Human population growth: Impacts on environment, human health, and welfare

Effects of Population Growth on our Environment!

One of the factors responsible for environment degradation is population growth or population density. In particular, population density plays the most important role in shaping the socio-economic environment. Its effects are felt on the natural environment also.

1. Generation of Waste:

Due to his destructive activities, man has dumped more and more waste in environment. As the man-made waste is not transformed, it causes degradation and the capacity of environment to absorb more waste is reduced. Further, waste leads to air and water pollution.

2. Threat to Biodiversity:

Due to his destructive activities, man has extracted more and more minerals from the earth. Animals have been hunted and plants have disappeared. There has been loss of biodiversity. These have led to ecological imbalance.

3. Strain on Forests:

Man has established new housing colonies. National highways and hydropower projects have been built and forests have been wiped out. These destructive activities have increased and led to ecological imbalance.

4. Urbanization:

Rapid growth of population has led to urbanization which has adversely affected environment. Due to population pressure, natural resources in the cities are depleted at a fast rate due to population pressure.

Moreover, population does not have proper sanitation facilities and pure drinking water. As a result, the health of the people is adversely affected. No doubt, urbanization reduces pressure on the rural environment, but it brings with if environmental damages through industrial growth, emissions and wastes.

5. Industrialisation:

Underdeveloped countries are following the policy of heavy industrialisation which is causing environmental degradation. The establishment of such industries as fertilizers, iron and steel, chemicals and refineries have led to land, air and water pollution.

6. Land Degradation:

Intensive farming and excessive use of fertilizers and pesticides have led to over-exploitation of land and water resources. These have led to land degradation in the form of soil erosion, water logging and salination.

7. Transport Development:

Environmental degradation is also due to transport development in the different parts of the world. The automobiles release huge quantities of poisonous gases such as carbon monoxide, nitrogen oxides and hydrocarbons. The development of ports and harbours have led to oil spills from ships adversely affecting fisheries, coral reefs, mangroves and landscapes.

8. Climatic Change:

Climatic changes are irregular due to greenhouse gases. The thin skin of air that surrounds the planet is being affected by human activities as never before. Urban people are still being exposed to unaccepted levels of toxic pollutants. Further, forests are still being degraded by acid deposition generated by faraway industries, and greenhouse gases continue to accumulate in the atmosphere.

9. Productivity:

Environmental degradation not only harms health but also reduces economic productivity. Dirty water, inadequate sanitation, air pollution and land degradation cause serious

diseases on an enormous scale in developing countries like India.

These, in turn, reduce the productivity levels in the country. To take specific instances, water pollution has led to declining fisheries in rivers, ponds and canals in both urban and rural areas. Water shortages have reduced economic activity in towns, and cities and villages.

Soil and hazardous wastes have polluted ground water resources which cannot be used for agricultural and industrial production.

Soil degradation leading to soil erosion, drought, etc. have led to siltation of reservoirs and blocking of river and canal transport channels. Deforestation has led to soil erosion and consequent loss of sustainable logging potential.

Loss of bio-diversity has resulted in the loss of genetic resources.

Last but not the least, atmospheric changes have given rise to disruption of marine food chain, damages to coastal infrastructure due to sea-rise and regional changes in agriculture productivity due to hurricanes in seas.

Thus, environmental degradation undermines economic productivity of a nation.

10. Technology:

Presently, environmental pollution is caused by old technology which releases gases and pollutants causing chemical and industrial pressure on environment.

Impact of Environment on Population:

Polluted environment also affects adversely the health of people.

Table 36.1 shows the types of pollution, their poisonous elements and effects on health.

TABLE 36.1 : DISEASES CAUSED BY ENVIRONMENTAL DEGRADATION

Type of Pollution	*Toxic or Poisonous Elements*	*Effects on Health*
Water Pollution	Arsenic, Cadmium, Lead, Zinc, Copper, Mercury, Cyanides	Diseases related to intestines (Gastro)
Air Pollution	Fly ash, Metal powder, Chromium, Nickel, Arsenic, Cadmium	Chronic cough, lung cancer
Soil Pollution	Reaching to earth through Air or water (acid rain)	Enters body through food cycle and affects adversely.
Noise Pollution	Due to industrialization (1) effects on hearing power (2) effects not related to hearing power	Hearing power and fatigue lead to deafness. Headache, increase in B.P. palpitation, restlessness.
Radioactive Pollution	(1) effects on body (2) hereditary or genetic effects	Leukaemia, cancer, foetal effects, chromosome and genetic damages.

Policy Measures:

Agricultural and industrial development along with urbanisation and spread of infrastructure combined with population growth has led to environmental degradation. Environmental degradation harms human health, reduces economic productivity and leads to the loss of amenities. The

damaging effects of economic development on environmental degradation can be reduced by a judicious choice of economic and environmental policies and environmental investments.

We discuss some policy measures as under:

1. Control of Population Growth:

The rate of population growth should be curtailed through effective family planning measures. This is essential because the proportion of total population in the labour force will increase further in the years to come as a result of changes in the age structure of the population.

The shifting of labour force from the rural to the secondary sector requires increase in agricultural productivity. Increased agricultural productivity helps in meeting the demand for raw materials of the expanding manufacturing sector. With increased productivity, less workers are required to produce raw materials for industry and food-grains for the population.

It also increases agricultural surplus thereby raising saving and investment for economic development. So concerted efforts are needed to increase agricultural productivity through technological advancement. This will ultimately lead to commercialisation of agriculture and production for exports, thereby earning foreign exchange for further development.

2. Economic Development:

The aim of population control is not only to bring about a decline in fertility rates but also to improve the quality of life of the people. These are possible through rapid economic development. It is not an illusion to believe that a reduction in population growth will automatically raise living standards. In fact, an effective family planning policy should be integrated with measures to accelerate economic development.

As the Ninth Five Year Plan observes:

"Several of the South Asian countries have been able to achieve economic prosperity and improvement in quality of life in spite of population growth. This has been attributed to the increase in productivity due to development and utilisation of innovative technologies by the young educated population who formed the majority of the growing population."

In the current phase of demographic transition, developing countries can also achieve economic growth and improvement in quality of life despite population growth through commercialisation of agriculture, diversified industrialisation, urbanisation, and development of infrastructure so as to increase employment opportunities, raise income levels, and saving and investment rates.

These will help the country to achieve economic transition from low economic growth (low per capita income) to high income growth and to high per capita income. This will, in turn, raise the quality of life of the people and the population will be controlled automatically.

3. Improving Health and Nutrition:

The food and nutrition security for the weaker sections in a developing country should not be considered as issues in the Nutrition Science but should be considered as part of right to work, right to health, right to education, right to information and right of the poor. In such a country, there are agricultural, health, population, nutrition, children and education policies.

On the other hand, there are fiscal and budget revisions, exports, imports, taxation, price wage, employment policies and policy related to subsidies. Ultimately, all these policies affect life of the poor, their food and nutritionist security and health. As a leading nutritionist C. Gopalan notes: “Various types of food are needed for maximum nutrition and if they are all taken together and in proper proportions (systematic balanced diet), they can provide necessary nutrients.

Guarantee of good nutrition and absence of hunger are not the same thing. Our first effort should be towards removing hunger of the poor, but our long-term goal should be to provide maximum nutrition to our people which is useful in

bringing out their hereditary talents. Nutrition security is more important than food security. Nutrition security includes making our food base wider and varietal. ”

Improving health and nutrition levels is an extremely important factor contributing to the social development of a developing country. Especially the people of the weaker sections of the society who do not take adequate advantage of health, family welfare and nutrition services, should be made aware of these facilities so that their health and nutrition status can be improved.

4. Reducing Poverty:

Such development projects should be started which provide greater employment opportunities to the poor. The government should expand health and family planning services and education so as to reach the poor that will help reduce population growth. Further, making investments in providing civic amenities like the supply of drinking water, sanitation facilities, alternate habitats in place of slums, etc. will not only improve welfare but also environment.

5. Removing Subsidies:

To reduce environmental degradation at no financial cost to the government, subsidies for resource use by the private and public sectors should be removed. Subsidies on the use of electricity, fertilisers, pesticides, diesel, petrol, gas,

irrigation water, etc. lead to their wasteful use and environmental problems.

Subsidies to capital intensive and highly polluting private and public industries lead to environmental degradation. Removing or reducing subsidies will bring both economic and environmental benefits to the country.

6. Clarifying and Extending Property Rights:

Lack of property rights over excessive use of resources leads to degradation of environment. This leads to overgrazing of common or public lands, deforestation, and overexploitation of minerals, fish, etc. Clarifying and assigning ownership titles and tenurial rights to private owners will solve environmental problems. Places where the use of common lands, forests, irrigation systems, fisheries, etc. are regulated and rules for their proper use are laid down by the community, the ownership rights should be clearly specified in the administrative records.

7. Market Based Approaches:

Besides regulator measures, there is urgent need for adopting market based approaches for the protection of environment. They aim at pointing to consumers and industries about the cost of using natural resources on environment. These costs are reflected in the prices paid for goods and services so that industries and ultimately the

consumers are guided by them to reduce air and water pollution.

The Market Based Instruments (MBIs) are in the form of environmental taxes that include pollution charges (emission tax/pollution taxes), marketable permits, depositor fund system, input taxes/product charges, differential tax rates and user administrative charges and subsidies for pollution abatement equipment for air and water resources.

8. Regulatory Policies:

Regulatory polices also help in reducing environmental degradation. Regulators have to make decisions regarding prices, quantity and technology. In making decisions, they have to choose between the quantity or the price of pollution or resource use of technologies.

The regulating authority has also to decide whether policies should target the environmental problem directly or indirectly. It lays down technical standards and regulations and charges on air, water and land pollutants. Regulators should be impartial in applying environmental standards to both public and private sector polluters or resources users.

9. Economic Incentives:

Like regulatory policies, economic incentives relate to price, quantity and technology. Incentives are usually in the form of variable fees to resource users for the quantity of

pollutants in air, water and land use. They are given rebates if less waste or pollution is generated than the emission standards laid down.

10. Public Participation:

Public awareness and participation are highly effective to improve environmental conditions. Conducting of formal and informal education programmes relating to environment management and environmental awareness programmes can go a long way in controlling environmental degradation and keeping the environment clean. For instance, the scheme of eco-labelling of products helps consumers to identify products that are environment friendly.

Public participation can also render costless and useful assistance in Afforestation, conservation of wildlife, management of parks, improvement of sanitation and drainage systems and flood control. Use of indigenous institutions, local voluntary organisations and NGOs can render much help in educating the masses about the harmful effects of environmental degradation and the benefits of keeping the environment clean.

Carbon Footprints:

Definition:

The term carbon footprint is defined as the amount of carbon (usually in tonnes) is emitted by an organization, event, product or individual directly or indirectly.

Everyone's carbon footprint is different depending on their location, habits and personal choice.

Each of us contributes to the greenhouse gas emissions either by the way we travel, the food we eat, the amount of electricity we consume and many more.

Carbon footprint consists of two parts – The Direct/ Primary footprint and Indirect/ Secondary footprint.

Primary:

- The Primary footprint is a measure of direct emissions of CO_2 from the burning of fossil fuels including domestic energy consumption and transportation (e.g. car and Plane).

Secondary:

- The secondary footprint is a measure of the indirect CO^2 emissions from the whole lifecycle of products that are used.
- These are associated with their manufacture and breakdown.
- For a country the total amount of CO_2 release is associated with the carbon foot print of the individuals and business houses that belong to that country.

A carbon footprint is defined as:

- The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO_2).
- CO_2 is the chemical symbol for carbon dioxide
- Carbon footprint is the sum of all emissions of CO_2 (carbon dioxide), which were induced by your activities in a given time frame.
- Usually a carbon footprint is calculated for the time period of a year.
- Essentially, the carbon footprint is the amount of carbon dioxide released into the Earth's atmosphere due to the daily activities of humankind, whether domestically or commercially.
- It is also known as accumulative sets of greenhouse gas emissions caused by humankind or human-made products.
- It is argued that there is also no known method of calculating the total carbon footprint because of the large amounts of data allegedly required to do this.
- The carbon footprint is a very powerful tool to understand the impact of personal behaviour on global warming.

Calculation:

Each of the following activities adds 1 kg of CO_2 to individual person's carbon footprint:

- Travel by public transportation (train or bus) a distance of 10 to 12 km (6.5 to 7 miles)
- Drive a car to 6 km or 3.75 miles (assuming 7.3 litres petrol per 100 km or 39 mpg)
- Fly with a plane a distance of 2.2 km or 1.375 miles.
- Operate any computer for 32 hours (60 Watt consumption assumed)
- Production of 5 plastic bags
- Production of 2 plastic bottles

Primary contributors:

These are just some of the main contributors to today's carbon footprint:

- Energy: Here, carbon footprint emissions are collective, coming from a variety of sources, namely industrial processes, transport and electricity and fuel emissions.
- Industrialization: Since the industrial revolution began during the middle of the twentieth century, CO2 has continued to rise unchecked and at alarming rates.
- Agriculture: Most agricultural processes within developed and developing nations are still being carried out commercially with the result that mass production of livestock has led to large levels of methane gas being released into the atmosphere.
- Waste: No matter which process or activity is being carried out, the waste from these is excessive. It is also having a harmful impact on the earth's natural resources (flora, fauna and the oceans).
- Human action: Ultimately, the way humankind has become accustomed to doing things every day, keeping pace with the need to do things more quickly and with more convenience, has contributed towards the exponential increase in carbon footprints on an annual basis.

Harmful contributors:

Industrialization:

- Giant companies from around the world are responsible for two thirds of CO_2 emissions.

Highlights:

- Many of the large energy producing companies are influenced by investor's contributions and stake holdings from government institutions. In some countries, the state still holds a majority share in these companies.
- In the last twenty five to thirty years at least half of estimated emissions have come from these oil and coal burning companies alone.
- In some places, mandated by governments to do so, they are also holding large reserves of fossil fuels. If these are burned, the earth is placed at even greater risk.
- On the global, governmental scale, the USA, China and India are the largest emitters of human-induced greenhouse gasses, while South Africa is the biggest contributor on the African continent.

How to reduce?

