

CONFLICTS OVER NATURAL RESOURCES
IN NORTH KANARA

Further details of work to be done during September - November 1983 by Pandurang G. Hegde.

September 05-30: Case of the Caustic Soda Factory in Binaga

Binaga is a small village off the town of Karwar, head-quarter of North Kanara district of Karnataka state. It is a coastal village and it was, so far, predominantly a fishing village. It is, thus, important to trace the economic history of the village for the last 50-100 years to put the current changes in proper ^{historical} perspective. The historical study will aim at understanding the material standard of living, its phases of change, impact of independence in 1947, impact of the various development programmes on the social organisation and material prosperity of the fishing community.

In the last few years the economy and ecology of the coast around Karwar has been undergoing quick changes as a result of the starting of a caustic soda factory, whose effluents, as is reported, are leading to the destruction of marine ecology over a large ^{part of the} coastline. The study will try to bring out, in quantitative terms, the economic impact of the caustic soda factory on the economy of the area. Special attention will be given to the impact on the fishing community. Separate estimates will be made for the traditional and the mechanised fishing groups. The loss of human knowledge as a result of destruction of the ecology of the fishing areas will be attempted to be understood.

The destruction of the ecology has led to organised movements of the local people. The nature of the movement will be analysed. Data on the following items will be collected:

A The Technology used in the Caustic Soda Factory
The nature of pollution

The productivity of the factory and employment-

The loss of productivity and employment in fishing

Possible Analysis of effluents & Polluted water

History of fishing - Impact of Mechanisation

Decline of fish catch for both traditional and mechanised boats.

Impact of the factory on local politics.

History of the conflict and beginning of agitation.

The natural resource used by the factory:

where did land come from

How do they get water?

Has any significant air pollution taken place?

Dear Pandurang,

I fell ill since I got wet in rain. I am trying to send you the other part soon. It will be good if you can come here at the end of Binaga study so that the Supa-Bedthi programme can be discussed and we can know of your experiences in Karwar. Please send me your account no in Bank.

Best wishes,

Jayanta

CONFLICT OVER NATURAL RESOURCES IN UTTARA KANNADA.

1.00 Historical Background.

1.01 The British took over this part of country in 1801. The East India company took this keeping an eye on the natural tropical forests, which produced huge quantities of Pepper. This area ~~is~~ was popularly known as 'Pepper Queen'. Pepper grew in midst of thick evergreen forests. The country was prosperous. They exported huge quantities of Pepper and other species to other countries.

1.02 Politically the East India Company managed this area from Madras. As East India Company was taken over by British Govt, the importance of Bombay as a centre of trade and commerce increased. In 1861 the administrative headquarter of Konara was transferred to Bombay Presidency. There was increasing demand of raw materials from forest to meet the needs of evergrowing industries. This, in addition to the nearer to coast was the main reason for handing over the administrative charge to Bombay.

1.03 With an imperialistic attitude the British government wanted this whole track of western Ghat to serve as a hinterland to meet the demands of European market. The valuable teak and rosewood was the main attraction. This was exported to Britain. The management of forests to meet the needs of industry started in this period.

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1.04 The conflict over natural resources started long back in 1830's. The Canara Gazetteer of 1884 mentions about 'ROYTA KOOTAS' (Royta Meet) of 1831-1837. This revolt was crushed by using British Army. We do not have enough evidence to prove the main cause of this revolt. However we can assume, it may have been due to curbing of peoples right over natural resources.

1.05 Again in 1930's 'Jungle Satyagraha' began in this area as a response to rigid rules of Britishers which prohibited people and also their cattle from entering Reserved forest. People succeeded in getting back some rights under the word 'PRIVILEGES'.

2.00. Scientific Management of Forests:-

2.01 It was during the British rule that they framed policies to manage these forests scientifically. To be frank, these Britishers hardly knew anything about the management of Tropical Forests. They had least knowledge and scientific understanding. Their main intention was to grow, to replace the original mixed forests with commercially valuable TEAK. The Forest Working Plans are example of this one sided approach.

2.02 Even after the independence the people in charge of managing forests continued the same insane policies followed by British. The examples of can be seen in the objectives of Working Plan for

(3)

Joida and Supa Forests of Konara North Div. (By Havnkinve) and the Working plan of Yellapur written by Wesley. All of these documents spill out the objectives of replacing the present stock of wood with those having commercial value. Thus the whole basis of this district was undermined. There was rarely any mention of forests and its relationship to agriculture and people.

