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ENVIRONMENTAL PROBLEMS

1. INTRODUCTION:

Despite the impressive achievements in hydroelectric energy, irrigation potential, the expected benefits in terms of the actual generation of electricity, irrigation and flood control have fallen short of the planned targets. "If the costs of environmental degradation such as deforestation in the catchment areas are included, the price paid for these modern temples becomes truly staggering. The big dams have had several adverse effects on the environment and the people, which were not foreseen during the planning of these projects. One of the most important of these effects is the degradation of the soil in the command areas of irrigation projects due to increase in soil salinity and water logging. The construction of several large dams has involved the eviction of thousands of families and their resettlement at some other site resulting in destruction of habitat. Another harmful impact of dam building on the people is the increase in the incidence of some diseases. In the destruction of eco-system, the decimation of vital forests in the catchment areas is one of the most serious consequences of the engineering approach of providing intended benefits to downstream areas. Large tracts of forests have been lost as a result,

particularly in the Himalayan hills and the Western Ghats. Submerging forest land has aggravated the problem. The Western Ghats, running parallel to the west coast of India, provide several ideal locations for hydroelectric and irrigation projects. The steep Western Slopes receive heavy rainfall and are, therefore, ideal for generating hydroelectric power. The slopes on the eastern side merge with Deccan plateau and are best suited for irrigation works. The major hydel projects are the Koyana, Linganamakki, Upper Bhavani and Idduki dams. The irrigation works include the reservoirs at Panshet, Kabini and Bhavanisagar. These projects have sharply diminished the biological diversity of this region points out Dr. Madhav Gadgil." 1

Thus "a large dam inevitably alters the course of nature and because of the play of complex and largely unknown forces, the ecological consequences are usually much more serious than were bargained for." 2

On this background of dams and environmental problems, the present chapter deals with the acceptance of rehabilitated families by native villagers, respondents' mind about new settlement, rainfall, flora and fauna in Koyana catchment, problems like barren land, shifting cultivation and charcoal-making. An attempt has also been made to throw light on the steps taken by the government in this matter such as afforestation and Koyana Sanctuary and the activities undertaken by the "Save The Western Ghats" movement.

2. ACCEPTANCE OF RESPONDENTS BY NATIVE VILLAGERS: An attempt has been made in the present section to understand the extent to which the rehabilitated villagers have adapted themselves to the new environment and how far they have become one with the native villagers.

In this context the respondents in the rehabilitated villages were asked about whether the native villagers have accepted them in the village and continue to co-operate with them as they do amongst themselves. The data in this regard are presented in Table 8.1.

TABLE 8.1

ACCEPTANCE BY NATIVE VILLAGERS

Zones	Accepted	Not-Accepted	Total
Plain	45 (16.66)	225 (83.33)	270
Catchment	15 (5.15)	276 (94.84)	291
Konkan	22 (40.74)	32 (59.25)	54
Total	82 (13.73)	533 (86.66)	615

The table clearly indicates that the overwhelming majority of the respondents (87 percent) reported that the native villagers have not accepted the rehabilitated families as part and parcel of their native village and they do not extend wholehearted cooperation to them and this is true for all the zones. Native villagers feel that

these new colonies have been imposed upon them by the Government agencies; that they are no better than parasites of their village, and that they have come to share everything with them. Therefore these natives try to see that these parasites are kept at a distance, they are used as a reserve labour force on their farms. This attitude of detachment on the part of the native villagers towards the rehabilitated villagers has certainly created a sense of bitterness amongst the rehabilitated villagers towards these natives. This bitterness is expressed by them on various occasions. They, however, do not try to disclose this bitterness to the natives. When we approached them, they were frank enough to express this bitterness with us. They felt that they were being treated as second grade citizens in the village, that they were unwanted in the village, and that they were strangers in the village. They have developed this sense of bitterness over the years and it is based on their experiences that they have witnessed during all these years, i.e., they were not allowed to share the common drinking water facility, their animals were not allowed to enter into the common pasture lands of the natives for grazing, some of them were forced to become bonded labour in the houses of the landed aristocrats from the native village, and the rest of them as the agricultural labour. They could not say no to the natives. If they did, they have had to face the grave consequences. This tensionsome situation has horrified the new settlers in the village.