- Driving hybrid vehicles
- Instead of driving, use rapid transport
- Buy local – Adding to the above remark, buying local, organic produce effectively counters mass-produced agricultural outcomes.
- Energy efficiency at home
- Buy green energy
- Recycle and reuse
- Plantation of trees: (A single young tree absorbs 13 pounds of carbon dioxide each year)

Carbon offsetting:

- Carbon Offsetting can be defined as the mitigation of carbon footprints through the development of alternative projects such as solar, wind, tidal energy or reforestation.
- The emission of greenhouse gasses is a global problem and carbon offsets work on the idea that any reduction in any area is worthwhile. It basically measures how much carbon dioxide (CO_2) we have produced just by going about our daily lives.
- A carbon offset is a reduction in emissions of carbon dioxide or greenhouse gases made in order to compensate for or to offset an emission made elsewhere.
- Carbon offsets are measured in tonnes of carbon dioxide-equivalent (CO2e) and may represent six primary categories of greenhouse

gases:[5] carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF_6).[6] One carbon offset represents the reduction of one tonne of carbon dioxide or its equivalent in other greenhouse gases.

Ways to reduce Carbon Footprint:

- Offsetting carbon and obtaining credits for reduction of carbon emissions by adopting "flexible mechanisms:
- Under Kyoto Protocol, United Nations Framework Convention on Climate Change (UNFCCC) members is divided into two groups: Annex 1 countries include mainly the OECD and eastern European industrialized countries and the Non Annex-l countries are the developing economic.
- Three emission trading based 'flexibility mechanisms' were adopted to help in minimizing the global economic cost of achieving The agreed emission reductions. They are namely:
- International emission trading that would involve the transfer of the Assigned Amounts Units (AAU) among the Annex 1 countries.
- Joint Implementation (JI) involves project based activities undertaken between Annex 1 countries.

- Clean Development Mechanism (CDM) involves emission reduction projects undertaken in non Annex- 1 countries. For each tonne of CO_2 that an industry in the developing world saves by adopting cleaner technology or energy efficiency or shifting to non-conventional sources of energy generation, the United Nation's body on climate change gives a certificate called Certified Emission Reduction (CER) to the concerned industry.
- The company receiving the CER can sell the surplus credits (collected by surpassing the emission reduction targets) if any, to entities in the developed countries either immediately or through a future market at a price that is mutually agreed upon by both the parties involved in the deal.
- In the process the entities in the developed countries find it cheaper to buy "offsetting" certificates rather than achieving emission reductions in their own backyard.

Resettlement and rehabilitation of developmental project affected persons and communities; relevant case studies

Development projects that displace people involuntarily generally give rise to severe economic, social, and environmental problems: production systems are dismantled; productive assets and income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community structures and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished. Involuntary resettlement may cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out.

The World Bank was the first multilateral lending agency to adopt a policy for Resettlement and Rehabilitation (R&R).

The treatment of resettlement issues beyond hydropower and irrigation projects to all types of investment operations. It emphasizes the need for:

- Minimizing involuntary resettlement;
- Providing people displaced by a project with the means to improve, or at least restore, their former living standards, earning capacity, and production levels;
- Involving both resettles and hosts in resettlement activities;
- A time-bound resettlement plan; and

- Valuation and compensation principles for land and other assets affected by the project.

A full EA is required if a project is likely to have significant adverse impacts that may be sensitive, irreversible, and diverse. The impacts are likely to be comprehensive, broad, sector-wide, or precedent-setting. Impacts generally result from a major component of the project and affect the area as a whole or an entire sector.

- Dams and reservoirs; Forestry production projects;
- Industrial plants (large-scale) and industrial estates;
- Irrigation, drainage, and flood control (large-scale);
- Land clearance and leveling;
- Mineral development (including oil and gas);
- Port and harbor development;
- Reclamation and new land development;
- Resettlement and all projects with potentially major impacts on people;
- River basin development;
- Thermal and hydropower development; and
- Manufacture, transportation, and use of pesticides or other hazardous and/or toxic materials.

The impacts are not as sensitive, numerous, major, or diverse as category A impacts; remedial measures can be more easily designed. Preparation of a mitigation plan suffices for many category B projects. Few category B projects would have a separate environmental report. Examples of Category B projects are:

- Agro-industries (small-scale);
- Electrical transmission;

- Aquaculture and mariculture;
- Irrigation and drainage (small-scale);
- Renewable energy;
- Rural electrification;
- Tourism;
- Rural water supply and sanitation;
- Watershed projects (management or rehabilitation); and
- Rehabilitation, maintenance, and upgrading projects (small-scale).

An EA or environmental analysis is normally not required for Category C projects because the project is unlikely to have adverse impacts. Professional judgment finds the project to have negligible, insignificant, or minimal environmental impacts. Category C projects might be:

- Education,
- Family planning,
- Health,
- Nutrition,
- Institutional development,
- Technical assistance, and
- Most human resource projects.

Social analysis is a part of the EA process, and resettlement is one of five topics that are required, where they are relevant, be explicitly addressed in an EA. The five topics are:

- involuntary resettlement,
- new land settlement,
- induced development,

- indigenous peoples,
- and cultural property

The objective of the resettlement policy is to ensure that the population displaced by a project receives benefits from it. Involuntary resettlement is an integral part of project design and should be dealt with from the earliest stages of project preparation, taking into account the following policy considerations:

- Involuntary resettlement should be avoided or minimized where feasible, exploring all viable alternative project designs. For example, realignment of roads or reductions in dam height may significantly reduce resettlement needs.
- Where displacement is unavoidable, resettlement plans should be developed. All involuntary resettlement should be conceived and executed as development programs, with resettles provided sufficient investment resources and opportunities to share in project benefits. Displaced persons should be (i) compensated for their losses at full replacement cost prior to the actual move; (ii) assisted with the move and supported during the transition period in the resettlement site; and (iii) assisted in their efforts to improve their former living standards, income earning capacity, and production levels, or at least to restore them. Particular attention should be paid to the needs of the poorest groups to be resettled.
- Community participation in planning and implementing resettlement should be encouraged. Appropriate patterns of social organization should be established, and existing social and cultural institutions of resettles and their hosts should be supported and used to the greatest extent possible.

- Resettles should be integrated socially and economically into host communities so that adverse impacts on host communities are minimized. The best way of achieving this integration is for resettlement to be planned in areas benefiting from the project and through consultation with the future hosts.
- Land, housing, infrastructure, and other compensation should be provided to the adversely affected population, indigenous groups, ethnic minorities, and pastoralists who may have usufruct or customary rights to the land or other resources taken for the project. The absence of legal title to land by such groups should not be a bar to compensation.

Resettlement and outlines of the main point's planners should consider when preparing a resettlement plan. Depending on the magnitude of displacement and other factors, the resettlement plan will normally contain a statement of objectives and policies, an executive summary, a budget, a timetable coordinated with the physical works of the main investment project, and provision for:

- Organizational responsibilities;
- Community participation and integration with host populations;
- Socioeconomic survey;
- Legal framework;
- Alternative sites and selection;
- Valuation of and compensation for lost assets;
- Land tenure, acquisition, and transfer ;
- Access to training, employment, and credit;
- Shelter, infrastructure, and social services;
- Environmental protection and management ; and

- Implementation schedule, monitoring, and evaluation.

The foregoing is meant to be an indicative, not authoritative, discussion of the World Bank's involuntary resettlement policy. For more information, visit the World Bank's Public Information Center or the Environmental Management for Power Development page supported by the World Bank and other sponsors.

Case studies:

The Case study of a village to be affected by the indira sagar pariyojana

Indira Sagar Pariyojana (ISP) has been under planning and construction since decades. Work on the project has gained momentum in the last decade. Since then, the construction has been on and off depending on the availability of funds. On 24 April, 2002, an announcement was published both in Nai Duniya and Dainik Bhaskar1 stating that the village Jabgaon would be inundated with water in the coming monsoons owing to the increase in the height of the dam. The village was being asked to evacuate the area by 20 May, 2002. In March 2002, with the release of funds from the Center to the Narmada Hydro Development Corporation, a decision was taken to increase the height of the dam to 212 m by June 2002. In fact since October 2001, there was a sudden spurt in announcements of the Section 4 notices of land acquisition in the regional Hindi newspapers making it evident that the project would soon be underway again. Meanwhile there had also been reports in the press that the rehabilitation had been lagging behind.

Manthan Adhyayan Kendra, which had been following the events in the history of the construction of this dam, decided to attempt to bring to fore the ground realities regarding the status of resettlement and rehabilitation of villages affected by this project. It was thought that the situation would be analysed at 3 points in time: pre-monsoon, monsoon and post-monsoon. Accordingly, 2 visits to this village had been undertaken: the first in the first week of May and the second in the third week of August. There have been less than normal monsoons this year and therefore while the village has not been submerged, some farms had been flooded.
The Kendra is a centre set up to monitor, analyse and research water and energy related issues, with a special focus on the latest developments resulting from the liberalisation, globalisation and privatisation of the economy. The Centre is located at Badwani, a district town in Madhya Pradesh five kilometers from the banks of Narmada. While the focus of the work is on water and energy issues, this will be in the larger context of equitable, just and sustainable development.

Uttaranchal's disaster management

Uttaranchal's location and geographical features render it vulnerable to minor changes. Hence any activity disapproved by mountain ecosystem triggers a disaster. One cannot stop disaster happening but can certainly take some steps to reduce its effects. If disasters cannot be averted, then reduction of losses of any type caused by disaster becomes a focal point of the policy for disaster management. To devise Uttaranchal's disaster management mechanism for reduction of effects of disaster, i.e. damage to property and loss of life and the rapid and effective rescue, relief

and rehabilitation of the victims.

The study reveals that 83 villages in Uttaranchal need rehabilitation but, to date, Uttaranchal has no resettlement and rehabilitation policy. In India only three States, Maharashtra, Madhya Pradesh and Punjab, have state-wide resettlement and rehabilitation (R&R) policies. Other States have issued Government Orders or Resolutions, sometimes sector-wide but more often for specific projects. The study is based on secondary data; however, sufficient care has been taken to consider all important factors while suggesting Rehabilitation Policy for Uttaranchal State. A disaster of rare severity requires a high level of resettlement and rehabilitation assistance from the State. Sound Resettlement and Rehabilitation Policy helps the Government to tackle the problem immediately and efficiently.

Resettlement and rehabilitation of project affected persons; case studies

Problems and Concerns

Economic development raises the quality and standard of living of the people of a country. Developmental projects are planned to bring benefits to the society. However, in the process of development, very often there is over-exploitation of natural resources and degradation of the environment. Besides this, quite often, the native people of the project site are directly affected. These native people are generally the poorest of the poor, underpriviledged tribal people. Various types of projects result in the displacement of the native people who undergo tremendous economic and psychological distress, as the socio-economic and ecological base of the local community is disturbed.

A. Displacement problems due to dams:

The big river valley projects have one of the most serious socio-economic impacts due to large scale displacement of local people from their ancestral home and loss of their traditional profession or occupation. India is one of countries in the world leading in big dam construction and in the last 50 years more than 20 million people are estimated to have been directly or indirectly affected by these dams.

The Hirakund Dam has displaced more than 20,000 people residing in about 250 villages. The Bhakra Nangal Dam was constructed

during 1950's and till now it has not been possible to rehabilitate even half of the displaced persons.

Same is the case with Tehri Dam on the river Bhagirathi, construction of which was green signaled after three decades of long campaign against the project by the noted activist Sunderlal Bahuguna the propagator of Chipko Movement. The immediate impact of the Tehri Dam would be on the 10,000 residents of the Tehri town. While displacement is looming large over the people, rehabilitation has become a more burning issue.

[Case study: *The much debated Sardar Sarovar Project which plans to build 30 big, 135 medium and 3000 minor dams on the Narmada river and its tributaries is estimated to submerge almost as much area as it is meant to irrigate. A total of 573 villages, consisting of about three lakh people are going to be affected due to submergence under water. As a result of the big dams the community rights of the tribals is breached. It is a traumatic experience to get uprooted from ones native place where its generations have lived and move to a new place as a total stranger. Very often the family breaks up. It is a big price that the tribals have to pay for a big dam project which is supposed to bring happiness and prosperity to the country. In return of this big sacrifice, the tribals must be given adequate compensation in the form of land, jobs, cash compensation etc. and care should be taken to improve their quality of life.]*

B. Displacement due to Mining:

Mining is another developmental activity, which causes displacement of the native people. Several thousands of hectares of

land area is covered in mining operation and the native people are displaced. Sometimes displacement of local people is due to accidents occurring in mined areas like subsidence of land that often leads to shifting of people.

[Case study: *Jharia coal fields, Jharkhand have been posing a big problem to the local residents due to underground fires and they are asked to vacate the area. The proposal of large scale evacuation of about 0.3 million population of Jharia immediately raises the question of their relocation and rehabilitation for which proper planning is required. Some 115 crores of rupees have been spent to put out the fires since 1976, still the problem persists. The people of Jharia are being asked to evacuate the area, but till now there is no alternative land and rehabilitation package prepared. As a result of it, the local people have formed a 'Jharia coalfield Bachao Samiti'. They have apprehensions that they are going to be left in the lurch. The latest estimates show than about Rs. 18,000 crores will be spent for shifting the Jharia population while the cost for extinguishing the fire would be around 8,000 crores. Perhaps scientific fire-fighting will prevent the Jharia residents from undergoing the hardship of displacement.]*

C. Displacement due to Creation of National Parks:

When some forest area is covered under a National Park, it is a welcome step for conservation of the natural resources. However, it also has a social aspect associated with it which is often neglected. A major portion of the forest is declared as core-area, where the entry of local dwellers or tribals is prohibited. When these villagers

are deprived of their ancestral right or access to the forests, they usually retaliate by starting destructive activities. There is a need to look into their problems and provide them some employment.

*[**Case study:** The tribals belonging to Tharu Community in 142 villages in Bihar in the Valmiki Tiger Reserve area in the district of West Champaran feel that they have been deprived of their legitimate ancestral rights to collect firewood and fodder from the forest. Their employment is also lost due to the 'Project Tiger' initiative. The jobless villagers feel cheated and are found to indulge in destruction of forest and forest wealth in connivance with foreign agents who supply them arms and ammunition for illegal logging and poaching. In order to stop the local tribals from becoming criminals, the foremost effort of the planners should be to compensate for the loss to the locals by providing them job opportunities.]*

*[**Case study:** The Wayanad Wildlife Sanctuary in Kerala has caused displacement of 53,472 tribal families. At the time of its initiation it was decided to transfer land to these tribal families in order to settle them. However, till 2003 only 843 families could get the land. As a result of this the tribals felt cheated and in January, 2003 they encroached into the forest in large numbers, cut down the trees, started constructing huts and digging wells causing a violent encounter with the forest officials, ultimately causing injuries and deaths to the people.]*

Rehabilitation issues

The United Nations Universal Declaration on Human Rights [Article 25(1)] has declared that right to housing is a basic human right. In India, most of the displacements have resulted due to land acquisition by the government for various reasons. For this purpose, the government has the Land Acquisition Act, 1894 which empowers it to serve notice to the people to vacate their lands if there is a need as per government planning. Provision of cash compensation in lieu of the land vacated exists in section 16 of the Act. The major issues related to displacement and rehabilitation are as follows:

(i) Tribals are usually the most affected amongst the displaced who are already poor. Displacement further increases their poverty due to loss of land, home, jobs, food insecurity, loss of access to common property assets, increased morbidity and mortality and social isolation.

