

MODULE 3 - NATURAL RESOURCE : FOREST

OBJECTIVES

After a study of this e-content module, the learner will be able to know about:-

1. Natural resources
2. Renewable and Non Renewable Resources
3. Forest Types occurring in India and major and minor forest product
4. Harmful Effects of deforestation
5. Effect of Mining and Dams on forests
6. Conservation of forest which is an important wealth of nature

SUMMARY

Natural resources are a gift of nature. They are essential for civilized and comfortable living. But injudicious use of natural resources by man is disturbing the balance of environment.

Forest in nature is a renewable resource because there is recycling of plant life but over exploitation of forest for timber extraction, mining activities and construction of huge dams have made it nonrenewable. For ideal living conditions, earth should have 33% forest but in India it has been reduced up to 18%. This situation is alarming. India's forest policy laid down in 1988 has allowed JFM (Joint Forest Management) in which 25% of revenue earned from forest products is used for village development. Chipko movement, Appiko movement have also been started for the protection of forest. We should remember that we can grow plants but not a forest, because forest is an Ecosystem formed in Nature due to interaction between producers, consumers and decomposers. The time has come when every responsible citizen of India has to be conscious to protect trees. Development should not be encouraged at the cost of destruction.

TRANSCRIPTION

Introduction

Resources are the wealth of Nature and are essential for a civilized life. According to A.S. Jinsbergh all such natural commodities which come under the purview of human activities are called natural resources. The scenario of the present day world is that developed countries like America, which are rich in technology, are poor in natural resources where the developing countries like India, which are poor in technology, are

rich in natural resources. This results in the exploitation of developing countries by the developed countries. India is exporting cadmium a precious metal to other countries to earn foreign exchange. Cadmium rods are used in nuclear reactors as well as cadmium solar cells for electronic watches. The time may come when this precious resources may get exhausted and India may be required to pay high cost for the same to meet her needs.

In the present century it has been realized that resources are being used indiscriminately. Population explosion is the main reason for exhausting natural resources. Industrialization is also an important cause for depletion of natural resources. For centuries developing countries has been exporting raw materials to developed countries. It has now become necessary to be judicious in making use of these resources.

The problems associated with natural resources is that most of them are in limited quantity but their use is extensive especially in view of increasing population, Industrialization, technological advance and changing life style as well as the dominance of developed countries. Misuse of natural resource may lead to a catastrophe.

Over exploitation of natural resources disturbs the balance of environment. Vegetation, Soil, Minerals, Wildlife, air, water are important natural resources and their thoughtless exploitation is disturbing the balance.

Man is proving to be the most dangerous creature in nature. He has cut forest to use land for agricultural purposes and has converted agricultural land into residential areas. Natural Jungles are getting converted to cement –concrete Jungles. Over exploitation of natural resources has resulted in desertification, scarcity of ground water, scarcity of rain fall, soil erosion, land slides, floods, danger to wild life and increase in global temperature.

Classification of Natural resources

Renewable are Inexhaustible because they are regenerated

- e.g.
1. Forest
 2. Water
 3. Wild life

Non Renewable are Exhaustible they are formed once in millions of years and do not regenerated

1. Minerals
2. Coal
3. Petroleum
4. Soil

Forest resources: Use and over exploitation, deforestation, timber extraction, mining, dams and their effects on forest & tribal people: - The word forest is derived from the Latin word **foris** which meant outside. It was used to include all vegetation on cultivated and uncultivated lands. The present day meaning however relates to land managed for the resources from trees shrubs, herbs etc.

In an ideal ecosystem there should be 33% forest, 33% animals and 33% human beings. At the time of independence M.P. had 33% forest but now it has been reduced to only 12 to 16 %. Meghalaya has a forest cover of 25% rest of all the states are very poor in forest cover. In 1982 about 14% of the geographic area of India was covered with forest.

Benefits of Forest :- According to Hon'ble K.M. Munshi, the first agriculture Minister of India "tree means water, water means agriculture, agriculture means food grains and food grains mean life". Thus forests are connected with human life. It is with this idea that the minister had started **Van Mahotsava**.