2.03 Even upto this day the same kind of Working Plan is under execution which totally supports industry rather than agriculture. Mixed forests are clearfelled to make way for Teak and other commercially valuable monoculture.

3.00 Effect of Scientific Management of Forests.

3.01 The disturbance of this tropical evergreen forests by imperialist British rulers and then by native imperialist elites has reduced this forests to a patch of deciduous forest. The large scale removal of mixed forests has had adverse affects. The rainfall pattern changed, the weather became erratic causing great damage to people. The nature was affected a lot due to this intervention.

3.02 The wild life disappeared causing a great imbalance. Wild pigs increased in huge quantities. Elephants and Bisons to and many animals totally disappeared.

3.03 The effect on agriculture was beyond repair. These monoculture plantation of Teak and Eucalyptus dried up perennial water sources. As a result the yield of agricultural produce started decreasing. There were new diseases due to pests and the Pepper cultivated in gardens totally wiped out. The bonnana and cardamom also was wiped out. Thus the whole multi-tined system of cropping was shattered. The honey bearing trees were cut down for industrial need. With this even the herbs and trees with medicinal value disappeared. There is a shortage of green leaves for manure and fodder for cattle is difficult to find.

4.00 Present revolt - APPIKO CHALUVALI
(CHIPKO) (Movement)

4.01 With above mentioned background the people revolted against the so called 'Scientific Management of Forests' which shattered peoples life style. This is the main reason for a quick communication of APPIKO to seven areas within a short span of three months (Sept to Dec).

4.02 People are demanding total change in forest policy. They demand "Forestry should be in support of Agriculture". To attain this they are demanding total ban on green felling for commercial purposes. They ~~say~~ - are requesting to meet the present demands through dead and dry trees in the forest.

(5)

4.03 The Political set up and the technical expertise was supporting this kind of Scientific management which supported industry. Now the peoples awareness has sent shivers through their bone. They are trying to crush this movement through using political leverage and police. The so called 'Science and Technology' is behind elite group. They are working against peoples interests.

09.12.1983

- Pandurang.

(This report is a short one - we can write an analytical report in future. ~~But~~ Because of the present movement I am not in a position to give more time to writing work.)

STUDY OF CONFLICT OVER NATURAL RESOURCES

Plan of work in North Kanara Dist.

(August 01 - ~~October~~^{November} 30, 1933)

A. Conflict Over Dams

The hilly district of North Kanara in Karnataka has been one of the richest districts in terms of natural resources. Abundant rainfall feeds the innumerable perennial rivers providing irrigation to the agricultural belts scattered in dense forest areas. In view of the water potential as well as the structure of the hilly terrain, large scale construction of dams, primarily for power generation to satisfy the needs of the growing industrial sector, has been taken up in the district. The construction of the dams obviously was accompanied by the submersion of large part of the valleys and lower areas on the slopes where human settlements and agro-pastoral economy had flourished through centuries. The plans for the construction of the dams, were, opposed tooth and nail by the local inhabitants.

The Supa Dam on river Kali went ahead inspite of strong local opposition but Bedthi Dam on river Gangavati has been frozen. The study will develop the history of the evolution of local opposition to these movements, identify the characters of the movements and their respective strengths and weaknesses, and make an attempt to bring out the reasons under which the dam at Supa was not stopped whereas it was stopped in Bedthi.

B. Conflict Over Water Pollution

The town of Karwar, the headquarter of the district of N.Kanara has been a traditional centre for marine fishing. In the last 5 years a caustic soda factory has come up. It has been supported in the name of industrial growth of the backward district though the factory is owned by the monopoly house of Thapars.

The effluents of the factory was being let out directly into the Arabian sea for the last 4 years. Though inland waters have been covered by anti-pollution acts, there is no clear control on dumping of effluents in the sea. The factory is reported to have claimed that the effluents are being thrown outside the 2.5 km limit which is covered as inland water.

The fishing community around Karwar has been voicing their dissatisfaction about the establishment of the factory for years. Their fish catch has dwindled and while the more mobile mechanised boats could move out to better waters, thousands of traditional fishermen are stuck.

The study will go into the history of the fishing activity and trade over the last 10 years and identify social, economic and ecological impact of the pollution of the sea water on the fishermen, both traditional and mechanised. It will further analyse the pattern and extent of the resistance movement and find out how the local establishment is combating it.

The study will be undertaken by Pandurang Hegde.

