overall political consciousness, in some cases social conflict has erupted at dam sites. The flash points have been Koel Karo, Sugathan and Subarnarekha.

We now move to a detailed analysis of the situation at the Narmada's Sardar Sarovar dam.

In the case of Sardar Sarovar Project, the issue of rehabilitation and resettlement has attracted a lot of controversy. The debaters are divided sharply. The advocates of the dam argue that since the dam will bring about much needed development in the key areas of Gujarat, Maharashtra and Madhya Pradesh a certain cost has to be paid.

More specifically on the question of relocation and resettlement of dam oustees, they feel that the cost borne by a few may be in the interest of many and this cost can be largely mitigated by the liberal policies of rehabilitation that have been adopted by the respective state governments.

At the other end are persons like Patkar ~~those~~ who maintain that the cost of displacement is not as little as is maintained. Further, the entire cost in terms of loss of identity, physical relocation and the trauma of displacement is borne by the marginalised and poor, who in the case of the Sardar Sarovar consist primarily of the scheduled castes and tribals. Last but not the least, they maintain that rehabilitation records of the government have been abysmally poor till date, with faults at the planning and implementation levels leading to undesirable consequences as a whole and they use past indicators to project the likely consequences in the case of Sardar Sarovar.

Now what are the facts?

The Sardar Sarovar consists of several components. There is the dam, together with a riverbed power house and transmission lines. There is also the main canal, a canalhead, powerhead and irrigation network.

According to certain figures available, the reservoir will submerge 34867 hectares of land of which 10719 hectares are classified as forests and as per 1981 census the total population affected is 66,675 comprising 10,593 in Gujarat, 11,082 in Maharashtra and 45,000 in Madhya Pradesh (Raj, 1990 : 126).

However the Independent Review Commission (1992) puts the figures higher, at approximately 37,000 hectares of land in the three states of Gujarat, Maharashtra and Madhya Pradesh, which shows an increase of almost 3,000 hectares of land that is likely to be submerged.

Apart from this the Sardar Sarovar affects 245 villages from the three states, 19 from Gujarat, 33 from Maharashtra and not less than 193 from Madhya Pradesh.

In Maharashtra, 100% of the oustees belong to the scheduled tribes. 99% of those in Gujarat belong to these communities. In Madhya Pradesh, the tribal communities account for 50-60% of the total affected people and amongst the remaining population, are the scheduled castes and those engaged in traditional occupations (like Kawats) comprise a large group (quoted in Patkar, 1989 : 72).

The Narmada Water Dispute Tribunal of 1979 has laid down a series of directives for the resettlement of oustees from the Sardar Sarovar Project. According to Kalpvriksh

(1986), the most important directive is that all landowning families who lose at least 25 per cent of their land to flooding must be allocated as much land as is lost with a minimum of five acres. In addition a resettlement grant (transportation cost etc.) of Rs 750 plus a grant in aid to those receiving a total compensation of less than Rs 2,000 is to be given. As far as possible culturally important sites were to be relocated. No area can be submerged till compensation and expenses are paid and rehabilitation arrangements completed. Further the tribunal maintained that project affected persons of Maharashtra and Madhya Pradesh will be offered land and entitled to resettlement if they so wish in Gujarat. In case oustees preferred to stay in their own states then settlement works would be carried out in these respective states. Every project affected family would be given a resettlement grant in addition to compensation and would be entitled to a residential plot free of cost. Civic amenities like drinking water wells and troughs, primary schools, dispensary, panchayat office, village pond and seed stores, would be provided in the new place of settlement. Similarly the World Bank which was a major credit source for the project also laid down guidelines on how resettlement of those who had undergone involuntary displacement should be undertaken. In an attempt to follow these guidelines the states of Gujarat, Maharashtra and Madhya Pradesh have formulated certain

policies. The major highlights of the policy of resettlement in the these states are :

The size of the land that is to be given for cultivation is or should be commensurate with land acquired. The minimum amount of land that is to be given to the cultivator is 2 hectares.

Major sons of displaced families would be treated as a separate family and given land for cultivation and residential plots.

"Resettlement grants would be payable at Rs 75 per family and the grant will be increased at 8 per cent per annum to account for escalation, considering January 1980 as the base year for working out the increment" (Raj, 1990:128). Every oustee family will be paid subsistence allowance of Rs. 15/- per day for 25 days a month for a period of one year from the date of actual residence at the new village.

In Gujarat, wherever oustees wish to purchase private land for cultivation, instead of using governmental land that has been granted, they would be assisted in this matter by a Land Purchase Committee. The Committee would meet in an open forum and would examine offers for voluntary sale of land. Representatives of project affected families/ persons (PAPs) would be and are present and they indicate

the preference for the lands under offer. Once a price is fixed then a transaction between the landlord and PAP is done by this Land Purchase Committee. Further, writers like ^{Mehra (1990)} P.N. Raj, maintain that lands allotted to the PAPs are of superior quality and in many cases facilities of irrigation are there. Many times the cost of the alternate land allotted ~~to hire~~ is several times higher than the compensation received. The difference in the price is entirely borne by the Government and is treated as 100% subsidy.

100% subsidy limited to Rs 5,000 is given to agricultural tribals to encourage them to avail of schemes under other development projects. Insurance cover of Rs 6,000/- would be given to the oustee family in case of accident or death. These oustees would also be provided with employment opportunities on priority basis.

All landholders, encroachers and major sons would be given land. The PAPs have the option to choose the land and the government has to provide irrigation facilities on such land.

The Gujarat government's policy, among other things, provides for allotment of irrigable agricultural land equal to what was acquired from the project affected families, with a minimum of two hectares and maximum limited to land ceiling.

The government of Madhya Pradesh's measures to deal with the displacement caused by the SSP provide for the allotment of land subject to a maximum of 8 hectares and a minimum of 2 hectares to all landholders. For encroachers, allotment of land will be limited to a minimum of 1 hectare and a maximum of 2 hectares.

50% of the compensation that is given to project affected families will be adjusted against the new allotted land. The rest of the money will be recovered in a period of 20 years. There would be no recovery for the first 2 years.

House plots would be allotted free of cost to all displaced families. Major sons of displaced families would get independent plots.

