CHAPTER – VI
THE DANGS FOREST

Forest in the Dangs is a huge oxygen bank in the region. The industrial belt of south Gujarat maintains its environmental balance due to the Dangs forests. The forests, like water, agricultural crops, and other natural resources are the backbone of the Dangs socio-economic system. The socio-economic factors in the Dangs are interrelated with both natural and the biotic factors. They include population density, infrastructure, demand & supply, labour, capital, accessibility of resources and the technology. The government’s financial support and necessary reforms, however, are equally vital for the development of the Dangs. Sustainable development is a viable option to offer developmental activities without disturbing the natural surroundings or the ecosystem of the Dangs forest. The forest as the ‘Marginal lands,’ which is classified by the “Man & Biodiversity” program of UNESCO, show that hundreds of million hectors of forests are located on marginal lands. Due to unfavourable location or economic inaccessibility, they are not properly managed or occupied by other forms of land use like agriculture, pasture, settlements or roads.

The forests have constantly remained an easy target of exploitation of resources by people with utilitarian view point. They are either greedy businessmen or the helpless or deprived, suffering dire poverty. As a result, such people indulge all kinds of dishonest means with profiteering motives. They do harm to health and integrity of forests. The forests are a good store of natural resources that keeps the richness of forests if they are utilized adequately. But in reality it speaks a different story. So the time demands that these scarce resources must be protected from illicit cuttings and unauthorised cultivation. In spite of strict vigilance of the forest department, illicit cuttings still continues in the Dangs forests. Therefore, the cutting of forests by the subversive elements needs to be restricted. The quality of forests and the product-mix need to be improved. Such efforts will certainly help the poor, especially tribals. The period from 1970 to 1986 and that of 1995-96 remaining the periods of plantation forestry in the Dangs forests. The ban was laid on green trees cutting in the Dangs from 1986 to 1990.
Further the concept of the joint forest management began since 1990s. This has affected improvement in the forest cover. Over grazing by cattle and illicit cutting, and to prevent unauthorized cultivation and religious and cultural functions and some such harmful activities must be put to a stop to prevent degradation of the forest.

Gujarat can justifiably be proud of its Dangs forests. In the past these forests were much exploited and condemned for the British asseration to supply large scale teak timber to Her Majesty’s Navy and the armed forces. In the 18 the century the timber merchants from Surat too exploited the Dangs forest on a very large scale.

The below given data explains the status of forest in the Dangs district

**The Forest cover of India, Gujarat & Dangs in 2002**

<table>
<thead>
<tr>
<th>Forest cover in India</th>
<th>Forest cover in Gujarat</th>
<th>Forest cover of Dangs</th>
<th>Total forest of Dangs sq.kms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.44</td>
<td>10.78</td>
<td>2.63</td>
<td>1187.02</td>
</tr>
</tbody>
</table>

(Source: FSI report, GOI) (Table 6.1)

In 2002 the total forest cover in the Dangs was 5.56 % covering some 1187.02 sq kims of the forest area. **Protected areas in the district 821.89 Sq. km** of which the North Dangs has 425.97 Sq. km of the protected forests and the South Dangs has 395.92 Sq. km of the protected forests. The Reserved forests cover 502.12 Sq. km in the North and 363.83 Sq. km in the South Dangs. **The total of the Reserved forest is 865.9528 Sq. km of area.** The Reserved forests are mostly relegated to larger and difficult hills with a cover of poor reddish to gray soil, while the protected forests occupy on gentle slop of hillocks,
Ahwa, Waghai and some area of Saputara declared as protected forest vide notification no. MSC/4064 - A, dated 3rd January 1963 under Section 29 of Indian Forest Act.

MAP - 21

Ahwa, Waghai and some area of Saputara declared as protected forest vide notification no. MSC/4064 - A, dated 3rd January 1963 under Section 29 of Indian Forest Act.
The Protected forest have been subjected to intermittent and rotational cultivation which is not generally allowed in the Reserved forest. However, some area in the Reserved forest spread over in many compartments were leased out for cultivation in different years under special circumstances.

plateau and flatter and undulating low lying areas generally containing richer and deeper soil. The teak is of different kind of wood based on certain geographical factors. The table 6.2 below presents the details.

Geographical conditions for the growth of Teak & other trees in Dangs district

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Rain &amp; Type</th>
<th>Soil</th>
<th>% of teak.</th>
<th>Regeneration.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2500 to 3000mm very moist</td>
<td>Deep Alluvial</td>
<td>Low % of teak</td>
<td>Little regeneration</td>
<td>Very dense evergreen Tecona Grandis</td>
</tr>
<tr>
<td>2</td>
<td>1600 to 2500mm Moist</td>
<td>Deep Loamy</td>
<td>Moderate</td>
<td>Fair but patchy natural regeneration</td>
<td>Adina cordifolia ii &amp; iii grade (M.P.)</td>
</tr>
<tr>
<td>3</td>
<td>1200 to 1600mm Moderate Moist</td>
<td>Moderate Deep Loamy</td>
<td>Moderate to high</td>
<td>Little Regeneration / nil</td>
<td>Dalbergia latifolia</td>
</tr>
<tr>
<td>4</td>
<td>Forest Dense and evergreen</td>
<td>Dense undergrowth</td>
<td>Moderate undergrowth</td>
<td>Fire &amp; grazing negligible</td>
<td></td>
</tr>
</tbody>
</table>

Source: Forest Working Plan 1996. (Table 6.2)