Period of study : August 01 - ^{November}~~October~~ 30, 1983

Budget

Salary of Pandurang Hegde	Rs.4800
Rent for office space	Rs.1200
Incidental and travel	Rs.2000
	<hr/>
Total	Rs.8000
	<hr/>

Anti-Steel
16
FORWARD

Protecting tropical forests - conserving what with whom?

That tropical forests need saving is no longer a debate. Local communities have been saying this for decades and have ~~even~~ been willing to sacrifice their lives to save these forests, as in the case of Chipko and Appiko. Now non-local groups also have a new interest in saving the tropical forests of the Third World either because they are a treasure-chest of biodiversity and hold the genetic resources for food and drugs, or because they can act as sinks for the carbon dioxide that has accumulated in the atmosphere due to overconsumption of fossil fuels. In fact, both international treaties that were the most concrete achievement of the Earth Summit in Rio, the Biodiversity Convention and the Climate Change Convention, imply that tropical forest conservation is an important part of the solution.

While older conflicts over forest resources used to be between conservation and exploitation, current conflicts are between different models of conservation. For local communities, forests need to be conserved to provide ecological stability for local ecosystems and to provide resources necessary for the survival of local people.^f For non-local interest groups, tropical forests need to be conserved to serve as mines raw material and sinks for pollution.

Associated with different conservation objectives are different concepts and understanding of participation. Conservation, it is now recognised, cannot be a matter of policing; it must be based on participation. But preferred partnership models differ for local communities and national and global agencies. From the heart of a region of India where local people have been engaged in struggles to protect their forests and their rights for more than a century,

including the 'forest satyagrahas' of the 1930s and the more recent Appko movement, we now get a timely publication that raises a debate about 'which conservation? which partnership?'

As the report indicates the old enclosure of the commons that was achieved by forest reservations is being deepened by a new enclosures of the commons to be achieved by zonation. It is infact this exclusion of local communities from forest use and management that is shrouded by their inclusion in the management of Zone IV which constitutes a mere 1% of the entire forest area . The exposure of this farce of participation is the focus of this report, in order to ensure that authentic policies that ensure people's real participation are evolved.

Ecology & Politics &
Survival

Sage

U'Kannada

The United Nations University's Programme on Peace and Global Transformation was a major world-wide project whose purpose was to develop new insights about the interlinkages between questions of peace, conflict resolution, and the process of transformation. The research in this project, under six major themes, was coordinated by a 12-member core group in different regions of the world: East Asia, South-East Asia (including the Pacific), South Asia, the Arab region, Africa, Western Europe, Eastern Europe, North America, and Latin America. The themes covered were: Conflicts over Natural Resources; Security, Vulnerability and Violence; Human Rights and Cultural Survival in a Changing Pluralistic World; The Role of Science and Technology in Peace and Transformation; The Role of the State in Peace and Global Transformation; and Global Economic Crisis. The project also included a special project on Peace and Regional Security.

ECOLOGY AND THE POLITICS OF SURVIVAL

Conflicts Over Natural Resources in India

VANDANA SHIVA

in association with

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United Nations University Press



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SHIVA REPLIES

Sir,

A news item entitled "Shiva's nomination resented" in your paper of 16.7.90 on page 5 has shocked and disappointed me. Since then, much to my sadness, I have come to know that the false and fabricated information^{of the news} was provided by none other than my estranged husband Dr. J. Bandyopadhyay, from whom I have been separated for the past two years. I feel pained that Dr. Bandyopadhyay should need to carry out personal jealousy of the recognition of my work in recent years to public platforms in this degraded manner.

I would, with this letter like to clarify certain points in your news item. Firstly, the nomination to the Doon Valley Board came while I was away in the U.S. as a visiting Professor where I have been also offered a chair on Ecology on the basis on my decade long contributions to ecology and the worldwide publication and acclaim of my book "Staying

Alive" on Ecology and Feminism which has already been translated into four languages - (German, Italian, Danish, Norwegian).

Worldwide my contributions have been acknowledged and recognised as original and pathbreaking in deepening the struggle of women who have to sustain society inspite of all kinds of personal and societal oppression. The glaring example of the struggle in my own life against a sexist husband is one aspect of this. In all areas where I have gained recognition, it is through making intellectual breakthroughs.