Landless people are not eligible for land but would be helped economically.

The government of Maharashtra's resettlement policy provides for allotment of 2 hectares of agricultural land to landed project affected families¹ and encroachers. They and their major sons will be entitled to house plots free of cost. As in the case of Madhya Pradesh, 50% of compensation will be adjusted against the land allotted. Landless oustees are entitled to only 1 hectare of land. If they move

1. Project Affected Families or Project Affected Persons will be called PAPs.

with the other oustees, they would be assisted to earn a stable livelihood.

Viewed cursorily they are impressive and very well meaning, but the worth of any policy for the public as public policy lies in how 'public' it is. Is it truly aimed at the target for which it was formulated? Has it achieved anything?

According to figures available from the Narmada Control Authority (1993) on the progress of rehabilitation, in Gujarat, out of 4500 affected PAPs till the end of December 1992, a total of 3978 PAPs had been allotted agricultural land and 3669 families had been allotted house plots. The entire process of rehabilitating the Gujarat PAPs in Gujarat was expected to be completed by the end of March 1993.¹ Out of 11250 PAP families of Madhya Pradesh willing to resettle in Gujarat, 943 families had been allotted agricultural land and 802 families had been allotted house plots till the end of December 1992. (In this connection, it may be noted that there is no submergence in Madhya Pradesh till 1993-94). The first village in Madhya Pradesh to be affected by submergence will be in 1994-95 involving 45 families. All the 45 families of the first village to be affected in 1994-95 submergence have been allotted agricultural land in

1. Data available only till 24.2.93.

Gujarat and 23 of these families have been allotted house plots. 625 PAPs of Maharashtra have opted for resettlement in Gujarat out of which 500 families have been allotted agricultural land and 360 have been allotted house plots till the end of December 1992.

MADHYA PRADESH

In Madhya Pradesh, the first village would come under submergence in 1994-95, 16 villages in 1995-96, 13 in 1996-97 and the balance 163 villages in 1997-98. The number of oustee families will change in Madhya Pradesh since the cut off date for the major sons in Madhya Pradesh is linked with the notification of Section 4 of the Land Acquisition Act. Village surveys have been completed in 192 villages. Construction of civic amenities is in progress at these relocation sites and 305 hectares of agricultural land has also been identified for allotment to the PAP families who have expressed their willingness to settle in Madhya Pradesh.

MAHARASHTRA

In Maharashtra, 33 villages will be affected by submergence, 1 village in 1992-93, 4 in 1993-94, 10 in 1994-95, 11 in 1995-96 and balance 7 villages in 1997-98. The number of PAP families will change partly due to revision of the policy which include major unmarried daughters as separate oustee families for the purpose of rehabilitation and partly.

due to the resurvey of submergence villages. Out of the presently assessed 1839 PAP families willing to resettle in Maharashtra, 436 families have been allotted house plots.

We can now move on to a detailed analysis of the planning and implementation of resettlement and rehabilitation policies in the states of Gujarat, Maharashtra and Madhya Pradesh. Since the tribal population comprises a substantial amount of those who will be affected by the submergence it would not be out of place to examine briefly their way of life in the Narmada Valley, and then examine the consequences of such policy.

TABLE 4.1

THE ESTIMATED NUMBER OF TRIBAL PEOPLE POTENTIALLY AFFECTED BY THE SARDAR SAROVAR PROJECT

Location	Estimated No. of People to be affected	Tribal People %	Estimated No. of Tribals to be affected
Gujarat	23,500■	90	21,150
Maharashtra	13,500+	95	12,825
Madhya Pradesh	115,000+	49	56,350

From: Morse (1992) : Sardar Sarovar, The Independent Review, page 62.

The tribal people have an intimate relationship with the earth, the forest and the animals. They tend to identify themselves with their lands and with the river. "In

village after village people talked of the fruits, herbs, roots and medicines they gather from the forest. Even where the forest appeared to be extremely degraded, they explained that in it there were still resources of great importance to them and they would travel far, into better forests, deeper in the hills to gather what they needed. They also told us about ways in which resources were shared, and how groups collaborated on the basis of kinship to plant, harvest and build houses. In all this the people sought to show us that they had their own ways of looking at and living in the world" (quoted in Morse, 1992 : 69).

Although this is by no means an exhaustive analysis of tribal life, it refers to the gist of tribal life. It is a lifestyle that is dominated by a very close interaction (a) between men in terms of strong kinship bonds (b) between man and nature - in terms of close interaction for daily needs with the river and forest.

In Gujarat, the population of the submergence area is approximately 95 to 98 per cent tribal composed of Tadvis, Bhils and Rattwas. Geographically, the Tadvi villages are closest to the dam site, the Bhil villages lie further upstream in the remotest parts of Gujarat's submergence area and the Rattwa are concentrated in villages nearest the Madhya Pradesh border.

Work on the Sardar Sarovar began in 1961. Construction of infrastructure at Kevadia and near the dam site displaced people living adjacent to the site of the now Kevadia colony. This was because work on roads, guest houses, office blocks and the preliminary development of the dam site entailed the acquisition of land in six villages - Kothia, ^{Kevadia} Gora, Vaghadiya, ~~Imudi~~ and Navagam. Overall more than half of the total holdings of the villages were acquired. They were all agricultural villages with pre-dominantly tribal populations, mostly Tadvi. The Independent Review Commission (1992) after studying data as provided by Arch Vahini, a non-governmental organisation active in the area, estimates the number of affected families at 950. Though some compensation was paid, the villagers did not know on what basis such compensation was given. They said that they had been given between Rs 90 and Rs 250 per acre. Some said that it represented an assessment of the value of the crops that were destroyed during construction; some believed it had been the value attached to the land according to the Land Acquisition Act of 1894. Further they maintained that various compensation promises of employment and alternate land that had been made to them had not materialised.

The problem here is that these people have not been given oustee status, and they continue to be treated out of the pale of resettlement policy 1988 of the Government of

Gujarat towards the Sardar Sarovar oustees. Government officials feel that if such legislation is made retrospective it would create problems of all kinds, with people affected by project all over the state demanding extra benefits.