(i) Resources of the Dangs district:
The Dangs forest are rich in natural resources. They comprises chiefly of wood like teak, khair, bamboo, haldu & other mixed forest species. In addition, ample Water resources, cheap man power, healthy climatic conditions and beautiful surroundings are the factors boost the tourism. The virgin forests surrounding Barda and Patolia fall near Chankhal village need to be developed for Eco-tourism or as wild life sanctuary. Except the Purna wild life sanctuary, the wild life at other places seems to be diminishing fast. Domestic animals, on the other hand help the dairy activities to prosper in the region. Medicinal plants too form vital supply for ayurvedic and pharmaceutical industries and they are rich to generate handsome income for the district. The geographical conditions are very suitable for the growth of trees in the Dangs. They make the forests fertile enough to provide ample resources.

a) The major forest resource is the wood of the quality like teak, haldu, khair and bamboo. They make the major forest products from which crores of rupees are raised by the Department of Forest. The bamboos are supplied to the paper industry located at Valsad, Songadh, and other nearby places. The bamboo give rich pulp to make good quality papers.
b) The tree growth along the river banks: Sadad and Bamboo are the trees that grow on large scale.

c) Mixed with vegetative growth: They are quite extensive and expanding from the upper part of hills is washed away by the heavy rains that cause soil erosion and render infertile land along the river banks. However, these steep slopes of hills are most suitable for the Karvi grass.

d) Moderate steep slope: These slopes lie next to Karvi grass area. It is hard stony steep slopes on hills with red soil. It is moderately fertile soil suitable for Kalam, Haldu, Ficus and other species.

e) The low lying area following the moderately steep slopes are the river bank areas or near Nala and foothills. Such areas are most suitable for the growth of Sadad, high quality of teak growth and plenty of Bamboo.

1. Exposed Hills & Ridges: High quality of teak grows on exposed hills and ridges. It is black in colour and has more oil content and hardness. The special condition is that water should not log any where on hills. It has to flow down the valley. The red soil with more iron contents is favourable for its growth. The teak has good commercial value of as high as Rs.1200 to 1300 per sq feet. The bamboo on the other hand is being used in manufacturing of paper. It is supplied to the Rohit Pulp Mills near Valsad. Haldu and Kalam are the other species of the forest wood used in the furniture industry.
Minor forest produce (MFP) include rare medicinal species. They form valuable resources of the Dangs forests, as these products have good market value. Musli, both white and black too have the high market value, it is sold at Rs.600 to 700 per kg. It is termed as an indigenous version of the viagra and it make a good cash crop for thousands of tribal households. But the farmers are not properly guided to enhance its growth. If the plantation of Musli is carried out with proper care and on commercial basis, the peasants of the Dangs may earn good profits and improve their economic conditions.

2. Water Resources: The region has four seasonal flowing rivers through it. The Gira river flows in the northern part and the Purna river flows in the southern part. The rivers Khapri, Purna and Ambica does flows through the Southern part of the Dangs district. There are some perennials streams namely Kusmal, Vanar, Ukhatia, Morzira, Don and Ambapada that flows through the region. There are lakes that provide drinking water to Ahwa and Saputara. The inter mountain lake at Saputara is badly encircled with hotels and shopping centres. They cause pollution of the water in the lake. Now it becomes a matter of high concern for the district’s administration.

Water is precious to all beings on the earth. It needs to conserve efficiently. But in the Dangs 80% of the rain water flows in the sea through rivers. It flows away without being put to any use. The growing need of water in the area may cause shortage of water in future. The state of Gujarat has been progressing industrially and agriculturally. The population of the state too multiplies rapidly. Both these factors would cause more and more demand of water. Many parts of the Gujarat state suffer due to scarcity of water during summer. In view of all these the irrigation and the forest department have constructed about 362 check dams that cover 1812 hectares of the land under irrigation. There are 280 small ponds that provide irrigation to 4213 hectares of the land. There are seven small irrigation projects too that help to irrigate 260 hectares more of the land. Such scenario prevailed in irrigation in the year 2004 - 05. During the field work for the present study it was noted that the construction of the check dams has poor quality standard. Most of the check dams are found to be leaking continuously. Both man and animals drink together from the same reservoir. It would spread water born diseases among the tribals. Thus lack of proper maintenance and administration may prove risky to their health.
Perennial Streams, Spring, Tube Wells & Roads in Dangs

Map - 23
The check dams brings up the level of water reservoir. Before 1992, water had to be pulled from the depth of about 200 feet. Today water can be found not very deep from just at 50 feet to 70 feet depth. The check dams have made this possible to solve the water problem for the people in the district. By the end of 2005 the district administration has planned to increase the irrigated areas too bring more of 760 hectares of land under irrigation. The tribals utilize water to grow vegetables, fruits and flowers. Some of the peasants grow two seasonal crops in a year. With crops, vegetables and fruits supply of fodder and grass has increased. This has also supported the growth of Dairy in 2002. Now the dairy industry has developed well enough to make the district self sufficient in milk production.

3. **Pollution free climatic condition:** The Dangs does not have any industries. Even not many vehicles except governmental vehicles at Ahwa found in the area. On the RTO records about – 150 jeeps, 30 trucks, 19 tractors, and 685 bikes and scooters are recorded in the district in 2004. Compared to the larger area of the forests of about 1187.02 sq km. of the area, the vehicles are limited. As a result, the area has remained almost pollution free. The forests preserve the natural environment. Malaria is the only problem for the people. No major diseases are detected in the district. But Malaria takes away all energy of the tribals who suffer malnutrition and deprivation. Lack of strength makes people lazy or lethargic that adds further to their hardships.

