

URGENT NEED TO PREVENT ENVIRONMENTAL DEGRADATION IN TRIBAL REGION OF INDIA: A CASE STUDY

BARLA, Marcus*
HĪNDĪSTAN/INDIA/ИНДИЯ

ABSTRACT

Jharkhand is a state of India curbed out from Bihar state on November 15, 2000. 'Jharkhand', meaning 'the forest area', forms the north-eastern portion of peninsular plateau of India. The state had 23,605 sq. km of land under forest which was about 29.61 percent of the total area of the state during 2001-2002. The total population is 21.84 million according to the 2001 census and about 26 percent represents the tribal population. There are 30 different tribal groups in the state. The tribals of the region are closely associated with the nature. It is a fact that forest has played important role in shaping the economic, cultural, religious, social, and political systems of tribals of the region. The *sarna* a sacred grove of the tribal is also preserved within or near the forest. They worship their 'Singbonga', the Supreme Being at *Sarna*. The tribals pay great respect to trees, flowers, animals, birds etc. Deforestation is causing the problem of food and livelihood insecurity, displacement, out migration, isolation from the natural environment and social imbalance among the tribals. The main objectives of the study are initiating and reviving the spirit among the people to preserve the existing forest wealth, bringing more land under forest, conserving environment and natural heritage by preserving the remaining forests, and maintaining the ecological balance.

Key Words: Jharkhand, forest, tribals, deforestation, environmental, ecological, degradation, medicinal, herbs, sarana, Singbonga, insecurity, employment, strategies.

INTRODUCTION

Jharkhand (See: p. 497-498) is a state of India curbed out from Bihar state on November 15, 2000. 'Jharkhand', meaning 'the forest area', forms the north-eastern portion of peninsular plateau of India. The state had 23,605 sq.km of land under forest which was about 29.61 percent of the total area of the state during 2001-2002. The total population is 21.84 million according to the 2001

* Dr. Marcus Barla is a Lecturer in the Department of Economics, St. Xavier's College Ranchi, INDIA. e-posta: marcusbarla@yahoo.com

census and about 26 percent represents the tribal (indigenous people) population. (See: p. 497-498)

There are 30 tribal groups in Jharkhand, which include eight minor tribes, known as Primitive Tribal Groups (PTG). This area was the home land of aboriginal races such as the Santhals, Mundas, Oraons, Hos, Kharia, Bhumij, Birhors, etc. These indigenous people of the area are known as *adivasis* literally meaning 'original settlers' or the earliest settlers.

The tribals of the region are closely associated with the nature. It is a fact that forest has played important role in shaping the economic, cultural, religious, social, and political systems of tribals. The tribals living in and around the forest begin their daily routine from the forest and collect edible fruits, roots, flowers, mushroom, tubers, wild vegetables, honey, birds, animals, fuel wood etc for their daily use. They also depend upon forest for the medicines to cure different diseases with the help of medicinal herbs, fruits, grasses, leaves etc. The *sarna* a sacred grove of the tribal is also preserved within or near the forest. They worship their 'Singbonga', the Supreme Being at *Sarna*. The tribals pay great respect to trees, flowers, animals, birds etc. They have been worst hit by the large scale exploitation of the natural resources of the region. Through the development of industries, mines and commercial exploitation of forests, the majority of the tribals live in a state of semi starvation throughout the year. Its valuable forest resources have been ruthlessly depleted by illegal greedy contractors and other agencies without considering the implications of forest cover on environmental degradation and soil erosion in the region.

Deforestation is causing the problem of food and livelihood insecurity, displacement, isolation from the natural environment and social imbalance among the tribals. Large scale migration from the rural area to urban centers is increasing due to livelihood and food insecurity. Due to massive deforestation annual rainfall declines to a great extent which causes water scarcity in the region. The main objectives of the study are to initiate and revive the spirit among the people to preserve the existing forest wealth, bring more land under forest and maintain the ecological balance. The proposed strategies and action plans of the study are protection of forests by the local people and making alternative strategies for employment in the rural areas, enhancement of social forestry and creating awareness among the rural people for conserving environment and natural heritage by preserving the remaining forests.

Forest

The word 'forest' is derived from Latin word 'foris' meaning outside the village boundary or away from inhabited land. Generally, forest is referred to a place occupied by different kinds of trees, shrubs, herbs and grasses maintained for the production of wood and non-wood products. Technically, a forest is an area set aside for the production of timber and other forest produce, or maintained under woody vegetation for certain indirect benefit, which it

provides, e.g. climate or protective. Ecologically, it is defined as a plant community, predominantly of land other woody vegetation usually with a closed canopy.