In 1990-91, the Government of Gujarat made a new offer to the people of these six villages. It was Rs 7000/- per acre up to a maximum of 5 acres. The offer also provided a house site but the landless and major sons were excluded. The reason given for this was that the lands had been taken away almost 30 years ago and the present generation had not grown up practising agriculture. Therefore the officials felt that a compensation package that is a mixture of money, employment opportunities and replacement of housing would be a better idea. However, the villagers claim that they would prefer the present Gujarat resettlement policy because land offered them the best long term security.

In 1981 when the construction of the dam and head of the irrigation system started more land was required. The villages from where the land was acquired were Panchmuli, Khalvani, Navagam, Limidi and Zer. The number of families that were relocated from here between 1983 and 1991 are indicated below:

TABLE 4.2

TOTAL NUMBER OF RELOCATED FAMILIES

Village	Arch Vahini	Nigam
Panchmuli	361	366
Khalvani	79	110
Navagam	145	145
Limidi	212	272
Zer	36	36
Total	833	929

From : Morse (1992): Sardar Sarovar, The Independent Review, page - 95)

The land of these oustees was valued at Rs 2500/- to Rs 3,000/- per acre while prices of the land in the same district were approximately Rs 4,000/- per acre. As a result of this people who lost their land could not buy the same amount of land that they had lost. Often money given for housing was used for buying land. So they had no resources left for adequate housing.

Members of Arch Vahini, Dr Anil Patel and Ambrish Mehta, wrote a letter to William Rodger, Divisional Chief in the Irrigation Division of the Asia Projects Departments of the World Bank. They said, "the oustees have been shown lands, which are so poor in quality and so far away from their traditional place that their economic well being bad as it is would even worsen further, and their whole social and cultural life would get totally disrupted and the people

dispersed".¹ This degree of dispersal or scatter is provided in the table below which demonstrates that at the new sites social, cultural, and economic ties of the kind that shaped life in the original villages cannot be maintained.

TABLE 4.3

NUMBER OF RELOCATION SITES			
VILLAGES	ARCH VAHINI SITES	NIGAM SITES	TALUKAS*
Panchmuli	15	23	3
Khalvani	6	12	5
Navagam	12	19	6
Limdi	18	21	9
Zer	7	8	4
Total	58	83	27

(* administrative districts)

From : Morse (1992): Sardar Sarovar, The Independent Review, page - 97)

The Independent Review visited certain other villages where resettlement programmes had or were taking place.

In the village of Pachisgaon² the people mentioned specific problems, fuel, fodder and water. There were

1. In direct contradiction to claims of scholars like Raj who claimed that these oustees were given a superior quality of land.
2. Data on the villages of Pachisgaon, Mrishnapur, Amroli, Dabhoi, Kukad, Bhusha, Vaishali, Junmana, Shelda, Manibeli, Parveta, Khalkurj, Albarpara, Chichli, Gettal, Suriya, Gaulaganebi are taken from the Independent Review's Report on the Sardar Sarovar 1992.

anomalies in the allocation of land. For example, three brothers told the Review that they had received land, but their father had not been included in the list of oustees. Others mentioned that they could not put up in their houses due to infestations of white ants. Further they maintained that the land was waterlogged.

The team found similar sentiments at Malu village where there was a problem of burglary too.

But the plight of the oustees was the worst in Krishnapur and Amroli. There were problems of waterlogging; the interior of houses became so damp that firewood would not burn properly. Further the oustees maintained that they had very few of the promised employment opportunities. The women maintained that they had nowhere to bathe and no privacy to perform their ablutions.

In Amroli, the oustees said that the pump that had been provided for drinking water facilities did not work and the water was saline. Therefore they fetched water from the river one kilometer away. One told the Review "This place is not good. Many in our family are sick. The water is not good and is far away. The place is like a crematorium. Our children suffer from vomiting, diarrhoea and dehydration."

The consensus among these oustees was that life in their original villages was superior from many points of view.

In a village resettlement site at Dabhoi and Kukad conditions were better. Some had been encroachers, now they owned their own land and were able to raise two crops a year. Apart from that there was availability of drinking water and green vegetables. The construction of a road to provide access to the site, and the poles for electricity that had been installed were indicative of better things to come, the villagers felt. Although there were certain difficulties about fuelwood and fodder, they did not think these problems as unsurmountable.

Maharashtra

Thirty three villages in this state lie in the submergence area, i.e., in the 2 talukas of Akrani and Akkalkwwa. The population of these districts is almost entirely tribal made up of various Bhil groups, including Tadvi, Vasava and Paura.

The displacement in Maharashtra till now has been much less than in Gujarat. There is no equivalent of Kevadia. Nor has any intensive resettlement effort been made in Maharashtra despite the fact that 16 villages share a submergence schedule with 14 villages in Gujarat.

At Bhusha and Vaishali, many people were in favour of resettling because they felt that it might be an opportunity to secure a better agricultural base. However most of the oustees expressed anxiety about most of Maharashtra's

policies, because they were not prepared to accept resettlement except on the terms of Gujarat's policy although they were intent on staying in Maharashtra.

The rising of Narmada waters would create problems of tapu lands which would be completely marooned. In Savardigal 100 families would be marooned; Bhamanna with 105 families would become an island and worse these people were not being given oustee status, according to the resettlement policies.

In various villages of Akrani there was a strong opposition to Sardar Sarovar relocations.

In other villages in Maharashtra like Junmana and Shelda, oustees felt their lives were as of now much more secure than they would be at any relocation site. They pointed out that they lived on a mixture of subsistence farming and gathering, supplemented by the sale of fish and forest produce at Dhadgaon market. Although their population had increased and land was suffering from erosion and deforestation they felt that they were still able to live well on the same resources as had always been available to them. They said that they could not imagine leaving their forest and river. In such villages there appeared to be extensive reliance on forest and river produce, strong cultural ties with the land and an overarching sense of distinct cultural identity, according to the Independent Review.

Implementation of the resettlement programme in Maharashtra began in the 1980s by moving oustees from the village of Manibeli to Parveta in Gujarat. The rationale of moving people to Parveta was that the cultural and economic ties between the people of Manibeli and their neighbours would facilitate the process. This village is shared by the Vasana and Tadvi tribes.

