

SUPA DAM

CATASTROPHE AHEAD

At ~~the~~ present Karnataka is going through one of its worst power and water crisis. It is more than a decade that Karnataka Power Corporation (KPC) promised to the people of abundant power and one of the projects through which this is to come true is Kali Hydrel Project. This project coming up in three stages is to generate 1220 MW of power. Construction of 101 meters high concrete dam at Supa is the key structure to the subsequent second and third stages. The Supa Dam to be commissioned in May 1984 will have to face more problems than its counterpart ~~xxxxxx~~ across Sharavati. Observing the present events and activities in and around Supa Dam and near by areas one comes to an obvious conclusion that a catastrophe is not too far.

A FEAT- AT WHAT COST ?

The round the clock work going on at the construction site in Supa with the help of modern mechanised equipment like rope way etc. is described as an engineering feat. The original estimated cost to complete Kali Stage I was Rs. 228 crores, with an installed capacity of 910 MW. However the complex geological problems and the fractured rock coming under the foundation posed a threat to the stability of the Dam. In order to rectify these geological complications the engineers had to resort to scooping of loose earth and filling the space with concrete. That is how the dam when completed would have consumed 10 lakh cubic meters of concrete. It would be interesting to know how this aspect would effect on the total cost and the original estimated cost of Rs. 228 crores. And a further question which would logically ~~xxxxx~~ follow is why this mechanisation was resorted instead of making it labour intensive, ~~xxx~~ that too when our country is facing the unemployment rate about thirty percent. Well, while planning these big hydrel projects data of generation of man days of employment is churned out, ~~ix~~ however in practice human labour is displaced with machines. Further the engineers might argue that employment of labour at this stage would have delayed the completion of the project ~~xx~~ to an uncertain future date-leading to acute shortage of power.

But well, k KPC which plans for our future power and energy needs and also the implementing body should have had the rationale in selecting a suitable spot for the foundation of the dam after testing all geological features. The costly lapses of such government undertaking puts heavy burden on ex-chequer, that is people's money.

DIGGI- DIGGING THE GRAVE OF SUPA DAM

Kali river across which Supa Dam is being constructed originates at Diggi, at an altitude of 915 meters along the border of Karnataka and Goa. The Kali stream flows from the thick ever green forest of western ghats. This is one of the rare tropical evergreen forests left in bio-sphere. Its importance is much more than the evergreen forests of Silent Valley in Kerala. It is a laymens knowledge that the complex eco-systems in these forests is the base of the streams which later on join together to form into a river. This sensitive zone is known as the catchment area. Any kind of disturbance in the catchment area leads to imbalances in the eco-system. This in turn leads to chain reactions on the whole area and the course of the river. Water sources dry up, the top soil is washed away and the rainfall is effected.

The human exploitation of these ecosystems at Diggi can aptly be described as plundering of natural resources. The hill slopes near the Kali stream is totally denuded. Clearfelling ~~is~~ has been done in evergreen forest area and to this date it is going on. The other activity around the Kali stream is extensive open cast mining. Large tracts of forest is cleared to make way for mining activities to extract manganese. As a result of mining and forest clear felling the area near Diggi looks as if it is raped. As a result of these activities one of the streams of Kali near Kusaravali village has dried up. As an ultimate consequence of this activity ~~the~~ the Supa Dam will be effected in the long run because of high rate of ~~it~~ silting and the estimated storage capacity of 4,350 million cubic meters will never be attained as the rainfall will be scanty and the water sources will dry up. Thus this human activity in the sensitive catchment area of Kali at Diggi is like digging the grave of Supa Dam.

AN EXPERIENCE FORGOTTEN

Nagjhari power house with six ~~pxx~~ generators is the key for generating in aggregate 810 MW of power. This power house at the ~~gx~~ right bank of Kali is located beneath Sykes point

This power house was in utter shambles after last years monsoon. Kali is dry during summer but during rainy season it is the most ferocious river in Western Ghats. After the monsoon in 1982 huge amount of ~~ix~~ silt was deposited in the power house causing alarming damage. Lakhs of rupees was spent on removing and repairing the damage done by silting. The reason for such high rate of silting is not far to seek, it is the obvious result of cutting and removal of the tree cover in the catchment area. This has caused the silting as the top soil is washed away in heavy rains.