4. **The productive human resources:** The district has a total population of 68599 persons (2001) with 49.80 % males and 47.21 % female. The non-working population was made up of 50.20 % male and 52.79 % females. About 6 % of the ‘koita’ people have migrated from the northern villages and about 1.38 % came from southern villages. There are 23 forest co-societies that had 23,796 members in 2003 –04. The non-working class of the population includes children below six years, old age persons above 65 years, the physically handicapped and the blind. The real working class is the members of co-operative societies members who work in the forestry during the season under the guidance of the forest department.
5. The wild life and domestic animal resources in the district: The Dangi in the northern villages eat flesh as they do not get sufficient agricultural production to cater to the food requirements of the population. Hunting still prevails in the northern Dangs. It may be due to its 'economic isolation' from the district head quarter at Ahwa. There are a few wild animals are left in the district. A few wild animals are seen in the Purna wild life sanctuary. The resources available readily in the Dangs forest are adversely affected by problems of various kinds. The problem confronted so often may be spelt out as under:

The forest of the Dangs facing many problems that has to be managed by the State Forest Department and the Forest Corporation of Gujarat Limited. The department of forest has been working very efficiently and they have tried to minimise the problems of the Dangs forest. The problems are stated given below:

(ii) The Problems of the Dangs Forest:

The important problems of the Dangs forest are unauthorised cultivation and illegal cutting by the anti social elements and some of the close friends of ministers and influential politicians. The animal poachers are active in the forest who kills the wild animals and birds. The forest department is not able to stop the animal pochers in the Dangs. That is why the animals and birds are not seen in the forest except the Purna wild life sanctuary. The problems are given below.

1. Natural regeneration capacity of the trees
2. Illicit cuttings and unauthorized cultivation.
3. Poor participation of the tribals in the forest management.
4. Killing of wild animals.
5. Uncontrolled grazing & soil erosion.
6. Inadequate security on the interstate boundary touching areas in the East and North East.
7. 'Occupancy Right' and ('Malki land & Malki tree') over the trees in the private lands the most disastrous and destructive act of 1970.
8 Insufficient forest staff & ill equipped telecommunication system. Nor informers group. Lacking sense of belonging to the forests among the local tribals.

1. **Natural Regeneration Capacity of Trees:** The regeneration of the invaluable species like teak, haldu, and the medicinal plants is found to be less or almost absent in the Dangs forest. The reasons may be excessive biotic pressure in terms of uncontrolled grazing and repeated fire incidences. The Bardipada Range located in the interior forest has good capacity of regeneration. A tree takes 30 to 50 years to attain maturity. In view of absence of such capacity of regeneration it would not be advisable to allow such a tree on 'Malki Right or Occupancy right.

   “Any forest incapable of reproduction or natural regeneration will have a definite death. Hence, we will try to remove the causes, which are responsible for its absence. We cannot create nature by artificial means but can augment reproduction and natural regeneration by artificial regeneration.” (WP for Dangs Forest report, 1997 page 117)

Hapalea is a disease that eats away leaves of the teak tree. It is known as the teak leaf skeletoniser. Hyblea is a teak defoliator. It makes a leaf weak and dry. The Lepidoptera insects eat away the green pigment of the teak leaves and leave the leaf as skeleton with just ribs and venation. During July to September and October this disease is visible to naked eyes. Since the scientific knowledge, laboratory, scientists and the biotechnologists are constantly at work to study the impact of the disease. The impact assessment need to be undertaken by environmentalists to access the economic value of the degradation. So that an exact economic loss can be predicted.

2. **Illicit Cutting and Unauthorised Cultivation:** The eastern side of the Dangs district villages like Singana, Subir, Pipaildevi, Galkund and Shamgahan near Saputara are found to be affected badly with illicit cutting chiefly with felling of teak trees and other valuable timber. These trees are easily transported to Nasik at mid night. Following the occupancy Rights of 1970 many tribal bhils became landless cultivators who lost their
ILLEGAL FOREST CUTTING AND UNAUTHORISED CULTIVATION (DANGS)
agricultural lands. This forced them to turn to naxalite activities. Many tribal indulged in
started unauthorised cultivation for livelihood. Smuggling of teak wood also increased
with greed foe a very high market price. The gap that prevails between the demand and
the supply of woods and increased with more and more corruption. Construction of
houses are the chief causes for smuggling timber through forest check posts.

3. Poor Participation of the Tribals in the Forest Management: In 1990, a scheme
of joint forest management was implemented with an objective of providing more tribals
into self management of the forest to preserve and protect trees in the forests. For this the
forest department will have to develop sense of belonging about the forests among the
tribals. The level of education and understanding amongst the tribals are low. Therefore,
it is difficult to form working groups amongst them who would work efficiently and
honestly. The poverty is another big obstacle in the protection of the forests. The
government of Gujarat has introduced a new scheme called ‘Border area development
programme. During 2003-04 the fund of Rs.391 lakh was allotted for the scheme to ensure
protection of the border area.

4. Killing of Wild Animals: The forest department has not been able to prevent
hunting by the tribals. From the very beginning the Bhils live on hunting. Even today
many tribals treat hunting as pleasure game. Among the rich and the affluent too hunting
turns about a popular hobby. The result is that in towns like Ahwa, Waghai and at
saputara birds are not even found today.

5. Uncontrolled Grazing & Soil Erosion: Since majority of tribals live below the
poverty line they have to bank on the subsidiary activities like keeping flocks of sheep
that provide milk, meat and cash money. On selling it they raise good income. The
eastern belt, neighbouring to the Maharashtra state adjoins places like Nasik, Dhulia and
Navapur, the people are equally poor. Their animals often get into the border of the
Dangs graze and return. Browsing by livestock and destruction of young shoots and
leaves are major causes of constant destruction of forest. Over grazing by sheep and goats
destroy the under cover of vegetation of over soil. It destroys the humidity and exposes
the soil to the heat of the sun. During heavy rains in monsoon this exposed soil wash away to cause soil erosion. Soil erosion is a very common problem in the district.