(ii) Break up of families is an important social issue arising due to displacement in which the women are the worst affected and they are not even given cash/land compensation.

(iii)The tribals are not familiar with the market policies and trends. Even if they get cash compensation, they get alienated in the modern economic set-up.

(iv) The land acquisition laws ignore the communal ownership of property, which is an inbuilt system amongst the tribals. Thus the tribals lose their communitarian basis of economic and cultural existence. They feel like fish out of water.

(v) Kinship systems, marriages, social and cultural functions, their folk-songs, dances and activities vanish with their displacement. Even when they are resettled, it is individual-based resettlement, which totally ignores communal settlement.

(vi) Loss of identity and loss of the intimate link between the people and the environment is one of the biggest loss. The age-long indigenous knowledge, which has been inherited and experienced by them about the flora, fauna, their uses etc. gets lost.

Rehabilitation policy

There is a need for a comprehensive National Rehabilitation Policy. Different states are following different practices in this regard.

[Case study: *In case of Sardar Sarovar Project, Gujarat Government is formulating its policy through various government resolutions. It has decided that each landed oustee shall be entitled to allotment of irrigable land in the state which he chooses for his resettlement. The area of the land would be equal to that owned by him earlier and the minimum land given to an oustee would be 2 hectares. However, there are problems of landless oustees and those natives who were cultivating forest land. The cut-off date for identifying an adult son in a family has not been fixed. It is important since the adult son is to be treated as a separate family. The people of 20 submerged villages in Gujarat have been resettled at different locations leading to disintegration of joint families.]*

[Case study: *The case of Pong Dam is different. The dam was constructed on Beas River in Himachal Pradesh in 1960, while it was*

a part of Panjab. The water is harnessed to irrigate Rajasthan. Rajasthan, therefore, agreed to provide land to the oustees in the command area of Indira Gandhi Canal. However, to carry Beas Water to Rajasthan, another dam had to be built adding 20,722 more families that were displaced and had to be resettled by Rajasthan. Out of 30,000 families uprooted due to Pong dam, only 16,000 were considered eligible for allotment, as only they were bonafide cultivators for whom 2.25 lakh acre land was earmarked. What happened to the rest of the 14,000 families is not answered. Panjab, which is one of the beneficiaries of the dam is totally out of the rehabilitation issue. Only Rajasthan and Himachal Pradesh are trying to settle the matter. Even those who have been settled, they are in resettlement sites in desert bordering Pakistan, more than thousand kilometers from their native place, thus breaking their kinship ties.]

There is a need to raise public awareness on these issues to bring the resettlement and rehabilitation plans on a humane footing and to honour the human rights of the oustees.

Environmental movements: Chipko movement

- Chipko means tree hugging or “embrace” as the villagers hugged the trees.
- The movement is best known for its tactic of hugging trees to prevent them being cut down and to prevent commercial timber harvesting.

Introduction

>it is primarily a forest conservation movement.

>it created a precedent for non-violent protest started in india.

>it inspire many eco-groups by helping slow down rapid deforestation.

>it stirred up the civil socity in india to adress the issue of tribal people.

>it is seen as a ecofaminism movement.

in 1987 it was awarded as the "Right livelihood award"

The Chipko movement was a non-violent agitation in 1973 that was aimed at the protection and conservation of trees, but perhaps, it is best remembered for the collective mobilisation of women for the cause of preserving forests, which also brought about a change in attitude regarding their own status in society. The name of the movement ‘chipko’ comes from the word ’embrace’, as the villagers hugged the trees and encircled them to prevent being hacked.

Deforestation is the clearance of naturally occurring forests by the processes of humans' logging and/or burning of trees in a forested area.

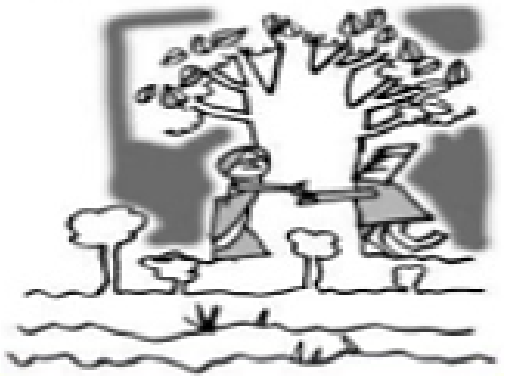
BACKGROUND

- Government's decision to allot forest trees to a sports goods company.
- The local residents in Gopeshwar were denied the similar demand of getting few trees, required for making farm tools.
- Organized rallies to protect the forest from mass destruction.
- Idea of Chipko Movement originated.

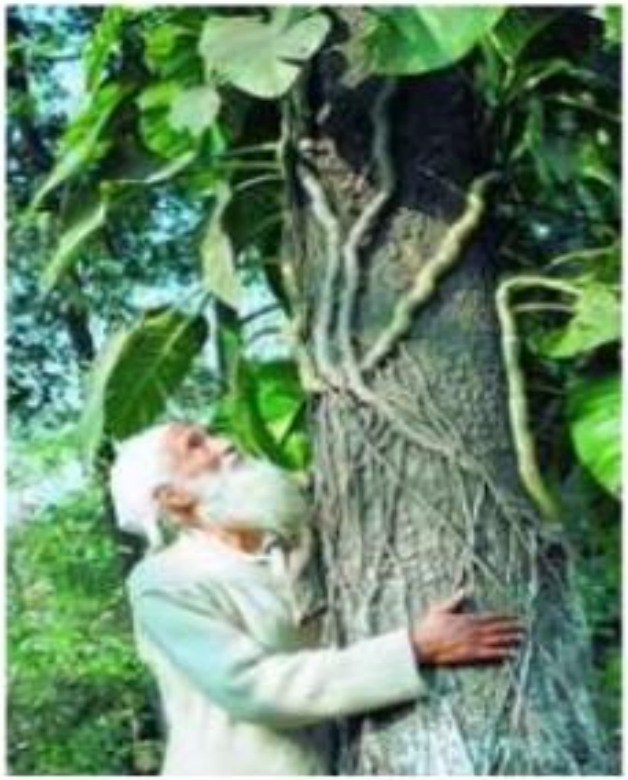
HISTORY OF CHIPKU MOVEMENT

*Chipko movement was a daring act of non violence.
*It was carried out all over India in order to save the trees of the forest from being cut down.

THE FIRST CHIPKO MOVEMENT
* It was originated in Rajasthan in 18 century
*Bishnoi community living around the forest protested against the king wishes to cut down forest trees.
*women & men hugged the trees to prevent the king's men from felling down the trees.
*many people lost their lives during protest.



- The name of the Chipko moment originated from the word **'embrace' or 'Hugging'.**
- Birth place - Gopeshwar in District Chamoliin 1973.
- First Chipko action- March 1974 in Reni village.



CAUSES OF CHIPKO MOVEMENT

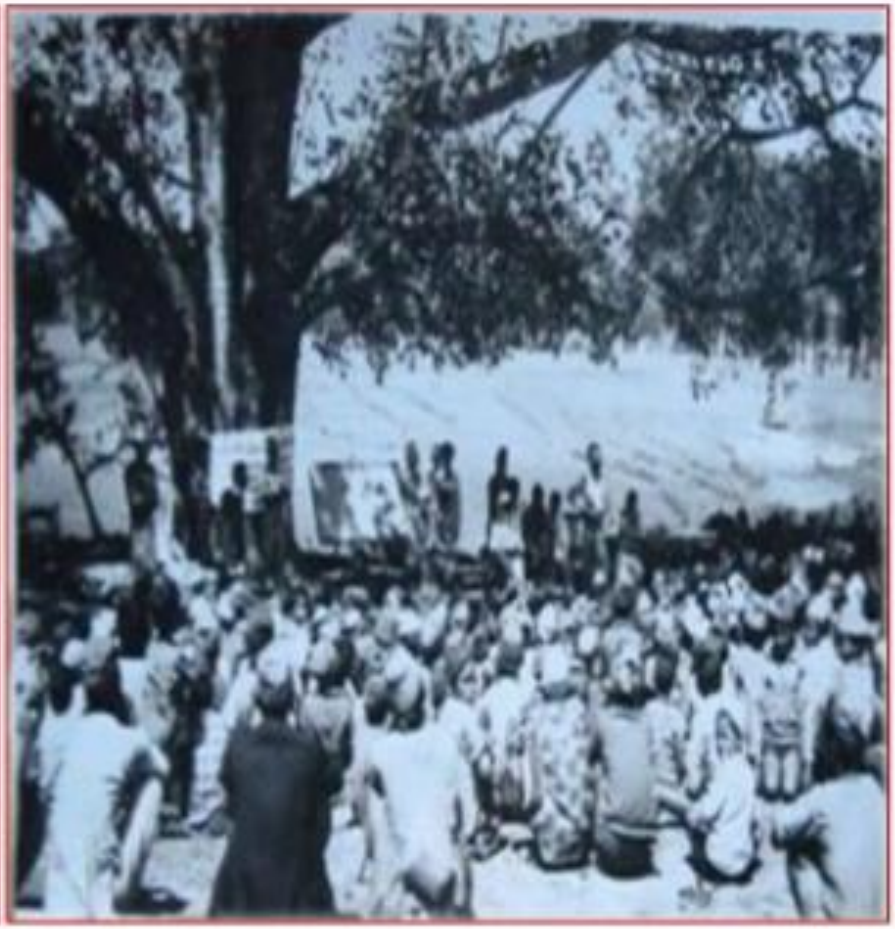
*In uttarakhand during 20th century, large scale deforestation brought a lot of hardships to common people.
*problems arose due to inefficient polices of the government.
*lack of environmental & ecological awareness in the society.
*people gave up on keeping large livestocks.
*caused malnutrition among people.
*heavy effect on ecological balance of the region.
*poor condition of land.
*scarcity of drinking water.
* government turned deaf ears to the people's conditions.

Why Chipko Movement?

- The forests of India are a critical resource for the livelihood of rural peoples throughout the country.
- These forests have been increasingly felled for commerce and industry.
- If the Himalayas are not saved all of India will be turned in to a desert, Fodder will not be available.
- There will be Soil Erosion and land slides.
- The Chipko movement was started to prevent the cutting of trees.
- Chipko Movement aimed at protection and conservation of trees and forests from being destroyed.

Foot March for Chipko Movement

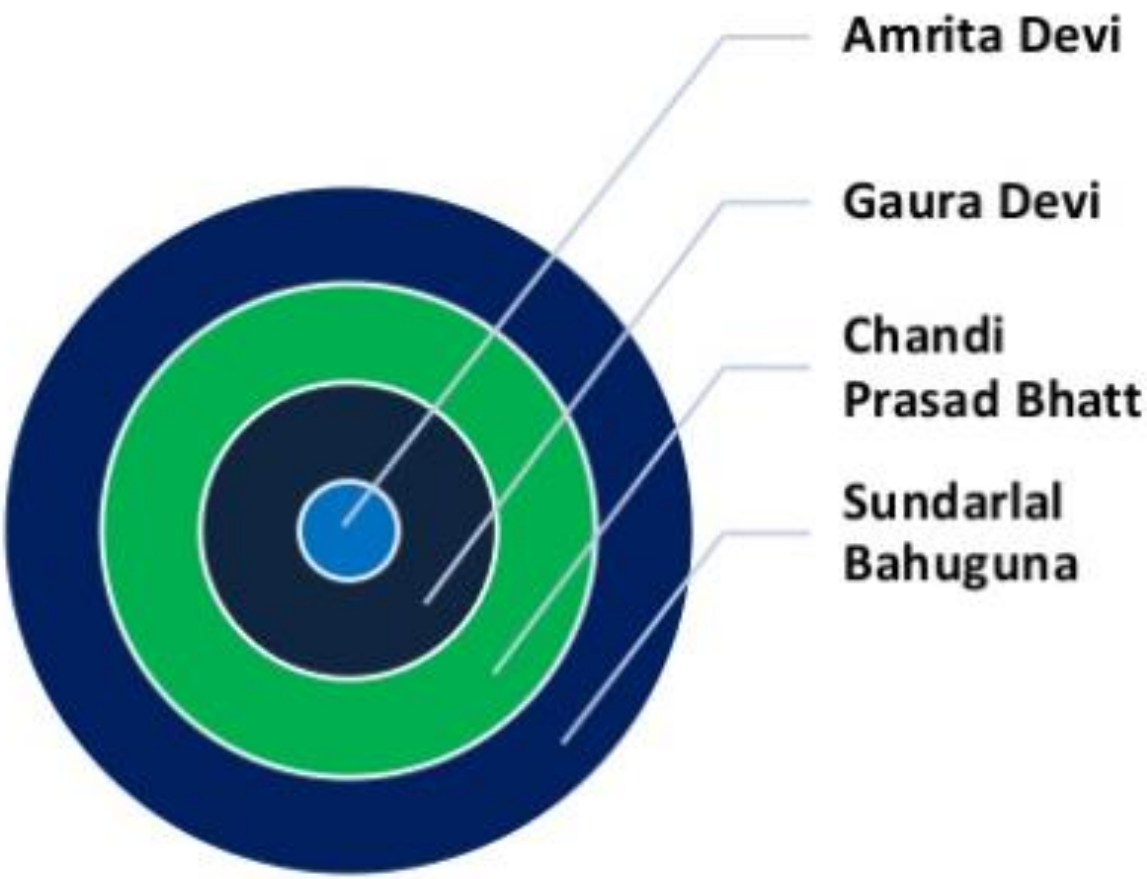
Meeting for Chipko Movement



SPARKING OFF THE MOVEMENT

- Chandi Prasad Bhatt
- Sunder Lal Bahuguna
- Sarla Bahen from Lakshmi Ashram
- Women groups
- the Uttarakahand Sangharsh Vahini (USV)