A person's professional reputation, if based on borrowed work, collapses as quickly as it has been built up. If it is sustained over a life time and across platforms, it is proof of creativity and originality, which is tested repeatedly in all kinds of platforms through writing, speaking and debate. Professional work like research and writing is evaluated on the basis of systematic

review by peer groups, not by the gossip of disgruntled individuals. Dr. Bandyopadhyay's frustration probably lies in the fact that since we parted as a team, he has been unable to make any original contribution on his own, and is being driven by malice and jealousy to sneakily try and damage my reputation. Unlike what he suggests, I have never needed to run to the environment ministry for favours. If Dr. Bandyopadhyay has given "proof" of my visits to the Ministry while I was teaching in the U.S., those proofs must have been fabricated.

I am also unhappy about the insinuations about my family by Dr. Bandyopadhyay out of sheer profession jealousy. The only organisation in Dehradun I have ever been involved with was jointly started by Dr. Bandyopadhyay and me and has been dissolved when we separated. The INTACH Garhwal Chapter was exclusively run by him, as was a Garhwal study financed by the Department of Environment and

roured through Centre for Studies on Developing Societies in Delhi, which was never completed. Due to incomple tion of the study and non-submission of accounts by Dr. Bandyopadhyay inspite of repeated reminders from the department of environment, the Department blacklisted Dr. Bandyopadhyay. I have neither participated in these projects, nor do I have any financial responsibility for them.

Since 1987, Dr. Bandyopadhyay is working in ICIMOD, Kathmandu. In early 1989 when Mr. Sethan was Secretary, Environment and Member of ICIMOD Board, the activities of ICIMOD staff were banned in India. Maybe, a CBI enquiry is needed to find out the exact status of Dr. Bandyopadhyay's activities in Garhwal.

Yours etc.

Vandana Shiva

105, Rajpur Road

Dehra Dun

Dated: July 18, 1990

3. Forest Conflicts in Uttara Kannada and the Appiko Movement

3.1 Pepper Queen to Timber Mine

Uttara Kannada is situated amidst hilly tracts of Western Ghats. Though very little is known about historical facts, we can authoritatively claim the importance of the country in foreign trade. As early as the beginning of Christian era, the Arabs and Europeans came to the Coast of Uttara Kannada to trade in spices. The country was known for its high quality Pepper. Thus the outsiders identified the area as "PEPPER QUEEN".* In addition to spices, the rich forests provided raw material for ship-building activity.

The hills were covered with evergreen forests. These tropical evergreen forests provided the micro-climatic factors for the growth of spices. The famous 'black-pepper' grew wild in forests. The pepper-vines climbed high trees and the dense forest provided shade. The tropical weather gave the humid conditions essential for the growth of pepper vine. The whole region was under the rule of Vijayanagar till 1565. After the decay of Vijayanagar kingdom, local Chieftans ruled till 1763. Thereafter Hyder Ali and Tippu Sultan ruled it in till 1799. The English people had already established their base in the coastal area of Karwar and Honnavar in 1638 and 1675. Though they came as traders, the natural resources and the fluid political situation provided them enough opportunity to conquer it from Tippu in 1779.

Dr. Francis Buchanan was deputed in 1801 to travel this country and report on it "for the express purpose of investigating the state of agriculture, arts, commerce; the religion, manners and customs-----". Accordingly, Dr. Buchanan travelled this area and his report is the reference point regarding various matters. While studying the condition of forests he noted "The forests are the property of the gods of villages in which they are situated, and the trees ought not to be cut without having obtained leave from Gauda, or the headman of the village, whose office is heridi-

* Pepper had a critical role in the struggle between the Dutch and English for exclusive possession of the rich monopoly of Oriental commerce. It was the grasping policy of the Dutch merchants in raising the price of pepper from 3 to 6 and 8 shillings per pound (the cost in India being 2 to 3 pence) which actually led to the formation of the British East India Company.

tary, and who here also is priest (Pujari) to the temple of the village god. The idol receives nothing for granting this permission; but the neglect of the ceremony of asking his leave brings his vengeance on guilty person." This shows the concept of community ownership over natural resources-like forest etc., mediated through worship and concepts of sacredness. By the beginning of 1800, Bombay was becoming the centre of British activity. The colonial powers wanted to exploit the natural resources of Western Ghats to build ships and to send them to England. The community ownership of natural resources proved a hurdle. So in Uttara Kannada, then North Canara, they decided to take over ownership of forest in 1830. North Canara was then managed from Madras, under Madras Presidency. Their effort to take control of community owned forest led to passive resistance popularly known as 'Raita Koota' (farmers or peasants meet) which continued from 1831 to 1837. Eventually this opposition was crushed with the use of Army. Realising the problem of administering this part of the country, Canara was transferred to Bombay Presidency in 1865.