The Sharavati hydel project is a pointer ~~z~~ as to how this high rate of silting can wreck the whole system of power ~~generation~~ generation. Even after one of the heaviest rainfall, and the year when the water level at Linganmakki had reached its maximum level, this year there is shortage of water to generate power. Why is it so ? Obviously, due to extensive deforestation in Sharavati catchment area. The top soil of these hill slopes has been brought down by rain water and it is deposited in the bottom of the Dam. As a consequence the total storage capacity of the dam ~~z~~ has gone down considerably. The recent trouble in Sharavati project is attributed to the landslide which has affected the water pipe. Thus landslide and silting is the result of removal of tree cover in that area.

The Karnataka Power Corporation claims that there is hardly any siltage in Sharavati. As the above experiences point out the claim is unjustified and baseless. So far scientific measurement of siltage in hydel dams is not carried on in ~~Rx~~ Karnataka. There is an urgent need to study this aspect which will have a long term impact on the life span of hydel dams. KPC has overlooked these experiences of its own, which again will lead to costly lapses and eventually to perpetual power crisis.

RAMNAGAR * A MAN MADE DESERT

A catastrophe has already occurred at Ramnagar. Ramnagar is a rehabilitation unit for 47 villages to be submerged due to Supa Dam. More than 5000 acres of virgin moist deciduous forest is clearfelled to make way for establishing Ramnagar. The KPC, incharge of rehabilitation unit and its esteemed planning engineers have not left even a single tree in the whole area of more than 5000 acres ! The planners have definitely not thought that human beings would be living there. In 1975 the area was clearfelled and as a result~~ix~~ of heavy rains during these years the top cover of earth is totally washed ~~qxx~~ away leaving only the barren land. Thus even after four years of they stay the

the rehabilitated villagers have not dared to cultivate their land. Only one person out of the 250 resettled families tried to cultivate but he failed to get back even the seeds. The KPC after displacing the people has put them in Ramnagar- a man made (or KPC made) desert, a dismal feature of what happens when natural eco systems is damaged through reckless human intervention. It is a clear case which shows that man cannot live without trees but trees can survive without man. Another major impact of clearing forest for Ramnagar will be on Supa dam. This area is the cathment area of river Pandri, one of the tributaries of Kali.

LONG TERM IMPLICATIONS

As the demand for power increases in future, the people will be put into more trouble because these hydel projects will suffer from long term implications. At present we have the experience of Sharavati in hand unable to generate the estimated power and the catastrophe at x Supa is not far ahead. With extensive damage to catchment area, the life span of the dam will be shortend due to high siltage, the water resources will dry up due to removal of forest cover. The ecosystems imbalances will start showing results in terms of shortage of rainfall and eventually to shortage of power. KPC has to have a broader perspective taking into consideration the long term ecological implications. Otherwise, the costly lapses as in the case of selecting suitable site xfor foundation would lead to wastage of crores of rupees, which is in fact peoples money in the form of taxes. So let us not play with poor peoples money.

May 13th, 1983.

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PEOPLES IRRIGATION SCHEME

While walking towards Keravalli village the barren hills surrounding the hills shows the scars of deforestation. As a visitor one wonders about the loss of greenary. Suddenly as one reaches the last point on the hill, the green valley an adjacent to the quitely flowing Sharavati river provides a scenaric view. Suddenly the greenary, the water of river and the western ghat hill ranges on the background creates a feeling that you are in wonderland. The paddy fields turned yellow, the green sugarcane fields provides a spectaclar view of the green valley.

The people of Keravalli, in Honnavar taluka, Uttara Kannada district have struggled hard for several years to make the barren valley into green by bringing irrigation. This village is situated on the banks of Sharavati river. There is constant water flow in the river that can be utilised for irrigation. The only need is to install the pumpset to lift water from the river.

There are about 12 lift irrigation schemes on the banks of Sharavati, irrigating several hundred acres of land. Some of there schemes were built with the help of Max Danida, the Damish Development agency. Some were built by state government. Even in Keravalli the DANIDA assured to build the lift irrigation system. Their estimate was to spend three and half lakhs to install the scheme. But eventually they backed out, saying that such an expenditure to irrigate, just 70 acres was not feasable from benefit cost analysis. Thus the abrupt stoppage of work, led to demoralising effect on villagers. Most of the 70 odd farmers has no money to install individual pumpsets as their holdings was meagre. Some farmers have just small piece of land, from 5 cents to 10 cents.

In the meantime the Manager of Varada Gramen Bank, Allonki came forward to support the lift irrigation scheme. They assured the loan facility to install the scheme. But they put the condition, that they should evolve a community irrigation scheme.