Deforestation

Massive felling of trees and destruction of forest and its species by different agents is called deforestation. Excess cutting of trees from the forest is causing the threat to the sinking of oxygen as well as green house effect. It is causing the problem of livelihood and displacement among the tribals and rural people. Deforestation is causing the isolation of the tribal people from the natural environment and social imbalance. Large scale migration from the rural area to urban centre is increasing due to livelihood and food insecurity. Due to massive deforestation annual rainfall declines to a great extent which causes water scarcity. Massive deforestation affects hydrological cycle and causes drought, flood, and soil erosion and siltation effect in rivers.

Objectives of the Study: The main emphasis of the study is to initiate and revive the spirit among the people:-

1. To preserve the existing forest wealth.
2. To bring more land under forest and trees.
3. To maintain the ecological balance.

Hypotheses

1. Growth in human and animal population increases deforestation.
2. Forest is decaying due to unauthorized exploitation by the traders and local people.
3. Greater extraction of fuel wood, etc.

Methodology

This study is based on primary and secondary data collected from different sources mainly field works, the government published records like census's statistical handbook, reports of commissions on scheduled tribes etc.

Extent of Forest

India sustains over 16 percent of the world's human population and over 15 per cent livestock population on just over 2 percent of the world's geographical area and 01 per cent its forests. The total geographical area of the country constitutes 328.8 million hectare. Out of it, approximately 63 million hectare land is having forest cover. This is about 19.27 per cent of the geographical area of the country. The per capita forest area in India is 0.07 hectare approximately. Forests in India are generally under the government ownership. India's forests provide fuel wood for domestic use, industrial wood, and non-wood forest products like *tendu* leaves, fruits, herbs medicines and houses. The extent of

forest area of various categories in various states/Union T. is indicated in the table below.

Table 1: Changes of Forest Covers over 5 Years (area in Sq. Km)

| Category | Area as per 1995 assessment | Area as per 1997 assessment | Area as per 1999 assessment |
|---|-----------------------------|-----------------------------|-----------------------------|
| Dense forests (crown density 40% & over) | 385,037 | 367,260 | 377,358 |
| Open Forests (crown density 10% to 40%) | 249,09 | 249,309 | 255,064 |
| Mangrove forest | 4,533 | 4,827 | 4,871 |
| Total | 638,879 | 633,397 | 637,293 |

Source: FSI (1995, 1999)

The assessment made by FSI in 1999 gives the figure of actual forest cover as 63.72 million hectare against the previous assessment of 63.88 million ha (1997). Thus, on the basis of these gross figurers one can conclude that there has been a reduction of 1586 sq. km. of forest cover over a period of 5 years. The annual rate of loss of forest cover thus works out a 31,720 ha. The state wise change in the forest coverage could be observed in the table presented below.

Table 2: Forest coverage in India (in Sq Km)

| State/UT | 1993 | 1995 | Change in 1995 |
|------------------|--------|--------|----------------|
| Andhra Pradesh | 47256 | 47112 | -144 |
| Bihar | 26587 | 26561 | -26 |
| Delhi | 22 | 26 | +4 |
| Goa Daman Diu | 1250 | 1250 | Same |
| Gujarat | 12044 | 12320 | +276 |
| Haryana | 513 | 603 | +90 |
| Himachal Pradesh | 12502 | 12501 | -1 |
| Jamu&Kashmir | 20443 | 20433 | -10 |
| Karnataka | 32343 | 32382 | +39 |
| Keral | 10336 | 10336 | same |
| MadhyaPradesh | 135396 | 135164 | -232 |
| Maharashtra | 43859 | 43843 | -16 |

| | | | |
|------------------|--------|--------|------|
| Orissa | 47145 | 47107 | -38 |
| Panjab | 1343 | 1342 | -1 |
| Rajasthan | 13099 | 13280 | 181 |
| Sikim | 3119 | 3127 | +8 |
| Tamilnadu | 17726 | 17766 | +40 |
| Uttar Pradesh | 33961 | 33986 | +25 |
| WestBengal | 8186 | 8276 | +90 |
| Andamans | 7624 | 7615 | -9 |
| Chandigarh | 5 | 7 | 2 |
| Dadar &N. Haweli | 206 | 204 | -2 |
| Total | 474965 | 475241 | +276 |

Source: Forest Report, Environment & Forest Ministry, Dehradun, 1995.

From the observation of the above table it becomes obvious that out of 22 states at least 10 states of India witnessed the depletion in forest area during 1993-1995. In 1993 the total forest cover in Bihar was 26587 sq km which decreased to 26561 sq km (i.e.-26 sq km) during the same period. It is obvious from the analysis of the table that major deforestation was observed in M.P. (-232 sq. km.), Andhra Pradesh (-144 sq. km), Orissa, (-38 sq. km) and Bihar (-26 sq .km), all tribal populated regions of the above mentioned states during 1993-95.