Therefore they feel that they are living at the mercy of the native villagers.

3. REHABILITATION OF THE SCHEDULED CASTE HOUSEHOLDS: In the colony of the rehabilitated people again there were some scheduled caste households. We wanted to understand the pattern of their rehabilitation. And to our surprise we found out that the old traditional pattern of spatial distribution of households was observed, i.e., the pattern in which the scheduled caste families were made to build up their huts on the periphery of the colony. This gives one the impression of a colony within the colony.
4. COMPARATIVE PERSPECTIVE OF RESPONDENTS: We wanted to know the respondents' mind about whether they feel at home in the new colony in comparison to their old native village.

The feelings of respondents are presented in Table 8.2.

TABLE 8.2

FEELING ABOUT NEW SETTLEMENT

Zones	Comfortable	Not Comfortable	Total
Plain	9 (3.33)	261 (96.66)	270
Catchment	29 (9.96)	262 (90.03)	291
Konkan	28 (51.85)	26 (48.14)	54
Total	66 (10.73)	549 (89.26)	615

The table clearly indicates that the majority of the respondents felt that they were not at all comfortable in their present location. Thus the rehabilitated respondents even after a span of two to three decades indicate that their original villages were more comfortable than the present ones. When the data are analyzed in terms of different zones, it shows that the majority of the respondents from the Konkan zone indicated that they feel relatively more comfortable in their new settlements and this may be due to the factors like employment opportunities that are readily available to them in the industrial belt and better agricultural activities.

5. ENVIRONMENTAL PROBLEMS IN KOYANA CATCHMENT: A marathon debate is going on in India today regarding the construction of big dams. The main issues involved in this debate are nature and people, so far we have discussed the impact of Koyana dam on displacement and rehabilitation of people. The present section deals with the environmental problems in Koyana catchment area in terms of rainfall, flora, fauna, charcoalmaking activities, afforestation, Koyana Sanctuary and the movement for save^{the} Western Ghats.

6. RAINFALL IN KOYANA CATCHMENT AND WATER LEVEL IN KOYANA-RESERVOIR:

The catchment area of "Koyana Dam and Mahabaleshwar are closely associated with one another. Koyana river emerges from Mahabaleshwar and whenever there is a good rainy season, it assists in filling up the reservoir of

Koyana Dam. The rainfall in the drought years as well as the intensity of rainfall have been decreased over the century." 3

The Koyana Dam water storage capacity is 98 billion sq. feet. The maximum water storage height is 2158 feet and the average rainfall in the catchment area is 8384 mm.

The details of last three years rainfall are presented in Table 8.3.

TABLE 8.3
RAINFALL IN KOYANA CATCHMENT

Water Storage		Water level	Total rainfall
October 1985.		2151'	5494 m.m.
October 1986		2152.75'	5580 m.m.
October 1987		2132.25'	4109.40 m.m.

(Source: Daily Sakal, Kolhapur, 8th October, 1987).

The table indicates the decreasing trend in the rainfall in the Koyana catchment.

7. FLORA IN THE KOYANA FOREST: During 1972, tree-cutting activity started on a very large scale in the Koyana catchment area. The "employees in the forest department gave false assurances that the governmental land would be allotted to the dam-affected people. That is why these people started tree-cutting in a big way." 4

Further, Koyana Dam has a height of 2160' but it has been constructed at 1900' above the sea level which means that the exact height of the dam is 260'. Though the water could be stored upto 257', only the water above 150' is used for electricity-production, "as the generators have been installed above that level only. On this background there will be erosion of soil in the dam on a very large scale. And then the dam will be filled with more mud than water." ⁵

The Koyana catchment forest has had 105 types of big trees, 42 types of shrubs and 33 types of creepers. Apart from these, there are spiceyielding trees.

The kind of trees that are there in the Koyana jungle are shown in the Table 8.4

TABLE 8.4

FLORA IN KOYANA FOREST

<u>Memeceylon edule</u>
<u>Terminalia tomentosa</u>
<u>Lagerstroemia lanceolata</u>
<u>Terminalia chebula</u>
<u>Terminalia paniculata</u>
<u>Clochidion hohenackeri</u>
<u>Randia dumetorum</u>
<u>Leea macrophylla</u>
<u>Semicarpus anacardium</u>
<u>Rauwolfia serpentina</u>
<u>Mangifera indica</u>
<u>Actinodaphne hookeri</u>
<u>Syzygium cumini</u>

The table indicates that the Koyana catchment has had rich flora resources.

