

# ENVIRONMENT – Perceptives and Concerns

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Man, Animal and Nature are mutually dependent. Man depends on animal and Nature's endowments for its sustenance in the planet. For thousands of years, these three entities were in balance and in equilibrium. However, during the last hundred years, rapid increase of human population and rising consumption per person have led to heavy pressure on animals and nature. Thousands of animal and plant species have become extinct. Forest cover and pasture land have shrunk. Air and water bodies have been heavily polluted. Non-renewable energy resources are declining fast. Soils are heavily eroded and desertification is reducing land available for agriculture and forestry. These dangerous trends, if they continue at the present pace, may endanger human existence in the planet. It is the duty of everybody – Government, non-governmental organizations and citizens – to arrest this trend individually and collectively.

## **Biosphere & Biodiversity**

Human beings have the ability to change the environment and collectively these changes influence the biosphere for good or bad. What we do today would affect tomorrow and life on Earth for future depends on how we take

care of it now. As humans, we have advanced technologically over the years, many a time, manipulating the environment, to suit our needs. But today, as we reach, what appears to be critical threshold of the biosphere, we are realizing that we must change our attitude and habits for our very survival.

Biosphere is thin outer layer of the Earth. It consists of the living organisms and their environment. It is the only habitat for all living beings including us and its resources are finite. We tend to think that biosphere is a resource. But it is a system. For a system to function efficiently and continuously all its constituents should perform in unison without upsetting the balance. We, as members of the biosphere, should understand that we are part of the system and not its consumers. As the quality of environment improves so does the quality of life for us.

Man is the only creature apparently standing aloof from the interaction of living things since he is able to make a home for himself anywhere in the world. But he needs air to breathe, water to drink and food to eat which are provided by nature. Apart from providing food for humans, plants have been the source of

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medicines in the treatment of various diseases. The diversity of plants and animals have also been the source for the products we use – fibre, leather, paper, to name a few. It also provides us with beautiful and breathtaking landscapes, exotic flora and fauna and natural climatic control. Preserving the diversity that has given so much is essential for the continued well being of the earth and its inhabitants. Larger the number of diverse species, the greater will be the resilience of the biosphere and its ecosystem. This by itself is a reason for protecting the endangered species. The loss of bio-diversity will ultimately make our lives poorer.

### **Natural Resources (NR)**

The resources of the earth are neither distributed evenly nor are they exploited equally. Scarcity of natural resources has been a basic cause for conflicts between people both as individuals and as nation. Growing population, increasing consumption and poor management of existing resources are leading to a decline of NR. Studying and understanding NR is imperative for the proper management of the environment. Environment management strategies should vary with the environment and the resources that are to be managed. For example, in India, hill areas are entirely different from the plains and require management solutions specific to their problem. Environment management should also include social and ecological factors. For example, wild life conservation plans should consider not only the wild life, but also human settlements around the nature reserves.

When environment and development concerns are merged, a better set of goals

evolves. This would lead to a better quality of life, satisfaction of basic needs, sustainability of development and respect for biosphere and concern for the needs of the future generation.

### **Soil and Forests**

Soil provides nutrients, water and support for plants. The air trapped in soil provides oxygen to plant roots, the organic material from plants affect soil texture and composition. Formation of top soil can take anything from 100 to 2500 years. Correct land use practices can prevent soil erosion. Faulty agricultural practices such as ploughing down a slope increases flow of water and removal of top soil while planting trees reduces the velocity of water preventing erosion.

Forests perform different functions in different terrain. In hilly areas they regulate the water supply, feeding springs and streams gradually. In level areas forest facilitate drainage and in wet areas they control the ‘swampiness’. Forests slow the flow of rain water, thereby limiting floods, soil erosion and land slides. Depletion of forests has also resulted in climatic change.

Wrong land use practices include deforestation, over grazing, over cropping, excessive irrigation and unplanned urbanization. Nearly half of all land in India is considered degraded, that is, it produces far below its biological potential and sustains few native species. Good land use practices are those which would satisfy today’s needs without compromising the ability of the land to sustain us tomorrow. Hence management planning is most effective when done with the involvement of the local people, keeping in view their

immediate and long term requirements. Water shed management is one good initiative in that direction.

