

Unit - IV

CHAPTER 6

SOCIAL ISSUES AND THE ENVIRONMENT

4.1 Objectives

Developing and modernizing the technologies without losing our sound traditional values and practices is essential.

4.1.1 Sustainable development

Meeting the needs of the present, without compromising the ability of future generations, to meet their own needs.

4.1.2 True sustainable development

Optimum use of natural resources with high degree of reusability, minimum wastage, least generation of toxic byproducts and maximum productivity.

4.1.3 Dimensions of sustainable development

Multi dimensional concept – derived from interactions between society, economy and environment.

4.1.4 Aspects of sustainable development

- Inter-generational equity
- Intra-generational equity.

4.1.5 Approaches for sustainable development

- Developing appropriate technology - locally adaptable, eco-friendly, resource efficient and culturally suitable.
- Reduce, reuse, recycle [3R] approach – reduces waste generation and pollution
- Providing environmental education and awareness – changing attitude of the people
- ❖ Consumption of renewable resources – attain sustainability
- ❖ Conservation of non renewable resources – conserved by recycling and reusing
- ❖ Population control.

4.1.6 Urban problems related to energy

- Energy demanding activities
- Solution for urban energy problem.

4.2 WATER CONSERVATION

The process of saving water for future utilization.

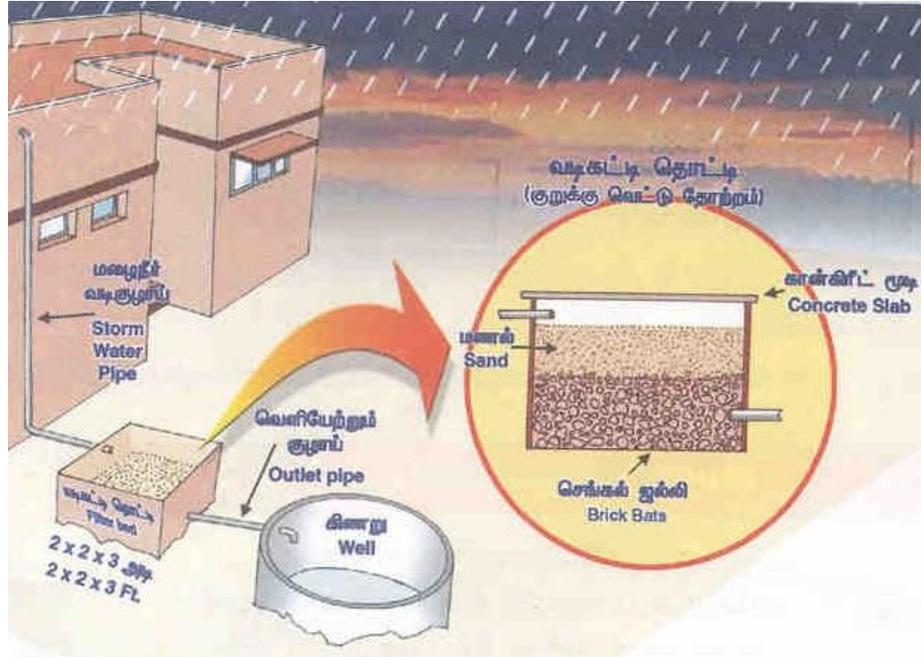


Fig.4.1 Rain Water Harvesting

4.2.1 Need for water conservation

- ✓ Changes in environmental factors
- ✓ Better lifestyles
- ✓ Increase in population
- ✓ Deforestation
- ✓ Over exploitation of ground water
- ✓ Agricultural and industrial activities.

4.2.2 Strategies of water conservation

- Reducing evaporation losses
- Reducing irrigation losses
- Re use of water
- Preventing of wastage of water
- Decreasing run-off losses
- Avoid discharge of sewage.

4.2.3 Methods of water conservation

Rain water harvesting- A technique of capturing and storing of rain water for further utilization.

4.2.4 Objectives of rain water harvesting

- ❖ Increasing demands
- ❖ Recharging the ground water
- ❖ Reducing the ground water
- ❖ Increase in hydro static pressure.

4.3 WATER SHED MANAGEMENT – The management of rainfall and resultant run-off.

4.3.1 Objectives

- ✚ To minimize of risk of floods
- ✚ For improving the economy
- ✚ For developmental activities
- ✚ To generate huge employment opportunities
- ✚ To promote forestry
- ✚ To protect soil from erosion.