The soil erosion is the chief problem of the Dangs forest. Heavy rainfall, high velocity of water flowing down the streams and steep gradient, grazing by animals specially sheep & goat, cutting and lopping of trees and shifting cultivation. All these are responsible to cause soil erosion in the Dangs forest. Thus, both abiotic and biotic factors work as degrading elements. The soil covering upper hills is red in colour that at foothills and along the river course is black soil. The forests are covered with the trees like Teak, Bamboo, Khair, Sadad and other mixed vegetation. The forests are rich in 'soil organic carbon' (SOC). According to the National average, the soil organic carbon (soc) per hectare in the forest soil is 182.94 tones per hectare. The SOC under the teak is 755.9 million tones of store. Bamboo has 181.22 million tones of SOC in the soil. The Khair has minimum of the SOC 51.93 tones per hectar. The fertility of the Dangs soil is determined with the availability of the SOC. The infertility of the upper hard layer of the basaltic structure is spread all over the Dangs. This influences the agricultural development in the Dangs. The poor soil & water scarcity for the crops is more visible in the north Dangs than that in the south Dangs.

6. **Inadequate Security:** The interstate boundry between Gujarat and Maharashtra states makes the major part with the Dangs region. In the East, the government of Maharashtra ignores the development of the border land and its people. Owing to the impoverished conditions of the Marathi population there they often cross the state boundry to cultivate land or to graze animals and involve in illicit cutting of trees. This is a sensitive issue for the government of Gujarat. In this light the Government of Gujarat implemented the ‘Border Development Programme’ in 2003 to ensure safe and secured borders across the Dangs in view of protection of the forest.

7. **The Occupancy Right 1970 (Malki land – Malki tree):** This is most destructive step taken on the part of the government of Gujarat. It seems that the policy of ownership of land and tree will destroy the Dangs forests slowly and gradually. The act gives right to owners of land to cut the trees grown on his land. “ Under the ‘Malki scheme,’ in the
last four years Rs. 28 crore had been distributed to the tribals” said DCF Mahesh singh. (Times News Network, Ahmedabad. 2002).

8. Insufficient forest staff and ill equipped transport and telecommunication system

The poor category of staff posted at one place for number of years causes desperate situation that ultimately generates dishonesty and inefficiency among their staff. With insufficient staff too an employee has to look after a larger forest area. Further placement of an employee at a place in the interior forest may cause family related and socio-economic problems. Such is the predicament of the staff of the forest department in the Dangs. In such a condition an active staff with fully equipped and quick transport and telecommunication system, vehicles are the dire necessity. The staff has to be provided with good medical services for him and for their family members. Malaria is a much common disease in the forest. The clean drinking water and vegetables are not easily available. All such problems in the forest management should be sorted out on humanitarian grounds and employees and their department should be relieved from such conditions of deprivation.

No informer groups set up: to save and to protect the forest. Informer groups need to set up to get more information on illicit cuttings and unauthorised cultivation in the forest. With it deforestation can be restricted. A ‘bit guard’ appointed by the forest department may not be much effective to guard a large forest area. To support their function, informer need to be appointed secretly by the forest department, like the police do, through which the information regarding harm of any kind to the forests inflicted by any person may be supplied to the guards and the concerned range officers. This would prove an effective support system in the efficient management of the forest. The degradation that harm to the forests resources may occur in this way as shown in three ways as shown in the table below.

(iii) The Degradation of the Forest Resources:

The Dangs forest is very rich in forest resources but due to natural and human disturbances, the forest has been degrading for the last many years. The department of
forest has been working continuously to protect the forest. The degradation of the forest resources are taking place in the following ways as mentioned in table 6.3.

The **Degradation of Forest Resources**

<table>
<thead>
<tr>
<th>Soil erosion</th>
<th>Loss of Biodiversity</th>
<th>Loss of wild life</th>
<th>Loss of Forest &amp; F.Capital</th>
<th>Poor Natural Regeneration.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Grazing</td>
<td>Shifting cultivation</td>
<td>Wasteful Harvesting.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Govt/Forest Role</th>
<th>Weakness</th>
<th>In people’s Participation</th>
<th>Low awareness</th>
<th>Employees Dissatisfaction.</th>
</tr>
</thead>
</table>

(Table 6.3)

The **Loss of Biodiversity**: The tribals in the region live on hunting of birds and small animals like rabbits. Today, nobody finds birds like sparrow, crow, pigeons etc. Even wild animals too are not visible except in the interior forests or in the reserve forests. The tribals are flesh eating community. This increases demand of birds and animal and, consequently, hunting of birds and animals is done at large scale.

The lopping activity for cultivation is again destructive as it kills the micro insects which are good for (decay generating) nitrogen and organic matter for the vegetative growth. It destroys the tiny roots of the vegetation. The felling of green trees without planting new trees and low regeneration ability of the plants cause ecological imbalance in the area. The forests that has no vegetative cover allow the sun rays to reach directly fall on the ground (insolation). It eventually dries up the humus content in the upper layer of the soil that is essential for vegetative growth. This affects adversely the food chain for the birds and animals. The loss of biodiversity further affects adversely the conversion process of the carbon dioxide into oxygen through photosynthesis. As a result, the health and growth of vegetation is prevented.