The people got together and organised a series of meetings. They were very eager to irrigate the fields. The irrigation would provide them with a means of livelihood. Various caste groups like Gama Vokkaligas, Naiks and Haviks organised themselves and formed Kalpataru Yata Niravari Sahakari Sangh (KYNSS).

The birth pangs of this Society was a lengthy process. When the people went to register the society under Cooperative Act the Registrar declined to register it. The reason was: In the Cooperative bylaw of the district the provision to register a society with the objective of providing irrigation did not exist.

The villagers were dissappointed. However they had heard about irrigation societies in Belgum district. So they decided to visit these societies. The village leaders visited Margund Taluka in Belgum district where 70 Irrigation Societies were registered. The village people discussed with the members of these societies and brought their by laws with them.

Their by laws were submitted to the Registrar of Cooperatives in Uttara Kannada district. Eventually he agreed to register the society.

Proper bylaws were amended to give recognition to the Irrigation Societies. Thus the first Irrigation Society was established in Keravalli.

The hinderances started propping up at every step. When the society decided to open a bank account in Varada Gramen Bank, the Act prohibited

a Society to open bank account in any schedule Bank. The account has to be only in a Co-operative Bank! Thus through the Varada Gramen Bank was interested and willing to give finance to the Society they were anable to open a bank account. There are the rules and regulations that destroy the creativity of village people.

The villagers visited Bangalore and met the higher officials. Thus the officials agreed to their request and allowed the KYNSS to open a bank account at Varada Gramen Bank. This was an exception to the rule. Thus, they succeeded in opening the bank account.

The bank was willing to finance, but they had no idea of the procedures to ~~xxxxxx~~ mortgage the land as security. How to mortgage land of to farmers towards loan? Again people visited Belgaum district where irrigation societies were working and where Malaprabha Gramen Bank had given the loan to these societies. A technical person came to Keravalli to sort out the issue of mortgage! Eventually the struggle to get finance ~~xxxxx~~ ended when the KYNSS get Rs. 120,000/- from the bank.

WATER MANAGEMENT

The Kalpataru Yata Niravari Society has a complicated task of allocation of water to the land. First of all the water from Sharavati River is lifted to 160 feet on a hillock. A ten horse power pump lifts the water on to the hill. There is a small water tank in which water gets stored and from this tank the water goes through channels. There are channels at different ~~xx~~ elevations, to cater to the needs of different crops. This irrigation is used for coconut, areca garden, paddy and sugarcane.

Every fifth day the land gets water, either it is for paddy or

different crops. There is one person incharge of management of water and the pumpset. The society KYNSS pays him the salary. Each household gets water regularly. There are farmers owning small plots of five cents of land. The society caters to their needs. Obviously, there farmers owning very small pice of land could have never imagined the availability of water to grow second ~~xx~~ crop. This ~~p~~ irrigation is in operation since past four years.

There exists a management committee which collects the revenue from farmers to repay the loan. Each farmer pays according to his land holding. The repayment of loan is Rs. 4,000 per acre of land over a period of 8 years with an interest of 8 percent per annum. The Zilla Parishat has given the subsidy of Rs. 45,000/-. Thus the repayment burder has got reduced.

PROSPERITY TO FARMERS:

What are the changes it has brought in the lives of farmers who are using the irrigation? Narayan Krishna Gauda, an elderly farmers said. " I am growing second crop of paddy and sugarcane. On an average I earn an additional income of Rs. 14,000/- per year due to availability of irrigation". Narayana has 2 acres of land, and after the introduction of irrigation he has been able to build a house,

Similarly Hanumattha Timmappa Gauda, a middle aged farmerx having one acre of land. Before irrigation he was able to feed his family of eight people for only six months. But the things have changed after the introduction of irrigation. He is able to grow second crop of paddy and the yield is enough to feed the family for whole year.

On an average the people irrigation scheme has succeeded in irrigating 70 acres of land in the village. Seventy farming families have benefited from this initiative. The irrigation has provided an opportunity to

grow second crop of paddy and cash crop of sugarcane. Shivaram Hegde, a middle age farmer and the Chairman of Irrigation Society said " This land was used for growing one crop of paddy. After the irrigation we are able to grow second crop. The yield from sugarcane and paddy may amount to an income of Rs. 2 lakhs per year". He has provided the able leadership to the first Irrigation Society of Uttara Kannada.

The experience is not all rosy. The society faces problems in collection of loan amount and the to run the water management scheme. There is also the problem of waterlogging and seepage of water from the channels. The organisation is planning to solve these problems.