Utility of Forest

1. Source of Livelihood: Forest is the source of livelihood for the rural people living in and around the forest.

2. Reduces Food Insecurity: Forest reduces food insecurity of the tribals living around it because it supplies different types of food items, viz. vegetables, fruits, roots, mushroom and other minor forest produce.

3. Extracts Rains: Forest has greater capacity to extract rains because the areas surrounded by the forests are damp and cool.

4. Prevents Flood: The forest trees absorb the excess rain water and they prevent flood. Forest tree can check the soil erosion. They moderate the intensity of storms. The forests increase the humidity of the air and make the climate more equable.

5. Fertilizers for Soil: When the leaves, flowers and fruits of the forest trees fall and decompose, they become fertilizers for the soil and add to the humus and increase the productive capacity of the soil.

6. Enhances Beauty: Forest enhances the beauty of the country and it has recreational values. They improve the health of climate, nature and human being.

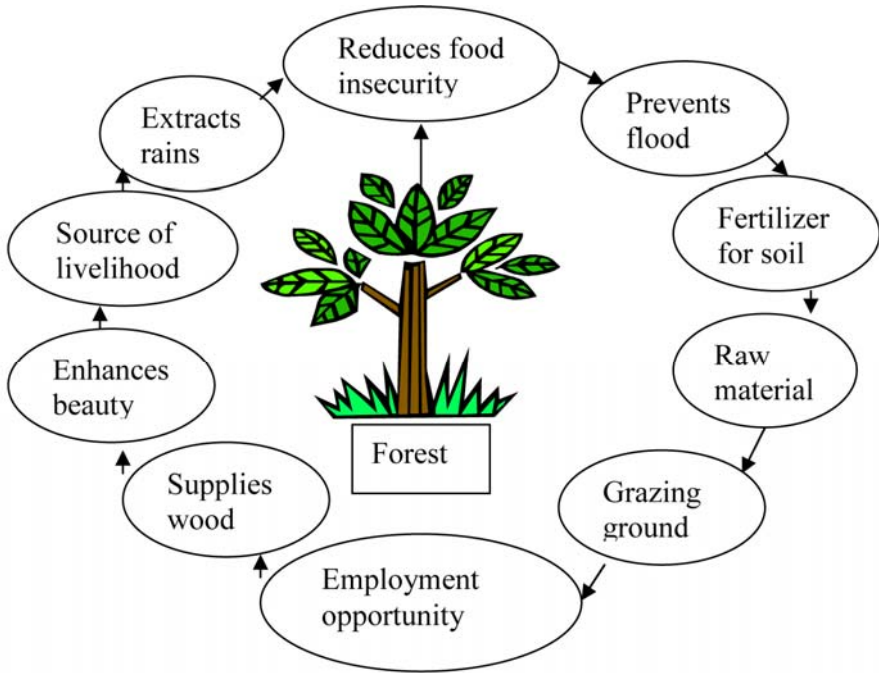
7. Raw Materials: Forest provides raw materials for industries like paper, sports goods, match, furniture, resin, turpentine and lac etc.

8. Supplies Wood: Forest supplies wood for agricultural implements i.e. set of wooden ploughs etc.

9. Grazing Ground: Forest serve as a grazing ground for the cattle. The forests are valuable assets in the event of famine because they provide vast quantities of fodder, edible flowers, fruits and roots.

10. Employment Opportunity: Forest provides employment opportunity to a large number of tribals and rural people.

Diagrammatic Representation of the Utility of forest



Extent of Forest in Jharkhand

The state had 23,605 sq km of land under forest which was about 29.61 % of the total area of the state during 2001-2002. The per capita forest area in Jharkhand was estimated 0.088 ha during the same period. District wise and division wise distribution of the forest area can be observed in the annexure.

Table 3: Jharkhand Forest

| State | Geo. Area (Sq. km.) | Forest Area (sq. km) | Percentage of forest area Geo. Area | Population (1991 Census in lakhs) | Per capita forest area (in ha) |
|-----------|---------------------|----------------------|-------------------------------------|-----------------------------------|--------------------------------|
| Jharkhand | 79,714 | 23,605 | 29.61 | 269.09 | 0.088 |

Source: Govt. of Jharkhand, Ministry of Forest & Environment, 2001-2002.

During 2001-2202, the total area of legal status of reserved forest, protected forest and un-classed forests was 19184.78 sq. km, 19184.78 sq. km and 33.49 sq. km respectively of the total geographical area (i.e.79.714 sq. km).