Major people in the Chipko Movement



BIRTH OF CHIPKO MOVEMENT

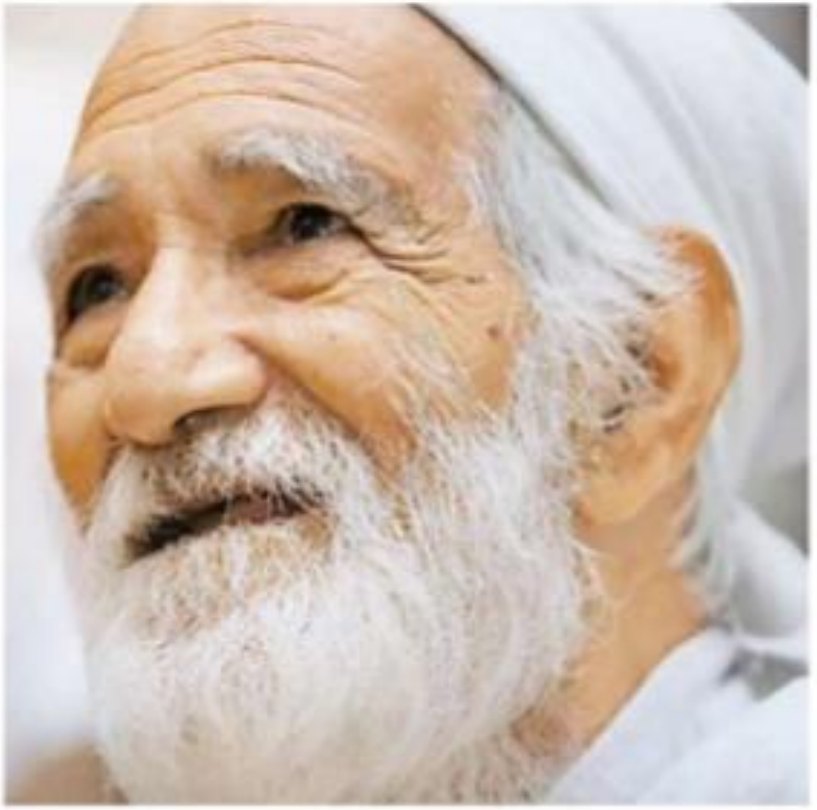
- Gaura Devi (an elderly woman)
- Head of the village Mahila Mangal Dal
- Mobilized village women for the movement when company men marched to cut the trees.
- She declared : *"The forest nurtures us like a mother; you will only be able to use your axes on it but you have to use them first on us."*

Chandi Prasad Bhatt

- A leader within the Chipko movement.
- Bhatt's teachings focus on the protection of the Himalayan Mountains from deforestation.
- Organized rallies to protect the forest from mass destruction.

Sundarlal Bahuguna

- He has contributed globally through awareness raising measures concerning deforestation.
- He was one of the first people to stop the construction of the Tehri Dam.



Results of Chipko Movement

- Ban on cutting the trees for the 15 years in the forests of Uttar Pradesh in 1980.
- By 1981, over a million trees had been planted through their efforts
- It generated pressure for a natural resource policy which is more sensitive to people's needs and ecological requirements.
- New methods of forest farming have been developed, both to conserve the forests and create employment.
- The Chipko is still working to protect the trees today through the same nonviolent methods.

Environmental movements: Appiko movement

Appiko Movement is one of the forest-based environmental movements in India. The movement took place in Uttara Kannada district of Karnataka in the Western Ghats. The movement created awareness among the villagers throughout the Western Ghats about the ecological danger posed by the commercial and industrial interests to their forest which was the main source of sustenance.

The people's struggle against commercial forest policy has come to light in the region of UttaraKannada. The destruction of tropical natural forests has caused irreversible changes in the ecosystem of the forests. The destruction of mixed species denied people's access to biomass for fodder, fertilizer, etc.

The clear felling of natural forests has led to severe soil erosion and drying up of perennial water resources. Moved by the destruction of essential ecological processes, the youth of Salkani village in Sirsi launched a Chipko movement, which was locally known as "Appiko Chaluvali". They embraced the trees which were to be felled by contractors of the forest depart-ment.

The protest within the forest continued for 38 days and finally the felling orders were withdrawn. The success of this agitation

spread to other places and the movement has now been launched in eight areas covering the entire Sirsi forest division in Uttara Kannada and Shimoga districts.

The Appiko Movement, a movement similar to the Chipko Movement, was launched in September 1983 by the representatives of a Yuvak Mandali to save the Western Ghats in Southwest India. It was observed by the representatives of the Yuvak Mandali that in areas, which were easily accessible, there was an excessive concentration of trees reserved for felling, and there was also excessive damage to other trees during such course of felling.

In a one-hectare plot sampled, it was found that 11 trees had been marked for cutting, out of which 8 were fallen. In the process of felling these eight trees, as many as five trees had been damaged. This rapacious destruction of forest resources was undermining the ecological survival of local communities, who finally stopped felling, through non-violent direct action, as seen in the case of Chipko.

The objective of the Appiko Movement is three-fold—to protect the existing forest cover, to regenerate trees in denuded lands and, last but not least, to utilize forest wealth with due consideration to conservation. All these objectives are implemented through ideally established Parisara Samrakshna Kendras (environmental conservation centers).

The Appiko Movement has created awareness among villagers throughout the Western Ghats about the ecological destruction of

forest wealth. People now closely monitor the exploitation of forests by the forest department and have been able to show the discrepancy between professed and actual practice of forest management.

The regions rainforests have been undermined by logging for the plywood and paper industry, conversion of forest to monoculture plantations and the construction of large hydro-electric dams for power generation. This has also resulted in the destruction of livelihood of forest dwellers.

The Appiko Movement forced the government to change its forest policy. Some specific changes include ban on clear felling, no further issuing of concessions to logging companies, and moratorium on felling of green trees in the tropical rainforest of the Western Ghats.

SILENT VALLEY

Structure

Silent Valley Movement in Kerala was against the construction of a hydroelectric dam on the river Kunthipuzha under the Kudremukh project.

11.1 INTRODUCTION

"If the misery of our poor be caused not by the laws of nature, but by our institutions, great is our sin."

[**Charles Darwin**]

The mainstream development models implemented particularly in the Third World have had devastating effects on the ecology and environment of these countries to the extent of endangering the very existence of life forms on the planet earth. The basic problem with the development models prescribed and implemented is the unscrupulous exploitation of nature for short term economic gains of a few powerful individuals. The totalising imperatives of this new wave of development destroyed the forests and ultimately destabilised the 'blue planet'. In the post-war period there was a strong faith in the development models proposed by the west. Most of the developing countries followed these dominant models without raising any question. In India, the large dams were viewed as the "icons of development". Most often, the beneficiaries of these development models in India were the big farmers and the industrialists. Under these circumstances the traditional communities were totally marginalised and they were 'silenced' in the name of "nation building" and "development". In the process, they were evacuated from their homeland without any proper rehabilitation or compensation from the government. The most victimised among these sections are the *adivasis* and other deprived sections.

Large scale deforestation had taken place in the name of development in different parts of India. The destruction of the forests and the building up of huge dams resulted in the drying up of many water abundant rivers, other water bodies and ultimately deprived the local communities of their livelihood.

The growing awareness among the *adivasis* and such excluded sections led to the emergence of large scale protest movements against the concerted efforts of the privileged sections of the society to conquer the forests in the name of development. The movement for protecting 'soil and water' has contributed to the contemporary discourse on development politics. There are assertions from the deprived sections against the well thought out designs of exploitation in the name of development and modernisation. People joined together cutting across parochial social and formal political divisions in the society

to protect their right to livelihood. The civil society has become more active in environmental protection movements and gained acceptance beyond the formal political format. The strong feeling is that major political parties failed to address these types of issues. The need of the time is the active participation of the people in the forest conservation programmes and activities.

In this context we are discussing here the success story of an environmental protection movement in the Silent Valley in the Palghat district of Kerala against the proposed Hydro electric project during the late 1980s. The movement was locally initiated with the strong support from the civil society and later on it was taken up by the Kerala Sastra Sahitya Parishad (KSSP) - the People's Science Movement of Kerala -and finally the government was forced to abandon the project. In a Post-Gandhian perspective, the movement was totally a non-violent one in a non-political space.

As has already been noted, the modern development models failed to address the fundamental base of the human habitation, the environment. In this context, there are many attempts to go beyond the established models of development by local initiatives, which include the resistance against the annihilation of the forest reserve in the name of 'development' and also, the local initiatives for formulating a nature-friendly model of development. The movement in the Silent Valley is noted for its non-political character and admired for its seminal contribution towards creating awareness among the people on the importance of protecting the evergreen forests.

Aims and Objectives

After studying the Unit, you will be able to understand:

- The importance of protecting the forests through people's initiative
- The basic characteristics of the 'new social movements'
- The catastrophic effects of the big projects on environment
- The power of non-violent interest articulation in the civil society and
- The importance of a vibrant civil society in a democratic system.

11.2 THE IMPORTANCE OF 'SILENT VALLEY'

The Silent Valley National Park is one of the last undisturbed rain forests and tropical moist evergreen forests in India. The park is located in the Nilgiri Hills, Palakkad District in Kerala, South India. The first English intrusion into the watersheds of the Silent Valley area was in 1847 by the botanist Robert Wight. The British named the area 'Silent Valley' because of a perceived absence of noisy Cicadas**.** It is estimated to have a continuous record of not less than 50 million years of evolution. In 1914 the forest of the Silent Valley area was declared a Reserve Forest. However, from 1927 to 1976 portions of the Silent Valley forest area were subjected to forestry operations.

The Silent Valley is rectangular, 7 km (east-west) X 12 km (north-south). Located between 11o03' to 11o13' N latitude and 76o21' to 76o35' E longitude, it is separated from the eastern and northern high altitude plateaus of the (Nilgiris Mountains) by high continuous ridges including Sispara Peak (2,206 m) at the north end of the park. The park gradually slopes southward down to the Palakkad plains and to the west it is bound by irregular ridges. The altitude of the park ranges from 658 m to 2328 m at Anginda

Peak, but most of the park lies within the altitude range of 880 m to 1200 m. Soils are blackish and slightly acidic in the evergreen forests where there is good accumulation of organic matter.

The Kuntipuzha River stretches the entire 15 km length of the park from north to south and fall into the Bharathapuzha. Kuntipuzha divides the park into a narrow eastern sector of width 2 kilometers and a wide western sector of 5 kilometers. The river is characterised by its perennial crystal clear water. The main tributaries of the river, Kunthancholapuzha, Karingathodu, Madrimaranthodu, Valiaparathodu and Kummaathanthodu originate on the upper slopes of the eastern side of the valley. The river is uniformly shallow, with no flood plains or meanders. Its bed falls from 1,861 m to 900 m over a distance of 12 km, the last 8 km being particularly level with a fall of only 60 m. Kuntipuzha is one of the less torrential rivers of the Western Ghats, with a pesticide-free catchment area.

Silent Valley gets copious amounts of rainfall during the monsoons, but the actual amount varies within the region due to the varied topography. The mean annual rainfall ranges from over 5000 mm in the Neelikal area in the west to around 3200 mm on the eastern side of the park. The park being completely enclosed within a ring of hills has its own micro-climate and probably receives some convectional rainfall in addition to rain from two monsoons. In general the rainfall is higher at higher altitude and decreases from the west to east due to the rain shadow effect. Eighty per cent of the rainfall occurs during the south-west monsoon between June and September. It also receives significant amount of rainfall during the north-east monsoon between October and November. The mean annual temperature is 20.2°C. The hottest months are April and May when the mean temperature is 23°C and the coolest months are January and February when the mean temperature is 18°C. The relative humidity is consistently high (above 95%) between June and December because of the high rainfall.

The valley is famous for many rare species of birds and animals. Birdlife International listed 16 bird species in Silent Valley as threatened or restricted: Nilgiri Wood-pigeon, Malabar Parakeet, Malabar Grey Hornbill, White-bellied Tree pie, Grey-headed Bulbul, Broad-tailed Grass bird, Rufous Babbler, Wynaad Laughing Thrush, Nilgiri Laughing Thrush, White-bellied Short wing, Black-and-rufous Flycatcher, Nilgiri Flycatcher, White-bellied Blue-flycatcher, Crimson-backed Sunbird and Nilgiri pipit. Rare bird species found here include Ceylon Frogmouth and Great Indian Hornbill. The 2006 winter bird survey discovered Long-legged Buzzard, a new species of raptor at Sispara, the park's highest peak. The survey found 10 endangered species recorded in the IUCN Red List including the Red winged crested cuckoo, Malabar Pied Hornbill, Pale harrier. The area is home to 15 endemic species including the Black-and-orange Flycatcher. It recorded 138 species of birds including 17 species that were newly observed in the Silent Valley area. The most abundant bird was the Black bulbul.

The mammals in the valley include Gaur, largest of all wild cattle. There are at least 34 species of mammals at Silent Valley including the threatened Lion-tailed Macaque, Niligiri Langur, Malabar Giant Squirrel, Nilgiri Tahr, Peshwa's Bat (Myotis peshwa) and Hairy-winged Bat. There are nine species of bats, rats and mice. Fourteen troops of lion-tailed macaque, eighty-five troops of Nilgiri langur, fifteen troops of bonnet macaque and seven troops of Hanuman langur were observed. Of these, the Nilgiri langur was randomly distributed, whereas the lion-tailed macaque troops were confined to the southern sector of the Park. Bonnet macaques and Hanuman langurs were occasional visitors. The tiger,

leopard (panther), leopard cat, jungle cat, fishing cat, Common Palm Civet, Small Indian Civet, Brown Palm Civet, Ruddy Mongoose, Stripe-necked Mongoose, Dhole, clawless otter, sloth bear, small Travancore flying squirrel, Indian pangolin (scaly anteater), porcupine, wild boar, sambar, spotted deer, barking deer, mouse deer and gaur also live here. There are at least 730 identified species of insects in the park. 33 species of crickets and grasshoppers have been recorded of which one was new. 39 species of true bugs (six new) and two species of Homoptera (both new) have been recorded. 128 species of beetles including 10 new species have been recorded.

Over 128 species of butterflies and 400 species of moths live here. A 1993 study found butterflies belonging to 9 families. The families Nymphalide and Papilionidae contained the maximum number of species. 13 species were endemic to South India, including 5 species having protected status. 7 species of Butterflies were observed migrating in a mixed swarm of thousands of butterflies towards the Silent Valley National Park. In one instance an observer noted several birds attempting to catch these butterflies. The bird species included the Pied Bushchat Saxicola caprata, Nilgiri Pipit Anthus nilghiriensis, Tickell's Warbler Phylloscopus affinis, Greenish Leaf-Warbler Phylloscopus trochiloides and the Oriental White-eye Zosterops palpebrosa.