Before 1917, Manibeli was part of an estate recognized by the British and known as Kathi. In such villages there were two types of cultivators. One of these was granted permanent occupancy rights and these type of cultivators were recorded as land owners in village records. These were the Kathedars and they paid taxes to the estate. The second category of cultivators held land by virtue of a 11-month contract between themselves and Kathi chieftains. They paid an annual rent and were entitled to use as much land as could be tilled by two bullocks. In 1975, the Maharashtra government introduced the Private Forest Acquisition Act to regularise land ownership. The government maintained that any land that was not registered by 1978 would be classified as encroached land. However, as far as the people were concerned they owned all the land that they cultivated; this dichotomy was the result of a divide between administrative perceptions of ownership on one hand and the people's practices on the other.

However, once the process of resettlement was set into motion on the basis of the 1979 award, most oustees were not even given the choice between settling either in Maharashtra or in Gujarat. In fact there was no attempt to establish relocation sites in Maharashtra.

Once these people were actually shifted to Parveta they encountered various problems. Pumps for drinking water did not work and the development of infrastructure was slow. The subsistence allowance of Rs 15/- per day for 25 days of a month for a year was not sufficient to meet their needs. "In 1984-60 Manibeli oustees qualified for land in Parveta. By 1990-42 they had been given land, but only 18 had managed to start cultivation. A further 10 attempted to clear the land, but never succeeded in removing stumps and rocks. Fourteen had judged the land too intractable to be worth even trying to convert it into arable fields" (quoted in Morse, 1992 : 155).

At least till 1989 the resettlement policy was not implemented in a manner that would mitigate the hardships of the settlers. But the Independent Review (1992) argues that things have improved since then. "Basic services now function well and are keenly appreciated especially the school. The provision of Gobar gas plants has eased the problem of firewood for a number of families".

However, fundamental problems in both social and economic aspects of life continue. All respondents rated Parveta worse than their original village for drinking water, cremation ground facilities, possibilities for keeping livestock and opportunities for casual labour.

The oustees were yet to develop social relations because the social groups were quite dissimilar. This is a striking factor because one of the major reasons for relocating oustees from Manibeli to Parveta was the belief that it formed a some sort of contiguous economic, cultural and marriage circle.

In Madhya Pradesh the number of villages that will be submerged are 193. The areas affected are the plains of Nimad and the hills of the Vindhya range. The Nimad plains are occupied by peasant villages composed of many caste and tribal groups, and the affected areas of the Vindhya hills are occupied by the Bhil and Bhilaha communities.

The Government of Madhya Pradesh's resettlement policy really came to the fore in 1989. This was based on the Narmada Waters Tribunal Award of 1979, and the Madhya Pradesh Project Displaced Persons Resettlement Act, which resulted in a policy in 1987 for the Narmada Sagar oustees. In 1989 this was revised and extended to the Sardar Sarovar oustees in Madhya Pradesh.

The Multiple Action Research Group (MARG) of New Delhi undertook some studies on the rehabilitation of the Narmada oustees in Madhya Pradesh. These reports covered 26 villages in the Aliraj-pur tehsil of Dhar district and 21 villages of the Bawani tehsil of Khargone district. The most important conclusion of the study is that transmission of information to the tribals on various aspects of displacement and resettlement has certainly been lacking.

Dhagamwar (1983) noted that "The quality and quantity of information given to the villagers differs from village to village, tehsil to tehsil.... Some are ill-informed, others are misinformed. But no one has been informed about the full extent of their rights under the award. 'Go to Gujarat if you want land' they are told; no one adds that they have a right to land in Madhya Pradesh."

Apart from this, the MARG report noted that not even one villager had seen the public notice,¹ mandatory under the Land Acquisition Act of 1894. Further they were not told that two acres is a minimum entitlement. In fact the impression created was that it is the maximum amount of land that will be allocated.

However, those oustees who preferred to stay in Madhya Pradesh were relocated there at the sites of Khalkurj and

1. Even if they had seen the notice, it would not mean much to the illiterate villagers.

Albarpura. In Khalburj the oustees said the officials had discussed this move with them for at least eight months. However at Arbarpura villagers said that consultation with people had been minimal, and there was unease about the resettlement site itself. At Chichli where over 100 households are expected to relocate the villagers maintained that they had played no real part in the choice of a resettlement site.

Ousteas from Madhya Pradesh who had chosen to resettle in Gujarat at Gotal, Suriya and Gaulagambi maintained that the land they had left behind at Bhawati was irrigated and they could get three crops per year. At Gotal they said there was only one crop. Therefore they said one and half acres at Bhawati equalled five acres at Guttal. In general they maintained that their standard of living had gone down.

However at other villages like Suriya and Gaulagambi also they were uncertain about the government keeping its promises, yet considering they had no alternative they would try and make the best of what was available to them.

Thus from the case studies above, a certain pattern emerges. In all the three states it is primarily the tribal people who will be displaced.

The tribunal of 1979 on whose directives the resettlement package for Sardar Sarovar ^{is based} creates a few

problems itself. The first and foremost being that "despite its noble intentions, the NWDT¹ award on rehabilitation was destined to remain a much talked of but largely flaunted provision as the Tribunal neglected to include any conditionality clause. While suggesting how rehabilitation should be done the award failed to include any safeguard which should ensure the implementation of the R and R package" (Paranjpayee, 1990 : 187).

When the World Bank in 1985, entered a loan agreement with the Government of India and the state governments it linked the success of the process of rehabilitation to the disbursement of loan tranches. The principles that underlay the agreement was that rehabilitation should be done as a village unit and that it should be such that after relocation the standard of living of those relocated should improve; in any event they should not go lower than their existing standard of living. Earlier in 1983, the World Bank had commissioned Professor Scudder to make a formal appraisal of the Sardar Sarovar project. He concluded that the resettlement of Sardar Sarovar oustees was likely to take place in unfavourable conditions because of lack of adequate data. Therefore the decision to go ahead with the loan to the Sarovar project without adequate information input was at most irresponsible and at best in contradiction to existing Bank Policy (quoted in Morse, 1992: 44).