The green valley experience of Keravalli shows how people can organic themselves to solve their own problems. It also shows the strength of ordinary people. Who do not depend on government initiative. The peoples movement in this village has shown that it can build an irrigation system at half the cost of government would have spent. The creativity and spontaneous motivation of the people has provided the necessary strength to maintain this system efficiently.

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KAVERY WATERSHED IN KARNATAKA

Kavery Watershed in Karnataka plays a vital role in supplying water to a large area in South India. Kavery emerges from Bhramagiri Hills at Talakaveri in Kodagu district, Karnataka. This hill range, a part of fragile western ghat eco system is undergoing a through an accelerated process of change in recent years. An attempt is made in this paper to analyse these changes in the light of ecological perspective.

Kaveri Watershed and Kodagu District

Kodagu is like a fountain, from which major tributaries of Kaveri emerges from its hills. The major tributaries are Karnataka, Harangi, Lakshmana Teertha, Kabini, Suvarnavathi. All these tributaries flow from hills of Kodagu. Thus this district forms part of major watershed of Kaveri. Though it emerges as small streams and river-lets from these hills, once it becomes Kaveri it irrigates approximately 4 lakhs acres in Karnataka and 17 lakhs acres in Tamil Nadu. It is due to this immense life supporting quality of Kaveri, that we need to look at the catchment of Kaveri. Especially in Kodagu, Kaveri plays a crucial role in agricultural activities, making it as the base for whole development of district. May be due to this important factor all people in Kodagu ~~is~~ treat themselves as children of Kaveri.

The whole of South Kodagu has tropical evergreen vegetation. The shola forests, grass lands of Bhramagiri is being planted with fast growing acacia and silver oak species. The forest department has also clear felled an area of about 20 acres on the way to Nelje and has planted silver Oak. This was done about 10 years back. But the clear felling of natural forests just near tributary of Kaveri is irrational process. However, all along southern Kodagu most part of land is under private ownership. Wherever cardamom cultivation is practiced. The landholders have kept good shade trees, covering the soil. But introduction of coffee has resulted in removing of the shade trees. The coffee area is devoided dense canopy, exposing tropical soil to sun and heavy rainfall. In Kabbinkad forest area, we saw an area of 20 hectares being almost clear felled by the landowners on steep slopes. This was done to extend coffee cultivation. Felling of trees whether by private landowners or government on these slopes of Kavery catchment is

determental in the long run. The southern region of Kodagu receives heavy rainfall of about 4412 mms. So it is essential to keep dense cover to protect soil from being washed off to Kaveri river. On steep hills near Tadeandamol, regular fire to grass land damages the nature of ever green forest on steep slopes. In one area we observed a large area of forests being burnt due to fire.

The area after Kakkabbe, Napoklu and upto Madakeri in Central Kodagu is entirely coffee area. The area looks green with lot of trees. However, the density of tree cover is very minimum. The coffee cultivators are restoring to clearing of old indigenous trees and are replacing them with silver Oak species. It is either coffee estates or cardamom cultivated area, natural forests have been converted into cash crop plantations.

Galibid area beyond Madakeri presents totally a different picture. The shola hills all along, and the type of forest in between the hills are different from the forest of southern or central Kodagu. This area is much dry and there are grass lands on the hills. It seems the Britishers felled the forest in this area and tried to cultivate coffee and tea in the process they have denuded hill slopes, have left it as barren area. The state Forest Plantation has launched an ambitious plan to establish tea garden in Galibid areas on an area of 5000 acres. Though the area is barren with grass land, we came to know that about 400 big trees were felled to make way for tea cultivation. Rare trees on this barren slopes would have provided some protection from soil erosion. But the tea plantation work has felled these old trees and have planted new silver oak species to give shade to tea plants". The density of population is very less and the forests are under private ownership cardamom is the main cultivation with little bit of paddy, Kalur has excellent Devarakadu, which is maintained intact. However, large areas have been lodged in Surlabi Hills by Govt. as well as by individual landholders. Destruction of green cover in this area is destroying catchment on Harangi.

North Kodagu presents a pathetic scene as most of the deciduous forest is converted into mono culture plantations of teak. This whole area of North Kodagu represents catchment of Harangi. The forestry activities have totally destroyed this catchment forests. Beyond Somawarpet the meagre forests are under private ownership, which is under coffee, cardamom cultivation. The coffee curing causes havoc for the month of February and March, polluting all river streams and damaging drinking water supply. Though forest-

logging has been stopped in Pushpagiri area, private forests are constantly logged destroying streams.