The vegetation type belongs to Memeceylon - Actinodaphne - Syzygium series. These are common trees and shrubs found in Koyana Catchment.

8. FAUNA IN KOYANA FOREST: The following fauna are found in the reserved forest of Koyana Dam.

TABLE 8.5

FAUNA IN KOYANA FOREST

<u>Mammals</u>	<u>Reptiles</u>
Tiger	Python
Panther	Monitor lizard
Leopard Cat	Common Krait
Jungle Cat	Banded Krait
Wild dogs	Green Pit Viper
Jackal	Saw Scaled Viper
Fox	Rusells Viper
Sloth bear	Cobra
Indian Pangolin	<u>Birds</u>
Porcupine	Grey Jungle fowl
Gaint Indian Squirrel	Common peafowl
Flying squirrel	Paradise fly catcher
Samber	Crested serpent eagle
Barking deer	Black eagle
Mouse deer	Indian Pitta
Wildboar	Hornbill
Gaur	Drongo
Small Indian Civet	Green pegeon.
Toddy Cat	
Common Mongoose	
Hare	

Thus the Koyana forest has had a rich source of fauna also which is shown in the above table under the categories of mammals, reptiles and birds.

After the shifting of some of the settlements on the hilltops in the Koyana catchment region, the fauna world in the forest has been badly disturbed. "As the people in these settlements started cultivation, the wild-pigs entered the agricultural land of Patan Taluka. The crops like vari, nachani, corns, sugarcane and groundnut are being increasingly damaged by these wild-pigs. Thus the attack of people on the jungles has proved to be a boomrang for them." 6

9. BARREN LAND: THREAT TO ENVIRONMENT IN KOYANA RESERVOIR:

About 48 percent of the catchment area of the reservoir (891.78 sq. km.) is owned by the Government. The forest Department, which is in charge of this area, has developed and protected forests there. The Department has also undertaken massive afforestation on the land it has acquired from the project authorities. Nearly 27 sq. Km. have been planted with eucalyptus, silver oak, acacia and casurina.

The roots of the problem of situation lie in the remaining 52 percent land under private ownership, as a team of Pune journalists who visted the place recently found out.

In sharp contrast to the adjoining lush green forests, these privately owned patches hardly have any trees. This naturally leads to massive erosion and resultant silting of the Koyana dam during the rainy season. The total rainfall during the average season in the valley is as high as about 150 to 175 inches.

About 95 sq.km. area of the total privately owned 482 sq. km. area is under regular cultivation. The rest is either under shifting cultivation or remains idle as fallow land.

Almost all the farmers residing in small scattered 'bastis' comprising about 15 to 20 hutments in the area live below poverty line as they have no other means of subsistence except their primitive mode of shifting cultivation. A few quintals of 'nachani' or paddy is all they can produce during the entire season.

10. CHARCOAL MAKING: The reserved forest under Koyana catchment falls in Ratnagiri and Satara Districts. In Ratnagiri District, the majority of the forests are owned privately, whereas in Satara District these are with the Government. The "contractors have started charcoal making activity, for which they have diverted their attention to reserved forests in the Koyana Catchment. Tiware and Tiwadi are the two villages at the foot-steps of Sahyandri - 25 km. from Chiplun. One can reach Koyana Catchment area through Tiware Ghat from these villages. In this area itself,

the tree-cutting and char-coal making activities went on and the char-coal is being transported to Pune-Bombay continuously. At last, the villagers made a complaint to the sub-divisional forest officer, Chiplun and gave a proof indicating that trees worth lakhs of rupees have been used for char-coal making. Untill then char-coal of 100 trucks was transported. The sub-divisional forest officer then seized 800 bags of char-coal, 7 to 9 thousand Bamboos and hundreds of wooden posts. This has been informed to the forest officers of Satara District." 7

Even when we were conducting our field work in that area, we have observed that char-coal making activity has been going on in that area continuously. And the contractors have spellbound the local people there. The local people are at the mery of these contractors for want of the satisfaction of basic minimum needs.