1. Narmada Water Disputes Tribunal (1979).

Despite the Tribunal's award and World Bank guidelines on resettlement which had to be done as a village unit the directives have not been complied with. Apart from what the Morse report calls an institutional numbness, there just was not and is not land available in Gujarat in such large chunks.

Further, Gujarat under the Tribunal's award has got responsibility of resettling oustees from Madhya Pradesh and Maharashtra if they choose to settle in Gujarat. If this happens it would mean an additional 15,000 families to resettle and the Independent Review (1992) maintains that this would be a difficult task since problems of resettlement are made more acute by the distances between the original and relocation sites and paucity of land available for people to be settled as a village unit.

The problems of lack of research have led to various failures of the policy at the formulation and implementation levels. Although the Gujarat Government policy extends to all oustees, yet it did not cater to the specific cultural, economic and social needs of the tribals. That is why the case studies show that there is hardship for these oustees by the loss of the entire lifestyle they are used to. The loss of their natural environment is looked as simply as any other resource that can be compensated for quite easily. But the issue is "how for example would the government

ensure that the earth used by the tribals for making their roof tiles becomes available to them in their new place. How for example could any one account for and compensate the loss of their access in the new place to wood from the forest, not only as a source for energy and light but also a substitute for warm clothes. In fact the government was totally insensitive to the style of life of the tribal people, who had a completely different perception about life and living." (quoted in Patkar, 1989 : 73).

Despite the Tribunal's award and World Bank guidelines that resettlement should be done on a village level, there is just not enough land that will accommodate entire villages, especially in Gujarat.

Another problem is that the Gujarat policy for resettlement provides rehabilitation measures only for oustees from submergence villages. The impact of the canal, the expansion of the Shoolpaneshwar Sanctuary and secondary effects of relocation on potential oustees has not been considered. The benefits of Gujarat's Sardar Sarovar resettlement policy have not thus far been extended to these potential oustees.

The Centre for Social Studies in Surat had undertaken a study to try and find out the degree to which oustees in five relocation sites had integrated with host aspects. The

five villages were Ambavadi, Chhindiapura, Khadagada, Tentalav and Parveṭa.

Various indicators suggested a low level of social and cultural adjustment. For example, visits to markets and celebration of religious festivals had declined in all relocation sites. Apart from Chhindiapura, where oustees and host villages were linked by kinship ties and knew each other previously there was tentativeness and distance between the oustees and hosts. This finding suggests that even though these oustees are Tadvis and have relocated quite close to their original communities there are problems with this approach. The problems basically being that tribal links are not sufficient for the integration of oustees with host populations and that effective socializing only occurs within marriage circles, which extend approximately 20 km away from the home village. The low levels of integration recorded at these sites do not bode well for integration of oustees from Bhil and Bhilala villages much further away.

Although land for new families is also a problem in many submergence villages, encroachments and a range of forest and river resources combine to create a relatively elastic economic base. The relocation site is a precisely measured plot of irrigable land. Rigid boundaries cause apprehension about the future of their children. Under the Gujarat Government policy, every major son should also be

entitled to separate land. But villagers at relocated sites were concerned about their children, who hadn't qualified as major sons, but who were in their teens and would soon be needing land.

In Maharashtra, as in Gujarat, a lack of adequate appraisal and not taking into account the tribal people's characteristics had led to resettlement problems. At the same time pressure continues to be applied to the oustees in Maharashtra to take advantage of relatively more generous Gujarat policy. Under the Master Plan of 1991 that deals with the oustee problem at Sardar Sarovar a number of problems have arisen. Under a Government resolution dated 1992 landless oustees include Major sons and major unmarried daughters of land oustees - encroachers who encroached after 31 March 1978, encroachers whose encroachments were not regularised, landless agricultural labourers, village artisans and persons engaged in non-agricultural trades. All of them would be allotted on a first come first ^{serve} basis, a minimum of one acre of irrigable land available near the relocation site, if the landless oustee moves with other oustees to the relocation site. For landless people who cannot secure land under this system a grant in aid is offered to ensure that they acquire a stable means of livelihood. However in tribal areas there was no distinction between landholders and landless because those who did not own land had encroached on it and had a

means of livelihood to sustain themselves. So the offer of one acre of land is insufficient for their needs.

Maharashtra's programme for training and offering employment opportunities may help only the truly landless. For the vast majority who are landless only under the law these opportunities represent a fall in economic status from farmers to labourers. Also "in Maharashtra no one is entitled to compensation for loss of forest resources. Yet every family is heavily dependent on the forest" (quoted in Morse, 1992 : 168).

In Madhya Pradesh, a similar lack of an adequate information base has created problems in resettlement. Resettlement and rehabilitation have not proceeded far. This may be because submergence in these areas is not anticipated until 1997-98.

Further like Maharashtra, there is some sort of pressure on oustees to relocate in Gujarat. Part of this phenomenon may be explained by the fact that each state is trying to relocate the oustees in another state, i.e., Gujarat, because each state is trying to maximise benefits through irrigation potential that they feel will be realised and minimise its costs by spending less and doing less for rehabilitation.

Thus we see that apart from certain common denominators

in resettlement, each state because of its own different policy formulation has a slight variation of the resettlement problem.

Last but not least we have been able to analyse certain trends : (a) those displaced belong more or less to poorer sections of society, or belong to tribal sub groups, (b) often the special situation of indigenous persons is ignored; for example the cultural and social loss that they would undergo is not counted, (c) Each community is being relocated to a number of different sites causing problems to an established network of social relations among these people.

But we have not really been able to analyse the question of rehabilitation. This is because answers to whether a family has been successfully rehabilitated or not are not based on a few years data or observation, but take much longer than that. But even without long term data available one can maintain that the prospects for rehabilitation of these oustees are not those of prosperity for the vast majority.

However all this does prove that the cost of the Sardar Sarovar is not all that minimal but quite substantial, especially to those who are already on the fringes of society and who may soon have to join the ranks of the marginalised.