Table 4: Distribution of Forest Area in Jharkhand

| Legal Status | Reserved Forest | Protected Forest | Un-classed Forest | Total Area |
|--------------|-----------------|------------------|-------------------|------------|
| Area (sq.km) | 4387.20 | 19184.78 | 33.49 | 23605.47 |

Source: Govt. of Jharkhand, Ministry of Forest & Environment, 2001-2002.

Important trees in this area are *Sal, Asan, Karam, Kend, Palas, Kusum, Biza, Jamun, Piar, Semal* etc. Bamboos are found almost everywhere. Some areas also represent Mango, *Mahua* etc. of tropical evergreen forest. Among the forests three categories of vegetation are found. This vegetation includes tall trees, dense bushes, grasses and give a look of three layers.

The forest resources of Jharkhand have been ruthlessly depleted by illegal greedy contractors and other agencies without considering the implications of forest cover on environmental degradation and soil erosion in the region. The rate of deforestation can be analyzed with the help of the table presented below.

Table 5: District wise Forest Coverage in Jharkhand

| District | Forest cover 1989-90 (000ha) | 1995-96 Forest Cover (000 ha) |
|----------------|-------------------------------|-------------------------------|
| Godda | 24 | 31.3 |
| SahebGanj | 47 | 63.5 |
| Dumka | 60 | 62.9 |
| Deoghar | 21 | 34.6 |
| Dhanbad | 24 | 18.9 |
| Giridih-Bokaro | 234 | 230.6 |

| | | |
|----------------------|-----|-------|
| Hazaribag-Chatra | 537 | 547.7 |
| Palamu-Garwa | 556 | 556 |
| Lohardaga | 45 | 45 |
| Gumla | 232 | N.A |
| Ranchi | 153 | 159.1 |
| East & West Singbhum | 380 | 446.3 |

Compiled from District Gazetteer & Jharkhand, 2002

From the observation of the above table it becomes clear that forest coverage has depleted from the mining districts of Jharkhand, viz., Dhanbad, Giridih-Bokaro and Singbhum in between 1989-90 to 1995-96. In the rest of the districts the forest coverage has either remained the same or increased during the same period. However, ranking of the forest coverage of the districts during 1989-90 to 1995-96 remained the same except Giridih district is pushed down by Gumla district in 1995-96. This can be observed in the boxes below.

Box (a): Districtwise Ranking and Changes in Forest Coverage of Jharkhand State, 1989-90

| |
|---|
| Bottom 6 districts with forest coverage of 21000 ha. to 60,000 ha. Deoghar, 21 Deoghar, Godda, 21, 24 Deoghar, Godda, Dhanbad, 21, 24, 24 Deoghar, Godda, Dhanbad, Lohardaga, 21, 24, 24, 45 Deoghar, Godda, Dhanbad, Lohardaga, Sahebganj, 21, 24, 24, 45, 47 Deoghar, Godda, Dhanbad, Lohardaga, Sahebganj, Dumka 21, 24, 24, 45, 47, 60 |
| Top 6 districts with forest coverage of 556000 ha. to 232000 ha. Palamau, 556 Palamau, Hazaribag, 556, 537 Palamau, Hazaribag, singbhum, 556, 537, 380 Palamau, Hazaribag, Singbhum, Giridih, 556, 537, 380, 234 Palamau, Hazaribag, Singbhum, Giridih, Gumla, 556, 537, 380, 234, 232 Palamau, Hazaribag, Singbhum, Giridih, Gumla, Ranchi, 556, 537, 380, 234, 232, 159 |

Box (b): District wise Ranking and Changes in Forest Coverage of Jharkhand State, 1995-96

| |
|--|
| Bottom 6 districts with forest coverage of 18000 ha. to 64000 ha. Dhanbad, 18.9 Dhanbad, Godda, 18.9, 31.3 Dhanbad, Godda, Deoghar, 18.9, 31.3, 34.6 Dhanbad, Godda, Deoghar, Lohardaga, 18.9, 31.3, 34.6, 45 Dhanbad, Godda, Deoghar, Lohardaga, Dumka, 18.9, 31.3, 34.6, 45, 62.9 Dhanbad, Godda, Deoghar, Lohardaga, Dumka, Sahebganj, 18.9, 31.3, 34.6, 45, 62.9, 63.5 |
| Top 6 districts with forest coverage of 556000 ha. to 160000 ha. |

Palamau, 556
 Palamau, Hazaribag, 556, 547.7
 Palamau, Hazaribag, Singbhum, 556, 547.7, 446.3
 Palamau, Hazaribag, Singbhum, Gumla 556, 547.7, 446.3, 232
 Palamau, Hazaribag, Singbhum, Gumla, Giridih 556, 547.7, 446.3, 232, 230.6
 Palamau, Hazaribag, Singbhum, Gumla, Giridih,
 Ranchi, 556, 547.7, 446.3, 232, 230.6, 159.1