Kodagu - a total perspective

Kodagu is the smallest district in Karnataka with a total geographical area of 4102 sq. kms. It has a interesting history of feudal kings, who ruled with very rigid ways. Because of frequent wars the land has produced excellent ~~marital~~ marital race in south India. The British rule in 1830's brought about a drastic change in the history of district. Introduction of coffee increase in education facilities opened up enormous opportunities to the people. Even today we see the deep impact of European life style on the people in Kodagu. The forest were classified in 1904, demarcating the inaccessible part as Reserve Forests. Thus we have the reserve forest area of 80,000 hectares, mostly adjacent to boundaries in Kerala, Mysore and South Kanara. Britishers started destruction of catchment forests, trying to replace natural tropical forests with coffee. They ~~resorted~~ resorted to clear felling and burning techniques, which shows that their knowledge of tropical forestry was very meagre. However, during central administration, the British Kodagu was self sufficient in most aspects of revenue. The end of Central rule in 1956 with Kodagu becoming one of districts in Karnataka started a major change process.

Kodagu, with its bounty of natural resources base was reluctant to become part of larger state, as it feared that it will loose its special identity. Assurances were given to maintain this special identity. However, once it became part of larger state, the natural resources were the first target of destruction. Large forest areas were given on lease to plywood factories for logging. The private forests were also logging extensively. The large scale defforestation in Karikka area, near Kerala border led to influx of encroachments. Local tribals, male Kudias were given out by encroachers, who raised large rubber plantations in defforested land. Devarakadu or sacred grover were encroached the extent of Devara Kadu was 1000 acres in 1964 and it has been reduced to a meagre of 3000 acres. The politicians supported encroachers for the sake of getting vote. The forests provided easy money through forest based industries. The encroachmentser provided vote banks, these two acts by politicians of Kodagu has destablished ecological, social balance leading to serious conflicts in Virajpet taluka.

The population pressure has put a great pressure on existing land and other resources. The per capita density of population per square kilometre has increased from 92 persons in 1973-74 to 113 persons in 1983-84. It is very interesting to note that out of the total population of 4,61,888 (1981) about half of them (2,18,347) are labourers. This means the influx of labourers from neighbouring states in Kodagu has reached a high peak. Obviously, the local inhabitants feel threatened in their own land. The ethnic composition of Kodagu, especially in south, has changed so drastically over the years that the local people have become a minority. The landed people of Kodagu are witnessing the scene where people from outside, who is mainly a trader is purchasing land. The interest of outsider is totally different from original inhabitants. The clash in interests has led to social tensions, leading to destabilising the harmony in society. The turmoil is more intensity in southern Kodagu as compared to Northern Kodagu, which is a stabilised society.

Overall impact on Kaveri - Watershed

As said earlier the change in land use pattern over the past in Kodagu, and in future will eventually affect Kaveri water flow. From 1973-74 to 1983-84 the extent of coffee cultivation in terms of coverage has increased from 46,708 hectares to 68,798 hectares. Similarly, the cardamom area for same ten years span has increased from 11474 hectares to 16900 hectares. This reveals that enormous amount of change in land use, from converting natural forests has taken place in this area. It means opening up of canopy, disappearing tree cover, leading to siltation in Kaveri. Surprisingly, the most sensitive crop like pepper has shown a decrease in area from 1696 hectares in 1973-74 to 1084 hectares in 1983-84.

Towards desertification:

D.A. Chinnappa said in Karnataka Assembly "Though Kodagu receives highest rainfall, there is shortage of drinking water" (Prajavani news paper dt.12.2.87) well it is true. The average rain fall figures for district (according to Kodagu District at a glance by Govt. publications) was 2725 mms in 1973-74. This has increased to 3075 mms in 1983-84. It is very important to realise that with increase in intensity of rainfall we need a dense tree cover to protect soil and to recycle rain water. However, the green cover according to official figures is just 25 per cent. Though Kodagu hills may look green, the density of tree cover over the years have been reduced due to on-going deforestation process. This has changed the water cycle leading

to dryness, shortage in drinking water. This trend reveals the serious nature of problems in Kaveri catchment area.

Ecological imbalance in Kodagu district will have a long range impact on agricultural yields. The sensitive crops like cardamom and pepper requires a stable micro climate. Defforestation has changed this micro climate though we do not have actual authentic figures to prove this, we will take the example of bee keeping, which is obviously on sensitive area to show change of micro climate in district. The Coorg Honey is famous all over country. In recent years bee keeping and epiculture has increased enormously in the district leading to 3 times increase of bee boxes. However, the collection of honey has come down drastically. In Galibid and Mannangeri area the production of honey was 10000 kgs in 1955-56. This has come down to half about 5000 kgs in 1985-86. As Mr. Krishnamurthy from Galibid, with an experience of 30 years in bee keeping says "The change in nature of forests is shown by reduction in honey production. Many flowers trees have become extinct. Obviously, this is a clearcut indicator of changing micro climate. We come to know about similar trends in Bhagamandala area.

