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**ROLE OF EDUCATION IN ENVIRONMENT**  
**PROTECTION AND CONSERVATION**



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***Role of Education in Environment Protection and Conservation***

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## Are we living in a factory?

**Dr. Jyotsna Garg**

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*Noise is defined as unwanted sound. Environmental noise consists of all the unwanted sounds in our communities except these which originate in the workplace. Environmental noise pollution, a form of air pollution, is a threat to health and well-being. It is more severe and widespread than ever before, and it will continue to increase in magnitude and severity because of population growth, urbanization, and the associated growth in the use of increasingly powerful, varied, and highly mobile sources of noise. It will also continue to grow because of sustained growth in highway, rail, and air traffic, which remain major sources of environmental noise. The potential health effects of noise pollution are numerous, pervasive, persistent, and medically and socially significant. Noise produces direct and cumulative adverse effects that impair health and that degrade residential, social, working, and learning environments with corresponding real (economic) and intangible (well-being) losses. It interferes with sleep, concentration, communication, and recreation. The aim of enlightened governmental controls should be to protect citizens from the adverse effects of airborne pollution, including those produced by noise. People have the right to choose the nature of their acoustical environment; it should not be imposed by others.*

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Throughout recorded history, mankind has been plagued by a variety of both natural and manmade ills. In the 21st Century we are experiencing the man-made plague of environmental noise from which there is virtually no escape, no matter where we are - in our homes and yards, on our streets, in our cars, at theaters, restaurants, parks, arenas, and in other public places. Despite attempts to regulate it, noise pollution has become an unfortunate fact of life worldwide. In a way that is analogous to second-hand smoke, second-hand noise is an unwanted airborne pollutant produced by others; it is imposed on us without our consent, often against our wills, and at times, places, and volumes over which we have no control.

Because their wheels clattered on paving stones, chariots in ancient Rome were banned from the streets at night to prevent the noise that disrupted sleep and caused annoyance to the citizens. Centuries later, some cities in Medieval Europe either banned horse drawn carriages and horses from the streets at night or covered the stone streets with straw to reduce noise and to ensure peaceful sleep for the residents. The noise problems of the past pale in

significance when compared with those experienced by modern city dwellers; noise pollution continues to grow in extent, frequency, and severity as a result of population growth, urbanization, and technological developments.

In comparison to other pollutants, the control of environmental noise has been hampered by insufficient knowledge about its effects on humans and about dose-response relationships, but this seems to be changing as more research is carried out.

More than a decade ago, on 14th February 2000, the Union ministry for environment and forests (MoEF) enacted the Noise Pollution (Regulation and Control) Rules, but was hardly ever holistically implemented. The Act recognizes that there is "increasing ambient noise levels in public places from various sources, inter alia, industrial activity, construction activity, generator sets, loudspeakers, public address systems, music systems, vehicular horns and other mechanical devices" and further states that these have "deleterious effects on human health and the psychological well-being of the people". Consequently, the government also considered it "necessary to regulate and control noise

producing and generating sources with the objective of maintaining the ambient air quality standards in respect of noise". As per this Act; the ambient air quality standards in respect of noise for different areas/zones have been specified in the box.

### Ambient Air Quality Standards in respect of Noise

Area Code	Category of Areas/ Zone	Limits in dB(A) $L_{eq}$ *	
		Day Time	Night Time
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

### Notes

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 metres around hospitals, educational institutions and courts. The silence zones are zones which are declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

Indian Ministry of Environment and Forests launched the Real Time Ambient Noise Monitoring Network in 2011 to address the lack of real-time data. Under its first phase, automatic monitoring stations were set up in seven cities: Delhi, Mumbai, Chennai, Bangalore, Kolkata, Hyderabad and Lucknow. The data received from these stations showed that the noise levels were far above permissible limits. For example, commercial areas reported 93 dB in breach of the 65 dB limit, whereas the entire city of Chennai reported noise levels at over 100 dB, prompting an article in the Times of India (April 27, 2011) to equate living in Chennai with "living in a factory!"

The noise nuisance stems largely from unethical commercial practices. Young people love riding bikes in streets using shrill hooters. At Diwali, few parents instruct their children not to light noisy fire crackers at night. Jagrans or late night devotional songs take place regardless of the inconvenience caused to others

especially the elderly. In fact, individual selfishness lies at the root of the routine acts of incivility such as encroachment on a neighbor's parking area or a user's negligence in flushing a public toilet. Similarly, the absence of social obligatory sense, apart from the apathy of local administration, accounts for noisy commercial activities in residential areas.