The flora of the valley include about a 1000 species of flowering plants, 108 species of orchids, 100 ferns and fern allies, 200 liverworts, 75 lichens and about 200 algae. In addition to facilitating recharge of the aquifer, water retention of the catchment basin and preventing soil erosion, every plant in the park from the smallest one celled algae to the largest tree in the forest has unknown potential for beneficial innovations in biotechnology.

Angiosperm flora currently identified here includes 966 species belonging to 134 families and 599 genera. There are 701 Dicotyledons distributed among 113 families and 420 genera. There are 265 Monocotyledons here distributed among 21 families and 139 genera. Families best represented are the Orchids with 108 species including the rare, endemic and highly endangered orchids Ipsea malabarica, Bulbophyllum silentvalliensis and Eria tiagii, Grasses (56), Legumes (55), Rubiaceae (49) and Asters (45). There are many rare, endemic and economically valuable species, such as cardamom Ellettaria cardamomum, black pepper Piper nigrum, yams Dioscorea spp., beans Phaseolus sp., a pest-resistant strain of rice Oryza Pittambi, and 110 plant species of importance in Ayurvedic medicine. Seven new plant species have been recorded from Silent Valley in 1996 including Impatiens sivarajanii, a new species of Balsaminaceae.

Six distinct tree associations have been described in the valley. Three are restricted to the southern sector: (Cullenia exarillata & Palaquium ellipticum), (Palaquium ellipticum) and Mesua ferrea (Indian rose chestnut) and (Mesua ferrea & Calophyllum elatum). The remainders are confined to the central and northern parts of the Park: (Palaquium ellipticum & Poeciloneuron indicum), (Calophyllum elatum & Ochlandra sp.) and (Poeciloneuron indicum & Ochlandra sp.) A study of natural regeneration of 12 important tree species of Silent Valley tropical rain forests showed good natural regeneration of all 12 species. The species studied were Palaquium ellipticum, Cullenia exarillata, Poeciloneuron indicum, Myristica dactyloides, Elaeocarpus glandulosus, Litsea floribunda, Mesua nagassarium, Cinnamomum malabatrum, Agrostistachys meeboldii, Calophyllum polyanthum, Garcinia morella and Actinodaphne campanulata.

There is a huge hollow Kattualying tree here which can fit 12 people inside. Throughout human history about 10% of the genetic stock found in the wild has been bred into

palatable and higher yielding cereals, fruits and vegetables. Future food security depends on the preservation of the remaining 90% of the stock through protection of high biodiversity habitats like Silent valley.

The National Bureau of Plant Genetic Resources of Indian Council of Agriculturaal Research, ICAR (India), Plant Exploration and Collection Division has identified Silent Valley as high in bio-diversity and an important Gene Pool resource for Recombinant DNA innovations. An important example of use of wild germplasm is gene selection from the wild varieties of rice Oryza nivara (Central India) and Oryza Pittambi found in Silent Valley for the traits of broad spectrum disease resistance in high yielding hybrid rice varieties including IR-36, which are responsible for much of the green revolution throughout Asia.

11.3 THE HYDRO ELECTRIC PROJECT

At first, the Silent Valley got world attention not because of its rich natural diversity, but the successive struggle of the native people against the proposed hydroelectric project in the valley by the Kerala State Electricity Board [KSEB]. In 1928 the location on the Kunthipuzha River at Sairandhri was identified as an ideal site for electricity generation and in 1958 a study and survey of the area was conducted and a hydroelectric project of 120 MV costing Rs. 17 Crore was proposed by the Kerala State Electricity Board. Plans for a hydroelectric project that threatened the park's high diversity of wildlife stimulated an Environmentalist Social Movement in the 1970s called 'Save Silent Valley' which resulted in the cancellation of the project and the creation of the park in 1980. If the project was implemented, the reservoir would have submerged 8.3 km² of virgin rainforest and threatened the endangered Lion-tailed macaque. In 1976 the Kerala State Electricity Board announced a plan to begin dam construction and the issue was brought to the notice of the public.

The Kerala electricity board had started construction works in the proposed region. A vigorous public debate had taken place about the project. The scientific community, political parties, local people, activists and the civil society in general were included in this debate. However, the KSEB announced that it obtained clearance for the construction of the project from the Planning Board and the Science and Technology Department, Government of Kerala. But the fact is that it failed to obtain clearance from any of the concerned authority. The Morarji Desai government at the centre instructed the state government that sanction should be given to KSEB overruling the objections raised by the Science and Technology Department of Government of Kerala and the science community in the state. The project became a prestige issue for the KSEB, the Kerala government and the Prime Minister of the country. On the other side, the science community became more and more aware of the need for intensifying the resistance movement for protecting the rich diversity of the Silent Valley. Finally the science community in Kerala understood that they could not, on their own, fight the cause and they felt that coordinated efforts of both the scientific community and the local people were inevitable for the conservation of the forests.

It was very clear that the authorities who proposed the dam construction have not taken into consideration the kind of destruction that would set in motion in the entire geographical area. In this context it is worthwhile to note that the disastrous earthquake in Koyna in 1968 had been attributed to the weight of water in the Koyna reservoir. The effect of Aswan High Dam on the Nile Delta had been disastrous. Stoppage of flooding

and consequent loss of fertility, increase of soil toxicity due to absence of flooding, reduction of still and consequent rapidity of current causing accelerated erosion of banks, stagnation of water and consequent increase in mosquitoes and diseases especially bilharzias had all added together. The Idukki Project Hydel project in Kerala submerged the entire natural forests. It was widely understood that the proposed dam would alter the eco-system of the valley.

11.4 MOVEMENT AGAINST THE PROJECT

It is very important to note that an environmental movement like the *Silent Valley Movement* got national attention during the 1980s when the state-led development projects were dominating the scene. The dams were viewed as the 'icons' of development. The movement, in unequivocal terms, underlined the importance of protecting the environment for the generations to come. Protecting the lion tailed Macaque became the symbol of non–violent struggle to save the evergreen forests from total destruction. Many environmental groups like the Narmada Bachao Andolan (NBA), Bombay Natural History Society (BNHS) and Silent Valley Action Forum participated in the campaign. The prominent leaders were Vandana Shiva, Medha Patkar, Sundarlal Bahuguna, Baba Amte and Sunita Narain. The campaigns launched through the media, both print and electronic, generated public opinion in favour of the protection of the ecosystem of the silent valley.

As is stated elsewhere, the movement was first initiated by the local people and was subsequently taken over by the Kerala Sastra Sahitya Parishad (KSSP). Various scientific studies conducted by KSSP unequivocally emphasised the need for the protection of ecosystem in its pristine form for serving the interests of mankind. It was the biologist leaders of KSSP who identified the importance of protecting the valley because of its rich biodiversity. They had arranged several public meetings to educate the people. As a result most modern technical terms like the 'genetic diversity' became a household word in Kerala. Even concepts like 'gene pool' and 'deme' became part of the general vocabulary. The studies of the KSSP revealed that very limited section of the people would benefit from the proposed project; specifically, a large chunk of the electricity produced there would go for industrial purposes. Another argument was that by destroying the forest, the energy sources of vast majority of the poor people would be lost once and for all. The KSSP generated public opinion against the project. It had science groups all over the state and through newsletters and journals it had spread the message among the students and youth as also the general public. It had sent a memorandum to the Kerala government about the issues and problems involved. It had organised street plays, exhibitions, public debates, and also conducted a 'marathon march' which covered around 400 villages. The student community also rose against the proposed project and it was the first time in the history of the state where the students agitated for the protection of the environment. Some celebrities who were actually not part of the environment movement like KPS Menon (Sr.) extended support to the cause of the Silent Valley.

The campaign of KSSP was based on a distinct understanding of the following factors:

1. Vested interests, those who reap benefit from the felling of trees from deep forests and other similar activities, were getting protection from the powerful political class.

2. The achievements of Science and Technology are indiscriminately used for the promotion of the interests of the upper crest in the society.

3. It is the responsibility of the People's Science Movement to fight for the protection of the interests of common man and to be in the forefront of struggles to protect the environment to make the planet earth safe for the future generations.

4. Forest conservation is possible only through diverting people's struggles against the policies of the State, which is supporting the interests of certain sections of the population.

As a result of the massive campaign launched by KSSP, the Central Government appointed Dr. M.S. Swaminathan, a leading plant geneticist and agricultural Scientist to enquire about the issue. He visited the Silent Valley area and suggested that 389.52 km^2 including the Silent Valley (89.52 km^2), New Amarambalam (80 km^2), Attappadi (120 km^2) in Kerala and Kunda in Tamilnadu (100 km^2) reserve forests, should be developed into a National Rainforest Biosphere Reserve.

In 1983, the Central Government instructed the State government to abandon the Project and on November 15, the Silent Valley forests were declared as a National Park. On September 7, 1985, the Silent Valley National Park was formally inaugurated. On September 1, 1986 Silent Valley National Park was designated as the core area of the Nilgiri Biosphere Reserve. Since then a long-term conservation effort has been undertaken to preserve the Silent Valley ecosystem.

The Silent valley movement was in several ways crucial to other environmental movements in India. The seminal contribution of the Silent Valley movement is that it educated people regarding the importance of environmental protection. It is further realised that effective environmental protection can be achieved only through the active participation of local people in collaboration with the Science Community with the committed involvement of the civil society.

11.5 SUMMARY

It is very significant to note that the post-industrial developmental models totally discarded the importance of protecting the environment for the very survival of the mankind on the planet earth. In most of the developing countries, the building up of huge dams was the symbol of modern development. In India it was viewed as the 'Temples of Development'. However, the construction of big dams brings forth several environmental problems. But it was overshadowed by the slogans of national development and nation building. In the name of development, the native people were evacuated from their home land and the forests of rich diversity were destroyed. In this scenario, the active involvement of the civil society actors for the conservation of the forests and the natural resources has redrawn the boundaries of politics. The new social movements addressed these problems through the victim's angle and deconstructed the very idea of development. The Silent Valley movement was the beginning of such movements in India. It is very clear that the rejuvenation of the Gandhian developmental discourse is the need of the time.

11.6 TERMINAL QUESTIONS

1. Write an essay on the Silent Valley Movement.

2. How do you look at the Silent Valley Movement from the angle of the new social movements?

3. Explain the role of the KSSP in the Silent Valley movement.

4. The Silent Valley activism is a new beginning to the forest conservation. Elucidate.

SUGGESTED READINGS

1. Prasad, MK, MP Parameswaran, VK. Damodaran, KNS Nair and KP Kannan., The Silent Valley Hydroelectric Project, Kerala Sastra Sahitya Parishat, Kozhiokode, 1979

2. Parameswaran, M. P., Significance of Silent Valley, Economic and Political Weekly, Vol. 14, No. 27, July 7, 1979, pp. 1117-1119

3. Subrahmanyam, K.V., Environment of 'Silent Valley', Economic and Political Weekly, Vol. 15, No. 40 ,October 4, 1980, pp. 1651-1652

4. Pat, A.K., Revisiting Silent Valley, Economic and Political Weekly, August 14, 2004

5. James Gustave Speth., Global Environmental Challenges, Transitions to a Sustainable World, Orient Longman, Hyderabad, 2004.

Web Sources:

1. http://en.wikipedia.org/wiki/Silent_Valley_National_Park

2. http://en.wikipedia.org/wiki/Save_Silent_Valley

3. envfor.nic.in/divisions/ic/wssd/doc3/.../css/Chapter18.htm

4. http://www.kerenvis.nic.in/isbeid/Silent%20valley.pdf

Environmental movements: Bishnois of Rajasthan

This movement was led by Amrita Devi in which around 363 people sacrificed their lives for the protection of their forests. This movement was the first of its kind to have developed the strategy of hugging or embracing the trees for their protection spontaneously.

ENVIRONMENTAL MOVEMENT

- An environmental movement can be defined as a social or political movement, for the conservation of environment or for the improvement of the state of the Environment.

- The terms 'green movement' or 'conservation movement' are alternatively used to denoted the same.

- The environmental movements favor the **sustainable management** of natural resources.

ENVIRONMENTAL MOVEMENT

- The movements often stress the protection of the environment via **changes in public policy**. Many movements are centered on **ecology, health and human rights**.

- Environmental movements range from the highly organized and formally institutionalized zones.

- The spatial scope of various environmental movements ranges from being local to the almost global.

BISHNOI MOVEMENT

- Year: 1700s
- Place: Khejarli, Marwar region, Rajasthan state.
- Leaders: Amrita Devi along with Bishnoi villagers in Khejarli and surrounding villages.
- Aim: Save sacred trees from being cut down by the king's soldiers for a new palace.

RECENT TRENDS OF BISHNOI MOVEMENT

- In memory of the 363 Bishnois, who died protecting their dear trees, a number of khejri trees are planted around the area, which is still notably lush and rich with animal life. The Bishnoi sacrifices became the inspiration for a much larger Chipko movement that is still growing today, in which villagers physically embrace trees to save them from logging.

RECENT TRENDS OF BISHNOI MOVEMENT

- It is heart-warming to notice that the younger generation of Bishnois is slowly taking over the reigns of protecting the Earth in their own ways. We are optimistic that this new generation, armed with increased environmental consciousness and mass support for eco conservation will be successful in preserving the priceless treasures of this world.

WHAT WAS IT ALL ABOUT

- Amrita Devi, a female villager could not bear to witness the destruction of both her faith and the village's sacred trees. She hugged the trees and encouraged others to do the same.

- 363 Bishnoi villagers were killed in this movement.

- The Bishnoi tree martyrs were influenced by the teachings of Guru Maharaj Jambaji, who founded the Bishnoi faith in 1485 and set forth principles forbidding harm to trees and animals.

WHAT WAS IT ALL ABOUT

- The king who came to know about these events rushed to the village and apologized, ordering the soldiers to cease logging operations.

- Soon afterward, the maharajah designated the Bishnoi state as a protected area, forbidding harm to trees and animals. This legislation still exists today in the region.