In addition to above factors governmental agencies are destabilising Kaveri catchment with their own development schemes. The afforestation schemes in Bhamagiri with monoculture plantation of Acacia, with huge inputs of fertilizers is going to affect the Kaveri in lower streams as the leaching will contaminate Kaveri water. The prestigious tea plantation in Galibid will accelerate soil erosion process. A higher increase in the use of higher yielding varieties in average from 1819 hectares (in 73-74) to 25,478 hectares (in 1983-84) means more use of praxtz pesticides polluting Kavery! Add to this pesticides used by Cardamom and coffee cultivation.

Forest destruction and emergence of Appiko Movement in Kodagu.

The tropical forests of steep slopes in Kodagu performs varied functions, including a regular flow of water in Kaveri. However, the forest policy of Karnataka government has led to a great pressure on these forests. Large tracts are given to plywood factories on lease, at concessional rate. The contradictions in-herent in government forest policy is revealed in order No. FFD 154 FDP 77 Bangalore dt. 11-6-1986. The Govt. framed a policy by passing the above order, restricting fresh allocation of forest area to existing plywood industries. However, ignoring this policy decision the government passed another order on 4-7-1986 (Order No.FFD 150, FDP 85) allowing Western India Plywood Factory to extract wood from forest of Kodagu for another five years term from 1986. This obviously

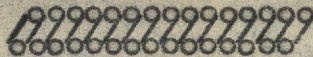
shows the over riding importance given to earning money than to see the ecological consequences. The excessive trends of defforestation in Kodagu, Destablished the ecosystem. People organised themselves and launched Appiko Movement in Udumbe forest in 1986.

As the Appiko movement gathered momentum, the politicians entered the scene to make political capital out of peoples movement. The organisers of the movement had no experience of dealing with politicians. So both ruling as well as opposition party politicians made use of Appiko Movement. The situation changed with Sunderlal Bahuguna visiting Kodagu in last week of December, 1986. He called for a genuine peoples movement to protect forests of Kodagu. He urged politicians to support the cause but to keep their vested interest away. In January 1987, people gathered in Virajpet and reaffirmed to launch Appiko, on non political basis. Simultaneously Appiko Movement was launched in Karikke, Bachnadi forests in February 1987. The government has ordered to stop felling activities. However, the people are vigilant and are keeping constant watch in deep forests to protect trees from axemen. People stopped government felling in ^{12 different forest area of Kavery} watershed. People of Kodagu have also launched a strong movement against establishing tea estate by destroying shola forests.

Towards protection of Kavery Watershed:

To protect the catchment area of Kavery it is essential to stop the defforestation process. The government should stop leasing forests to plywood factories. These factories can import wood from out side or they can diversify to other areas. At the same time it is necessary to stop felling to in private owned land in Kodagu. Only those trees should be allowed to be cut which are essential for land-holder. The leasing of forests should stop immediately. While tree planting work care should be taken to plant indegenious species like "Edinji" (local name) which gives honey, fruits and which regenerates faster. The government should put a moratorium on felling of green trees in Kodagu as it is catchment area for Kaveri. The district and state administration has to take special care to tackle ethnic problems in southern Kodagu. The encroached land by any person has to be evacuated resorting Devarakadu to its original status. If this problem is tackled with political interest or if the problem solving if postponed to future, then there is every change of problem getting complicated. The marital race may have to resort to its own wayw of conflict resolution which may lead to violence and destabilisation, eventually leading to destruction of Kavery watershed.

Kavery is the Ganga of South India, the catchment area of this major river needs a cautious handling. The present trends of change in land use of establishing tea estates with enormous money should be given green signal only after considering the ecological impact of such projects. Most development schemes of Govt. either forestry or extension of monoculture is going to destroy watersheds. We have done enough damage to Kavery catchment. It is high time we stop it and look at it afresh so as to get sustained watersupply to Kavery, to Kannambadi Dam, and eventually to Tamil Nadu. The Appiko Activists are trying to save Kavery from becoming dry in future.