Forests form a part of the global ecosystems that supports us and of which we are also a part. Forests contain important wild life and genetic resource and have aesthetic, recreational and scientific value. Trees can serve as acoustic and visual screens around busy highways noisy industrial installations and human settlements (eg: Vishakapatnam steel plant). Water quality and quantity in stream and aquifers depend to a large extent on forest covers. When forest cover is removed partially or fully sedimentation of stream beds and erratic stream flows lead to flood. Hundred years ago, India had thrice as much forest as today and only one third as many people and livestock. Indian forests are under heavy pressure with less than 2% of the global forest area. Indian forests have to provide 15% of the global human population and 15% of the global livestock population. If we have to satisfy our growing need for timber and other forest produce, existing forests are to be managed wisely and the vast degraded forests afforested. Forest tribal management policies and practices should recognize and provide the rights of the tribals. Involvement of the tribals will ensure the well being of the forests

### **Air Pollution**

Good health is essential for human welfare and productivity. Our health and well-being depends on the quality of environment which means availability of clean air, water, food and living space. Industrialization, population growth, exploitation of natural resources have affected our environment, more so in cities.

Pollution is concentrated more in urban areas because of high density of population, more industries, vehicles and accumulation of waste. The rate of urbanization in India has increased multifold since independence. This has created enormous problems for the city dwellers irrespective of the air they breathe, the water they drink, the place they live and the waste the city accumulates.

Urbanization and creation of job opportunities have resulted in strong travel demands within each city and especially so in big metropolises. Higher income, mobility, expanding cities and the proliferation of employment centers have increased the demand for increased transport. This has resulted in higher number of vehicles, larger distances to travel from residences to place of work, greater incentives to private transport, etc. Inadequate and poor quality of public transport has further aggravated the problem. Introduction to increasing number of buses and mass transport systems are the needs of the day. Recent developments in metropolises of Delhi, Kolkata, Mumbai and the metro rail construction in Bangalore might alter the present scenario. Such initiatives taken well in advance have made Singapore the ideal city, worthy of emulation of others. Thermal power plants, metallurgical industries, fertilizer plants, chemical plastic and pesticide manufacturing units are the ones which need effective measures to control pollution. Indigenous coal has very high ash content and one of the major pollutants is the fly ash from thermal power plants. The present trend is to locate them near the coal fields away from clusters of human habitation to minimize the effect of pollution.

## - Vehicular Pollutants

*Suspended Particulate Matter (SPM):* consists of particles from the exhaust of engines that are smaller than 100 micrometer. They collect in the middle of respiratory tract affecting our lungs; SPM is at high levels in our cities.

*Nitrogen oxides:* in higher concentration can contract the narrow air passage and create difficulties in breathing.

*Sulphur Dioxide (SO<sub>2</sub>):* a colorless sharp smelling gas emitted by diesel fumes, cause diseases like asthma, bronchitis and tuberculosis.

*Carbon monoxide:* a colorless, odorless gas, even in small quantities makes us feel drowsy and slow down our reflexes.

*Hydrocarbon:* released from unguent petrol and diesel, irritate the eye and throat.

*Ozone:* a colorless gas with pungent smell makes eye itch, burn and water.

## Water Availability & Conservation

India has 2.4% of world's land and 4 % of the fresh water resources. Precipitation of annual rain and snowfall is around 4000 billion cubic meters (bcm), which translates into 1869 bcm of water in rivers of which 690cm is made use of and 1,179 bcm drains into sea. The ground water availability is of the order of 432 bcm. Theoretically, the combined availability from rivers and underground resources should be able to meet the requirements of freshwater for our country. However, in actual case this is not so, as the rainfall pattern varies from 100mm in the west to 1,170m North – East and the duration is limited to a few hours

each day to 100 days a year, while water is required 365 days a year. The solution for this is conservation, proper distribution, avoidance of wastage and prevention of pollution.