RULES OR COMMANDMENTS OF BISHNOI COMMUNITY

- **Guru Jambheshwar** (b. 1451) is the founder of the Bishnoi community. Before his death, he had laid down 29 principles to be followed by the Killing animals and felling trees were banned. Before his death he has stated that the **black buck** was his manifestation after death and should be conserved.
- **Rules:-**
- 1) To observe segregation of the mother and newborn for 30 days after delivery
- 2) To keep woman away from all activities for 5 days during her menstrual periods

- 3) To take early morning bath daily.
- 4) To maintain both external and internal cleanliness and remaining content.
- 5) To meditate twice a day i.e. morning and evening (times when night is being separated from the day)
- 6) To sing the Lord's glory and reciting His virtues every evening.
- 7) To offer daily oblation to the holy fire with a heart filled with feelings of welfare, love and devotion

- 8) Use filtered water, milk and carefully cleaned fuel/ firewood.
- 9) Filter your speech: Think before you speak.
- 10) To be forgiving in nature.
- 11) To be compassionate.
- 12) Not to steal
- 13) Not to revile/ condemn someone.
- 14) Not to tell lies
- 15) Not to indulge in opprobrium

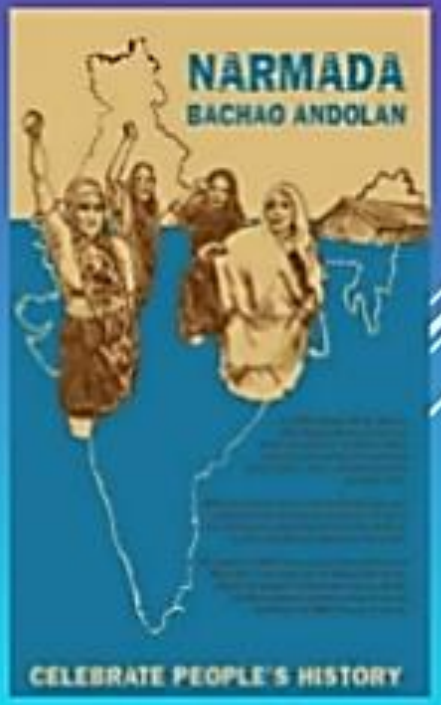
- 16) To observe fast and meditate on no-moon night (and the same day i.e. Amavsya).
- 17) To recite the holy name of Vishnu.
- 18) To be compassionate towards all living beings
- 19) Not to fell green trees
- 20) To kill the non-perishables: To overcome the non-perishable enemies of human beings viz. lust, anger, envy, greed and attachment.
- 21) To partake food cooked by self/ other religious person or one who is pure by heart and work

- 22) To provide a common shelter (*Thhat*) for goat/sheep to avoid them being slaughtered in abattoirs
- 23) Not to have bull's castrated
- 24) Not to partake of opium
- 25) Not to use tobacco and its products
- 26) Not to partake of cannabis
- 27) Not to drink liquor
- 28) Not to eat meat or non-vegetarian dishes
- 29) Not to use blue colored clothes

Environmental movements: Narmada Bachao Andolan

THE NARMADA BACHAO ANDOLAN

- Since the early 1980s, the Narmada Project has faced mounting opposition from a variety of sources.
- Protest groups formed in all three affected states and included or were supported by individuals facing displacement, students, social activists, Indian environmental NGOs, international NGOs, and transnational networks.
- Groups in Madhya Pradesh and Maharashtra opposed the dams altogether. Two such groups were the Narmada Ghati Navnirman Samiti in Madhya Pradesh and the Narmada Ghati Dharangrastha Samiti in Maharashtra
- These two groups subsequently merged to form the Narmada Bachao Andolan in 1989, under the leadership of Medha Patkar



- While Medha Patkar established Narmada Bachao Andolan in 1989, the groups joined this national coalition of environmental and human rights activists, scientists, academics and project affected people with a non-violent approach.
- NBA originally employed "Gandhian methods" such as peaceful marches and protests.
- Rajagopal—a scholar notes that globally, the NBA is "regarded as one of the signature public contestations of the twentieth century that redefined the terms of development, democracy and accountability."

THE WORKS OF NBA

- The success of the NBA campaign resulted from its innovative strategies of resistance that operated simultaneously at the grassroots, national, and international level.
- NBA focused towards the stoppage of the Sardar Sarovar Dam, Medha Patkar using the right to fasting, undertook a 22-day fast in June 1991 that almost took her life.
- She undertook a similar fast in 1993 and resisted evacuation from the dam site.
- In 1994, the Narmada Bachao Andolan office was attacked reportedly by a couple of political parties, and Patkar and other activists were physically assaulted and verbally abused.

- Medha Patkar and Baba Amte together let a series of protests, some of which failed.
- In September 1989, Amte led a 60,000-person anti-dam NBA rally in Harsud – a town of 20,000 people in Madhya Pradesh that faced submersion.
- In May 1990, a massive NBA five-daydharna (sit-in) at then-Prime Minister V. P. Singh's residence in New Delhi forced the Prime Minister to agree to "reconsider" the project.
- In December 1990, Amte, along with 5,000 protestors, began the Narmada Jan Vikas Sangharsh Yatra marching over a hundred kilometres.
- The government reacted by deploying the Gujarati police force and by bussing in thousands of government supported pro-dam demonstrators from urban centers in Gujarat.
- Following the government's announcement that rising waters from the dam would begin to submerge villages, domestic protest intensified and with it the resulting backlash from the state.
- On January 5, 1991, Amte began a "dharna [sit-in] unto death."
- Today it has became a 31 years long movement which started with the view to work towards and protect the environment as well as the shelter for the lakhs of peoples living at the banks of River Narmada led under the leadership of Socialists like Medha Patkar and Baba Amte.

Proponents

- Medha Patkar
- Baba Amte
- Dalits and Adivasi (indigenous people).
- Arundhati Roy
- Contributions from art and film world (to mention Aamir Khan)

ACHEIVEMENTS OF NBA

- In October 2000 the Supreme Court gave a judgment approving the construction of the Sardar Sarovar Dam.
- The court decided that the height of the dam be raised to 90 m. This height is much higher than the 88 m which anti-dam activists demanded, but it is definitely lower than the proposed height of 130 m.
- After the Supreme Court judgment, the Gujarat Government has taken up the construction of the dam.
- As the World Bank withdrew its financing in 1993 the project is now largely financed by the state governments and market borrowings.
- Now the project is expected to be fully completed by 2025.

CURRENT STATUS OF NBA

- The NBA has attracted an international network of support.
- They have gain some success in obtaining concession for the people who have been affected by already built dam on Narmada river.
- They achieved their early successes through being able to forge transnational linkages and to petition international organizations such as the World Bank from Sardar Sarovar in 1993.
- The NBA was able to halt of the construction of Sardar Sarovar Dam in 1994-99
- Withdrawal of foreign investors from Maheshwar dam 1999-2001
- The NBA has helped establishing a network of activists across the country – The National Alliance Of People's Movement.

CONCLUSION ON THE NBA

According to one NBA partner, the campaign against the construction of dams on the Narmada According to one NBA partner, the campaign against the construction of dams on the Narmada River is ‘‘symbolic of a global struggle for social and environmental justice,’’ while the NBA itself is a ‘‘symbol of hope for people’s movements all over the world that are fighting for just, equitable, and participatory development.’’ Though the NBA has yet to achieve the goals for which it has so tirelessly fought, its victories against the mammoth odds have earned it the reputation of being one of the most dynamic social movements of our time and one that the government continues to expend considerable resources to fight against. As noted by Medha Patkar upon her release from jail on August 6, 2007: ‘‘It’s obvious that the Government of Madhya Pradesh is all out to kill our right to land and also our right to agitate.’’

Environmental justice: National Green Tribunal and its importance

What is National Green Tribunal (NGT)?

- It is a specialised body set up under the National Green Tribunal Act (2010) for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources.
- With the establishment of the NGT, India became the third country in the world to set up a specialised environmental tribunal, only after Australia and New Zealand, and the first developing country to do so.
- NGT is mandated to make disposal of applications or appeals finally within 6 months of filing of the same.
- The NGT has five places of sittings, New Delhi is the Principal place of sitting and Bhopal, Pune, Kolkata and Chennai are the other four.

Structure of NGT

- The Tribunal comprises of the Chairperson, the Judicial Members and Expert Members. They shall hold office for term of five years and are not eligible for reappointment.
- The Chairperson is appointed by the Central Government in consultation with Chief Justice of India (CJI).
- A Selection Committee shall be formed by central government to appoint the Judicial Members and Expert Members.

- There are to be least 10 and maximum 20 full time Judicial members and Expert Members in the tribunal.

Powers & Jurisdiction

- The Tribunal has jurisdiction over all civil cases involving substantial question relating to environment (including enforcement of any legal right relating to environment).
- Being a statutory adjudicatory body like Courts, apart from original jurisdiction side on filing of an application, NGT also has appellate jurisdiction to hear appeal as a Court (Tribunal).
- The Tribunal is not bound by the procedure laid down under the Code of Civil Procedure 1908, but shall be guided by principles of 'natural justice'.
- While passing any order/decision/ award, it shall apply the principles of sustainable development, the precautionary principle and the polluter pays principle.
- NGT by an order, can provide
  - relief and compensation to the victims of pollution and other environmental damage (including accident occurring while handling any hazardous substance),
  - for restitution of property damaged, and
  - for restitution of the environment for such area or areas, as the Tribunal may think fit.
- An order/decision/award of Tribunal is executable as a decree of a civil court.

- The NGT Act also provides a procedure for a penalty for non compliance:
  - Imprisonment for a term which may extend to three years,
  - Fine which may extend to ten crore rupees, and
  - Both fine and imprisonment.
- An appeal against order/decision/ award of the NGT lies to the Supreme Court, generally within ninety days from the date of communication.
- The NGT deals with civil cases under the seven laws related to the environment, these include:
  - The Water (Prevention and Control of Pollution) Act, 1974,
  - The Water (Prevention and Control of Pollution) Cess Act, 1977,
  - The Forest (Conservation) Act, 1980,
  - The Air (Prevention and Control of Pollution) Act, 1981,
  - The Environment (Protection) Act, 1986,
  - The Public Liability Insurance Act, 1991 and
  - The Biological Diversity Act, 2002.
- Any violation pertaining to these laws or any decision taken by the Government under these laws can be challenged before the NGT.

Strengths of NGT

- Over the years NGT has emerged as a critical player in environmental regulation, passing strict orders on issues ranging from pollution to deforestation to waste management.
- NGT offers a path for the evolution of environmental jurisprudence by setting up an alternative dispute resolution mechanism.
- It helps reduce the burden of litigation in the higher courts on environmental matters.
- NGT is less formal, less expensive, and a faster way of resolving environment related disputes.
- It plays a crucial role in curbing environment-damaging activities.
- The Chairperson and members are not eligible for reappointment, hence they are likely to deliver judgements independently, without succumbing to pressure from any quarter.
- The NGT has been instrumental in ensuring that the Environment Impact Assessment process is strictly observed.

Challenges

- Two important acts - Wildlife (Protection) Act, 1972 and Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 have been kept out of NGT's jurisdiction. This restricts the jurisdiction area of NGT and at times hampers its functioning as crucial forest rights issue is linked directly to environment.

- The NGT decisions are being challenged in various High Courts under Article 226 (power of High Courts to issue certain writs) with many asserting the superiority of a High Court over the NGT, claiming 'High Court is a constitutional body while NGT is a statutory body'." This is one of the weaknesses of the Act as there is lack of clarity about what kind of decisions can be challenged; even though according to the NGT Act, its decision can be challenged before the Supreme Court.
- Decisions of NGT have also been criticised and challenged due to their repercussions on economic growth and development.
- The absence of a formula based mechanism in determining the compensation has also brought criticism to the tribunal.
- The decisions given by NGT are not fully complied by the stakeholders or the government. Sometimes its decisions are pointed out not to be feasible to implement within a given timeframe.
- The lack of human and financial resources has led to high pendency of cases - which undermines NGT's very objective of disposal of appeals within 6 months.
- The justice delivery mechanism is also hindered by limited number of regional benches.

Important Landmark Judgements of NGT

- In 2012, POSCO a steelmaker company signed a MoU with the Odisha government to set up steel project. NGT suspended order and this was considered a radical step in favour of the local communities and forests.

- In 2012 Almitra H. Patel vs. Union of India case, NGT gave judgment of complete prohibition on open burning of waste on lands, including landfills – regarded as the single biggest landmark case dealing with the issue of solid waste management in India.
- In 2013 in Uttarakhand floods case, the Alaknanda Hydro Power Co. Ltd. was ordered to compensate to the petitioner – here, the NGT directly relied on the principle of 'polluter pays'.
- In 2015, the NGT ordered that all diesel vehicles over 10 years old will not be permitted to ply in Delhi-NCR.
- In 2017, the Art of Living Festival on Yamuna Food Plain was declared violating the environmental norms, the NGT panel imposed a penalty of Rs. 5 Crore.
- The NGT, in 2017, imposed an interim ban on plastic bags of less than 50-micron thickness in Delhi because "they were causing animal deaths, clogging sewers and harming the environment".

Conclusion

There is need for more autonomy and widen NGT's scope for effective protection of environment in balance with human developmental activities.

Environmental philosophy: Environmental ethics

Environmental ethics refers to the issues, principles and guidelines relating to human interactions with their environment. It is rightly said, *"The environmental crisis is an outward manifestation of the crisis of mind and spirit"*. It all depends on how do we think and act. If we think *"Man is all powerful and the supreme creature on this earth and man is the master of nature and can harness it at his will"*, it reflects our human-centric thinking.

On the other hand, if we think *"Nature has provided us with all the resources for leading a beautiful life and she nourishes us like a mother, we should respect her and nurture her",* this is an earth-centric thinking.

The first view urges us to march ahead gloriously to conquer the nature and establish our supremacy over nature through technological innovations, economic growth and development without much botheration to care for the damage done to the planet earth. The second view urges us to live on this earth as a part of it, like any other creation of Nature and live sustainably. So, we can see that our acts will follow what we think. If we want to check the environmental crisis, we will have to transform our thinking and attitude. That in turn, would transform our deeds, leading to a better environment and better future. These two world-views are discussed here in relation to environmental protection:

(a) Anthropocentric Worldview: This view is guiding most industrial societies. It puts human beings in the center giving them the highest status. Man is considered to be most capable for managing the planet earth. The guiding principles of this view are:

(i) Man is the planet's most important species and is the in-charge of the rest of nature.

(ii) Earth has an unlimited supply of resources and it all belongs to us.

(iii)Economic growth is very good and more the growth, the better it is, because it raises our quality of life and the potential for economic growth is unlimited.