Industry growth, an increasing number of vehicles and constant information overloads causes a significant and underestimated problem - noise pollution. The term noise pollution is used to define unwanted sounds that are released into the environment. Various research studies have proven that noise pollution imposes a number of negative impacts on mental and physical health. To understand the reasons behind these health conditions, people should consider the effects that are usually caused by noise pollution.

In a modern megalopolis, noise pollution arises from many sources, such as traffic, barking dogs, noisy neighbors, aircraft, verbal advertising in streets and many other environmental factors merging into one sound wall. A person may get used to perceiving these sounds and ignore them, but on a subconscious level, such constant noise exposure has a significant effect. Noise pollution is measured in decibels, and its intensity and duration determines the impact on an individual's health.

Perhaps, one of the most obvious negative consequences of prolonged exposure to noise is hearing loss. Studies show that people who have been regularly exposed to intense noise, due to the nature of their work, have decreased hearing sensibility, compared to those who have worked in more quiet conditions. The most disturbing source of noise pollution stems from traffic (Healthy Hearing). Elevated sound levels cause changes in the structure of the inner ear which results in irreversible hearing loss.

Another negative effect caused by noise pollution is heightened irritability and sensitivity. Different sounds can have different impacts on a person; thus, one can get annoyed with the sound of water dripping from a faucet or car horns blowing, but relax to the sounds of falling rain. Natural sounds are much less irritating than artificial sounds such as traffic noise. However, natural sounds also create a sound wall effect as in the case of a waterfall or the wind blowing.

In contrast, living near the motorway can lead to frustration and can seriously upset human nerves.

Speech and sleep interference is another issue that arises from noise pollution. It can be difficult to talk while standing on a busy street, and in this case, people often have to shout to be heard. Therefore, hearing and interpreting each other becomes a issue. The noise of a big city is one of the most popular reasons for sleep disorders. High levels of noise often wake people in the middle of the night and hinder them while trying to fall asleep again, thus breaking bio-rhythms and causing weakness and drowsiness during the next day.

Decreased work performance should also be mentioned in the list of negative impacts caused by noise pollution. High levels of noise can cause inaccuracy and inattentiveness, which can result in decreased productivity and additional stress. This is a crucial point for people whose workplaces are potentially dangerous, such as construction sites or factories. A misheard order or instruction, or the lack of concentration in such workplaces can lead to severe consequences.

It can be observed that noise pollution is a serious, though underestimated problem for the human population. It causes a number of negative effects both on health and the effectiveness of performing actions. Among the most obvious and significant negative effects are hearing loss, increased irritability, speech and sleep disturbances and decreased work performance. Even if a person becomes accustomed

to constant noise and thinks that it does not affect them, changes still occur. Every individual, including scientific and healthcare organizations, should seek ways to minimize the aforementioned impacts and reduce their exposure to noise pollution.

Hence civic sense is quite essential. It is, of course, a Herculean task since the notion of civic obligation is alien to a multitude of people in the country who seem to be more aware of the "democratic ritual" of casting votes at periodic elections. As such, civic sense should be inculcated at an early age at schools. Moreover, imposition of heavy penalties on wrongdoers is imperative, whether they are individuals or commercial organizations, regardless of the status of an offender. Realistically enough, in the absence of civic sense, respect for the law is unlikely to take root unless the fear of punitive action is present.

It is thus imperative from the foregoing that the individual estrangement caused by the noise pollution can have negative and harmful societal and economic consequences. It's high time that governments should take immediate steps to strictly implement the laws to mitigate the nuisance of Noise Pollution just as air pollution laws and ban of plastic bags are being implemented.

Furthermore, as a long term solutions awareness programmes should be launched country wide, looping in the NGOs, media, schools & colleges and others to sensitize the public on the problems of vehicular and all other sources of noise pollution and take them out from syndrome of habitual honking and noise making.