These long term and appropriate solutions are not followed and short term measures are resorted to viz over exploitation of ground water resources. Even though ground water has contributed to increased agricultural production and food security over the years, the ground water levels have reached very low as to cause alarm both in respect of quality and quantity.

India's population is expected to touch 1650 million by 2050 and the estimated demand of water is 1447 bcm. No further time is to be lost for proper planning in augmenting and conserving water and regulating its supply to meet the increasing demand of our country. The Government of the day, both Centre and State have to take concerted action.

## Pollution of Water Bodies

**Ganga:** The holy river of Hindus starting from Gomukh and Gangotri traverses through the entire breadth of India discharging into Bay of Bengal. At Varanasi, the most sacred place of Hindus, the river is very polluted and the late Sri Rajiv Gandhi initiated the Ganga action plan to clean up the river by setting up sewage and effluent treatment plants to prevent impure water discharging into the river. In November 2003, the Central Pollution Control Board reported that the fecal coliform level in the river downstream of Varanasi was 5000 per 100ml while the permissible level for class – B water; used for bathing is 500 per 100ml, which means much more need to be done for cleaning up the river.

Shri Narendra Modi, the Prime Minister was recently elected from the city of Varanasi and he proclaimed that one of his missions is to clean up Ganga and the city. There is hope that we will see light at the end of the tunnel.

**Yamuna:** The river passing through Delhi is one of the most polluted rivers. Nineteen major drains discharge into the river at Delhi and so also effluent from 28 industrial plants. Three to five lakhs of people who live on its embankments have made the river dirty by discharging their household waste. Supreme court in a recent directive has asked for setting a panel to work out a viable way of cleaning up the river. This may alter the present status.

**Ground water resources:** Most of the dry land in the country survives because of lakes, traditional water harvesting systems and by conserving rain water. As the population increased, lakes dried up and the ground water tables went lower and lower due to over exploitation. Bore wells went deeper and deeper and the water is having dissolved salts. Arsenic contaminated water is very common in West Bengal and fluorides are contaminating the groundwater sources of Karnataka and Andhra Pradesh. The only solution to prevent this is rainwater harvesting and bringing up the water table by recharging of underground water resources. Over the years Bangalore City has lost many a lake due to urbanization. Water availability has become a major concern for the city.

### **Waste Generation & Management**

“Waste not, want not” assumes great significance when we consider the waste generated in every city. With the progress of

mankind from pre-historic days to the present century our wants have increased to enormous proportions, creating wastes of every kind – bio-degradable to hazardous waste.

Human Settlements (HS) took shape from economic, social and protective considerations. They are generally established near sources of water, natural resources and well protected areas. HS are part of environment and are also an environment in themselves. Cities are nothing but collection of large human settlements.

Indian cities are characterized by high density of population engaged in high volume of production, utilization of energy, material consumption, generation of large amount of waste. Unless there is an effective system of waste control and management, cities will degenerate into unhealthy areas causing illness, misery and death of the inhabitants. The rate of urbanization is rapidly increasing in India. Housing, water supply, waste disposal and sewage treatment have not kept pace with the demand, resulting in formation of slums and unhealthy living conditions.

Bangalore city generates around 4000 tons of solid waste daily and its management should be one of the major concerns of the City Corporation. While part of it can be diverted for landfills and some converted to compost, much more needs to be done for a satisfactory level of achievement. Of late waste management has reached very serious proportions. A case in point is the continuous use of Mandur village, in the outskirts of Bangalore, as a landfill and the protestations of the people living there. The Chief Minister has recently taken cudgels against slack bureaucrats for not taking timely

action. It is hoped that Bangalore would be cleaner and healthier place for its inhabitants within the next couple of years.

### **Environment Education**

Nature is a common property and therefore its resources are to be shared and used by everyone. Nature conservation should become a people's movement. To achieve this, environment awareness is essential among all strata of society and must be imbibed from the school going stage. The goals of environmental education are to develop a population that is aware of and concerned about environment in totality and committed to work individually and collectively for solving the current problems and prevention of new ones.