The forest resource of this state needs due attention towards its shrinking size, felling of valuable trees, associated soil erosion, awareness towards afforestation and preserving environmental conditions. The main problems of the forests of the region concern human interference in the form of clearing bushes for food crops for increasing population, greed of the contractors, lack of alternative livelihood for the aboriginals who still depend upon the forest and unplanned development of industrial, urban growth, etc. These problems have caused depletion of forest in mineralized, industrialized, urbanized and densely populated areas of the region. At the same time unscientific felling of immature trees is converting the forest into bushes. The problem of soil erosion is prevalent. Wasteland area is increasing the deforested areas and rocky surfaces are getting exposed. As such there is need to preserve the forest by planting trees in the deforested areas, preventing unscientific felling of trees, declaring protected forest areas and developing social forestry in the inhabited areas. During recent years special attention has been paid to maintain environmental conditions because forest influences precipitation, evaporation, moisture content, soil fertility, etc.

Forest and Tribal Economy

The tribals are very closely associated with the nature. Some of the tribes in Jharkhand for instance *Birhor* and *Birjia* are called the forest dwellers. There is symbiotic relationship between the forest and tribals. The clan of many tribes in Jharkhand is named after animals, birds, fish, insects, plants, trees (viz. *Lakra-tiger*, *Kerketta*- bird, *Minj*-fish, *Topno*-red ants in tree, *Kujur-kujri* plants, *Barla*-Baniyan tree, etc.) which are the different species of the forests, with mythical relation and totemic objects.

In spite of massive deforestation of biodiversity resources forest is still the primary source of livelihood for many tribal communities. Many Tribals construct huts, houses, doors and other necessary household items from wood, sticks, bamboo, leaves and grasses etc. which they collect from the nearby forest. Forest is still the means of food security for many tribal communities living near the forest and they supplement their income by the forest products. They collect wild vegetables leaves, flowers, fruits, roots, seeds, honey, birds, animals and insects from the forest in different seasons for food. They also collect grasses and leafy fodder for their live stocks from the forests. They collect various useful items viz., wax, lac, fire wood and leaf from the forest and

are also dependent upon forest for the medicine to cure different diseases with the help of medicinal herbs, fruits, grasses, leaves etc.

The *sarna* a sacred grove (a place of worship in forest for Santhal, Munda, Oraon, Kharia, etc.) is also preserved within or near the forest. They worship their 'Singbonga' (the Supreme Being) at *Sarna* on the occasion of *Sarhul* (tribal feast of nature and flowers). The tribals have secret knowledge about the forest and pay tremendous respect to wild animal, birds, flowers and trees etc.

Forest and tribals are closely related and inter-dependent due to the following facts:

a. The tribal women in around the forest begin their daily routine from the forest and collect twigs, leaves, fruits, fuel woods etc.

b. The tribal men go to forest to collect honey, hunt birds and animals.

c. The tribals living nearby the forest collect some edible fruits, roots, flowers, mushroom, tubers, and wild vegetables and use them as food.

d. The tribals collect different types of seeds like *Mahua*, tamrind, Sal etc, and boil them before they eat.

e. The tribals living around the forest collect *sal* seeds, *mahua*, *dori* and other oil seeds from the forest for self consumption and also sell them in the local market.

f. The tribals living around the forest gather honey combs. The tribals go to forest and refresh their minds when they are worried and tired.

Administrative Staff College, Hyderabad (1978) revealed that between 10 to 55 per cent of income of tribal families in the major tribal concentration states of Madhya Pradesh, Bihar, Orissa and Andhra Pradesh was based on the collection and sale of MFP.

Causes of Deforestation

1. Jhuming or Shifting Cultivation: In Chotagnagpur the deforestation began initially with the 'Jhuming' or shifting cultivation practiced by the *adibasis*, who started felling trees and burning them to increase the fertility of the soil on which they grew crops for a year or two and then left it to resume the process elsewhere. When their number increased more and more trees were cut and they cleared up the forest area for cultivation.

2. Vendees or Lessees under the Landlords: The indiscriminate exploitation of forests by vendees or lessees under the landlords, particularly during the II world War (1939-45) has been a major factor of deforestation in Chotanagpur region. During this period on account of high demand for all varieties of timber, dense forest of the area was ruthlessly exploited.

3. Salami to Raiyats: The settlement by landlords of steep slopes for cultivation by *raiya*t in consideration of a small amount as *salami* also caused considerable damage to forests in the Chotangpur region. The *raiya*t cut timber in excess of their need and are also wasteful.