The development of the Dangs forests can be affected in relation to its sustainability through afforestation and reforestation. In this view consultation with people and their
participation under the guidance of the forest authorities are much needed action plan for the Dangs forest. Most women in the Dangs carry out agricultural activities. They also work as agricultural laborer. Men generally prefer to cut trees and to be employed in the transport and for loading and unloading work. Approximately 1000 to 1500 tribal labourers are engaged in for various kinds of forest activities. The tribals who are permanent employees of the department of forest are entitled to get benefits like housing loans, free education and so on. But still many tribals live below poverty line (BPL) almost 70 %. But one should not forget that ‘Needs’, ‘Wants’ & ‘Rights’ can not be denied to these tribals. No government can forcibly expel them from the forests. They are very much a part of the Ecosystem in the region. It is with their support and active involvement that ecological balance can be well retained. Their value needs to be ascertained in this light and they should be evolved in efforts with appropriate role performing.

Loss of Wild Life: The tribals eating of flesh of birds and animals causes wide destruction of birds and animals in the forest. The result is that a few wild animals are left in the reserve forests of the district. In this light the awareness pertaining to preservation and protection of wild life and birds should be attached urgent priority to save the life of birds and animals. The report of the forest department of the Gujarat state notes “Increasing human population causes tremendous pressure on forests & wild life. There has been ruthless destruction of wild life by outsiders and local Dangis.” Loving the wild life acts will not help it much. It in fact calls for overall protection of the wild life. The government and the forest department will have to put more effective ban on poaching of animals. They should implement the act strictly with severe punishment. Further, awareness about valuable life of the animals and the birds need to be increased through developing school tourism, making beautiful pictures of birds and animals incorporate in teaching of the school syllabus. The tribals need to be persuaded not to go for hunting animals and birds. The forest department should organise exhibitions of photographs of wild life through which preciousness and value of our forests may be highlighted and conveyed effectively to coming generation.
Loss of Forest and Loss of Forest Capital: The TERI, a research group of the Tata estimates the economic losses resulting from forest degradation, soil erosion, diseases, and pollution, it amounts Rs. 1 crore to 5 crores every year. The politicians and their relatives have been the meanest enough to exploit the forest and this becomes the largest degrading factor. They ignore the offences committed by their friends for personal gains. The teak and the chill are precious trees that earn huge amount of cash without much perspiration. The smuggling of the teak and other valuable species cause huge economic loss to the forest department and the government. It eventually distrusts the eco-balance and the bio-diversity and wild life in the forest, by way of robbing them of the regeneration capacity.

Natural Regeneration in the Dangs is the main obstacle to grow and improve the plantation. The biotic interference like uncontrolled grazing and large scale felling of tree, causes negative influence on the regeneration capacity of trees in the forests. Overgrazing by cattle has increased over last few years. With an increase in domastic animals like cow, buffalows, sheep, goats etc. Instead of buying grass and food for them, the owners send their cattle free to enter into forest or farms for grazing. It causes enormouse harm to vegetation and crops. As the strength of domestic animals increases overgrazing becomes more serious problem.

The following table shows the strength of the domestic animals in the Dangs that cause degradation to the forest through browsing, grazing & lopping.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cow</td>
<td>13689</td>
<td>17388</td>
<td>58334</td>
<td>66624</td>
<td>66650</td>
<td>78058</td>
</tr>
<tr>
<td>2 Buffalo</td>
<td>594</td>
<td>438</td>
<td>6065</td>
<td>13194</td>
<td>18798</td>
<td>20402</td>
</tr>
<tr>
<td>3 Sheep</td>
<td>48</td>
<td>135</td>
<td>133</td>
<td>99</td>
<td>120</td>
<td>129</td>
</tr>
<tr>
<td>4 Goat</td>
<td>5158</td>
<td>12667</td>
<td>17538</td>
<td>38848</td>
<td>38468</td>
<td>38588</td>
</tr>
<tr>
<td>5 Donkey</td>
<td>...</td>
<td>...</td>
<td>54</td>
<td>227</td>
<td>80</td>
<td>-</td>
</tr>
<tr>
<td>6 Pigs</td>
<td>...</td>
<td>...</td>
<td>71</td>
<td>118</td>
<td>594</td>
<td>-</td>
</tr>
<tr>
<td>7 Poultary</td>
<td>...</td>
<td>...</td>
<td>71862</td>
<td>69862</td>
<td>93265</td>
<td>93370</td>
</tr>
</tbody>
</table>

(Source: Census Reports and District Statistical Report, Ahwa, Dangs) (Table 6.4)
Since the district does not have any other source of the income, the domestication of the animals cannot be prevented. Agriculture and hunting are pre-dominant occupations among the tribal community that provide them source of the food and income.

In the first stage: Browsing by livestock and the destruction of young shoots and leaves are major causes of constant destruction of the forest. Over grazing of the natural vegetation in the interior areas and high altitudes areas causes soil erosion. A high mountain region where the tribal keep sheep and goats and they eat plants. It removes the protective plant cover, primarily by trampling. Lopping continues for a longer period of time the leaves are used as fodder and the branches as building material. It may not cause destruction to trees, but it certainly hampers the regenerative capacity of the forests.

An other reason for the absent of natural regenerating processes in vegetation is the excessive humus collects in the soil during monsoons. With high temperature in summers, the humus content gets evaporated. As a result, soil becomes hard and infertile. The biotic interference and fast flowing waters again disturb the ecobalance with displacing nitrogen and organic contents present in the soil. The terrace grass cultivation on hilly barren lands may prove effective against soil erosion in monsoon.
In the second stage: The fire, shifting cultivation, grazing and wasteful harvesting are other factors to cause forest degradation. Before sowing seeds, farmers usually burn dry leaves, grass and other waste of trees to preserve fertility of soil. But this practice in fact destroys tiny roots, the humus content and minute insects which are important for early decay that helps to produce nitrogen and organic contents for the vegetative growth. In the summer season, the Dangs forests become very dry. Dry leaves, grass, and the waste of trees and scattered animal dung becomes dangerous to cause the fire. The department of forest has to take necessary steps to prevent the fire.