POLLUTING GANGOTRI

- by Pandurang Hegde

Recently the central government has announced that it is seriously considering to put a ban on expeditious and tourism in Gangotri Himalayas in Uttarkashi district, Uttar Pradesh. This is one of the steps to prevent polluting high ranges of Himalayas by debris and waste disposed by these expeditions. Similar ban was imposed in the Nanda Devi belt of Himalayas and valley of flowers in high himalayan ranges in Garhwal regions. This ban still continues and it has helped a great deal in protecting the fragile ecology of Himalayas.

Gangotri is one of the most important pilgrimage centres in Himalayas. It is famous because the holy river Ganga emerges from Gangotri. Gangotri is one of the most beautiful places situated in midst of snow clad himalayan peaks and green forests. It is located at an altitude of 3200 meters. The temple at Gangotri, dedicated to the Goddesses 'Ganga' is the centre of attraction. Gangotri attracts thousands of pilgrims from different parts of the country.

At present the road link to Gangotri has reduced the difficulties and hardship of trekking along bridle path. Before this road link pilgrims trekked hilly terrain and those few hundred reached Gangotri. During those days the people followed a rigid code of conduct and they did not commit any act of polluting Ganga.

Even throwing of stale flowers, clothes was prohibited. They held Gangotri in high esteem and this dedication, revarance protected the river from being polluted by human interfearence.

The road link to Gangotri from 1984 has increased the number of pilgrims from 10,000 per year prior to road link to five lakh visitors. This influx has put great pressure on the meagre infrastructure provided to pilgrims. The limited place for accommodation has led to construction of buildings in a hapazard manner obstructing the natural beauty of this place.

The most destructive result of this increased pressure of people is affecting the forests around Gangotri. Trees are felled for construction of new buildings and also to meet the fuelwood demands of five lakh people. The number of Sadhus staying in winter at Gangotri has increased in recent years. This puts an additional pressure on forests. These diverse pressures has led to destruction of forest cover at an alarming rate.

The forest cover beyond Gangotri is also depleting as people go upto Gaumukh, 18 Kms upstream of Gangotri. Sadhus have uprooted junifer shrub from alpine grasslands to build Ashrams. The destruction of junifer shrub and felling of trees around Bhojbhara has led to severe landslides, changing the landscape.

There is an increase in number of foreign and Indian expeditions taking this path from Gangotri to the high himalayan peaks. They carry enormous amount of baggage and food items. After using the tins, they dump them near their camps, I have had the opportunity to see this waste tins and plastic dumped in most sensitive areas in snow clad himalayas. The scattered rubbish and the waste disposed may one day turn himalayan mountain to a expedition dust bin. It is high time that our government should have banned this expeditions. However the lure of foreign exchange earnings and callacious attitude of Indian Officials accompanying these expeditions has allowed foreigners to use our himalayan mountains as cheap ground for seeking pleasure. In foreign countries they have to adhere to strict rules and regulations and are forced to bring back the waste product with expeditions.

Once while trekking in Gangotri Himalayas I came across 200 porters carrying material for two foreign climbers I wonder how much of the waste they have brought down with them. Perhaps they have dumped the waste on high mountains, leaving the himalays more filthy. The situation is same with Indian expeditions.

At Gangotri the influx of pilgrims has led to pollution of river Ganga. There are no facilities of toilet and bathroom to cater the needs of five lakh pilgrims. The

people use the every bit of open space as open latrines, deficiating all around and creating a horrible scene. Many Sadhus have built open latrines on the banks of the river Ganges. The human waste is directly dumped into the river water! The garbage is also dumped into the river. These human activity is increasing every year and the holy Ganges is polluted at its source. Gangotri at present is a very filthy place not fit for human habitation.

The whole country and political leaders are busy with solving the issue of Rama Janma Bhoomi and Babri Masjid. However the Hindu spiritual leaders are not bothered about the destruction of Gangotri, where our own countrymen are converting a holy place into a filthy dust-bin and open latrine. The Sadhus in Gangotri are busy encroaching land and building Ashrams for personal profit. These ashrams are centres of antisocial and criminal elements exploiting innocent pilgrims. It is essential to put an end to such cultural pollution that is polluting the Ganges at its origin.

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A CRITICAL LOOK AT NATIONAL WATER POLICY

The Ministry of water resources has framed the first National Water Policy for the country. In recent years the recurring phenomenon of drought and flood has adversely affected country's agricultural economy. Realising the seriousness of the issue, and recognising the need to develop this basic resource the central government has framed policy guidelines to harness water resources.