Bombay was getting industrialised and there was excessive demand for fuelwood and timber. The Marathas and Britishers had already used up the timber wealth of Konkan and Ratnagiri. So they started moving towards North Canara or Uttara Kannada. This part of the country, rich in forest wealth, proved to be a good hinterland to meet the demands of Bombay.

In 1867 Forest Department Laws were passed or enacted and the commercialisation of Natural resources began. The century old sustained-self reliant economy came under threat. The forests were looked upon as a source of raw materials to provide timber to centers like Bombay and London. Clearfelling of mixed forests and raising mono-culture teak plantations began. Simultaneously Eucalyptus was attempted as far back as 1880's.

The British Forest Officers started objecting to people-

utilising green manure for agriculture. Taking of dry leaves and grazing was reported to be harmful to forests. Their sole interest was to get maximum revenue from forest discarding its sustained produce of water and support to agriculture. "Pepper" which grew wild in forest started disappearing as the micro-climate changed due to logging operations. Those who suffered most were the local agriculturists. They were unable to carry on cultivation as the interlinking of forest and people was threatened. In 1885 the farmers of Sirsi and Yellapur taluka appealed to the Governor, Bombay Presidency, emphasising the ancient right of people to collect forest products like fuel, fodder and dry-leaves for agricultural activities.

The people's struggle continued till 1924, when Collins the then Settlement officer, submitted a report. Accordingly, each spice garden of one acre was allotted 9 acres of forest land to meet the demand of dryleaves, green leaves and fuelwood. The legal owner of this land was Forest Department. This specific concession is known as "BETTA" facility in Uttara Kannada.

3.2 Local Utilisation of Forest Resources

North Canara or Uttara Kannada district has abundant natural resources. The valleys in midst of hills provided ample scope for agricultural activity. Pepper grew wild, and the betel nut or areca came from Malaya Islands. The local people cultivated Paddy and Areca in these valleys surrounded by thick evergreen forest. The perennial streams irrigated the cereal crop during summer. Sugarcane and cotton was also cultivated according to need. Animal husbandry was an integral part of the household, as fodder was available in plenty. The district has never suffered from a serious drought in the past. The forests of these districts were opened up for cattle and people during severe famine conditions in neighbouring Dharwad district.

The role of forests in the hill economy of Uttara Kanhada

is obvious. First of all they intercepted the monsoon winds, and with their humidity, acted as a catalyst for precipitation. Because of these forests, the district never suffered from total failure of rainfall. The rainfall starting in late June continued till October and it was evenly spread during this season. This was the basis for successful agricultural operations and high yield. The forests retained rain water to be discharged through springs in summer. The rich wildlife never threatened the crops as they were kept in natural balance.

The local people depend on forests for various things. From June to September, in monsoon months, the usual practice is to fetch green leaves from the forest and spread them in the cattle shed. As there is enough of fresh grass-during rainy season the green leaves are not used for fodder. These green leaves with twigs get mixed up with cow-dung and urine. Everyday this mixture is removed and put in a compost pit. All kinds of trees are out during rainy season. But preference is towards Matti (*Terminalia alata*) and Jamba (*Mimosa xylocarpon*). The farmer is very cautious while bringing the green leaves. In Betta land, the unwanted undergrowth of shrubs is cut without harming young trees. Trees are systematically pruned leaving a good stem to come up. There was an established social rule followed : (1) They never lopped the branches of tree in rainy season (the seepage of water through branches kills the tree). (2) While taking green leaves systematic pruning was done, the budding stem of an young sapling was never cut down. There was a social/community pressure against breaking this established procedure. People breaking the role were punished.

However this procedure totally broke down as the owner and his successors stopped doing physical work. He took to supervising role and employed labourers. The labourers employed for procuring green leaves are migrants from coastal areas. They do not have a permanent interest or expertise in preservation of trees. They are also alienated from local practise. This has led to irrational

use of forest. This process of accelerated strain or pressure on a patch of land resulted in degradation of tree cover and tree growth.

At the same time the government Forest Policy allowed felling of trees for plywood Industries. Forest based industries mushroomed in Uttara Kannada, including a huge paper mill. Large tracts of land was clearfelled to plant Eucalyptus and teak. All these had a severe effect on availability of forest produce to farmers.