Forest has the following benefits:

A - Directed benefits

1. Fuel wood: - Even to day villagers depend upon fuel wood for cooking because LPG is not available to villagers.
2. Fodder: - Grass and leaves of forest trees are used as fodder for animals.
3. Minor Products:- Gum, Catechu, Honey, Lac, Bamboo, Spices, Oil of turpentine, Medicine, hides horns , bones
4. Raw material for industries: - Matchbox industries, Bidi industries.
5. Foreign exchange earning: - Foreign tourists are attracted to forest excursions. This has become source of foreign exchange.
6. Useful in transport: - Railway sleepers, railway compartments, body of bus, truck and ship is made from wood which is a forest product.
7. Sericulture: - Silk moth and kosa moth are reared upon forest trees.
8. Apiculture:- Honey bee prefer bee hives on forest trees.

B- Indirect advantages of Forest

1. To check soil erosion: - Roots of plants bind themselves with soil particles therefore soil erosion is checked.
2. Temperature Control: - Leaves of trees form an Umbrella like canopy. Due to transpiration water vapor collected under the trees and temperature is controlled.

3. Control over desertification: - Trees prevent sand from being blown away because sand binding takes place by roots of trees their fore the formation of sand dunes is checked.
4. Increase in soil fertility:- Dry fallen leaves of trees are called litter. The litter undergoes decay on soil and form humus. Humus adds to the fertility of soil. These forest act as soil bank.
5. Increase in the level of underground water:- Roots of the trees absorb rain water during rainy season and maintain the level of underground waters. They also maintain the moisture in surface soil by acting as water shed.
6. Purification of air:- Trees absorb carbon dioxide and give only oxygen. Oxygen is vital to air. It is estimated that fully grown trees can meet the oxygen requirement of 36 people. Shri Sunderlal Bahuguna the leading Indian naturalist and leads of Chipko movement has pointed out that we estimate the utility of a tree on the basis of wood, fruits and minor products but we over look the aspect of oxygen produced by it. This will run into millions of rupees for a single Peepal tree or Neem tree.
7. Protection from enemy attack:- Due to thick forest it becomes difficult for the enemy army to attack another country. Thus forest acts as protective cover.
8. Market use: - A dwelling on forest person sell fuel wood, honey, gum, fruit (chiraunji) baskets (preferred from bamboo or cane) in the market and make money out of it.
9. Gene bank:- Forest plants and forest animals possess several useful genes which can be used for the benefit of mankind. Blue print of aspirin was obtain from Salix plant while that of quinine from cinchona. The very first antibiotic of the world penicillin was discovered from the fungus penicillinium notatum.

FOREST AREA IN INDIA

Type of Forest	Dense forest	416869 (Area in Sq.km)	12.68 (% Of Earth surface)
Less dense forest	258725		7.87
TOTAL	675538		20.55

FOREST TYPES OF INDIA

- | | | |
|---|--------------------------------|--|
| 1 | Tropical wet evergreen: | Western ghats- Mahabaleshwer, Khandala, Lonawala |
| 2 | Tropical moist semi evergreen: | Karnataka, Kerala, Western region of Orrisa. |
| 3 | Tropical moist deciduous: | Maharastra and western Tamilnadu |
| 4 | Tidal: | Delta region Bengal |
| 5 | Tropical dry deciduous: | U.P., M.P., northern Bihar |
| 6 | Tropical dry evergreen: | Eastern Tamilnadu |
| 7 | Tropical Thorn: | Delhi, Rajasthan, western gujrat |
| 8 | Sub tropical wet hills: | Nilgiri hills |
| 9 | Sub tropical Pine: | Jammu Kashmir |

- | | | |
|----|-----------------------------|------------------------------|
| 10 | Sub tropical dry evergreen: | Himalayan foot hills |
| 11 | Temperate wet & moist: | Himanchal, Northern assam |
| 12 | Temperate Dry: | Central Eastern, Kashmir leh |
| 13 | Alpine: | Laddakh, Sikkim & Bhutan |

FOREST POLICY OF INDIA

During the British rule the govt. didn't show any concern about the protection of forest

In 1952 Govt. of India framed a policy that one third of area of India should have forest cover. Up to 1988 this very policy was repeated again but this goal could not be achieved. The result is that forest area has depleted almost 18%.

DEFORESTATION

Unplanned and uncontrolled felling of trees leads to deforestation. We cut trees and grow plants. This does not make a dense forest. More over a forest is an ecosystem with its own producers, consumers and decomposers. Man grown plants can not make an ecosystem. Ecosystem is a creation of nature and takes centuries for its formation. The civilization which have used forest and forest products with caution have prospered well while those where deforestation took place have become impoverished.