4.3.2 Factors affecting watershed

- Unplanned land use
- Deforestation
- Droughty climates.

4.4 RESETTLEMENT AND REHABILITATION OF PEOPLE

4.4.1 Causes

- Due to Developmental activities
- Due to Disaster
- Due to conservation initiatives.

4.4.2 Rehabilitation issues

- ✓ Displacement of tribal's increases poverty
- ✓ Breakup of families
- ✓ Communal ownership of property
- ✓ Vanishing social and cultural activities
- ✓ Loss of identity between the people.

4.4.3 Case Studies

SardarSarovar Dam, the Theri dam Project, Pong Dam.

4.4.4 Environmental ethics

Refers to the issues, principles and guidelines relating to human interactions with their environment.

4.4.5 Environmental problems

- ❖ Deforestation
- ❖ Population growth
- ❖ Pollution due to effluent and smoke
- ❖ Water scarcity
- ❖ Land degradation.

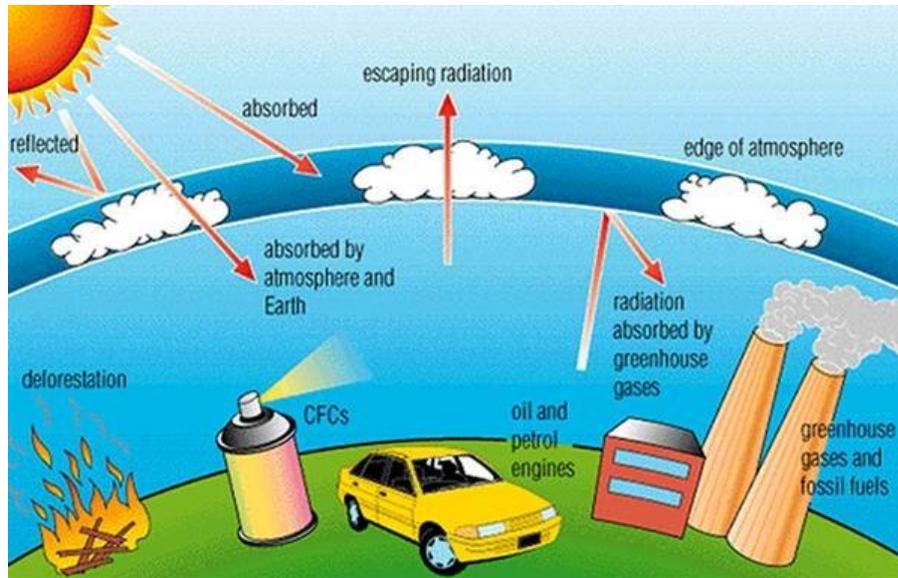


Fig.4.3 Green House effect

4.5.4 Effect on global warming

- Sea level
- Agriculture and forestry
- Water resources
- Terrestrial ecosystems
- Human health.

4.5.5. Measures

- ❖ Reducing CO₂ emission
- ❖ Utilizing renewable resources
- ❖ Plant more trees
- ❖ Adopt sustainable agriculture.

4.6 ACID RAIN

The precipitation of CO₂, SO₂, and NO₂ gases as pollutants in water.