In the third stage: poor participation on the part of the people and dissatisfaction among the staff may cause to the increase in deforestation. Looking at the cross border trespassers from adjoining state, the government of Gujarat has implemented the ‘border area development programme.’ Under the programme the forest staff are trained and equipped more with sophisticated tele-communication equipment systems. During 2003-04 the government spent Rs. 349.56 lakh and in 2004-05 the amount spent was Rs.133.51 lakh. (Samajic and Artbic Samiksha Gujarat Rajya 2004-05).

According to the FSI reports of the year 2001, the forest cover in India was 67 million hectors, to constitute 20.55 % of the total geographical area. It is composed of 41.68 million hectors (12.68 %) of dense forest, 25.87 million hectors of open forest, (7.87 %) and 0.44 million of hectors (0.14 %) of mangroves. There is another 4.73 million hectors of scrub in addition to a reported forest cover of 67 million hectors. The total forest cover of India of 20.55 %, that of Gujarat makes 10.02 %, and that of the Dangs forests 2.63 % of the total geographical areas. The table 6.5 furnishes details during 1997 and 2001.

<table>
<thead>
<tr>
<th>District</th>
<th>Geographic Area</th>
<th>Very Dense Forest</th>
<th>Moderately Dense forest</th>
<th>open forest</th>
<th>Total forest</th>
<th>%</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>1764</td>
<td>1008</td>
<td>-</td>
<td>500</td>
<td>1508</td>
<td>-</td>
<td>-2 compared to 1995 (Assessment)</td>
</tr>
<tr>
<td>2001</td>
<td>1762</td>
<td>78</td>
<td>1013</td>
<td>326</td>
<td>1417</td>
<td>80.42</td>
<td>20</td>
</tr>
</tbody>
</table>

(Source: FSI report of 1997 & 2001) (Table 6.5)
The FSI report of 2001 shows that two kilometer area has been changed. It means 5.50% of the degradation cause to dense forests within four years from 1997 to 2001, may be due to unauthorised cutting of trees in the forests. The open forests which was 500 kms in 1997 got reduced to 326 kms in 2001 with a reduction of −174 kms. The total forests which covered 1508 kms in 1997 was reduced to 1417 kms in 2001. It means the loss occurred was 6%. The table 6.6 below projects the data these facts.

**Yearwise Incidence of Unauthorised Cutting & Cultivation in the Dangs from 1993 to 2003**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UCutting 629 628 581 480 440 482 530 539 576 600 1135</td>
</tr>
<tr>
<td>2</td>
<td>Un.culti (hect) 33.93 36.25 225 259 63.30 40.45 11.13 11 00 1.75 00</td>
</tr>
</tbody>
</table>

(Source: Forest department Ahwa, Dangs) (Table 6.6)

(Abbreviation: I – U.unauthorised cutting, Un.culti – unauthorised cultivation.)

The greatest culprit to cause serious harm to the forests in India are greedy & notorious politicians. Under their petronage and protection, invaluable trees are cut constantly and sold in the markets. It makes them rich overnight. And other factor is religion. In celebration of some religious festivals, the trees are cut which is resulted into...
deforestation of the forests. The state forest department proves ineffective to prevent it. Any other problem that the forest department faces is the encroachment of the forest land by unauthorized cultivators. The shortage of the manpower for security renders the forest department ineffective to protect the forests from illicit cuttings & animal pouching. Thus, number of problems arise to the forest department to hamper the developmental activities and to affect sustainable development of the forests. In the district. The state forest department is, however, capable of generating employment and work for the tribals. But it requires absolute autonomous powers without political interference of any kind.

In relation with the forest policy of 1988, an emphasis has been laid on conservation, ecological balance, overall development and protection of the forests to gather with overall upliftment of the tribals residing in the forests of the Dangs district. The Millennium Ecosystem Assessment for the Dangs requires that the aim to reduce the poverty and hunger and to improve the health of the poor has to be worked out effectively. The forest department of the Dangs district works systematically and efficiently on well prescribed guide lines. It works effectively to protect the forests and conserve the biodiversity of the Dangs district. Under new plantation programmes implemented by the department number of new trees have been planted. The forest department has adopted a new strategy to replace clear felling system with the selection cum improvement system. It enhances natural regeneration of new trees that have economic value and also artificial regeneration of new species. This step eventually improves and enriches the forests of Dangs. The following table showing the number of plantation and the area under cultivation in hectar in the north Dangs.
The table 6.7 indicates that thousands of new plants by the forest have been planted during the last fifteen years. It indicates rotation in the number to reflect that the plantation is not done with steady growth. To ensure development and growth in the region, it is much needed that serious attention has to be paid to plantation activities and
The top priority has to be attached to it. Committed efforts and sincere management would certainly lead to usher good days for the much ignored and backward tribal communities.

The new plantation in the district helps to generate employment for the tribals. It also makes for future a potent income source for the development of the Dangs district. At present the forest department has employed about 800 to 1000 labourers for different kinds of works at plantations. Each plant and each tree is capable to control the ecosystem that stores 20 to 100 times more carbon per unit area than the cropland. The carbon is stored in the foliage, stems, root systems and woody tissues in the stems of trees. Trees act as carbon sinks when they absorb CO$_2$ from the atmosphere and store in the form of wood. Hard wood for instance contains about 48% of carbon in the form of cellulose in wood. It is estimated that 2.2 tones of wood is required to sequester one tone of carbon.