CAUSES OF DEFORESTATION

1. **FUEL WOOD:-** Village population depends upon fuel wood for cooking therefore they cut trees.
2. **OVER GRAZING:-** Due to overgrazing the soil becomes loose and forest soil of top layers undergoes erosion.
3. **AGRICULTURE:-** Due to increasing demand of food grain forest trees are cut and converted to agricultural land.
4. **Construction of Dams:** Dams are constructed on rivers and huge forest area gets submerged. This is progress at the cost of destruction.
5. **Cash Crops:** Tea, Coffee, Coco, Rubber and Coconut are commercial crops, which are raised on soil by cutting the forest.
6. **Attack of Insects:** Leaf borer in Bastar area destroy several thousand Sal trees.
7. **Industrial Products:** Furniture, Match box, Paper and Railway Sleepers are prepared from wood hence trees are cut at large scale.
8. **Jhum Cultivation:** Tribals of Assam cut the forest and set the trees on fire so that soil becomes rich in minerals. They cultivate rice in that area for 4-5 years and shift to another place and repeat the same there also. This is called Jhum cultivation or shifting cultivation or shift cultivation, which results in desertification.
9. **Diseases:** Several fungal diseases attach forest trees, for example chestnut blight or blister disease. This causes great damage to forests.
10. **Forest Fires**

Measures to Check Deforestation:

- Use of paper should be minimized at school level by encouraging the use of slates.
- Jhum Cultivation should be banned and tribal be trained for normal cultivation.
- Only mature and old or diseased trees should be cut and new saplings be planted immediately.
- Used paper should be recycled.
- Plants like plantain should be used to prepare paper pulp because these plants, being monocarpic, become useless after one year.
- Forest research institutes should be started in every state, on the lines of FRI, Dehradun. Madhya Pradesh has State Forest Research Institute at Jabalpur and Forest Management Institute in Bhopal.
- Plantation be observed as festival. India observes "Van Mahotsava", Japan observes "Green Week", Israel celebrates "New Years Day of Tree", while America celebrates "Arbor Day".

Timber extraction, mining and dams are the need of developing countries and forests are also located in such areas. Thus there is constant conflict between development and deforestation. Harsood in MP is an example where thousands of people became homeless due to Narmada Sagar Dam.

Timber extraction is the main cause of deforestation out of the total timber obtained by falling trees 40% is used for furniture, 35% as fuel wood, 15% for industrial use and 10% for miscellaneous purpose.

Tropical countries like Malaysia, Myanmar (Burma), Thailand, Indonesia, Congo, Brazil are involved in exporting wood to other countries. Brazil once was popular as Forest Empire but has become a tree less country due to the falling of trees.

Production of timber at world level is as under:-

S.NO	COUNTRY	PRODUCTION IN MILLION cu.mts
1	Asia	1146.6
2	Northern America	689.7
3	Africa	393.5
4	South America	392.2
5	Central America	71.0
6	Oshania	50.1

Principal timber trees of India are Teak, Sal, Pine, deodar, Shisham, Sundari, etc. Teak and sal are found in the forest of M.P., Maharastra, Chhhatigarh, Jharkand, Karnataka and Tamilnadu, Pine, Deodar in Himalayan region. The production of

timber is gradually decreasing in India. With developing civilization mineral requirement has also increased hence mining is necessary. Mining activities involve explosion with dynamite. This causes air pollution. Soil becomes hallow and a lot of forest undergoes denudation.

Dams are necessary for irrigation and hydel projects. Dams cover huge areas of several hundred km from where trees are to cut or undergo submergence. Irrigation canals are built which also becomes the cause of deforestation. Lot of areas in the vicinity of dam becomes marshy and useless for crops. Incidences of malaria are increases. Thousand of people become displaced.

Loss of habitat is the greatest punishment for an organism. Same applies to displace persons thus there is a constant conflict of interests between the protection of environment and the mining and irrigation activities. Long term ecological gains should not be sacrificed for short term economic gains which lead to deforestation. These forests where development projects are implemented can displace thousand of tribal people who become homeless. These results in suffering to old and young generation for which there is rarely a satisfactory answer.