Apart from this, the huge heaps of char-coal worth Rs.10 crores, manufactured by using illegally cut trees in Sindhudurg, Ratnagiri, Raigad and Thane Districts of the Konkan region are lying in open in forests in these areas.

The forest and revenue department officials have seized char-coal from illegal bhattis (kilns) which were set up by the char-coal manufacturers.

There has been a wanton tree-felling in the catchment area of the Koyana hydro-electric project. However, tree-cutting in this virgin forest remained undetected as the difficult terrain is only approachable through the Koyana tail-water region. This inaccessible area was illegally connected to nearby mainroads by char-coal manufacturers.

11. NEED OF AFFORESTATION: Due to the above mentioned activities the environmental balance has been badly disturbed. As such there is a need of afforestation on a very large scale.

The "electricity and irrigation in major regions including Bombay and Pune and downstream areas watered by Krishna and Koyana rivers would be badly affected if the mountain top ecology of the plateau continues to be disturbed. The monsoon would start eroding the soil which would choke the Koyana Dam with washed down mud if deforestation continued." ⁸

On this background the Government has implemented various schemes of afforestation plan for Koyana hills. In response to the numerous pleas from environmentalists, nature lovers and the unrehabilitated folk in the barren hills of the Koyana water reservoir in Maharashtra, the State Forest Department has undertaken afforestation scheme of privately owned lands that will ensure adequate income for the local people and increase the life of the Koyana Dam by prevention of silting.

"The scheme launched during the monsoon of 1984 embraces 17 villages of the Solshi river valley in the south of Mahableshwar. The three year scheme would entail an expenditure of Rs.66 lakhs and achieve the afforestation of 3900 hectares of privately owned land in the Solshi catchment. Even a layman could tell that the private lands needed to be protected against the shifting cultivation of vari-nagli and needed afforestation on a war footing. But the owners of these slopes could not dream of such a thing as they live on bare subsistence level themselves." 9

12. KOYANA SANCTUARY: The Government of Maharashtra declared the development of Koyana Sanctuary on December 8, 1984. The proposal had been sent to the Central Government for its approval for quite sometime. There are 15-16 settlements in the area of Koyana sanctuary. The sanctuary is "spread on 422.58 sq. km. area and the expenditure for the development of this sanctuary would be around Rs.55 lakhs." 10

The sanctuary has had no settlement officer so far and the implementation of the developmental plan was also very slow. "Due to the limited number of rangers to protect large area without proper communication equipment, arms and vehicles wildlife protection was almost impossible. The villages in sanctuary were entirely dependent on the forest for their firewood requirements. The prevalence of shifting cultivation was another factor responsible for the degradation of the sanctuary. The villages surrounding the sanctuary

have a long tradition of hunting. The human activity was detrimental to the preservation of biological diversity in the sanctuary. The study by Samant called for an immediate evacuation of the villages inside the sanctuary." 11

After having discussed the details of environmental problems in the Koyana catchment region at some length it is appropriate to take a glance at the details of "Save The Western Ghats Movement".

13. SAVE WESTERN GHATS MOVEMENT: The Western Ghats extending from river Tapi in the north to the Kanniyakumari in the south have played the most crucial role in the ecological balance of the country as well as in sustaining human and animal life in the country for the last several million years.

Unfortunately the faulty development strategy pursued over the last several decades has drastically destroyed the rich resource base of the Western Ghats. The Ghats no more harbour lavish fauna and flora, in fact in most parts the Ghats have become only barren hills. A large number of plant and animal species have been lost forever; several others are on the verge of extinction. Millions of tons of top fertile soil has been lost causing siltation of reservoirs and rivers. Due to massive deforestation the surface flow of water has accelerated thereby reducing the recharge of underground water table. This in consequence has

affected seriously productivity levels of agriculture, horticulture and animal husbandry.