Quantity of green leaves procured by people depends on the quantity of landholdings. One acre of areca or spice garden needs 200 headload of greenleaves per annum weighing about 30-40 Kg. each. These leaves are mixed with cowdung and rainwater and allowed to decompose. This produces a high quality organic manure. This is an age old practice and the farmers depend on organic manure for cultivation.

A variety of plants and herbs of medicinal value is found in the forest. For veterinary purposes - the forest is a rich resource to get medicines for various diseases. There is a local tree - Gulmau (*Machlus Macrantha*) whose bark is used to join the fractured bones. Rampatree (*Anona Rebiculata*) is another tree with high medicinal quality. The forest also has a tree providing edible seed - from which vegetable ghee is manufactured locally. It is known as Uppage (*Garcinia Cambogia*).

3.3 Forests and Agriculture

Broadly speaking there are two major areas which generate employment in Uttara Kannada. The first is of course agriculture, the second forestry. Agriculture can again be divided into categories (a) horticulture, spice garden (b) Paddy cultivation.

(a) Areca/Spices Garden :

This is the most important cash crop in Sirsi, Siddapur

and Yellapur talukas of Uttara Kannada district. After selecting a valley with a spring the area is levelled and for initial year bannana saplings are planted. The initial work, especially earthwork, generates employment. The local supply of labour force is always insufficient. So the labourers are brought from coastal areas during winter and summer months. The initial establishment of one acre of areca/spice garden generates 300 mandays of employment costing Rs. 4000/- towards wages (in 1984). The average recurring expenditure on the same one acre plot comes to around 250 man days per year, (there are 10,000 acres of spice gardens in Sirsi taluka alone) costing around Rs. 3500/- per year. The break up of this recurring expenditure is as follows :-

Description of work	Man days	Amount
Fresh-Soil-Earth work (once in a yr)	120	2,000-
Manuring	25	300
Lopping in Betta land	25	300
Harvesting areca/spices	8	200
Drying, Boiling etc.	10	100
Spraying pesticides on areca	8	200
Pruning Green leaves	30	500
Weeding	20	150

Total 246 Man days Rs. 3750/-

This is an average figure and the generation of employment may vary from place to place according to the nature of land and availability of labour near the village.

(b) Paddy cultivation

The initial establishment cost is mainly on earth work land levelling the ground. The employment generated is about 150 man days of employment costing Rs. 1500/-. The recurring expenditure and man days of employment generated every year is as follows :-

Description of work	Man days	Amount (Rs.)
Ploughing	4	100
Levelling	2	30
Ploughing (Second time)	5	125
Levelling (Second time)	2	30
Sowing	4	100
Weeding	3	75
Other	2	20
Weeding	4	40
Harvesting	6	60
Preparing Paddy-Crushing etc.	5	125
Green Leaves for Manure	20	200
<hr/>		
Total	Man days 57	Rs. 905

Thus for paddy cultivation the employment generated per acre of land per year is around 57 man days. In addition to this, casual labour is employed in the house all through the year.

The forest based employment is mainly through collection of Minor Forest Products, such as Honey, Wax, Soapnut, edible seed etc. The collection of the edible seed, Uppage gives employment to those situated in the midst of forest. In siru Forest Division alone it provides employment during rainy season for 20-25 days for 5000 people.

3.4 Agroforestry Systems

Spice garden-cultivation is the speciality of hilly regions in Uttara Kannada. As early as 9th Century A.D. the inhabitants started cultivating pepper, areca, bannana and cardomom. These farming families have acquired a special agricultural skill in raising, and managing these spice-gardens. New space gardens are established after levelling the ground. Beds of 20 feet wide are formed by drains which are parallel to each other. These drains carry excess of moisture during rainy season. In the first year banana saplings

are planted at a distance of 12 feet from each other in the beds, 2 feet away from the drainage channels. When these banana trees grow a year old, they are able to provide shade to young areca saplings. The entire bed is covered with dry and green leaves before the monsoon to control weeds. This also prevents the leaching of nutrients from the soil with erosion of topsoil during heavy rainy months.

During the second year, areca saplings are planted at a distance of 16 feet in a triangular shape. This distance of 16 feet ensures enough sunlight to each individual tree. It also provides opportunity to plant young saplings in coming twenty years time. This kind of planning is resorted to get a sustained yield and proper utilisation of sunlight. The idea is to grow three tiered vegetation in the garden. The first canopy consists of matured trees (40-50 yrs old), second canopy of maturing tree (15-20 years age) and third canopy of young saplings and trees. The old trees are replaced by maturing trees and the cycle continues, providing a systematic sustained yield of areca yield every year.