SOME REVOLUTIONARY MOVEMENTS REGARDING FOREST CONSERVATION

1. **KHEJARLI MOVEMENT**- This took place in 1730 in Khejarli village of Jodhpur, Rajasthan. The ruler wanted to cut green trees of Khejarli (white Acacia) for fuel wood but village ladies opposed it. They hugged the trees and Amrita Devi Vishnoi and her three daughters had to sacrifice their lives for protection of tress. Ultimately the ruler had to take back his decision. Even today, Person belonging to Vishnoi caste do not cut green trees. Government of Madhya Pradesh has declared Amrita Devi Vishnoi award for the organizations and individuals who have done commendable work in the field of conservation of forest and wild life.
2. **UTTRAKHAND MOVEMENT** – The villagers of Tehri Garwal realized that cutting of trees results in land slide and epidemic diseases. Here several organizations of villages are working for protection of the forest right from 19th century. Panchayats engaged paid forest guards to prevent felling of trees.
3. **TILADI MOVEMENT** – The villagers of Tiladi village of Uttaranchal organized a meeting on 30th may1930 in order to assert their claim on forests. They were attacked by the British Army, 17 persons died and the British Govt. was forced to withdraw its claim on forest property.
4. **CHIPKO MOVEMENT** – Started by Chandi Prasad Bhatt and followed by Sunderlal Bahuguna of Tehri Gharwal. Whenever the Govt. ordered the cutting of trees to build some Dam or any other building or factory the villagers hugged trees and saved the life of trees.

On the basis of Chipko movement a social worker Pandurang Hegde started 'Appiko' movement in south India and Silent Valley of Keral could be saved from destruction.

GLOSSARY

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|----------------------------|---|
| 1. Resource | - Means of Support. |
| 2. Technology | - Application of Science in Industry. |
| 3. Exploitation | - Utilization for one's own benefit. |
| 4. Export | - To send out to another country. |
| 5. Indiscriminately | - Non judiciously |
| 6. Depletion | - deficiency |
| 7. Judicious | - Sensible |
| 8. Inevitable | - Unavoidable |
| 9. Catastrophe | - Disaster |
| 10. Cement Concrete Jungle | -Multistory buildings |
| 11. Desertification | - Becoming barren |
| 12. Fuel Wood | - Wood used for cooking |
| 13. Fodder | - Hay of dry leaves for feeding cattle |
| 14. Forest | - Away from human habitat. |
| 15. Transpiration | - Loss of Water in the form of vapor from aerial organs of a plant. |
| 16. Oxygen | - Vital gas inhaled during respiration. |
| 17. Aspirin | - Analgesic drug given in fever. |
| 18. Quinine | - A bitter medicine used in cure Malaria. |
| 19. Antibiotic | - Secretion of a microbe used to kill other microbes. |
| 20. Fungus | - Spongy cattery growth on bread or pickle & other eatables. |
| 21. Deciduous tree | - Tree with simultaneous leaf fall. |
| 22. Evergreen tree | - Tree with gradual leaf fall. |
| 23. Alpine | - Growing on Lofty mountains. |
| 24. Deforestation | - Destruction of forest. |
| 25. Ecosystem | - A system showing interaction between the organism & environment. |
| 26. Impoverished | - Become poor. |
| 27. Dam | - Barrier checking the flow of water |
| 28. Sapling | - Young tree |
| 29. Histogram | - Proportional graph |
| 30. Mining | - Extraction of mineral by digging earth or rocks |
| 31. Dynamite | - High explosive |
| 32. Denudation | - Disappearance of forest |

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|----------------------|---------------------|
| 33. Conflict | - Trial of Strength |
| 34. Displaced person | - Homeless persons |
| 35. Habitat | - Place of Living |

FAQs

Q1. What are natural resources?

Ans: Natural resources are the gift of nature essential for civilized living.

Q2. Out of developed and developing countries which are rich in natural resources?

Ans: Developing countries.

Q3. Which precious metal from India is exported to other countries?

Ans: Cadmium.

Q4. List five causes of exploitation of natural resources.

Ans: (i) Population explosion

(ii) Industrialization

(iii) Technological advance

(iv) Changing life style

(v) Dominance of developed countries

Q5. Who is the most dangerous creature on the earth?

Ans: Human being.

Q6. List nine consequences of over exploitation of natural resources:

Ans:

- i. Desertification
- ii. Scarcity of ground water
- iii. Scarcity of rainfall
- iv. Soil erosion
- v. Landslides
- vi. Earthquakes
- vii. Floods
- viii. Danger to wildlife
- ix. Global warming

Q7. What are renewable natural resources?

Ans: Those resources which can be regenerated or which have cycle.

Q8. List three renewable natural resources.

Ans:

- (i) Tree
- (ii) Wildlife
- (iii) Water

Q9. What are non-renewable natural resources?