4. Administration Right to Amlas: The landlords used to leave the administration of their forests to *amlas*, who in lieu of small payment to them often allowed timber to such villagers who had no customary right to cut it.

5. Zamindars and Raiyats: When the Zamindari Abolition Act was in the offing, there was wanton destruction of forests both by the landlords and *raiya*t.

6. Excess Grazing: Grazing is equally harmful for regeneration as young shoots are not allowed to establish. The people living nearby the forest take their cattle into the forest for grazing due to scarcity of the grazing land around the village. While grazing the forest land the cattle regularly eat up the tender shoots of the plants and stamp the other species of the forest. Gradually, the plants and grasses disappear. The livestock population in India increased from 284.6 million in 1959 to 500 million in 1993, an increase of 50 per cent in 31 years. This huge mass of livestock needs fodder and there simply is not enough it. Area under cattle feed production has shrunk considerably the population of cattle is growing a very high rate resulting in malnutrition of our cattle.

7. Forest Fire: People nearby the forest often set fire when the trees shed leaves in order to facilitate for collecting *mahua* flowers, fruits, new plant shoots, grass and other minor forest products. As a result large number of species extinct from the forest. Deforestation is also caused by the setting fire in the forest during the summer season when the trees shed their leaves fire removes all the humus from the forest floor and burns down the seedlings and thus makes the reproduction of the forests impossible and opens up the soil to erosion.

8. Population Pressure: With increase in population requirement of food and space also increase. To meet these needs man has destroyed forests and converted it into food growing fields or space for building houses etc. Due to the growth of modern civilization and industrial revolution along with increasing human population, there has been a widespread destruction of the forest cover leading to soil erosion, floods, drought and increasing wasteland.

9. Forest Encroachment for Cultivation: Forests are the only land which can readily be brought under the plough. With population explosion comes unemployment which can partially be solved by the increasing preview of agriculture through cutting trees in the forest.

10. Large Dams, Roads, Industries, Mining, Power Plants: It is estimated that during the period 1951-1976, 0.49 million hectares of forest has been lost

due to major river valley projects. Forest is also being cleared for approach roads, offices, residential quarters and for storage of construction material with reduction in forest cover and the entry of people, the pressure on the remaining forest increases. After the formation of new Jharkhand state in November 15, 2000, 26000 trees were cut in order to broaden the road from the different cities of Jharkhand.

11. Railway Line: Expansion of railway line also caused a massive deforestation in Jharkhand. The most recent project of linking Hazaribag by railway line has caused massive felling of trees. At least three lakh trees have been cut to implement this project recently.

12. Dearth of Alternative Fuel in the Rural Area: According to an estimate our fuel wood requirement is 0.6 M. T. per capita per year. Thus we need 480 billion M. T. of fuel wood per year which is much more than the annual increment of the existing growing stock of our forests.

Impacts of Deforestation

1. Displacement: Deforestation is causing social imbalance and massive displacement of rural and tribal people from natural environment. It is estimated that some 50 million persons have been displaced since 1950 on account of various development projects, of which more than 40 per cent are tribals. These projects include large irrigation dams, hydroelectric projects, open cast and underground coal mines, super thermal power plants and mineral-based industrial units.

2. The tribal culture, social, political, spiritual and historical importance is disturbed due to massive deforestation.

3. Increase in Food Insecurity: The food insecurity of the tribals living in and around the forest has become worse after the depletion of forest due to establishing the mining centers. Many tribal villages were destroyed due to massive deforestation and mining. The number of tribals were displaced from their ancestral land and forced to abandon their villages.

4. Forest Gives Relief from Sorrow, Worry and Distresses: Tribals living near the forest go to the forest for relief from their sorrow, worry and distresses. But, due to massive deforestation by the greedy contractors and unplanned mining the forests are destroyed from the tribal areas to a great extent.

5. Increase in Anti-Social Elements: Many anti social elements are increasing among the tribals due to the massive deforestation. Due to lack of forest in tribal areas tribals are now forced to stay at home and they remain idle for longer period at home. As a result there are quarrel and fight among themselves and illicit relationship due to excess drinking and idling in the villages. Many tribal men and women have become daily wage earner in the

nearby markets centers and some even migrated to the far off urban centers for their survival and livelihood.

6. Sickness like Cancer, Diabetes and T.B.: Major sickness like cancer, diabetes, T.B. etc. were unheard among the tribals living near the forest due to mineral intake in their food which they regularly use to collect from the forest. But after the deforestation and displacement from their villages many tribals are the victims of such fatal diseases. This is caused due to malnutrition and hunger.

7. Increasing Distresses: Economic, social and cultural distresses are increasing among the rural tribals due to lack of employment caused by deforestation.