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# Environmental Degradation and Climate Change-Indian Response

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*With the dawn of the 21st Century, environmental issues have started dominating all discussions related to the welfare of the people, worldwide. If the environment is "everything that surrounds us", then its imminent collapse should be the reason for serious alarm among all members of our species. It is a fact today, that many things on which our future health and prosperity depends, is in dire jeopardy-climate stability, productivity of our natural systems, the beauty of nature and ecological balance. We must first have a proper understanding of these problems, which stare us in our faces today, in order to deal with them effectively, because they pose a threat to our very survival. Since these problems are related to ecology, their solution needs ecological knowledge, which studies relationships between organisms and their environment. The imbalance between the above mentioned relationships results in environmental degradation, leading to climate changes eventually. The severity of the threat posed to the world, by the above, has led the High Level Threat Panel of the United Nations, to officially name environmental degradation, as one of the Ten Threats faced by us today.*

*The protection, preservation and the enhancement of the environment for the present and future generations is the responsibility of all nations-individually and/or in collaboration with one another. India was quick to rise to the occasion, constitutionally, legally and practically to contribute towards its share in environmental protection and conservation. As regards its position on the issue of global warming and climate change, India has adopted a stance of confidence and self-belief in its economic policies and sent a clear message to the developed world, that it will not be pressurised in the negotiating process. The urban population of India, which is well aware of the above facts, has various civil society groups, non-government organisations and activists who supplement governmental efforts aimed at environment protection and conservation. All agree that environmental issues should be tackled with a multi-pronged approach-individual, social, political, educational, and regional. Thus even if there is uncertainty in the present, there is cause for hope in the future.*

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With the dawn of the 21st century, environmental issues have started dominating all discussions related to the welfare of the people, worldwide. We all know that the two components of nature - organisms and their environment, are not only much complex and dynamic, but also independent, mutually reactive and interrelated. The living and non-living components of nature, function in an orderly manner as a definite system. Thus structure and function should be studied together for a fuller understanding of this vast nature. The varied present day problems of human life are directly or indirectly related to ecology, and their solution needs ecological knowledge, which studies relationships between organisms and their environment.<sup>1</sup> The imbalance between the above mentioned relationship, results in what is broadly called

environmental degradation, leading to climatic changes over a period of time. Ecological changes not only have a direct impact on human health, but are seriously challenging the survival of mankind.

Environmental degradation is the deterioration of the environment through the depletion of resources such as air, water and soil - the destruction of ecosystems and the extinction of wildlife. It is defined as any change or disturbance to the environment, perceived to be deleterious or undesirable. Environmental degradation is one of the Ten Threats officially cautioned by the High Level Threat Panel of the United Nations. The United Nations International Strategy for Disaster Reduction defines environmental degradation as "the reduction of the capacity of the environment to meet social and



ecological objectives and needs". Efforts to counteract this problem include environmental protection and environmental resources management<sup>2</sup>.

When natural habitats are destroyed or natural resources depleted, the environment gets degraded, one major component of which, is the depletion of the resource of fresh water on Earth. Approximately only 25% of all the water on Earth is fresh water on which our life depends, but it is estimated that one in three people over the entire globe are already facing watershortages. Waterscarcity is an increasing problem due to many foreseen issues of the future, which includes population growth, increased urbanisation, higher standards of living and climate change<sup>3</sup>.

Another harmful effect on the ecological balance, leading to environmental degradation is due to population explosion. It is a time-bomb which has to be diffused. The massive deforestation in the Himalayas is linked to population explosion. Large-scale deforestation has badly affected the weather, and over-grazing by cattle has reduced the regenerative capacity of forests to a negligible point. All of this also leads to poverty, increased demands for goods and services, and tells adversely upon the health of women and children.

If the environment is "everything that surrounds us", then its imminent collapse should be a reason for serious alarm among all members of our species. Another factor which contributes to this collapse is the pollution of environment. The smoke nuisance in industrial cities, burning of low grade fuel in rural areas, and harmful vehicular emissions lead to atmospheric pollution. Another harmful effect of smoke is the formation of smog, a fog made heavier by smoke and chemical fumes.

Besides air pollution, nearly 80% of the world's diseases, particularly in the developing world can be linked with water<sup>4</sup>. Drinking water sources are mainly the rivers or the wastes percolated through the ground. Sewage and agricultural discharges carry a variety of pollutants that enter our water bodies. When this water is used for cooking, cleaning and other purposes, it results in epidemics like cholera, typhoid, dysentery etc.

Apart from the above, noise pollution has assumed grave dimensions. People do not realise that noise levels above 80 decibels for more than eight

hours a day, has been found to increase tension in human beings, and noise levels above 90 decibels during intermittent exposure, produces a change in the breathing pattern. Continued exposure to high levels of noise results in annoyance, fatigue, shifting of threshold limit of hearing, and may even result in total loss of hearing<sup>5</sup>. People must therefore be made aware of the dangers posed to the environment by all kinds of noise.