Ans: those natural resources which are produced in nature once in thousands of years & are not recycled.

Q10. List four non-renewable natural resources.

Ans:

- (i) Coal
- (ii) Petroleum
- (iii) Minerals
- (iv) Soil

Q11. What is a forest?

Ans: Vegetation on uncultivated and cultivated lands outside human habitats.

Q12. What is the composition of an ideal eco-system?

Ans: An ideal eco-system is that which has 33% forest, 33% animals, 33% human beings.

Q13. List eight direct benefits of forests.

Ans:

- (i) Fuel wood
- (ii) Fodder
- (iii) Minor products like gum, catechu
- (iv) Timber
- (v) Match box industry, paper industry
- (vi) Site seeing
- (vii) Body building of trucks, buses
- (viii) Sericulture and agriculture

Q 14. List eight indirect advantages of forests.

Ans:

- (i) To check soil erosion
- (ii) Temperature control
- (iii) Control over deforestation
- (iv) Increase in soil fertility
- (v) Supply of oxygen
- (vi) Source of earning for tribal people
- (vii) Increase in the level of underground water

(viii) Gene bank for medicines like aspirin and quinine

Q15. What is the present status of forest area in India?

Ans: 20%

Q16. Which regions of India have Alpine forests?

Ans: Ladhak, Sikkim

Q17. What type of forest is found in India?

Ans: Tropical dry deciduous forest.

Q18. Which parts of India have tropical thorn forests?

Ans: Delhi, Rajasthan & Western Gujarat.

Q19. What type of forest is found in Western Ghats?

Ans: Tropical wet evergreen.

Q20. What is a deciduous tree?

Ans: a tree in which all the leaves fall down at the same time, e.g. Teak.

Q21. Does evergreen tree mean that there is no leaf fall at all?

Ans: No. It means that all the leaves do not fall at the same time but the leaf fall is gradual.

Q22. What should be the forest cover according to the forest policy of India?

Ans: 33%.

Q23. Why is it said that man can grow trees but not the forest?

Ans: forest is an eco-system having its own producers, consumers and decomposers as well as cycle of water, minerals and gases. This is established in nature in several hundred years. Man can grow a plantation of trees but cannot grow a forest.

Q24. List eight causes of deforestation.

Ans:

- (i) Fuel wood extraction
- (ii) Over grazing
- (iii) Agriculture
- (iv) Construction of dams
- (v) Cultivation of cash crops
- (vi) Industrial products like matchboxes, paper, etc.
- (vii) Jhum cultivation
- (viii) Diseases & forest fire

Q25. List six measures to check deforestation.

Ans:

- (i) Jhum cultivation be banned
- (ii) Use of paper at school level be minimized
- (iii) Paper should be recycled
- (iv) Forest research institutes be started in every state
- (v) Van Mahotsav be observed in every state
- (vi) Joint forest management (JFM) be observed in all the states. According to this program 25% of revenue earned from timber is spent for village development

Q26. List main timber trees of India.

Ans: Teak, Sal, Sheesham, Sundari, Pine & Deodar.

Q27. What are two advantages of dams?

Ans: (i) Irrigation

(ii) hydro-electricity generation

Q28. What are two disadvantages of Dams?

Ans: (i) Deforestation

(ii) Displacement of human beings & habitat loss for wild life.

Q29. Which town in MP has to face the problem of displacement?

Ans: Harsud, due to Narmada Sagar Dam.

Q30. List two disadvantages of mining.

Ans: (i) Earth becomes hollow & prone to earthquakes.

(ii) Denudation of forest

Q31. List four movements for forest conservation

Ans: (i) Khejarli Movement

(ii) V Harakhand Movement

(iii) Tilod Movement

(iv) Chipko & Appiko Movements

Q32. In whose honor has the Government of MP declared Amrita devi Vishnoi Award?

Ans: In honor of Amrita Devi Vishnoi who, along with her three daughters, lead Khejarli Movement in Rajasthan and did not allow the ruler to cut Khejarli trees.

Q33. What is the value of Amrita Devi Vishnoi Award?

Ans: Rs. 1 Lakh for any organisation & Rs. 50,000/- for individuals who contribute towards conservation of forest and conservation of wild life.

Q34. Who started Chipko Movement?

Ans: Shri Sunderlal bahuguna.

Q35. Who is the leader of Appiko Movement?

Ans: Shri Pandurang Hegde

Q36. Due to which movement Silent Valley of Kerala could be saved?

Ans: Appiko Movement.