(iv) A healthy environment depends upon a healthy economy.

(v) The success of mankind depends upon how good managers we are for deriving benefits for us from nature.

(b) Eco-centric Worldview: This is based on earth-wisdom. The basic beliefs are as follows:

(i) Nature exists not for human beings alone, but for all the species.

(ii) The earth resources are limited and they do not belong only to human beings.

(iii) Economic growth is good till it encourages earth-sustaining development and discourages earth-degrading development.

(iv) A healthy economy depends upon a healthy environment.

(v) The success of mankind depends upon how best we can cooperate with the rest of the nature while trying to use the resources of nature for our benefit.

Environmental ethics can provide us the guidelines for putting our beliefs into action and help us decide what to do when faced with crucial situations. Some important ethical guidelines known as Earth ethics or Environmental Ethics are as follows:

- You should love and honour the earth since it has blessed you with life and governs your survival.
- You should keep each day sacred to earth and celebrate the turning of its seasons.
- You should not hold yourself above other living things and have no right to drive them to extinction.
- You should be grateful to the plants and animals which nourish you by giving you food.
- You should limit your offsprings because too many people will overburden the earth.
- You should not waste your resources on destructive weapons.
- You should not run after gains at the cost of nature, rather should strive to restore its damaged majesty.
- You should not conceal from others the effects you have caused by your actions on earth.

Role of various religions and cultural practices in environmental conservation

Living in harmony with Nature has been an integral part of Indian culture. This has been abundantly reflected in a variety of traditional practices, religious beliefs, rituals, folklore, arts and crafts, and in the daily lives of the Indian people from time immemorial. The present day global concerns for sustainable development and conservation of natural resources spanning the two decades between the Stockholm Conference of Environment in 1992 and the United Nations Conference on Human Environment and Development (Earth Summit) at Rio de Janeiro in 1992 are of recent origin in comparison to the long tradition and cultural ethos of nature conservation in India.

Virtually all the countries of the world have rich traditions embedded in the ethics of protecting nature. Many ancient cultures tell us how communities lived in harmony with nature, with a tradition of reverence for the elements that constitute ecosytems, drawing their sustenance from natural resources and at the same time protecting the environment that sustains them. Modern man tends to look down upon indigenous people as primitive, backward and superstitious. They may be poor, illiterate, and disadvantaged in many other ways, but they have a tremendous understanding of ecosystems and the factors that sustain them. In the words of Sitakant Mahapatra (1992):

"They still look upon life as a gift to be celebrated; and this

ancient Earth as one to be praised, worshipped and also celebrated. They are the one to whom the earth is not something to be used, not a possession or an object for exploitation but a living entity, an object of reverence, and the relationship is one of sacred trust and loving intimacy. For, they believe as much in celebrating one's life in this world as in remembering, adoring and celebrating the world in one's life. The sacred soil of ancestors into which one is born is thus a part of one's fundamental psychic experience of life and is a part of its spiritual dimension. The earth, the land, the village enter into and are secure in racial memory and it is only an ethical imperative to worship the Earth goddess, the Mother Earth."

The worship of Mother Earth is a universal phenomenon in many indigenous cultures. There are innumerable examples of festivals, rituals, songs, and myths that celebrate the gifts of Mother Earth all over the world, revealing the intimate sense of togetherness and harmony that exists between man and nature in tribal societies. An American - Indian community, the Sioux Indians, refused to till the soil because they did not want to wound the body of their mother, the Earth. They would say, 'Must I mutilate her flesh so as to get at her bones? Then I can never again enter into her body and be born again.'

Indigenous people in many countries attribute supernatural powers to plants, animals, rivers, oceans, mountains, the wind, sun and moon. Respect for nature is inherent in many religious faiths. Many Hindu gods and goddesses are shown to use animals as mounts. Sacred groves or sacred forests preserved with reverence have been part of Hindu and Buddhist culture. In

Christianity as well as in Islam, conservation of the environment is based on the. principle that nature and its components are created by God, and humans are entrusted with the responsibility of protecting it. Many religions and moral philosophies have professed the unity of all life on earth and the obligation of human beings to care for them.

Today, when people throughout the world are perturbed by the degradation of the environment and the disastrous consequences of this, traditional ethics of nature conservation could be looked upon as a source of inspiration and guidance for the future. Perhaps no other culture can provide such a profound variety of cultural practices and ecologically sound relationship with nature as the Indian. This chapter is an attempt to bring together some of the information available on this aspect of Indian culture from various sources.

THE INDIAN TRADITION

For the people of India, environmental conservation is not a new concept. Historically, the protection of nature and wildlife was an ardent article of faith, reflected in the daily lives of people, enshrined in myths, folklore, religion, arts, and culture. Some of the fundamental principles of ecology-the interrelationship and interdependence of all life-were conceptualized in the Indian ethos and reflected in the ancient scriptural text, the *Isopanishad,* over 2000 years ago. It says, 'This universe is the creation of the Supreme Power meant for the benefit of all his creation. Each individual life-form must, therefore, learn to enjoy

its benefits by forming a part of the system in close relation with other species. Let not anyone species encroach upon the other's rights.'

The oldest visual image of the human fascination, love, and reverence for nature in India can be found in the 10,000 year-old cave paintings at Bhimbetka in Central India depicting birds, animals, and human beings living in harmony. The Indus Valley civilization provides evidence of human interest in wildlife, as seen in seals depicting images of rhino, elephant, bull, etc. Historically, conservation of nature and natural resources was an innate aspect of the Indian psyche and faith, reflected in religious practices, folklore, art and culture permeating every aspect of the daily lives of people. Scriptures and preachings that exhort reverence for nature and relate to conservation can be found in most of the religions that have flourished in the Indian subcontinent. Hinduism, Buddhism, Jainism, Christianity, Islam; and others place great emphasis on the values, beliefs, and attitudes that relate to the cross-cultural universality of respect for nature and the elements that constitute the universe. The concept of sinning against nature existed in various religious systems. Classical Indian myth is replete with similies of man in unison with the environment. Many of the rituals which to modern society may seem meaningless and superstitious were traditional strategies to preserve the intrinsic relationship between man and nature. The worship of trees, animals, forests, rivers, and the sun, and considering the earth itself as Mother Goddess, were part of the Indian tradition.

SACRED GROVES

One of the finest examples of traditional practices in India based on religious faith which has made a profound contribution to nature conservation has been the maintenance of certain patches of land or forests as "sacred groves' dedicated to a deity or a village God, protected, and worshipped. These are found all over India, and abundantly along the Western Ghats, the west coast, and in several parts of Kerala, Karnataka, Tamil Nadu amd Maharashtra. In Kerala there are hundreds of small jungles dedicated to snakes *(Sarpakavu, Sarpa* meaning snake, *kavu* meaning jungle). There are also Ayyappan *kavus* dedicated to Lord Ayyappa, the most famous of which, visited by millions of devotees every year, being the sacred hill of Sabarimala with an Ayyappan temple.

According to Madhav Gadgil (1985):

"Sacred groves ranged in extent from fifty hectares or more to a few hundred square metres. Where the network of sacred groves has remained intact till recent times, as in the South Kanara district of the west coast, one can see that they formed island of climax vegetation at densities of 2 to 3 per. sq. km, ranging in size from a small clump to a hectare or more, and originally covering perhaps 5 per cent of the land area. This must have been a very effective way of preserving tropical biological diversity, for we are still discovering new species of plants which have disappeared from everywhere else, in these sacred groves."

In spite of the depletion of forests in many parts of India, some sacred groves still remain intact as oases in deserts, conserving rich biological diversity. The maintenance of sacred groves can thus he considered to be an outstanding example of a traditional practice that has contributed to forest conservation, albeit in a small measure. There are also examples of sacred ponds attached to temples in many parts of India. Some of these have been responsible for the protection of certain endangered species of turtles, crocodiles, and the rare fresh water sponge.

SACRED PLANTS AND ANIMALS

Many plants and animals have from historcial times been considered sacred in India by various communities. The most outstanding examples are the peepal tree *(Ficus religiosa).* The banyan tree *(Ficus 'bengelensiss,* and Khejdi tree *(Prosopis cineraria),* and these have been traditionally revered and therefore never cut. There are a number of other trees and plants considered sacred and grown in temple premises and are protected in other localities. More than a hundred such species of trees/plants in India are considered sacred by various communities and religious faiths. These include the sandalwood tree, beetlenut, palm, *neem,* coconut palm,juniper, *champa,* lotus, *tulsi,* pepper, etc. Such traditional cultural attitudes, though based on religious faith, have made significant contribution in the protection and propagation of various species of trees and plants in India.

Many animals are considered sacred and worshipped by several

Hindu and other communities, and have thus received protection for centuries. The peafowl, sacred to lord Karttikeya is never hunted, the blue rock pigeon is considered sacred to Saint Hazrat Shah lalal and is protected in the Bengal region. Even rodents are considered sacred and are allowed to breed in the famous temple of goddess Karnimata in Rajasthan. The tiger and the cobra, though greatly feared, are afforded protection on religious grounds.

According to Asutosh Bhattacharya (1956):

"In the pre-Aryan society of India tiger worship was in vogue from the remotest past. The seal engraved with the image of Siva, lord of beasts, that has been discovered at Mohenjodaro has also, among other four principal beasts, the figure of a tiger engraved beside Siva. Siva, the god of the ancient non-Aryan race of India, is clad in a tiger skin and it is a tigerskin which is his seat. Probably the tiger was the most primitive vehicle of Siva. Later, when cow-worship started in society, Siva was made to ride on a bullock, but a tiger skin was preserved for his wearing cloth and seat. The legitimate conclusion form the association of this particular beast with the god Siva is that the tiger-worship of primitive society has subsequently got mixed with the Saiva cult. Another proof of the special vogue of tiger-worship in regions lying outside the pale of Aryan society in Northern India is that there is a community named Baghel Rajputs in Rajputana. Perhaps they are the descendants of some primitive community of tiger-worshippers. They worship tigers and never hunt them."

Snake worship has been an established cult among the Nairs of Kerala. Snake groves or *kavus* abounding in wild trees and

creepers housing a cobra's head carved in granite were found near the homes of many Kerala Hindus. The celebrated Padmanabaswami temple in Thiruvanthapuram has Lord Vishnu reclining on a mighty serpent. Many other animals are also worshipped as they are considered vehicles of gods and goddesses.

Dealing with the status given to 'animals in India, Sadashiv Gorakshkar (1988) states:

"In Buddhist mythology, the *Jatakas* or the stories of the Buddha's previous life are replete with several incarnations of the Bodhisattvaas an animal. Among the Jains, eighteen of the twenty-four Tirthankaras have an animal as their cognizance. It is interesting to observe that the first, second and the eleventh Tirthankaras have a bull, an elephant and a rhinoceros as their cognizances. Their antiquity could be traced to the Indus valley period (c. 2500 -1750 BC). The famous Pasupati seal, for instance, shows a deity seated with a horned crown and surrounded by an elephant, a tiger, a rhino and a bull/buffalo. On the other hand, those of the first, second, third, and twenty-fourth, viz. the bull, elephant, horse and lion make their appearance on the Ashokan pillar capital at Sarnath in the third century BC."

All these accounts vividly show how the ancient culture and traditions of Indian society contributed to the conservation of natural ecosystems, and the plants and animals that inhabited these.

Environmental communication and public awareness: case studies:
CNG vehicles in Delhi

Delhi's compressed natural gas (CNG) experiment has been hailed as one of the few success stories in recent times, where a substantial reduction in vehicular pollution has been achieved in a very short time.

From one of the most polluted cities of the world in 1999, Delhi bagged the 'Clean City International Award' in May 2003 for successfully converting its 9,000 public buses to CNG. In fact, mandating the use of CNG for public transport is only one of the instruments used in Delhi, other notable instruments are installing 2-T oil dispensers, removal of old taxis, sale of low speed diesel, etc, which were aimed to affect the pollution profile of private and other commercial vehicle.

Suspended particulate matter (SPM), respirable suspended particulate matter (RSPM or PMi0), sulphur dioxide (SO2), carbon monoxide (CO) and Ozone (03) are the major constituents of air pollutants. In the case of Delhi the situation deteriorated in the 1990s as the growth of vehicles outpaced population growth and economic development. In 1997, Centre for Science and Environment updated the estimate and found that the situation had worsened - as a person was dying every 53 minutes because of air pollution - especially due to diesel run vehicles. The Supreme Court of India appreciated the gravity of the situation and responded by a ruling in 1998 that all public transport should shift from the use of diesel to CNG by March 31, 2001. After repeated deferment under some pretext or the other the court finally imposed the verdict and, as a consequence, by December 1, 2002 all buses were converted to CNG.

There are various fuel grades that exist and the level of pollutants depends on this grade. The combustion of fuels releases oxides of sulphur, oxides of nitrogen (NO, NO_2, N_20), CO and 0_3. CO is a highly noxious gas that forms when there is not enough oxygen during the combustion. The CO, however, oxidises very fast and forms CO_2, which though not noxious, is one of the major contributors of the greenhouse effect. This implies that a reduction of CO, hence CO_2 emissions, can only be achieved by improving engine efficiency or by using fuels containing a lower concentration of carbon such as natural gas. CNG is a clean-burning alternative fuel for vehicles with a significant potential for reducing harmful emissions, especially fine particles. Diesel engines are largely responsible for harmful emissions as the major part of the fuel remains unburnt in them and makes up for particulate emission.

Table 1: Emission Benefits of Replacing Conventional Diesel with CNG in Buses

Fuel	Pollution Parameter		
	CO	NOx	PM
Diesel	2.4 g/km	21 g/km	0.38 g/km
CNG	0.4 g/km	8.9 g/km	0.012 g/km
Percentage reduction	84	58	97

Source: World Bank (2001b:2), [Frailey et al 2000].

Daily ambient air quality data was used from June 1999 to September 2003 from the busiest intersection in Delhi for the impact study of CNG in the pollution of Delhi. The results however do not indicate an all-round improvement in ambient quality. NO_x has risen after the conversion whereas SPM and PM_{10} have shown only marginal fall. The only parameter that has shown a significant decline is CO. Based on the results, one can say that conferring of the clean city award just on the basis of conversion to CNG was not enough and warranted a broader look into the problem. In fact, as the situation exists, Delhi is not at all moving towards the CPCB definition of 'clean air' (i.e., achieving ambient air pollution levels that are 50 per cent of the standards set for each pollutant round the year) except for SO_2.