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of quality that permits a life of dignity and value. We bear a solemn responsibility, to protect and improve the environment for the present and future generations. However the reality today, is just the opposite. Pollution has become the concomitant hazard of an industrialized society, and modern technology is accentuating this hazard. The world scientific community has reached a consensus that if green house gas concentrations continue to rise at the current levels, the global mean temperature will rise by 2 degrees centigrade above the pre industrial levels by 2030<sup>6</sup>.

Besides human activities, burning of fossil fuels particularly and changes in land cover are modifying the concentration of atmospheric constituents of the earth's surface, that absorb radiant energy. This human induced pattern of climate change, gives rise to serious environmental concerns, as it impacts upon each and every life form on earth. Besides, developing countries and island states are twice and thrice more vulnerable respectively, to the adverse effects of climate change than industrialized countries.

India is a densely populated country where a majority of the people are dependent on agriculture for their livelihood, and they have to bear the brunt of the vagaries of the changing climate - like longer summers, and increase in heavy rains during north - west monsoons, leading to severe floods, landslides and debris flow. According to a study conducted by Greenpeace International, if global temperatures rise by 4-5 degrees centigrade in the course of a century, India and Bangladesh could end up facing a wave of migrants displaced by ecological factors. If this happens, Indian cities would face a tremendous resource crunch due to over - exploitation of ground water and other natural resources. Food scarcity will lead to higher prices and reduced caloric intake.

Climate change models suggest, that with the doubling or quadrupling of carbon dioxide concentrations by the end of the century, the Indian region may receive more average rainfall (Greenpeace 2006:10). But there could be substantial changes in the time of the monsoon, its spatial distribution and the occurrence of breaks. There is also the possibility of monsoon shifting its pattern abruptly. Increased scarcity of fresh water and spatial changes in precipitation and accompanying droughts has major implications for agriculture. With a high rate of population growth, the region faces severe hunger threat, if agricultural production declines. Increasing dryness during the pre-summer season may accelerate the instances of forest fire, posing danger to the rural population<sup>7</sup>.

The Himalayas host a number of glaciers which are heavily impacted upon by the rise in temperature. Melting glaciers increase flood risks and vanishing glaciers enhance the threat of water scarcity. This could necessitate a shift in the economic activities away from water intensive ones. Sea level rise can also aggravate the problem of water scarcity. Salt water intrusion in low lying agricultural plains and water resources could lead to the contamination of fresh water reserves. The runoff is expected to change significantly in the sub-continent with grave implications for agriculture. As a result of melting glaciers, there could be a significant decline in the flow of rivers which are fed by glacial water. India might end up reaching a state of water stress before 2025, when availability is expected to fall below 1000 /year per capita<sup>8</sup>.

Climate change also adversely affects the biodiversity and ecosystem, as vegetation boundaries shift in response to changing temperatures and precipitation patterns. This effect will be particularly visible in the Himalayan region, where some fauna species are expected to migrate upwards, as a reaction to global warming. This might also result in expansion of deserts, extinction of species, drying up of wetlands and mangrove forests.

Although India's ancient culture has basically been an Aranya culture (the forest culture) and nature has abundantly been used as a theme in our dramas, poetry and legendary epics for thousands of years, the Constitution of India had initially no direct provision

for environmental protection. But with the inspiration it got from the Stockholm Conference, and the increasing awareness of the environmental crisis around the world, the Constitution was amended in 1976 (42nd amendment) to insert Art. 48 A, which provides that the state shall endeavour to protect and improve the environment and safeguard the forests and wildlife of the country. Also clause (g) of Art. 51-A inserted in the section of Fundamental Duties, provides that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures. With these provisions, India is among the few nations of the world which provides a constitutional sanctity to the ecosystem.

Subsequently in 1980, the Department of Environment was set up by the government to serve as a focal point in the administrative structure of Central govt. for planning, promotion and coordination of environmental programmes. An entire chapter on Environment and Development was included in the Sixth Five Year Plan (1980 - 85). The Seventh Five Year Plan (1985 - 90) called for incorporating environmental factors and ecological imperatives into the design of all developmental projects at the planning stage itself. In 1985, a new Ministry of Environment and Forest, with the Department of Environment Forest, and Wild Life was set up. To provide a single focus for environmental issues in the country the government in 1986, enacted the Environment Protection Act, which confers power on the central government to take all necessary measures for protecting the quality of environment, and also plan and execute a nationwide programme for prevention, control and abatement of environmental pollution. Besides this, the Forest Conservation Act 1980, was enacted to check indiscriminate deforestation and diversion of forest lands for non-forestry purposes. The National Wasteland Development Board set up in 1985, formulates and coordinates programmes for the management and development of wastelands in the country. The Ninth Five Year Plan (1998-2002) focussed on the elimination of poverty and population control. In the Twelfth Five Year Plan (2012-17) also, the government intends to reduce poverty by 10%, which will have an indirect beneficial influence on environment protection.