Absorbing the CO$_2$ from the air and locking it in the forest biomass is one of the potential & practical ways to reduce the large volume of CO$_2$ from the atmosphere. As a result, the entire industrially polluted environment of the South Gujarat is environmentally balanced with the forests of the Dangs and the surrounding greenery in the area. In view of this, preserving the forests should our prime objective. The unauthorized cultivation and cutting of trees in the Dangs still remains a major problem. It may be because in sufficient staff for the supervision of the huge interior and the edge of the forest areas that lie between the Dangs, Dhulia in north east, Navapur in the north east, and Nasik in the east. These boarder areas of the Maharashtra state are economically poor and undeveloped. Agriculture is poor and there are no industries too located in the areas. To meet the daily requirements, the neighbouring people often cross the border for grazing, cultivation and for unauthorized cutting of teak & other timber to generate cash money. The forest department needs to form border supervisory groups in consultation with the local Dangi people who know both the Marathi & Gujarati dialects. Moreover, the forest department should increase the staff required for security. It should also increase the local informers who would inform the guards about harmful activities. This may affect some control over unauthorized cutting of trees and cultivation smuggling of timber. The land of joint forest management has an aim to eradicate activities of the anti-social elements.
from the border areas and also from the district. The present study revealed that the upper level of the forest authorities has over staffing, whereas the lower level employees suffer under staffing as compared to the actual requirement of the manpower.

It was also found that the employees who are working at remote places are not getting any adequate benefits. The authorities never think of the education of their children. They live in stagnant conditions for a longer period of their lives until they retire from jobs. These employees are human beings. They need a good social lifestyle and some changes to occur from time to time. Their human status must be respected and rights honored only. In view of the job requirements they have to be provided with proper labor distribution with some knowledge of the forest areas, language, and good vehicles to reach remote areas. The medical checkups for them and for their children must be arranged adequately and provided regularly.

From newspaper reports it was found that the unauthorized cutting of trees is supported by the corrupt politicians and their family inmates and friends. In case, they are arrested by the police, often try hard to influence the concern authorities and try to evade legal inquiries and punishment. They usually indulge in smuggling of the teak wood and other type of timber that is highly expensive and costly and generate huge amounts of cash money. This encourages the nexus of anti-social elements connected with politicians and corrupt officials.

In view of protection of wildlife and conservation, very little work is done in the Dangs. A few wild animals are left in the Dangs now. The forest department and the government have to execute severe punishment to offenders like animal poachers and other destructive elements in the Dangs. The Dangi in the northern villages eat flesh as they ever face severe scarcity of agricultural grains and vegetables. Hence, the tribals have to go for hunting and eat flesh of cows, pigs, and the poultry. Even no birds are seen in the Dangs. The towns like Saputara, Ahwa, and Waghai look barren with absence of birds. Few birds are found even at the Purna wildlife sanctuary. The Dangs must be safeguarded against all such subversive activities. The forest department will have to work under the
direct supervision of the central government (under MOEF), or it has to be given a status of an Autonomous body to act independently from the state government.

The Occupancy Rights – The Occupancy Rights has implemented in the year 1970. Under it tribals given 587.58 sq km in 58758 hectors of land out of the total protected areas. The total protected areas in the Dangs is 821.89 Sq. kms and 865.9528 Sq. km of area is notified as the Reserved forest areas. The protected areas as per the land records of the district cover 172356.75 hectares of land. This is a devastating right that will surely do serious damage to the forest lands gradually. The conditions that the occupancy right allow a Rights over the trees given to Malki land holder who can cut the 10 trees per year. Government would take 50% of the profits raised from felling of trees under the malki right. Both from the North and the South, division receives about 2000 to 2500 applications for malki trees. If 1000 trees are cut off every year than within next thirty years, large number of trees would disappear from the forest. Thus, slowly and gradually the whole of the Dangs forest would be wipe out. It would caused environmental imbalance and destroy the ecological balance in the region. Against cutting one tree a land holder is supposed to plant ten additional trees. But this rule is hardly observed with seriousness.

The destruction of forests by way of the Occupancy Right or the Malki will further prove disastrous for the district as the regeneration capacity of the region is poor. such is the effect of the region, government has to cease the policy of Malki from immediate effect. Once the owner cuts a tree or and fell a tree he never bothers to plant new trees to honour the rule of the forest department. The following data focus on the incidents of unauthorised cuttings and felling of trees.

Encroachment of the forest lands: ‘Go slowly’ said the minister of the forest on encroachment. According the figures obtained from the various forest circles in the state, some 365 sq. km. of the forest have been encroached with illegal farming. The Vadodara circle lost around 17,500 hectares. The Surat circle that includes Narmada district, Bharuch and the Dangs, has lost about 7500 hectares of land. The Gandhinagar circle that include the Sabarkantha & Banaskantha districts has lost 8,500 hectares of land in the
forests. This tribal belt of the Dangs is politically very important for politicians to preserve their assembly seat in the election. The Central government has to recover the land from encroachers and exploiters and try in the direction of Agro-forestry.

A large plantation of fast growing tree species like Eucalyptus, camaldulensis, Azadirachta indica, & Cassia siamea must be introduced. They are suitable fire wood. If possible Jojo plantation has to be developed. A kind of medicinal oil can be extracted from these plants. Its oil is very precious and costly. They help generating good cash money to add to the income. "Agro forestry is a collective term for land use systems and technologies. It refers to woody perennials like trees, shrubs, palms & bamboo etc that are deliberately used on the same land-management unit as agricultural crops. Animals too are used either in the same form of spatial arrangement or temporal sequence. Agro forestry system allows both ecological and economical interactions between different components. It can easily contribute to solving rural developmental problems."