CHAPTER V

SUMMARY OF MAIN FINDINGS

Our analysis of the policy promoting Big Dams has shown that Big has not necessarily been best. Although we have a network of canals and Dams which can be qualified as the highest longest, biggest, deepest, yet the pivotal role that Dams were expected to play in bringing about a better life for the majority of people in India has yet to be realised. The basic needs of the vast majority of the rural poor for drinking water, food and energy have not been fulfilled, as yet.

Data shows that the majority of irrigation projects not just in India but all over the Third world are not used to grow food for local consumption, on the contrary a substantial percentage of the command areas of these major irrigation projects are used to cultivate cash crops for export.

The rationale behind such cultivation given by governments is that such cash crops when exported helps in earning much needed foreign exchange for purposes of repaying back money invested in large scale irrigation projects by international funding agencies.

However this foreign exchange earned does not result in benefits to the poor either in terms of industrialization

that would raise their standard of living, or in terms of raising their income levels.*

This leads to a situation where a growth in the income of a certain section of the cultivators leads to a situation, where the price of even locally grown foodstuffs go up. This has a consequence on the already poor peasant who till now was barely able to meet his needs. He is now pushed even closer to hunger.

Further it was believed by the proponents of Mega Dams that Dams would provide a cheap source of electricity; which would meet the energy needs of the rural population of India. However data shows that about 70% of the available energy would be used by the Industrial sector which has grown substantially. One outcome of rapid industrial growth which has also been spurred on by the development of hydropower has been that there has been a loss of land to the process of urbanisation and industrialization.

Despite these trade offs between need of food versus need of foreign exchange, the need of energy versus the loss of land, Mega projects are continued to be built. There are a number of reasons for this, scholars like Paranjpye, (1990), Goldsmith and Hildyard (1984) and others claim that

* Any rise in income levels accrue to the rich peasantry, who own, or come to own most of the area in the command areas of irrigation projects.

often the decision to build or not to build a Dam is taken at a political level first. In the glare of publicity of the benefits of the projects, costs are often underplayed. Therefore any projects that are submitted for clearance to the Planning Commission or the Ministry of Environment and Forests often have a cost benefit analysis that tips the balance towards the clearance of such projects. Further the extremely long gestation periods of such Dams and consequent overruns have led to a massive hikes in the cost of Dams required to be built.

For example the Eighth Plan had noted that there were 168 major Dams that were incomplete and they would required Rs. 39,044 crores to be completed.

Further it has been noticed by scholars that often project planners regard irrigation and power generation as the most important uses of water. So much so that even drinking water which has been classified as priority number one in the National water policy document of 1987 has to take a secondary place in terms of outlays, investments and schemes. This has also been reflected in the Sardar Sarovar Project too. Although the main justification of the project is that of providing drinking water to over 32 million people, an analysis shows (chapter 2) that the drinking water problems of the really dry areas like Saurashtra and Kachchh would not be solved even after the SSP is built.

This is because these areas lie at the tail end reaches of the project and would not get water for the next 25 years. Further in the historical context their problem would be solved only for 60 years or thereabouts after which the accumulation of silt in the reservoir would reduce its storage capacity. The major beneficiaries are in the talukas of Bharuch, Baroda, Kheda and Ahmedabad which are not in the critical drought prone area. There are problems in operationalising the supply of this drinking water. Despite an increase in the population of the command area, the water allocated remains the same. In fact until April 1992 water rates were still undecided according to the Morse committee report.

Further the Sardar Sarovar Projects claims to crediate drought seem dubious. Similarly the areas of Kachchh and Northern Gujarat despite such claims will not receive much benefits of drought alleviation and may require a drought alleviation plan even after the Sardar Sarovar project is built.

Another claim that is made by the proponents of the Sardar Sarovar project is that the scheme would benefit a substantial tribal population. Yet figures prove otherwise and show that only 6.4% of these 32 tribal areas will benefit. In fact even scholars who support the SSP had maintained by 1990 that the tribal areas under the command

was not 6.4% but 2.8% and under the existing scheme it was not possible to cover the rest of the tribal areas.

The project also attempts to claim that manifold benefits would accrue to the Kachch region in the form of drinking water and irrigation benefits. The policy objectives of bringing about prosperity are laudable, but there are various loopholes. The Kachch region has enough water available locally to satisfy the drinking water, irrigation and industrial needs of its projected population until 2020 A.D. Despite these available resources, the government's policy envisages the construction of a canal stretching for 700 Kms from the Narmada Command area upto Kachch. Therefore this would make the cost of irrigation per hectare very high. Therefore the government policy is attempting to promote the growing cash crops in the area. in order to recover it's investment.* However analysis shows that only 4 out of 9 talukas of Kachch would receive irrigation benefits.

Another problem at the policy formulation level seems to be that the Sardar Sarovar Project does not aim at consolidating an already dynamic sector of the Kachch economy—the animal husbandry sector. The project ignores

* This is likely to have effects of pushing food needs of the majority to a secondary place, and would also leach out the valuable nutrients of the soil leading to soil erosion and degradation.

this sector on which a large number of people depend for their livelihood.

Thus Therefore it is clear that in terms of fulfilling policy objectives of food, water and energy the performance of Big Dams as a whole and the Sardar Sarovar in particular has not been what it was expected to be.

There has been a growing concern with the ecological consequences of such Mega Dam projects too. Critics maintain that the policy formulations ignore the environmental variable, or even if they do take it into consideration there is a very brief mention of it in a policy document. This lack of attention at the policy formulation level reflects itself at the level of implementation, where officials are not very concerned with the ecological stress that these dams bring about, and often ignore environmental safeguards to mitigate such stress even if they have been built into a project.

One of the reasons is that officials point of view is coloured by an economic cost benefit analysis rather than a socio-environmental cost benefit analysis. Scholars like Kakkar (1992) note that officials who are involved in the implementation of such Mega projects view the loss of forests submerged only in terms of valuable wood lost. A forest's intangible benefits like climatic stabilization, and capacity to prevent droughts among other things is ignored.

There is an inadequate data base on issues of the environment and projected consequences of such Mega projects like the Sardar Sarovar. All India data shows that the rates of siltation of most projects have been much above those anticipated at the planning state*. This results in a need to rework the benefits of the projects.