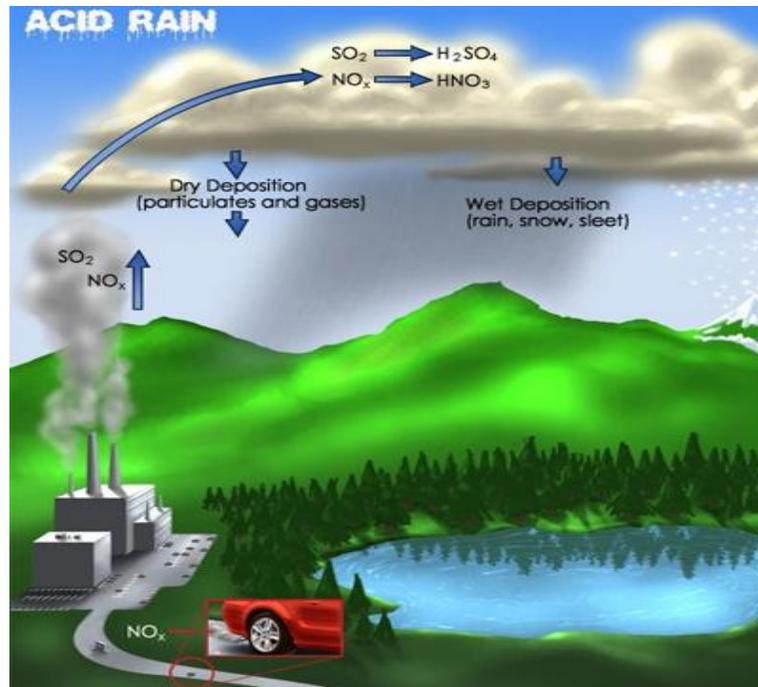


Fig.4.4 Acid Rain formation

4.6.1 Effects of acid rain

1. Human beings

- Destroy life – nervous, respiratory and digestive system
- Causes premature death from heart and lung disorders.

2. On Buildings

Corrosion - TajMahal, houses, statues, bridges, metals.

3. On terrestrial and Lake Ecosystem

- Reduces rate of photosynthesis, growth of crops, Fish population.
- And bio mass production.

4.6.2 Control measures

- ✓ Clean combustion technologies
- ✓ Using pollution control equipments
- ✓ Replacement of coal by natural gas
- ✓ Liming of lakes and soils.

4.7 OZONE LAYER DEPLETION

Ozone is formed in the stratosphere by photo - chemical reaction.

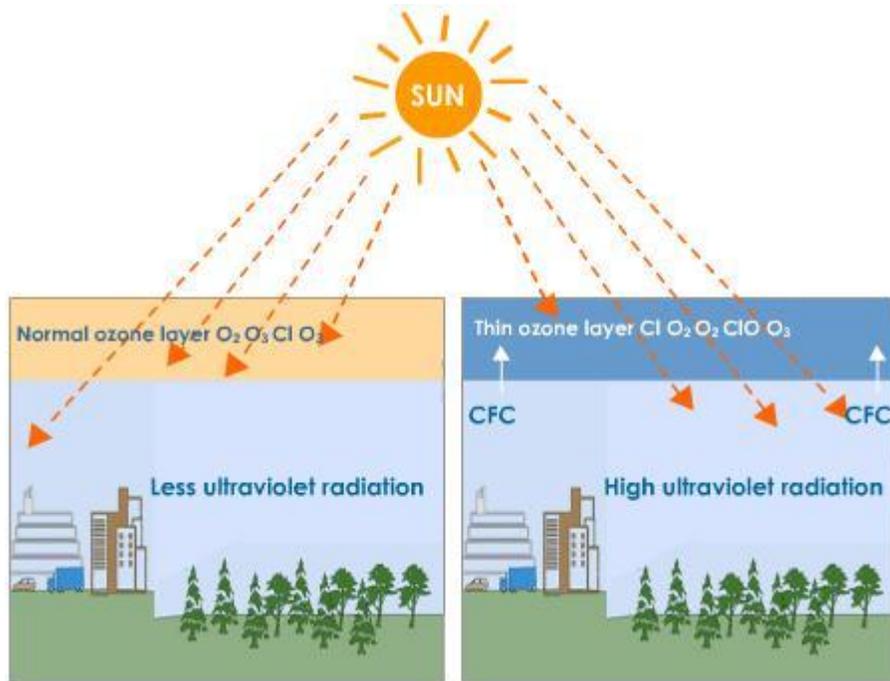


Fig.4.5 Depletion of Ozone layer

4.7.1 Ozone depleting chemicals

Chloro Fluoro carbon, Hydro chloro fluoro carbon, Bromo fluoroCarbon.

4.7.2 Effects

- ❖ On human health – Skin cancer, cataracts, allergies etc.
- ❖ On aquatic systems- phyto plankton, fish
- ❖ On materials- paints, plastics
- ❖ On climate – increasing the average temperature of the earth surface.