Agroforestry is attached to modern strategic research in biotechnology, genetic engineering and dynamic systems. The forest officials and executives have to be put through adequate training exposure in technological research and its implications in the forest management. If required they may be sent to foreign universities for the purpose under some suitable exchange programme sponsored by the government. Further, trained graduates who are interested in the environmental research and forest preservation may only be envolved in the task. Since the work in forests is a crucial task where commitment of an employee is the forest requirement The IFS management need to treat each employee with a human touch and concern. They should try to understand the problems that their employees usually confront in forests. The job satisfaction, job involvement and social /national responsibility with loyalty and honesty are the basic requirements in the MoEF.

Agro-forestry may prove the profitable business. It can earn good money to the concerned governments. The Agro-forestry in the Dangs too raised good income to the government of Gujarat. The table 6.7 furnishes figures indicated the income that has been raised from in the last ten years. The northern Dangs, there are ten ranges of the
They employed 217 laborers on daily wages. If the Agro-forestry system is adopted more skilled/unskilled unemployed laborers can be absorbed. Not only this, agro-forestry linked activities would develop more employment opportunity for the tribals.

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Year</th>
<th>Timber (Rupees in Crore)</th>
<th>Firewood (Rupees in Lacs)</th>
<th>Bamboo (Rupees in Lacs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1995</td>
<td>29.60</td>
<td>0.08</td>
<td>19.38</td>
</tr>
<tr>
<td>2</td>
<td>1996</td>
<td>6.11</td>
<td>0.28</td>
<td>24.69</td>
</tr>
<tr>
<td>3</td>
<td>1997</td>
<td>4.16</td>
<td>0.18</td>
<td>7.35</td>
</tr>
<tr>
<td>4</td>
<td>1998</td>
<td>3.28</td>
<td>0.31</td>
<td>38.38</td>
</tr>
<tr>
<td>5</td>
<td>1999</td>
<td>5.35</td>
<td>0.39</td>
<td>37.42</td>
</tr>
<tr>
<td>6</td>
<td>2000</td>
<td>2.06</td>
<td>0.48</td>
<td>57.08</td>
</tr>
<tr>
<td>7</td>
<td>2001</td>
<td>0.54</td>
<td>0.34</td>
<td>2.51</td>
</tr>
<tr>
<td>8</td>
<td>2002</td>
<td>5.95</td>
<td>0.73</td>
<td>20.42</td>
</tr>
<tr>
<td>9</td>
<td>2003</td>
<td>6.66</td>
<td>1.77</td>
<td>0.44</td>
</tr>
<tr>
<td>10</td>
<td>2004</td>
<td>9.98</td>
<td>0.69</td>
<td>11.81</td>
</tr>
</tbody>
</table>

(Source: Department of the Forest, Ahwa. Dangs.) (Table 6.8)

It can earn good money to the concerned governments. The Agro-forestry in the Dangs too raise good income to the government of Gujarat. The table 6.8 furnishes figures indicated the income that has been raised in the last ten years. The northern Dangs, there are ten ranges of the department.

They employed 217 laborers on daily wages. This may present seasonal laborers from migration elsewhere in search of livelihood. It eventually may reduce the children’s drop out ratio at schools which now stands at 13% due to the migration following monsoon. But it is good that migration towards industrial cities and towns provides the tribals a regular income and instead of lying lazy at home the tribal youngsters should go out for work. But it causes them harm in other way. The children are deprived of good education and training because instability of life. What badly they need is stable life with stable source of income. It can assures them happy, healthy and enlighten living. The agro-forestry can give them assurance for such a living.

The land locked location of the Dangs forest has offered an important constraints in the forest management and also in the socio-economic development in the region. The Dangs
is in area with most unproductive forests lands. The forest department needs to put efforts to improve its productivity. This usually requires higher input of labour, capital and technology. Leveling of undulating surface of lands, tilling of the hard surface of soil, adding fertilizer and applying electricity or diesel pumps for irrigation are the basic requirements to grow permanent agro forestry.

The reforestation by the department of the forest has converted deforested into lush greener in the southern foot hills Waghai and the interior forest Mahal, Subir and Lavchali areas.

‘Reforestation’: is defined as the direct human induced conversion of non-forested land through planting, seeding and or the human induced promotion of natural seed sources on land that was forested but that has been converted to non-forest land.

Afforestation along the northeast and northwest that was completely destroyed by felling of thousands of trees since the the British period and before. The department of forest has now planted thousands of new plantation and have tried to establish forest cover which was in the past destroyed through the large scale felling of trees.

‘Afforestation’ is defined as the direct human induced conversion of land that has not been forested for a period at least 50 years to forest land through planting, seeding and or the human induced promotion of natural seed source.

The main elements of natural resources are air, water, and soil of Dangs are swiftly deteriorating. The degradation of the forest by the natural agents and human activities are very common. (During Sabri Festival in Dangs in 2002-03 a large no. of trees destroyed by the department of Forest). The forest of Dangs that has huge amount of teak trees is a highly commercial resources. Bamboo for paper mill and minor forest produce (MFP) many of them ae being utilized as medicinal plants. Since the regeneration capacity of the Dangs soil is negligible or absent, in such condition invaluable and endanger species must be protected and at any cost. Because Forest eco-system stores 20 to 100 times more carbon per unit area than the cropland.