The sedimentation rate leads to consequent loss of storage capacity of a reservoir. This has meant that there has been a loss of flood control capacity of these Dams in the long run. As late as the year 1992, it was noticed by the Eighth Plan that there is a loss of 8 million hectares of land annually to floods.

Since appropriate sites for building Dams are limited, there will be a permanent, nation wide loss of flood control capacity.

As we saw, often there is a trade off between the objectives of flood control and generation of hydro electricity with power generation coming out on top. Therefore often during the rains when the water in a Dam should be kept low, it is kept high for power generation.

* According to figures in the case of the Bhakra Dam, the annual rate of siltation in acre feet was expected to be about 23,000 but observed rates proved to be much higher and lay in the region of approximately 33,475. Similarly in the case of the Nizam Sagar Dam, the expected annual rate of siltation was 530 acre feet, and the observed rate was 8725 acre feet. (Dogra 1986)

Then in the fear that the Dam may collapse under the floodwater the Dam operators release the water. This tends to increase the problems of floods in the downstream area. This phenomenon has been noticed in various Mega Dam projects.*

Water logging and salinity are problems that have reached serious proportions. Estimates of planning commission show that about 6 million hectares of land was affected by water logging and 4.5 million hectares were affected due to salinity. These problems are worsened due to lack of proper drainage facilities. Further there is an upsurge of water borne disease of both animal and men like fluorosis, skin infections, guinea worm disease and schistosomiasis.

Even in the case of the Sardar Sarovar project, the environmental impacts are likely to be manifold.

The approval that was granted for the SSP was based on instructions from the Prime Minister office that the project be cleared for implementation. The underlying reason was that the Chief Ministers of Gujarat, Maharashtra and Madhya Pradesh had threatened to withdraw their support to the Central Government if the project was not cleared. Therefore bowing to pressure the MEF gave conditional clearance to the project in 1987. (Paranjpye, 1990).

* *The Times of India* in 1980.

However, the Ministry of Environment and Forests was not too happy with the Project since it felt that adequate environmental impact studies had not been made. The MEF did stipulate however that the complete details of environmental impacts and ameliorative measures should be submitted by 1989.

As late as 1991 there were inadequacies at the level of impact assesment of the project on the environment. In fact the Independant Review (1992: 226) had noted "there appears to be an institutional numbness at the Bank and in India to environmental matters".

The importance of treatment of the catchment area was recognised as early as 1985 itself under the Dewan Committee that was set up to study measures to minimise soil erosion and sediment transport in the Narmada catchment area to prolong the life of SSP. However the World Bank the major financing body for the project at that time and the Narmada Control Authority maintained according to Paranjpye (1990) that if the treatment of the catchment area was added to the cost of the project, it would become economically unviable.

Thus there seems to be no attempt to treat the cost of catchment treatment as part of the project cost. This may lead to a situation where the responsibility for treatment of the catchment area may get pushed from one different

department to another. This would then obviously increase the silt load in the reservoir.

Further the loss of forest cover in the area to be submerged has led to a peculiar situation. The afforestation measures that are being undertaken in parts of Gujarat are being done in a different ecological region than the one where the forest is going to be submerged. For example, where forests are lost in the Narmada catchment, afforestation is being done in the Kachchh region by the Gujarat Government.

What is essentially needed at this point of time is that the catchment area plan take into consideration the likely demand of the population on this area in the future. No studies have been carried out on how dams will themselves promote a demand on the catchment area by accelerating urban and industrial growth.

Water borne diseases have become a menace in the SSP area. Various reports (Levenhagen 1988, Kalra 1992) maintain that there is potential for the increase of diseases like filaria and schistosomiasis and especially malaria. The inadequacy of environmental studies has also been felt in the areas where waterlogging and salinity are likely to occur. On the basis of the report of the Independent Review, one may conclude that there seems to have been a mismatch between what the soil of the Narmada

catchment area needs and what is being given to it. This is because a large chunk of the area is covered by black cotton soils, which do not respond well to irrigation.

The next vital issue that needs to be closely examined is the issue of resettlement. Generally the record of resettlement of displaced persons has been poor. This is because there is no National Policy on rehabilitation. The lack of a national policy on rehabilitation has led to a situation where each state has its own laws regarding the resettlement of such displaced persons. The Land Acquisition Act has been the basis on which compensation for displacement usually in cash has been awarded. This has created many problems since it is only an Act that provides for the settlement of damages and not rehabilitation of persons.

The compensation that is awarded either of land or cash is usually inadequate and not uniformly disbursed.

Often the people do not know on what basis the compensation has been awarded. There are other problems too, at times land allotted is very far away from the resettlement sites. This makes it very difficult for outsees to protect their land from encrochers; as we saw in the case of Muddavat Chenna, an oustee displaced by the Nagarjuna Sagar Dam. The situation of displaced people has

been the worst in the case of Inter State Projects like the Pong Dam. In this case the people displaced were from Himachal Pradesh and the land allotted was in Rajasthan. The allotment procedures were so cumbersome and time consuming that many of the oustees who were allotted land were rendered landless because they could not fulfill such conditions, as were laid down for obtaining the land. These conditions included clauses like possession within a stipulated time period, of 45 days also the tilling of the land was also time bound.

Another glaring problem in the resettlement process is that since the laws are so cumbersome and people affected are those who are already on the fringes of society, the process of litigation also takes its toll on these displaced persons. For example in the case of the Pong Dam "the oustees were dissatisfied with the award of Rs. 135 per kanal for the best irrigated land. The oustees had then appealed to the Deputy Commissioner who had increased the award for the best grade of land to Rs. 650 in 1965. 743 applicats filed applications to the District Judge who enhanced the compensation rate to Rs. 1000/- per canal. But the Union of India felt that this rate was too high and appealed against it. The High Court however maintained the earlier award of Rs. 1000/- per kanal. In 1979 the Union Government appealed to the Supreme Court in the matter of the 743 cases, and in 1983 the supreme court decided to

lower the rate to Rs. 750 per kional. The union of now decided to recover the differential lamount of Rs. 250/- from each oustee." (quoted in Thukral, 1992:112)

At the implementation level too, resettlement process requires an efficient machinery of government, and close cooperation Xbetween different departments. Both these requirements are missing.