#### **- Objectives of Environmental Education**

*Awareness:* Acquire an awareness and sensitivity on environment and its allied problems.

*Attitude:* Acquire a set of values, feelings and concerns for the environment and motivation for active participation.

*Knowledge:* To gain a variety of experiences and acquire basic understanding of the environment and associate problems.

*Skills:* Acquire skills for identifying and solving environmental problems.

*Evaluation:* Ability to evaluate various environmental measures.

*Participation:* To be actively involved at all levels for solving environment related issues.

Schools have an important role in environmental education. Teachers have

considerable influence over the children they teach. Teachers as resource persons can teach environmental concepts in many ways as part of standard curricula or in specific programmes both in indoors and outdoors. CARTMAN's recent interaction with middle and high school level students indicate that they are aware of the problem.

### **Sustainable Development**

**What is sustainable development?** – *Sustainable development means the needs of the present without compromising the ability of the future generations to meet their own needs, seen as the guiding principle for long term development. Sustainable development consists of three pillars- Economic development, Social development and Environmental protection.*

Increasing population, unsustainable development, consumerism, wastage and poor understanding of the interconnected nature of life are causing irreparable damage to the environment and unnatural extinction of species. We should adopt a model of development keeping the twin objectives of sustainability and preservation of environment in mind.

A country's wealth, as reckoned now, is on the basis of Gross National Product (G.D.P) a figure arrived by multiplying the goods produced with their market value. Naturally, the main accent is on production of goods and their profitability with no regard to the depletion of natural resources and its impact on environment. This coupled with ever increasing consumption levels have made indelible footprints on the ecology of developing countries.

Mahatma Gandhi was reported to have said, “To have its standard of living a tiny country like Britain had to exploit half the globe. How many globes will a country like India needs to exploit to have a similar standard of living?”

Therefore sustainable development, sustainable living, and sustainable society require a value system, which should not only, be eco-friendly but also meet the health and aspirations of the people at large.

### **Global Warming**

From 1760, the beginning of industrial revolution, there has been steady increase in global warming due to factors such as increased burning of fossil fuels, consumerism, industrial, construction and agricultural activities. These led to a rise in green house gases resulting in increase in global temperature mainly attributed to increase in levels of carbon dioxide in atmosphere. Continued rise in global temperature would melt the polar icecaps raising the sea level; submerging coastal areas and floods affecting human population.

Other dangerous trends with regard to global warming are:

- Unpredictable rains and drought affecting agricultural production, food availability, onslaught of diseases especially in tropical regions.
- Coral reefs under severe strain.
- Loss of habitat and extinction of plant and animals.

The only solution to reduce the effect of Global Warming is sustainable development and the UN Summit in Rio in the year 1992 has taken serious note of this and rang the warning

bell to all the nations of the world.

### **Environmental Initiatives at International Level**

1. **United Nations Conference in Human Environment:** Held in 1972 at Stockholm, Sweden represented by 114 Nations – stressed the importance of preserving and enhancing human environment. UNEP was setup to organize global environment and planning.
2. **United Nations Conference on Environment and Development:** It is also known as Rio Earth Summit, held at Rio De Janeiro in Brazil, in June 1992, represented by 178 nations and over 100 heads of state and 1000 NGO’s, reached major agreements on:
  - a) Principles of Sustainable development.
  - b) Bringing a halt to climatic change by reducing Green House Carbon (G.H.C) emissions and stabilizing G.H.C concentration.
3. **United Nations Conference on September 25, 2002, at Johannesburg, South Africa:** The need and implementation of Sustainable Development – Deepening poverty and degrading environment – Production and use of natural chemicals for better human health and environment were the issues discussed. India’s main concern was food security for its below poverty line population and our viewpoint was also taken up in the discussion. The W.T.O agreement and its effects on the livelihood of poor farmers of the country were emphasized.

4. **Rio + 20**— Year 2012: Twenty years after the 1992 Earth Summit in Rio, where countries adopted Agenda 21, a blueprint to rethink economic growth, advance social equity and ensure environmental protection – the UN is again brought together governments, international institutions and major groups to agree on a range of smart measures that can reduce poverty while promoting decent jobs, clean energy and a more sustainable and a fair use of resources. Rio + 20 was a chance to move away from business as usual and to act to end poverty, address environmental destruction, and build a bridge to future.