The spice garden has banana, cardamom and black pepper as intercrop. Each one of these crops has its own advantage and they contribute to healthy growth of spice garden.

The banana tree acts as an weed controlling agent. It has a wide canopy which intercepts the furious velocity of rainfall. Thus it protects soil from erosion. Banana helps to retain enough moisture during dry summer months. During early formation of spice garden, it gives shade to young areca saplings. In addition to all these ecological merits, it gives a regular yield of fruit in a short span of time, helping the owner to get a regular income at specific short intervals. Thus it is a regular source of revenue throughout the year, whereas cardamom, pepper and areca are yearly crops. The root system of this tree does not interfere with areca or other intercrops. Cardamom is planted near the drains in between two areca trees. It requires coolness and shade as well

as moisture. In the spice garden the first canopy of areca trees and second canopy of banana leaves creates an ideal micro climate for the growth of cardomom. The root system does not go deep and it is just on/above the ground, so it hardly competes with other crops.

When the areca trees are maturing, and are around 13-15 years of age, the pepper vine is planted near the areca tree. The pepper vine climbs the tall areca tree and as the tree is strong, the harvesting of pepper is easier. The root of pepper spreads wide on the ground without competing with other crops. These mixed crops were given organic manure and green, dry leaves. Manuring is done in alternative years. After giving organic manure the leaves, (green) procured from betta land are covered over the manure. This acts as mulch and moisture is retained. Dry leaves are spread throughout the garden which act as weed controllers and also help in humus formation. To control 'Kole-Roga' - a virus disease of areca - the dry leaves and grass are tied to the small raw areca before monsoon.

In last 10-15 years modern methods of cultivation have been introduced, discarding the traditional knowledge. The areca saplings in new spice garden are planted at a distance of 8 feet in a triangular shape. Every plant is given chemical fertilizer every year. This is to get QUICK yield. ~~The yield starts coming from~~ 7th year. There are no stages or canopies of areca trees. The maturing starts all of a sudden. There is no scope for introducing young saplings as sunlight is not available to young trees. The sustained yield is also affected as in initial years there is good yield but gradually it (reduces) decreases.

A rare and unknown virus disease has wiped out banana trees from this area. Cocoa trees were suggested as alternatives to banana. Thus many people shifted to cocoa cultivation in place of banana. But this exotic species has many demerits, hindering the growth of the mixed crop of spice garden. The root system

goes deeper and it consumes more water. So instead of keeping the moisture level intact (as in case of banana) cocoa dries up the moisture and coolness in spice garden. The root system competes with the root system of areca. The cocoa fruit has natural enemies is vulnerable to pest attacks so it is difficult to protect it. The other problem is that of marketing. It cannot be consumed locally, so many farmers are uprooting cocoa trees from spice garden.

The owner/labour equation has gone and owners have become manager cum supervisor, without the knowledge of practical skills. As family members started to look down on physical work as menial, labourers had to be employed to do the agricultural work. This migration of labour from coastal area has upset the man/land balance. Earlier they came for specific-period and specific tasks. Now they started settling down according to changed circumstances. As the labourers started settling down, they kept cattle and the demand for fuelwood, fodder, increased. With the general increase in population - they exerted greater pressure on limited forest resources. The traditional cultural barriers broke, and lopping of trees in rains started without regard for regeneration. The immigration of labourers, who settled down permanently tilted the natural balance in resource utilisation. The educated sons of landowners never wanted to work, and the demand for labour increased.

With the introduction of 'modern agricultural' pesticides in the early seventies, the use of chemical fertilisers and fertisers spread. The farmers were taken for training to show how necessary it is to use these modern methods. The stage has come today when it is generally accepted that people who use these modern methods are 'progressive' and those who depend on organic farming are termed as 'backward'.

According to historical facts the conflict over forest resources in Uttara Kannada started as far back as in 1831. The

community control over forests was destroyed and the interest of local inhabitants ignored in totality. The commercial interests of British in getting timber became more important. In order to prove that the forests are for timber alone, they tried to cut the linkage of people and forests. They claimed that the lopping of green leaves damages the trees which would provide good timber. Again they started raising objections to taking dry leaves. For the first time the grazing of cattle was questioned by Britishers and it was termed as harmful to the growth of forest. The struggle of people over forest policy started with people declaring that it is their right to get the necessary green leaves, and to graze cattle in forests.