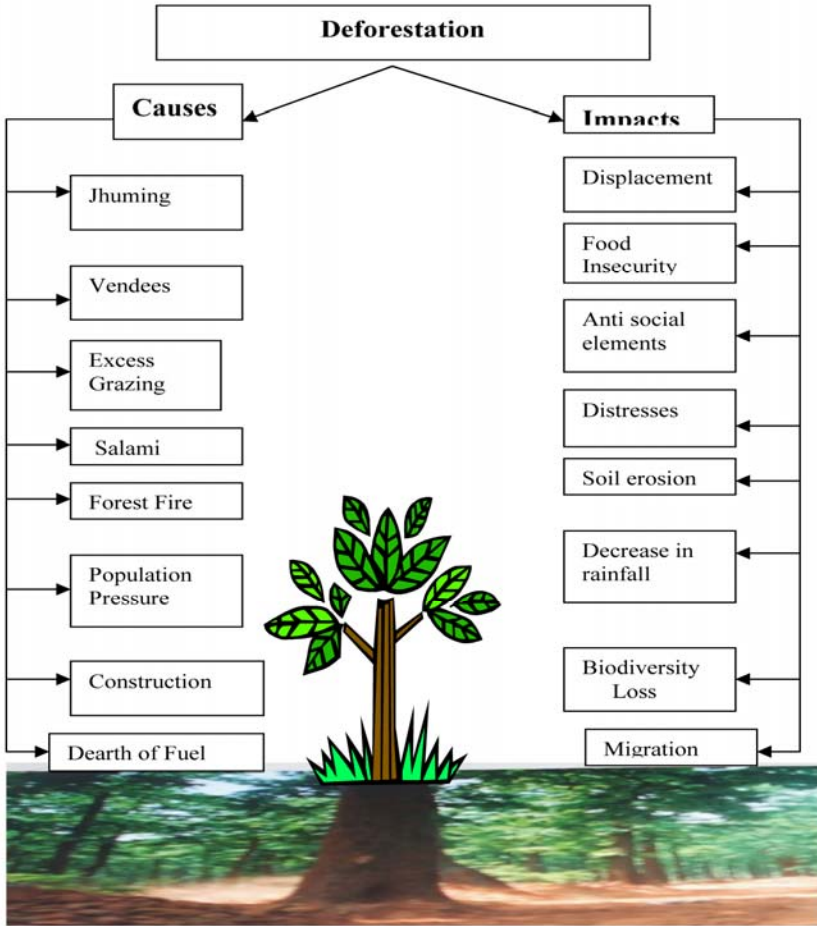
8. Soil Erosion: The top soil is much damaged through deforestation, running water and wind. The important factors, which make the soil less fertile, are leaching, cropping and soil erosion.

9. Uncertainty and Decrease in Rainfall: The forest coverage has the capacity to block the monsoon wind and it causes the rainfall around the forest area. But the ruthless felling of trees and massive deforestation has caused the uncertainty and lessened rainfall in Jharkhand and all over the country in recent years. At least 33 per cent of the forest cover is required in India for ecological balance. But due to continuous deforestation the forest cover in the country is reduced to about 23 per cent. This has created a serious problem of uncertainty of monsoon.

10. Biodiversity Loss: Between 1854 and 1952, i.e. roughly 100 years before Independence, tree cover had come down from an estimated 40 per cent to 23 per cent of the land area. The annual rate of decline was about 0.2 per cent. Between 1952 and 1988, i.e., in a short period of 36 years, tree cover had come down from 23 percent to 12 percent of the total land are, i.e., at the annual rate of decline of 0.4 per cent. According to an estimate of FAO. India lost 3.4 million hectares of forest are between 1951 and 1972, which worked out to an annual denudation of 155,000 hectares. The latest satellite imagery studies reveals that the country is losing its forest cover at the annual rate of nearly 1.3 million hectares.

11. Migration to Urban Areas: In past forest and rivers were the supplementary sources of livelihood and food security for the tribals. The tribals used to collect seasonal forest products particularly roots, fruits, seeds, tubers, leafy vegetables, mushrooms, *rugara*, and dry fuel wood for self consumption and for the exchange of money in the local market. Now, due to massive deforestation, erratic rainfall, and increase in population these forest products are not sufficient. Therefore, the tribals migrate to urban centers in search of food by exchanging their labour during the distress period.