### **National Initiatives on Environment**

The former Prime Minister Smt. Indira Gandhi attended the conference at Stockholm in the year 1972, and initiated series of steps for enhancing Human Environment.

**1974:** Created the Central Board for Prevention and control of water pollution (CSPCWP)

**1980:** Institutionalized by creating a separate department of Environment and Forests to function as a focal point in the administrative structure for planning, promotion and coordination of all environment problems. The following responsibilities were given to the ministry.

- Environment & Ecology
- Air & Water pollution Act
- Environment Protection Act
- National Forest Policy & Forestry Development
- National Land Use & Wetland Development

- Central Ganga Authority
- Fundamental Research on Biodiversity

**1986:** In the year 1984, after the great Bhopal tragedy. Environmental Protection Act (EPA) was promulgated. This covered the control of Pollution of air, water and land.

**EPA:** EPA gave power to citizens to take-up cases against industries and other entities whenever they were found violating the limits. This resulted in various public litigation cases and their rulings by the Supreme Court of India are significant. Few cases are:

- The shifting of industries from Agra to protect National monuments.
- Vehicular pollution in Delhi, mandate for introduction of CNG as fuel.
- Stopping of Taj Corridor project to protect the monuments.
- Cleaning of Yamuna river and improving quality standards of water.

Supreme Court also asked the government at the Center to study the feasibility of linking the rivers of India for solving the flooding of rivers in the north, and increasing the quantum of water availability in the peninsular rivers. This is being studied.

### **Environmental Ethics**

Environment Ethics make us respect, appreciate, protect and regenerate environment. Each culture has its own perceptions, beliefs and value systems derived from its natural surroundings and traditions which in turn govern the interactions with the environment. Sacred groves, trees, animals, rivers and lakes have been conserving biodiversity that



otherwise might have been lost. It is therefore our sacred duty to conserve these entities.

“By reviving traditional reverences, we could restore a degree of purity to our surroundings. We can see God in nature. This would make us more sensitive to the way we treat nature. We can take our lessons in environmental preservation from nature. Nature digests waste material and produces something beautiful every time. In nature always a balance is struck. It is not always Science or Technology that is harmful. It is the waste material produced that is toxic. This needs to be minimized and recycled. For this, both the ancient and modern methods are to be adopted.”

*Reverence to Nature –  
Only way to save it says Sri Sri Ravishankar*

It is necessary to examine the present state of environment in the country at the rural, urban and metro levels. Poverty, water borne diseases, malnutrition and lack of opportunities are endemic in rural areas. Air, water and sound pollution levels have risen abnormally in cities and waste accumulation has reached very high levels. Food security and employment to the poor need urgent attention and if not tackled now can lead to starvation and deprivation. The fruits of development should reach all the nooks and corners of the country, if we are to function as a nation, effectively.

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*Note: Oceans, marine life, mangroves and climate change not covered in the article, will be included in further issues.*



## ETHICAL BEHAVIOUR AND ENVIRONMENT

If an elevation of ethical behaviour in the corporate sector can ensure greater alignment with societal goals and higher responsibility to society, then private capital would also be employed in a far more sustainable manner. It could then approximate Gandhiji's vision of trusteeship and would certainly eliminate the kind of economic distress that the world has seen in the recent past, which was the direct outcome of unethical actions by the captains of some private corporations serving their own narrow private interests at the cost of social propriety and society's interests. A concerted effort to bring Gandhian messages into the hearts and minds of decision makers would not only help to create a movement towards sustainable development in its widest sense, but also then give us clean air in our homes and surroundings, clean water in our rivers and lakes, rich forest cover and biodiversity across this entire land and a stable climate. Absence or the decline in degradation in all of these would clearly erode human welfare and go against every healthy measure of the human condition.”

**R.K.Pacahuri - “Gandhian Ecology and the Path of Sustainable Development”**