The policy document recognises that the demand for water in urban and rural areas will increase in future leading to further scarcity of water. The quality of water is affected due to pollution of surface and ground water resources. The policy accepts the fact that "in some irrigation commands problems of water logging and soil salinity have emerged, leading to degradation of good agricultural land. There are also complex problems of equity and social justice in regard to water distribution". While recognising all these realities, the policy guidelines does not offer any solutions to resolve these complexities.

The policy advocates for early completion of large multi-purpose projects and to formulate such projects in future. The basic assumption behind this project is; it helps in control and management of flood. In contrary to this, the flood affected area has increased over the years. The big irrigation projects have failed to generate the income necessary to maintain the massive structures. For instance, in 1985-86 the receipts from all irrigation projects were Rs. 247 crores, whereas the working expenses alone were 1300 crores. On working expenses alone there is a loss of Rs. 1055 crores every year.

The rationale behind such big irrigation project being its capacity to provide food security to the nation. After having spent Rs. 20,000 crores in irrigation, we have irrigated 20 million hectares of land. Out of this seven million hectares is suffering from water logging, with an annual loss of Rs. 8000 crores. Obviously, we have put all the eggs in one basket, as a result this year the country is renewing PL-480 grant from USA. The water experts should have looked towards the dry lands as a potential to meet country's food needs.

In a diverse country like India, the existence of different eco-zones demands that water has to be harvested and managed at decentralised micro watersheds. Surprisingly, the water policy advocates for uniformity in water management for the country. This negates the concept of diversity leading to complex problems. In Hoshangabad district, Madhya Pradesh, construction of major dam across Narmada has created severe water logging problems in black cotton soil. In addition to this these dams have also failed from the point of social justice. The benefits have accrued to better off section of society.

There is a definite inter relationship between present water management practice and politics. The political ^{ians} derive enormous strength from sugarcane and irrigation lobby. It also gives them the ultimate power for "sanctioning" such projects. This creates a lobby of contractors who finance the election funds of political parties. The irrigation lobby has created a new nexus with politicians, bureaucrats and kulaks, dominating the country's political scene. The recent policy has reinforced the hold of this nexus. As all major political parties depend on this nexus for survival, they have not raised any objection against centralised water policy. Obviously, it indicates the bankrupt ideologies of our political system. For instance, the Janata party ruled Karnataka, that talks of decentralisation, has not objected against centralised capital intensive projects that transfer water from one river basin to another.

The scarcity of water and drying up of streams, rivers is attributed to natural phenomenon. However, in reality the scarcity is man made, and in our country it is predominantly the result, of acceptance of a model of 'development', that demands more water at every stage.

Expansion of urban areas increases the water demand and they consume more water than their rural counterpart. In addition to this, the industrialisation process puts increased pressure on water resources. The agricultural practices, especially the green revolution technology has necessitated the need for more water to raise food crops. Under drought prone Area Development Programme crops like paddy are propagated instead of millets. The water need of rice is more than millets. Similarly almost every development activity is related to water resources directly or indirectly. In Karnataka there are eleven major development projects financed by World Bank in 1986-87. Of these 4 projects are irrigation projects, that are directly linked to water resources. Other projects like social forestry, sericulture and cashew development impinge on available water resources.

Propagation of mono culture plantations under social forestry has affected the water table in arid zone. Similarly cultivation of mulbery for sericulture, has affected water resources. Thus, every development programme puts increased demand for water. But, we have not taken care of protecting the sources that provide us water resources.

The drying up of streams, tank beds is more due to destabilisation of hydrological stability of catchments. For instance in Kodagu district, Karnataka even with an annual rainfall of 3000 ^{mm} cms, people face acute shortage of drinking water in some areas. This is due to destruction of vegetational cover, that has increased the water run off, destabilising the hydrological cycle of percolation of underground water reserves. The acute power shortage in Kerala due to shortage of water is also the direct result of destruction of hydrological cycle, by reducing natural forest cover to seven percent. In tropical regions like India, with a seasonal rainfall for four months, destabilisation of catchments has accelerated the problem of water scarcity. Thus we have floods and droughts every year.

With present development programmes of industrialisation and urbanisation, the requirement of water will increase three times in the year 2025, compared to requirement in 1975. But the first water policy has not framed any practical guidelines to meet this increased requirement. This can be met, not by centralised massive water storage projects. Water resources management has to be at decentralised level. People like Salunke have evolved the concept of PANI PANCHAYAT, to manage water at village level. In order to mitigate impending water crisis we have no other alternative, but to evolve decentralised water management strategies. This will provide the practical solution towards sustainable availability of water.

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