Chart: G: Chart of Causes and Impacts of Deforestation



CONCLUSION

Therefore, on the basis of the analysis of the issues on environmental degradation in the tribal regions there is an urgent need to prevent environmental degradation by stopping deforestation and over exploitation of natural resources in tribal regions of India in general and from the tribal region of Jharkhand in particular. Therefore, from every angles emphasis should be made to initiate and revive the spirit among the people to preserve the existing forest wealth, bring more land under forest and maintain the ecological balance throughout the country and particularly in the tribal regions of India. The proposed strategies and action plans of the study are protection of forests by the local people and making alternative strategies for employment in the rural areas, controlling out migration and displacement of the tribals from their regions, enhancement of social forestry and creating awareness among the rural people

for conserving environment and natural heritage by preserving the remaining forests.

Policy For Forest Conservation

1. Protection of forests by the people for the people.
2. Making alternative arrangement of employment in the rural area.
3. Quick growing planted forests for cheap fuel wood be encouraged.
4. Enhancement of social forestry.
5. Creating awareness among the rural people regarding environment.
6. Conserving natural heritage of the country by preserving the remaining forests.
7. Checking soil erosion and denudation in the catchments areas of rivers, *nalas* in the interest of soil and water conservation for mitigating floods and droughts and for the retardation of siltation of reservoirs.
8. Increasing substantially the forest cover in the country through massive afforestation and social forestry programmes especially on denuded and unproductive lands.
9. Meeting the requirements of fuel wood, fodder and minor forest produce of the rural and tribal populations through agro forestry programmes.
10. Creating a massive people's movement for achieving these objectives and to minimize pressure on existing forests.

REFERENCES

- Brown, K. and Pearce, D. (ed.) (1995): **The Causes of Tropical Deforestation**, UCL Press, and London.
- Chopra Kanchan and Kadekodi, G.K. (1999): **Operationalizing Sustainable Development**, Sage Publications, New Delhi.
- Fernades, W. (ed.) (1998): **Forests, Environment and Tribal Economy**, Indian Social Institute, New Delhi.
- Kulkarni, K.M. and Lal, R.B. (1990): **Forest and Tribal Life**, Concept Publishing Company.
- Roy, A. Mukherjee (1995): **Forest Resources Conservation and Regeneration**, Concept Publishing Company, New Delhi.
- Shukla, R. S. (2000): **Forestry for Tribal Development**, Wheeler Publishing, New Delhi.

ANNEXURE
Jharkhand Forest

| Name of the Forest Division | Districts | Reserve Forest (in ha.) | Protected Forest (in ha.) | Unclassed Forest (in ha.) | Total Forest Area (in ha.) |
|------------------------------------|------------------|--------------------------------|----------------------------------|----------------------------------|-----------------------------------|
| Saranda | Singbhum | 81808 | 3988 | 86 | 85882 |
| Kolhan | Singbhum | 58716 | 11258 | 68 | 70042 |
| Porahat | Singbhum | 50628 | 15816 | 98 | 66542 |
| Chaibasa South | Singbhum | 31 | 50875 | - | 50906 |
| Chaibasa North | Singbhum | 6486 | 61540 | - | 68026 |
| Dhalbhum | Singbhuhum | 53050 | 51863 | - | 104913 |
| Ranchi East | Ranchi | 11742 | 80182 | - | 91924 |
| Ranchi West | Ranchi | 26290 | 73744 | - | 100034 |
| Gumla | Gumla | 12101 | 118717 | 16 | 130834 |
| Giridih | Gumla | 8776 | 113020 | - | 121796 |
| Hazaribag West | Hazaribag | 673 | 176524 | 340 | 177537 |
| Hazaribag East | Hazaribag | 1743 | 102055 | - | 103798 |
| Bokaro | Hazaribag | - | 51901 | - | 51901 |
| Chatra South | Chatra | 752 | 101828 | - | 102580 |
| Chatra North | Chatra | - | 93372 | - | 93372 |
| Koderma | Koderma | 15630 | 73408 | - | 89038 |
| Dhanbad | Dhanbad | 10825 | 15555 | - | 26380 |
| Daltonganj South | Plamau | 58081 | 46044 | 45 | 1041170 |
| Daltonganj North | Plamau | 3987 | 126661 | - | 130648 |
| Garhwa South | Garhwa | 549 | 123586 | - | 124135 |
| Garhwa North | Garhwa | - | 78705 | - | 78705 |
| Latehar | Latehar | 20648 | 111736 | - | 132384 |

| | | | | | |
|--------------------------|-----------|---------------|----------------|-------------|----------------|
| Deoghar | Deoghar | 2866 | 73922 | - | 76788 |
| Dumka | Dumka | 12803 | 135389 | 420 | 148612 |
| Sahebganj | Sahebganj | 50 | 10471 | 2276 | 12797 |
| Giridih Afforestation | Giridih | 485 | 16318 | - | 16803 |
| Total | | 438720 | 1918478 | 3349 | 2360547 |

Source: Govt. of Jharkhand, Ministry of Forest & Environment, 2001-2002