Thus to conclude, Delhi, which has already adopted and introduced most of the internationally tried and tested measures pertaining to vehicular pollution control like Euro norms, fuel quality upgradation, conversion to CNG, etc, has failed to derive any substantial benefits from the efforts. The menace of air pollution in Delhi will continue to exist until the pollutant levels are drastically brought down below the safe standards and their percentage adherence increased to 98 per cent. This can be achieved when there is a shift toward road-based policies and mass-rapid transport.

Environmental communication and public awareness:
Swachh Bharat Abhiyan

Table of Contents

Introduction

Swachh Bharat Abhiyan (Hindi : स्वच्छ भारत अभियान, English: Clean India Mission and abbreviated as SBA or SBM for "Swachh Bharat Mission") .

» Slogan : *One step towards cleanliness.*

» It is a national campaign by the Government of India, covering 4,041 statutory cities and towns, to clean the streets, roads and infrastructure of the country.

» The campaign was officially launched on 2 October 2014 at Rajghat, New Delhi , where Prime Minister Narendra Modi himself cleaned the road.

» It was performed in remembrance of Gandhi's words.

» It is India's biggest ever cleanliness drive and 3 million government employees and school and college students of India participated in this event.

Background

- With effect from 1 April 1999, the Government of India restructured the **Comprehensive Rural Sanitation Programme** and launched the **Total Sanitation Campaign (TSC)** which was later (on 1 April 2012) renamed **Nirmal Bharat Abhiyan (NBA).**

- On 2 October 2014, Prime Minister Narendra Modi launched the **Swachh Bharat Mission**, which aims to eradicate open defecation by 2019, thus restructuring the Nirmal Bharat Abhiyan.

- This campaign aims to accomplish the vision of "Clean India" by 2nd October 2019, 150th birth anniversary of Mahatma Gandhi and is expected to cost over INR 62000 Crore . This campaign was described as **"beyond politics"** and **"inspired by patriotism".**

Objectives of Swachh Bharat Abhiyaan

- Construction of Individual, Cluster and Community toilets.

- To eliminate or reduce open defecation.

- Public Awareness to be provided .

Objectives of Swachh Bharat Abhiyaan

- An accountable mechanism of monitoring toilet use.
- To keep villages clean. Solid and liquid waste management through Gram Panchayat.
- To lay water pipelines in all villages by 2019.

Public Awareness

Bring about a behavioral change in people.

Generating awareness among citizens.

The Private Sector

Ministry of Information and Broadcasting
Government of India

Creating an enabling environment for private sector participation.

Strengthening of urban local bodies to fulfill these objectives .

स्वच्छ भारत
एक कदम स्वच्छता की ओर

Swachh Bharat

Clean India Mission

Participation by prominent individuals

MODI'S CLEAN-UP ACT

Swachh Bharat | To ensure access to **toilets** and **safe** and **adequate drinking water** supply to every person. Ensure **solid & liquid waste disposal systems** and **clean** villages

Gramin SB | **Target:** Construction of **11cr household latrines** in villages by **2019**

Central agency: Drinking water & sanitation ministry

ESTIMATED EXPENSE: ₹1.34 lakh cr

Urban SB | **Target:** Build **1cr household toilets**, 2.5 lakh seats of community toilets, 2.6 lakh seats of public toilets & solid waste management

Central agency: Urban development & housing ministries

ESTIMATED EXPENSE: ₹62,009 crore

CSR Plans | PSUs under power, coal & renewable energy ministries to **build 50,000 toilets in schools** by **August 2015**

- CII to help build **10k toilets in schools by 2016** using private companies CSR arms. Costs: **Rs 200cr to Rs 500cr**
- Bharti Foundation & TCS to spend **Rs 200cr**

स्वच्छ भारत

एक कदम स्वच्छता की ओर

More toilets for a Clean India

₹12,000

₹10,000

Incentive for building toilets raised from

Incentive based Participation (per toilet)

Top 10 cleanest cities of India (2016 Survey)

On 15th Feb, 2016 The **Swachh Bharat Survekshan**.

1. Mysore (Karnataka).
2. Chandigarh (UT).
3. Tiruchirapalli (Tamil Nadu).
4. New Delhi Municipal Council.
5. Visakhapatnam (Andhra Pradesh).
6. Surat (Gujarat).
7. Rajkot (Gujarat).
8. Gangtok (Sikkim).
9. Pimpri-Chindwad (Maharashtra).
10. Greater Mumbai (Maharashtra).

MYSORE CITY

How Realistic is the Swachh Bharat Campaign ?

- ✓ Under pressure things happen faster.
- ✓ 20 millions toilets by 2015.
- ✓ Less than One third Indian have access to sanitation facilities.
- ✓ Around 4 lakhs – 0 to 5 years old die due to unsafe drinking water.
- ✓ Only 22% of rural household use Sanitary facilities.
- ✓ Caste is a major problem.
- ✓ **" If we Indians can reach Mars then , can't Indians go and clean our streets and roads".**
- ✓ **This is a very difficult mission ,**

but by 2019 we should accomplish it.

Swachh Bharat Campaign – Dream or Possibility

- First step element of psychology - first toilets at school- this will change the approach to defecation.
- Insanitation causes an expense of Rs 500 per month and Rs 7000 for every individual every year.
- Lets teach Swachh Bharat as a **Right and Responsibility**. **Freedom from dirt and filth** should be taken as fundamental right and responsibility.
- A additional cess of **0.5%** for Swachh Bharat is being levied in proportion to the taxable services from November 2015.

India's Filth Figures

According to Census 2011, the Urban Slum figures:

- ✓ 68 million people live in slums.
- ✓ 34% have no toilets at their homes.
- ✓ 63% own mobile phones.
- ✓ 44.3% have open drainage in slums.
- ✓ 1,88,500 tones of waste generated by India per day.
- ✓ 68.8 million tones of waste generated by India per year.
- ✓ 8,500 tones waste generated by Delhi per day.
- ✓ 0.2-0.6 kg garbage generated per head per day in India.

Swachh Bharat Abhiyaan – "Hit or Miss".

Swachh Bharat only Noise, No Action.

1.**Target**- 25 lakhs individual toilets by 2019.

4.6 lakhs installed.

12 lakhs under progress.

Success Rate – 18% .

2.**Target**- 100000 community toilets by 2019.

25000 toilets installed.

Success Rate – 25% .

3.**Target**- 1000 cities with 100% solid waste management by 2019.

Only 2 have achieved.

Success Rate – 0.2% .

THE SWACHH REPORT CARD

476
Number of cities in the country in which the survey took place

39
Number of cities from the southern states among the top 100

- 27 CITIES FROM EAST
- 15 CITIES FROM WEST
- 12 CITIES FROM NORTH
- 7 CITIES FROM NORTH-EASTERN STATES

25
Number of cities/towns from West Bengal that find a place in the top 100

5
Number of state capitals ranked beyond 300

BENGALURU LEADS THE LIST OF CAPITALS AT 7TH RANK

The top ranked 10 clean cities

15
Number of capital cities that figured among top 100

429
Patna's rank in the list

74
Number of cities from the North among top 100

Conclusion

- *Not to be disillusioned by the reports of slow progress.*
- *Somewhere somebody is listening , doing their bit.*
- *Lets look at the glass as half full and not half empty because we have come from nothing to this place.*
- *Role of Youth – by inculcating culture of self service and cleanliness we can bring change.*
- *Swachh Bharat Abhiyaan should be taken forward as a National Initiative irrespective of its name and fame.*
- *Attitudes towards cleanliness is changing but we must not forget we have miles to go.*

Environmental communication and public awareness: National Environment Awareness Campaign (NEAC)

National Environmental Awareness Campaign

- The National Environment Awareness Campaign (NEAC) was hence launched in mid-1986 with the objective of creating environmental awareness at the national level.
- In this campaign, nominal financial assistance is provided from all over the country for conducting awareness raising and action oriented activities.
- The programme facilitates the transfer of technical know-how to different people including local population.

- NEAC is a campaign of MoEF (Ministry of Environment and Forests) Govt. of India. It was initiated in 1986 for creating environmental awareness and since then is an annual feature. It involves public participation in conservation and management of environmental protection. Its main objective is to make environmental protection a people's movement.

Every year it starts its activities with a new theme. It is a widely spread outreach programme and reaches to the masses. It works in collaboration with various Regional resource agencies and non-governmental organizations. Republic Act No.9512 has been delivered to promote environmental awareness through environmental education which will include various environmental issues like threats, degradation, laws and ecofriendly practices. In the year 2019 its theme was ‘Swachch Bharat ,Ganga rejuvenation and River Cleaning.

Examples

Project Details :
N.E.A.C (2009-10) – Climate Change Campaign for Caring Community
AWARENESS MEETING:
Venue : Municipal Conference hall of Nirmal town
Day : 5th March 2010.
ACTION COMPONENT:
Tree Plantation at Adivi Sarangapoor- Khanapoor mandal (7th March)
Activities: Demonstration of pit digging, plantation, mulching and watering
Participants: Men& Women farmers
Conclusion:
•The farmers were motivated towards adopting chemical and and pesticides free cultivation or reduced usage.
•As part of climate change strategy field demonstration was conducted on organic manure instead of chemical powder/fertilizers
•Composting/demo pits filled with organic waste instead of burning it and polluting the air.
•Participants have taken up the plantation of around 200 plants -Mango, Amla and Glyricidia

N.E.A.C (2010-11) – BIODIVERSITY CONSERVATION

Day : 9th March 2011,

Venue : Adavaisarangapur of Kanapur mandal. .

Participation : Near 100 Tribal farmers ; 10 villages1) Vengalapoor,2) Nagapoor3) Jilledugunta 4) Adivisarangapoor,5) Pthasarangapoor 6) GN tanda7) Vepalaguda 8) Kolamguda

PLAN OF ACTION:

1.Awareness on Bio-Diversity

2.Action component

3.AWARENESS MEETING

• Assesing Climate change impact on Agriculture

•Biodiversity impact on health and food security

•Suggestions for improvement

•Tree based farming systems are encourage

•Diversified cropping systems shall be adopted to increase the food security

•More organic matter shall be applied for the soil to increase food security

•Farmers shall focus on subsistence farming

ACTION COMPONENT:

Tree plantation: Alaneredu(Kumini) Wood apple, Amla and Movva

Crop Seed Distribution

Pegionpea and Rain fed Paddy

Composting

Participants: Men & Women farmers

CONCLUSION:

•Each farmer took up demonstration of rain fed rice crop for seed production

•The same local seed will be used by many farmers at community level in the next season

•Each farmer has committed to take up 5 plants species for planting near farm lands for biodiversity promotion

•Aranya NGO provided plant material and hand holding for the farmers

N.E.A.C (2011-2012) – FORESTS FOR SUSTAINABLE LIVELIHOODS

ACTION PLAN :

•Pre Campaign Survey
•Awareness meeting
•Live Demonstration
•Interaction and visual displays
•Plantation activity

Pre Campaign Survey :

AWARENESS CAMAPIGN / PROCESS :

•Public meeting/Seminar /camp
•Lecture /AV show
•exhibition/demonstration
•Advertisement/poster/banner campaign
•Preparation and use/distribution of resource material
•Plantation activity

ACTION COMPONENT :

A). Live Conservation demonstration :

B). Tree Plantation activity :

Venue: Gangapur village

Activities: Demonstration of pit digging, plantation, mulching and watering.

Participants: Farmers,women groups,school teachers,community volunteers.

Conclusion : The programme succeded to the level of sensitization of the community towards forest conservation .The impact creation leading the farmer and women groups to own responsibility for their own enviroinment ,thus adopting initiatives like alternative and natural farm practices,tree based farming ,tree plantations and conservation of forests,the impact flow also visible in the community feedback.

(Feedback & Follow up activity undertaken)

N.E.A.C (2012-13) – BIO DIVERSITY

ACTION PLAN :

Pre Campaign Survey

•Awareness meeting

•Live Demonstration

•Interaction and visual displays

•Plantation activity

Pre Campaign Survey :

AWARENESS CAMAPIGN / PROCESS :

Public meeting/Seminar /camp

•Lecture /AV show

•exhibition/demonstration

•Advertisement/poster/banner campaign

•Preparation and use/distribution of resource material

•Plantation activity

ACTION COMPONENT :

A)Live Conservation demonstration

B)Tree Plantation activity :

Venue: Lingapoor village -Kadam mandal

Activities: Collecting of diversified crop seed, vegetables

Participants: Farmers,women groups,school community volunteers.

Environmental communication and public awareness: National Green Corps (NGC)- Eco-club programme

Context

Recently, the Ministry of Environment, Forest and Climate Change (MoEFCC) organized an annual meeting of state nodal agencies implementing the 'Eco club' programme for the first time.

About

- National Green Corps is a programme started in 2001-02 by the Ministry of Environment Forests and Climate Change.
- **Aim:** To provide opportunities for children to understand the environment and environmental problems through school eco-clubs.
- The programme is a sub part of Environment Education Awareness and Training (EEAT) which is a central sector scheme of the Ministry of the Environment continuing since 1983-84.

Objectives of the Programme

- To impart knowledge to school children through hands-on experience, about their immediate environment, interactions within it and the problems therein.

- To develop requisite skills of observation, experimentation, survey, recording, analysis and reasoning for conserving the environment through various activities.
- To inculcate the proper attitude towards the environment and its conservation through community interactions.
- To sensitize children to issues related to environment and development through field visits and demonstrations.
- To promote logical and independent thinking among children so that they are able to make the right choices in a spirit of scientific inquiry.
- To motivate and stimulate young minds by involving them in action projects related to environmental conservation.

Implementation

- The scheme is being operated through Eco-clubs of 50-60 students having an interest in environment related issues, formed in member schools.
- Eco clubs are supervised by a Teacher In-charge who is selected from among the teachers of the member schools on the basis of his/her interest in environment related issues.
- There is District Implementation and Monitoring Committee to supervise, organise training for In-charge teachers and monitor periodically the implementation of scheme at the District level.
- There is a State Steering Committee for guidance, direction and to oversee the implementation of the scheme.

- The State Nodal Agency coordinates the implementation of the scheme in the State and organize related activities like training to Master Trainers.
- The National Steering Committee will give overall direction to the programme and ensure linkages at all levels.

Conclusion

The NGC is the largest programme in the world. The programme targets that the children participating in the programme will grow up and take care of the environment. The NGC cadets are given pride places at celebrations of national days when they participate in their NGC uniform. Also, when NGC cadets take up environmental activities they attract huge public attention.