However the British Rulers arrived at a compromise formula to tackle this issue. In 1924 the Collins' Report was submitted, which allowed granting of Betta to farmers. One acre of spice garden was allotted 9 acres of betta forest. The ownership of Betta land was to be with Forest Department. The farmers were allowed to take green leaves, twigs for fuelwood and dry leaves. They were not allowed to cut any trees. The forest near to or adjacent to spice garden was allotted as betta land. This was a very clever move on the part of Britishers to give a sort of concession to pacify local farmers. In fact this concession put a restriction on utilisation of forest produce, which was unlimited according to earlier practice. British Forest policy created Minor Forests for the use of local people and major part was declared as Reserve Forests to earn revenue through timber. This categorisation totally ignored interlinking of forest and people. The commercial interest dominated over the survival issue. The local people suffered most due to this classification. The cattle was prohibited from entering the Reserve Forest area. The conflict led to a revolt by local people. 'Jungle Satyagraha' was launched in 1931 in a wide spectrum of villagers in Sirsi, Siddapur and Yellapur talukas. The demand of people was 'Forestry in support of Agriculture'. This movement gained momentum and ultimately culminated in the Independence

struggle.

Even after the Independence the situation did not change. Two major large scale forest based industries of plywood and paper were established. The government accelerated the logging operations to earn revenue. Large tracts of natural forest was clearfelled to plant teak and Eucalyptus mono culture plantations. Thus the colonial, commercial minded Forest Policy continued at a faster rate. The demands of Industry was given first priority and the local farmers need to maintain forests for sustained basis of agriculture was discarded.

With increase in population, the new forest areas were cleared for cultivation. The area under spice-garden almost doubled and the Betta land- to supply green leaves, dry leaves - remained constant. The pressure on limited amount of Minor Forest increased manifold rendering it totally bereft of vegetation. The Reserve Forests were converted into timber fields to produce teak and Eucalyptus. This conflicting demand on natural resources increased the difficulties of farmers. The ecological damage started showing its results on yield. The abundant natural forest resource became scanty. There was simultaneous change in micro-climate affecting spice-gardens and agriculture operations. The Evergreen forest of this area changed its character to semi-evergreen, deciduous and lastly to shrub forest. The over-exploitation led to erratic rainfall. The environmental affects of misutilising the natural resource started showing results in late seventies, when the natural springs dried up, pepper was wiped out due to an unknown virus disease, and also the banana, cardomom, areca and paddy crop were affected. These were never taken seriously and the deforestation continued unabated. This accelerated the conflict of utilisation of Forest for industry and for commercial purpose with that of local agriculture. This conflict led to launching of Chipko (Appiko Chaluvali) movement in Uttara Kannada .

Every attempt was made to deny the conflicting interests by Forest officials. They maintained that the logging operations were made according to scientific principles laid down in working plans. In case of Appiko, specific blame was put on farmers for depleting Forest due to their cattle and agricultural operations. They also pointed out that the management of Betta land and Minor-Forest was not scientific, and this is the major cause of soil erosion. In order to create confusion, they stated that the people from cities, and towns will invade the forests of Uttara Kannada to fetch fuelwood. This was done to conceal the real nature of conflict and to show that Appiko is against the town and city dwellers.

It is interesting to note that the forest cover in Uttara Kannada came down to 20% in 1982-83 as compared to 81% in 1952. This drastic depletion of forest resource is mainly due to deforestation to meet industrial demand and submergence of huge forest areas by dams for Hydro-electric generation. The scarce forest resource has to survive the threats from increasing demands of industry and commercialisation of logging operations to earn revenues. The revenue earned by forests of Uttara Kannada is 50% of the total forest revenue of Karnataka (21 crore ruppees).

3.5 APPIKO CHALUVALI - Towards a resolution of conflicts

As we have seen in the previous analysis, the eco-degradation in Uttara Kannada is an intermix of host of complex issues released since last 200 years. To resolve the ensuing conflict over forest resources, it is necessary to understand the (previous) background leading to an ecological crisis. Appiko has tried to take up some of the issues and is attempting to evolve a people's alternative to them.

The first attempt made by Appiko activists is to organise local villagers to stop commercial felling of trees, especially green trees for timber to plywood companies or industries. The people were also organised to save clearfelling of natural mixed forest