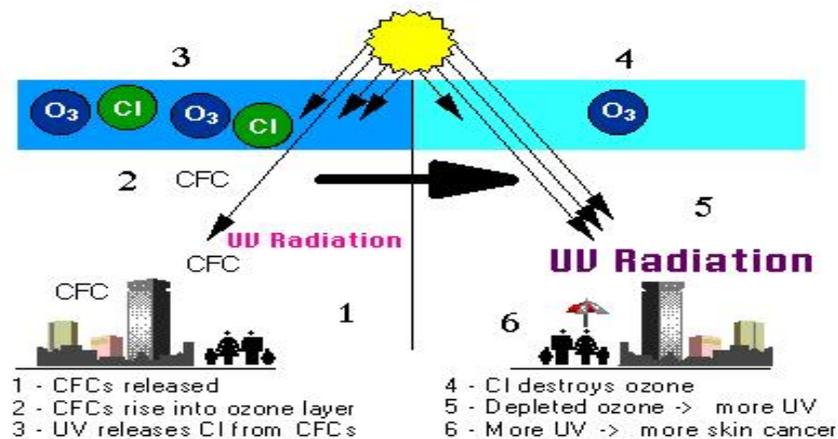


Fig.4.6 Causes and Effects of O₃ depletion

4.7.3 Control Measures

- Replacing CFCs

- Use of methyl bromide – crop fumigant.

4.8 NUCLEAR ACCIDENTS AND HOLOCAUST

The release of large amounts of nuclear energy and radioactive products into the atmosphere.

Nuclear energy was researched by man as an alternate source of energy compared to fossil fuels. Although this did happen along with the benefits came its downfall. In the short history of nuclear energy there has been a number of accidents that have surpassed any natural calamity. A single nuclear accident causes loss of life, long term illness and destruction of property on a large scale.

Examples

1. THE CARELESS SITING OF INDUSTRIES-Bhopal gas tragedy

The careless siting of industries and relatively poor regulatory controls leads to ill health in the. The Bhopal gas tragedy on December 2nd 1984, where Union Carbide's Plant leaked 43 tons of Methyl Isocyanate and other substances, used in the manufacture of pesticides is one of the worst industrial accidents in the recent past. Of the 5,20,000 people who were exposed to the gas - 8,000 died during the first week and another 8,000 later. The impact of the survivors is visible even today.



Fig.4.7 Bhopal gas tragedy plant

2. CHERNOBYL REACTOR INCIDENT

On April 25, 1986, Russian engineers and scientists begin preliminary tests on Chernobyl power plant's 4th reactor. In order to control the experiment, the automatic control system was shut down. After some work, stability was reached at very low power outputs. Unfortunately, manual control of the water pressure wasn't maintained. The reactor began to create excess heat. Without the automatic control, the control rods couldn't be reinserted in time; a deadly chain reaction had begun. Within a matter of 3-4 seconds, the reactor went from 5% output to 100 times its normal level. The water in the reactor flash-

boiled, creating an explosion that leveled thousands of tons of concrete and steel, including the housing for the reactor. The steam carried almost 70% of the nuclear material out of the reactor into the surrounding environment. Several thousand volunteers died on the scene, and it is estimated that 7,000 to 10,000 volunteers died in total, considering short and long-term effects. Thousands of miles from the scene, the birth defect rate became double the world average. It is also estimated that 150,000 were put at risk for thyroid cancer, and over 800,000 children were put at risk of contracting leukemia. 2 million acres of land (1/5 of the usable farmland in the Ukraine) was, and still is, completely unusable. It remains difficult to determine the scope of the disaster; radiation resulting from the event was detected all over the globe. It is estimated that it may cost up to \$400 billion and will take up to 200 years to correct the damage done to the area, and to compensate those affected by the meltdown.