Apart from constitutional and legal provisions, the government has been making practical efforts for reducing the threats to environment. With the goal of achieving zero population growth in the country, abortion has been made legal. The two-child norm is supposed to be popularised through various schemes and advertisements. Besides this, to reduce air pollution, the Department of Non-Conventional Energy Sources has designed improved stoves with increased thermal efficiency. In this field, the most novel development has been that of the production of bio-gas, or "gobar gas" as it is popularly known. Besides providing gas and manure, it cleans up the environment by the systematic collection of dung and faeces, thus reducing the incidences of diseases. For controlling water pollution, the ambitious Ganga Action Plan was set up in 1985, to clean the holy river. The Environmental Information System (ENVIS) was set up in 1982, to cater to the information needs of policymakers, research workers and the general public. Education in forestry and environmental sciences are being imparted through various universities in the country. Apart from all these efforts, several awards, for example, the Indira Gandhi Paryavaran Puraskar, the National Award for Excellence in Forestry, and the Indira Priyadarshni Vrikshamitra Awards are awarded annually to citizens/organisations for significant contribution on the field of environment.

As regards the issue of climate change, India is at the centre of the developing world argument, viewing climate change from the developmental framework and welfare system. At the heart of India's position on climate change, is the notion that it must be allowed to pollute on a per capita basis equally with the West. It is a strong conditional position that shifts the responsibility to developed countries, to drastically cut emissions if the world is to meet the target of keeping global warming within the generally agreed 'safe limit' of 2 degrees Celsius, set up by the Inter Governmental Panel on Climate Change (IPCC). It is a position of confidence and self-belief in its economic policies, a challenge and a message to the developed world, that it will not be pressurised in the negotiating process<sup>9</sup>.

Though there is a gathering wave of disquiet about climate change in India, it is limited to a narrow segment of India's educated and urban elite. The fact

that the Nobel-prize winning IPCC is led by an Indian scientist, R.K. Pachauri, also helps to high-profile the cause of climate change in India. Mr. Pachauri's institute The Energy Resources Institute (TERI) has long been working on climate and energy issues, and in 2008-09, the theme for its annual Delhi Sustainable Development Summit, was climate change, which was attended by climate diplomats from around the globe, including several serving Heads of State.

There are an increasing number of civil society organisations engaged in the climate debate in India, but a majority of these are also located in and representative of urban India. Their engagement on climate issues is recent and partly driven by donor interest. Most of these organisations are concerned with the links between development, human rights, equity and climate change, but they do not have a homogenous view on India's intervention in the climate space. Environmental advocacy groups, such as the Centre for Science and Environment (CSE), have been active participants in the climate debate since the early days of international climate negotiations, and have helped shape Indian governmental positions.

India's action programme on ecologically sustainable development, is very different from binding international commitments or legal obligations. India has an Energy Conservation Act, under which it has identified nine energy-intensive industries for the observance of mandatory energy efficient standards. India's National Action Plan on Climate Change (NAPCC) has a national mission on improving energy efficiency. India encourages the national industrial sector to exchange best practices and improve energy efficiency through better management apart from adopting technological innovations. India believes that investment in addressing climate change, especially in renewable energy, could create new industries, new jobs and spur technological innovations. Action on climate change must become part of the solution to financial and economic crisis, in its causality. In this context, India has welcomed US President Obama's Plan for a 10 year, 150 billion dollar Renewable Energy Initiative, and also expressed its readiness to become an active partner<sup>10</sup>.

It follows then that the construction of climate change as an issue, and India's framing of it, has been shaped thus far, by international influences and drivers,

rather than domestic ones, which are limited. But in defence of India's stance on climate change, it can be said that it is historically conditioned and equity driven. It suggests that contemporary environment problems must be viewed in context, and that appropriate mechanisms must be developed by the international community to recognise and right certain historical wrongs. While this may not be sufficient to achieve environmental objectives, it would ensure that the necessary confidence-building measures are put in place to make the environmental dialogue both feasible and productive. The Indian stance helps fashion a global environmental narrative that is sensitive to the needs of developing countries, and in this, it plays an important role<sup>11</sup>.