Last but not least in an important fact that is not given adequate attention. Of course the best compensation for land taken away is land, but the question is where is the land available? With the increasing population pressure on the scarce land resources there is scarely enough land to go ground. Scholars like Dhagamwar (1992) note that the government has been promising land not only to people displaced by development projects, but other classes of people as well: liberated bonded laboureres, discharged soliders, the handicapped and people affected by calamities to name a few. So often these is a competition between various groups for the same parcel of land, leading to tensions.

The Sardar Sarovar Project affects 245 villages from the states of Gujarat, Maharashtra and Madhya pradesh. Most of the persons likely to be affected by the displacement are the scheduled tribes and scheduled castes who often belong to the poorer classes.

Although the rehabilitation package for the Sardar Sarovar is regarded as one of the most liberal packages in the world (Scudder 1983). Yet there are deficiencies in the packages formulation and implementation. The objective of Resettlement as we have defined it in an earlier chapter is to restore the economic base of the oustees and to help them to reestablish their lifestyle. However detailed data shows that this has not happened. In the first place, in place of a lifestyle compensation, economic compensation is offered to these people; (in terms of cash, or land in certain cases). Even where economic compensation is offered it is usually inadequate.

An overview of data shows that most persons who had been displaced by the project were unhappy with their relocated site. Most maintained that their standard of living instead of going up had gone down. Their style of living had undergone vast changes, and usually in the case of the tribal populations it was seen that there was a loosening of traditional kinship relations, which are so important in a tribal society. This is because there is a substantial scatter effect during the relocation of such oustees. Resettlement sites are lacking in basic civic amenities like drinking water facilities, adequate fodder, and drinking water. For example in Amroli a resettlement site, oustees maintained that though there was a pump for drinking water, it did not work and the water was saline. Similarly in villages

like Pachisgaon, Malu, Parveta, many oustees standard of living as they defined it had gone down.

Thus the Sardar Sarovar Project continues as a part of this mind-set of our policy formulators that Big is Best, for the country. On the issue of resettlement there is no doubt that the provisions of the policy are a definite improvement on earlier rehabilitation schemes. But even then this package has several inconsistencies. Similarly on the question of ecological stress that the project may cause, there is inadequacy of data available, and a lethargy to implement environmental safeguards.

However just a criticism of our policy towards Big Dams is not enough, as we saw in chapter 1 each policy has to be understood within a certain context. Dams then are representative of not a single policy but of the entire development pattern that we adopted*. The point according to Iyer (1991) is that having chosen certain modes of development it would be inconsistent to single out one element or component for condemnation.

The development strategy that we adopted in 1947 emphasised growth and more growth. Iyer has described the

* At this point of time due to constraints of space and the scope of the dissertation, a detailed debate on alternative paths of development versus the present model would not be taken up.

developmental process as demand based, demand multiplying, technology driven and growth oriented. "As early as 1972 Mrs. Gandhi had suggested that there should be a reordering of priorities and perhaps a move away from the orthodox notion of economic growth, towards priorities centered around man." (quoted in D'monte, 1985:9-10) Despite the shift in thinking in India and all over the world, on the need to emphasise goals of fulfilling basic needs of hunger, shelter, poverty, reducing inequalities, ground realities show that such a reorientation has not occurred. The distortions inherent in our Big Dam policy are a reflection of the overall development process. For example there is often a confusion between physical targets and rationally prioritized socio-economic objectives. The reduction of poverty in India is the most important objective to which every development project must address itself. The generation of a certain number of units of power is on the other hand a target which when fulfilled may or may not achieve the objective.

In the cases of states like Gujarat and Maharashtra, removal of the causes, which leads to drought and consequent poverty is an objective. But the irrigation of a number of hectares of land is only a target which may or may not solve the problem of drought in the short and long run.

Paranjpye (1990) notes that 'whenever socially

determined priorities are assumed to be synonymous with technically determined physical targets, then the paradox of a high growth rate and the equally high poverty rate arises'.

There other problems that are found in our development strategy. "The iron hand of industrialization is all too painfully obvious, the cities are attracting as a magnet does to filings all the nations' resources leaving rural areas totally devoid of any development. The cruel contrast between town and countryside is a strong indictment as any of the pre-occupation with industrial growth. it is not that agriculture has been neglected-the amount of petroleum products and electricity that the Green Revolution areas have received together with the development of farm machines and implements show that it is both energy and capital intensive in certain priveleged sectors". (quoted in Economic Times, 1981: April 20)

"This Green Revolution route to agricultural development locks us into a pattern of resource use that has no future." (quoted in Engineer, 1991:166). It is based on technology that demands continuously rising inputs of chemical fertilisers and pesticides to maintain yields. All these inputs are based on oil, what happens when oil runs out?

Today even after four decades of independence, the

gains of development remain confined only to a few and the proportion of people below the poverty line remains high. Hunger, disease and a low standard of living for the majority continues.

According to Kalpvriksh (1986) our process of development has increased inequalities, concentrated power in the hands of a few, swamped valuable traditional cultures and knowledge systems. It has also neglected any alternative paths to a better life. For example it has neglected ecologically sound practices like organic farming. Therefore the question is with its past record of inequity and future likelihood of perpetuating the same pattern. Is this development?

Clearly then there is a need to reorient our pattern of development, to make it sustainable. We would describe as sustainable a process which would base itself on the judicious and efficient use of the resource base available. The idea is to use only that much that would fulfill our needs, there has to be a shift away from blindly satiating our desires through consumerism to the using only that much as we need.

For this, development needs to shift away from being a top to down process. Active involvement of the people at various levels of policy formulation and implementation are needed.

Further adequate research needs to be done in various sectors (including Big Dams). Alternatives need to be examined and put forth and considered seriously as they do exist, for example the lift irrigation schemes at Panchmahal and the dam at Baliraja which is truly a peoples alternative. According to Ranganathan (1990) there are alternatives available which would reduce urban pollution, improve the environment and generate ten times the employment so far created without straining our resources. He suggests a thorough examination of the alternatives to irrigation, especially through micro irrigation, and reforesting waste lands. All this should go hand in hand with better management techniques.

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