Fig.4.8 Chernobyl Reactor

4.8.1 Effects

- Nuclear winter
- Ignition of all combustible material

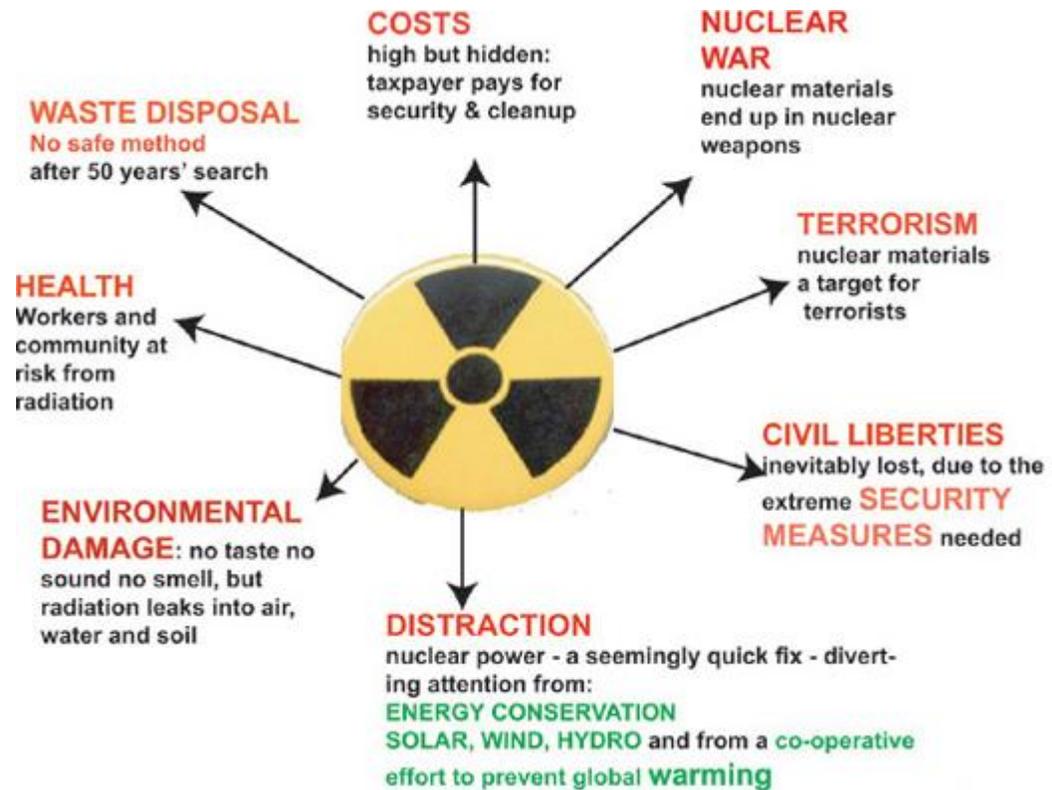


Fig.4.9 Effects of Nuclear Hazards

4.8.2 Control Measures

- Suitable precautions to avoid accident
- Constant monitoring of the radiation level
- Checks and control measures done by Atomic Energy Regulatory Board.

4.9 WASTE LAND RECLAMATION

Waste land: - The land which is not in use – unproductive, unfit for cultivation another economic uses.

4.9.1 Types of waste land

1. Uncultivable waste land

– Barren rocky areas, hilly slopes, sandy deserts.

2. Cultivable waste land

- degraded forest lands, gullied lands. Marsh lands, saline land etc.

4.9.2 Causes for waste land formation

- ❖ Soil Erosion, Deforestation, Water logging, Salinity.
- ❖ Excessive use of pesticides.
- ❖ Construction of dams.
- ❖ Over-exploitation of natural resources.
- ❖ Sewage and industrial wastes.

- ❖ Mining
- ❖ Growing demands for fuel, fodder wood and food causes degradation and loss of soil productivity.

4.9.3 Objectives of waste land reclamation

- To improve the physical structure and quality of the soil
- To prevent soil erosion
- To avoid over – exploitation of natural resources
- To conserve the biological resources.

4.9.4 Methods of waste land reclamation

- ✓ Drainage
- ✓ Leaching
- ✓ Irrigation practices
- ✓ Green manures and bio fertilizers
- ✓ Application of Gypsum
- ✓ Afforestation programmes
- ✓ Social forestry programmes.

4.9.5 Consumerisation of Waste products

- Consumerisation – Consumption of resources.
- Traditionally favorable rights of sellers
- Right to introduce product, price, Incentives
- Traditionally buyer rights
- Right to buy, right to expect the product to perform as claimed

4.9.6 Important information to be known by buyers

- About ingredients,
- Manufacturing dates,
- Expiry date, etc.

4.9.7 Objectives of Consumerisation

- 🗑 Improves rights and power of the buyers
- 🗑 Making the manufacturer liable
- 🗑 Reuse and recycle the product
- 🗑 Reclaiming useful parts
- 🗑 Reusable packing materials
- 🗑 Health and happiness.

4.10 SOURCES OF WASTES

Glass, papers, garbage's, food waste, automobile waste, dead animals etc.

4.10.1 E – Waste

Computers, printers, mobile phones, Xerox machines, calculators etc.