As a humble beginning to save the Western Ghats, a long March was planned from November 1, 1987 through February 5th 1988. "The main objectives of the March were:

1. To generate awareness among the people about ecology and related issues like denudation of forests, afforestation, preservation of wild life, natural resources etc.
2. To learn more facts about the nature and extent of ecological destruction of the Western Ghats.
3. To expose young Research Scholars to the real field situations/problems, so that they could view the problems in wider societal perspective.
4. To bring together all the Voluntary Organisations working in this region to formulate some long term common ecological action-programmes.
5. To encourage academic institutions including schools in the region to take-up afforestation and other ecologically relevant programmes, and
6. To create suitable environment for effective co-operation between Voluntary Organisations, Government Agencies, Academicians and Educational Institutions in solving the ecological problems." 12

The marchers said the main problem in the relatively affluent Western Maharashtra region was displacement of villages due to irrigation projects. This was unlike the tribal areas of Thane, Raigad and Nasik districts where the major social problem was exploitation of tribals.

"The marchers visited many villages where no development work had been carried out as they were earmarked as the areas to be submerged by irrigation projects. As a result, these villagers lived without any benefits of development for as long as two decades." 13

Chandoli and Koyana both of these sanctuaries, did not have a settlement officer and the implementation of the management plan was also very slow. With one ranger asked to protect over 2400 hectares without proper communication equipment, arms and vehicles wildlife protection was almost impossible.

The problem of protection was further compounded by the presence of 66 villages in the sanctuaries. "A study conducted by Dr. Jay Samant, an ecology professor at Shivaji University and his students, had revealed that over 65 percent of the inhabitants were unaware of the notification of the sanctuaries. The study said these villages were entirely dependent on the forest for their firewood requirements. On an average 95 percent of the firewood consumed by all households came from the forests. The prevalence of shifting cultivation in sanctuaries was

another factor responsible for degradation of the sanctuaries. Over 40 percent of the revenue department land in the Radhanagari sanctuary is used for shifting cultivation; while in Chandoli and Koyana sanctuaries the figures were 60 percent and 49 percent respectively. The villages surrounding sanctuaries have a long tradition of hunting and there are days when the villagers indulged in community hunting. On an average at least one wild animal is hunted for its meat per week by every family the study revealed."¹⁴

An overwhelming majority of the "Save the Western Ghats" marchers and non-governmental organisations (NGOs) extending active support to the march are in favour of the idea of forming an umbrella organisation for follow up work. The marchers, who shared their experiences over the last two years said the umbrella organisation would boost the confidence of NGOs who would have to launch struggles and agitations for preventing further degradation of the tropical rain forests in the ghats, one of the oldest hill ranges in India. The various state co-ordinators, who presented reports of the march felt endemic species instead of exotic ones should be used for afforestation and that the rural poor, mostly tribals, must be involved in afforestation efforts.

Government apathy had led to devastation of the forests both in government-owned and privately-owned land. All the five states unanimously felt that enough dams had been constructed on the-

rivers passing through or emanating from the hill ranges. They said "these dams instead of helping anyone, had only resulted in displacing lakhs of people from their homes and destroyed forests." 15

The Save Western Ghats (SWG) conference which concluded at Ramnathi in Goa has called for a mass people's resistance against environmental degradation, deforestation, pollution and the construction of projects which threaten the ecological balance. The SWG conference also decided to build up awareness about protecting the natural resources of the ghats. The conference also suggested that environmental education be made a part of the academic curriculum in schools and colleges. In another recommendation, the conference called for a comprehensive environmental protection act and a "people oriented" forest policy. It was necessary, the conference noted to involve activists, scientists, policy makers and people's representatives in a meaningful dialogue on this matter. An exhaustive survey conducted by the participants of the "Save the Western Ghats march" in 116 villages of Maharashtra, Goa, Karnataka and Kerala has highlighted the increasing devastation of the once-rich forests of the Western Ghats. They revealed how deforestation had created an ecological imbalance leading to less rainfall, reduced ground water resources, soil erosion, landslides and increased wind velocities.

In his address, "the central co-ordinator of the Save the Western Ghats march, Mr. K. Kalanand Mani,

said that the march had been successful in reaching out to a vast number of people. It had made them think and feel concerned about the grave situation of the Western Ghats. Emphasizing that the historic march had opened new gates for the survival of mankind and had heralded a new era in the ecological movement, Mr. Mani said that there was need to inspire more and more people and get them involved in the struggle. Speakers at the conference emphasized that it was the first time that an attempt was made to take a holistic view of the status of the Western Ghats." 16

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