4.10.2 Effects of wastes

- Dangerous to human life
- Degrade soil
- Cadmium in chips, Cathode ray tube, PVC causes cancer and other respiratory problems.
- Non biodegradable plastics reduce toxic gases.

4.10.3 Factors affecting consumerisation and generation of wastes

- ✓ People over – Population
- ✓ Consumption over – Population.

4.11 ENVIRONMENTAL LEGISLATION AND LAWS – IMPORTANT PROTECTION ACTS

- ❖ **Water Act 1974, 1978**-An Act to provide for the levy and collection of water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution constituted under the Water (Prevention and Control of Pollution) Act, 1974.
- ❖ **Water amendment Act 1987**-As a result, some of the basic principles of water law applicable today in India derive from irrigation acts. The early Northern India Canal and Drainage Act, 1873 sought, for instance, to regulate irrigation, navigation and drainage in Northern India.
 - One of the long-term implications of this act was the introduction of the right of the Government to 'use and control for public purposes the water of all rivers and streams flowing in natural channels, and of all lakes. The 1873 act refrained from asserting state ownership over surface waters. Nevertheless, this act is a milestone since it asserted the right of the Government to control water use for the benefit of the broader public.
 - This was progressively strengthened. Thus, the Madhya Pradesh Irrigation Act, 1931 went much further and asserted direct state control over water: 'All rights in the water of any river, natural stream or natural drainage channel, natural lake or other natural collection of water shall vest in the Government.
- ❖ **Air Act 1981**-An Act to provide for the prevention, control and abatement of air pollution, for the establishment, with a view to carrying out the aforesaid purposes, of Boards, for conferring on and assigning to such Boards powers and functions relating thereto and for matters connected therewith.
 - Whereas decisions were taken at the United Nations Conference on the Human Environment held in Stockholm in June, 1972, in which India participated, to take appropriate steps for the preservation of the natural resources of the earth which, among other things, include the preservation

of the quality of air and control of air pollution; and whereas it is considered necessary to implement the decisions aforesaid in so far as they relate to the preservation of the quality of air and control of air pollution;

- Be it enacted by Parliament in the Thirty-second Year of the Republic of India

❖ **Wild life Act 1972**-It refers to a sweeping package of legislation enacted in 1972 by the Government of India. Before 1972, India only had five designated national parks. Among other reforms, the Act established schedules of protected plant and animal species; hunting or harvesting these species was largely outlawed. The Act provides for the protection of wild animals, birds and plants; and for matters connected therewith or ancillary or incidental thereto. Formalization of national parks, wildlife sanctuaries, conservation reserves and community reserves. Protection to habitat and wildlife within premises of such protected areas. Development of National Board for Wildlife and State Boards for Wildlife for identification of future protected areas. Up to April 2010 there have been 16 convictions under this act relating to the death of tigers.

❖ **Forest Act 1980 and Environment Act 1986**- Environment protection act 1986 (23 May 1986) I- it is a legislation which signifies the central government determination to take effective steps to protect the environment.

Stating that: No State Government or other authority shall make any order directing-

- (i) that any reserved forest shall cease to be reserved;
- (ii) that any forest land or any portion thereof may be used for any non-forest purpose;
- (iii) that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other organization not owned, managed or controlled by Government;
- (iv) that any forest land or any portion thereof may be cleared of trees which have grown naturally in that land or portion, for the purpose of using it for reforestat.

4.12 ISSUES INVOLVED IN ENFORCEMENT OF ENVIRONMENTAL LEGISLATION

- Drawbacks of wildlife protection Act
- Drawbacks of Forest Act 1980 and
- Drawbacks of Environment Act 1972.

4.13 PUBLIC AWARENESS

Our environment is presently degrading due to many activities like pollution, deforestation, overgrazing, rapid industrialization and urbanization.

4.13.1 Objectives of public awareness

- 🌍 Create awareness among people of rural and city about ecological imbalances, local environment, technological development and various development plants.

- ✚ To organize meetings, group discussion on development, tree plantation programmes exhibitions.
- ✚ To learn to live simple and eco-friendly manner.

4.13.2 Methods to create environmental awareness

- ✓ In schools and colleges
- ✓ Through mass – media
- ✓ Cinema
- ✓ Newspapers
- ✓ Audio - Visual media
- ✓ Voluntary organizations
- ✓ Traditional techniques
- ✓ Arranging competitions
- ✓ Leaders appeal
- ✓ Non – government organizations.