From the above it is clear, that in order to achieve sustainable development and avoid the harmful effects of climate change, environmental issues should be made a political priority, and all political parties should join hands to ensure that environmental legislation and their compliance should get topmost priority in the political agenda. Environmental education must be included in the school and college curriculum. A harsh

tax regime should be able to control all kinds of pollution. For proper water management, we have to begin to value water and avoid its wastage at all costs. Besides, eradication of poverty is considered to be an indispensable requirement for sustainable development. Last, but not the least, developing countries of a region should cooperate to strengthen endogenous capacities by exchange of scientific and technological knowledge, develop contingency plans, and the capacity to respond quickly to critical situations and issues<sup>12</sup>.

Notwithstanding the many challenges it faces, India has the benefit of a few sagacious leaders, a politically active populace, a vibrant civil society, an enterprising and hungry industrial sector, competitive elite institutions and a proactive judiciary. Even if there is considerable uncertainty in the present, there is cause for hope in the future. The National Climate Change Action Plan has the potential to produce realizable plans to set the country on a low-carbon development pathway, and if India stays true to its promises, it will emerge as an environmentally responsible international actor<sup>13</sup>.

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# Environmental Ethics and Rabindranath Tagore

## Some Reflections

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*"Come closer, my love!*

*The free bird cries, it cannot be, I fear the closed doors of the cage,  
The cage bird whispers, Alas! my wings are powerless and dead."*

**-The Gardener**

*The poem highlights the way in which the man wants to domesticate nature which he sees from only his perspective and clearly refuses to see from nature's perspective. Rabindranath Tagore was an environmental pioneer and sought harmony between progress and preservation. He had been eloquent about the exploitation of environment even a century ago. Tagore first became concerned about man's impact on the environment after seeing an oil spill at sea on his way to Japan in 1916, decades before an environmental movement emerged in the West.*

*The Nobel Laureate poet depicted his intense affection for the nature and its beauty in his literary works, for example "Chander haashi baandh bhengechhe, uchhle pore aalo/ O rajanigandha tomar gandha shudha dhalo" (the laughter of the moon has surpassed all its limits/ bindings, with its lights overflowing in all possible directions. And, requesting the tuberose to pour in all its fragrance all around).*

*Environmental issues like river erosion and deforestation may be hot topics today, but Tagore had been conscious about the exploitation of environment even a century ago. What Tagore said on environmental crisis, modern technology and rural thinking in his lecture in 1922 on agricultural matters in honour of Leonard Elmhurst (Director, Sriniketan) comprises an important document even for today. Tagore believed that it was impossible to achieve overall development without rural development. The literary works of Tagore can be used for raising awareness about the environment. Poet Abul Bashir said: "Rabindranath wrote extensively about nature, about the relationship between human beings and nature."*

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The language of Nature is the eternal language of creation. It penetrates reality to reach the deepest layer of our consciousness, it draws upon a language that has survived thousands of years with the human ... it is the musical instrument of Nature, it replicates the rhythm inherent in life itself. If we listen carefully we will be able to trace within them the murmur of eternity where the spirit of liberation, peace and beauty lurk, it reminds us of the sea that issantamshivum, advaitam ... it reminds us of our bond with the world ... if we can accept this music of the wild within us, we can perceive the great music of oneness ... in the hotel of Vienna, I thus often fondly remember the flora and the fauna of my household at Santiniketan. ("Introduction", to Bonabani, Rabindra Rachnanvali, Vol 8, 87).

Rabindranath Tagore is aptly considered as one of the fifty leading thinkers of the world on environment. His engagement with Nature was a continuous motif in his poetry. His short stories, novels and essays exhibit his love, concern and responsibility for Nature. In this paper an attempt has been made to explore the contention that Tagore's approach is different from anthropocentric view in the sense that he "who's soul seems at once to vibrate in full harmony with the orchestra of melodies and echo reflected on the sound of rushing water, from the song of the birds, from the rustling of leaves" cannot see himself detached from Nature. Nature runs as a consistent motif in all of Rabindranath Tagore's oeuvre. He was an environmental pioneer and sought harmony between progress and preservation. He had been eloquent about

the exploitation of environment even a century ago. Tagore first became concerned about man's impact on the environment after seeing an oil spill at sea on his way to Japan in 1916, decades before an environmental movement emerged in the West. The experience provoked him to write at length about his annoyance at the way modern man was failing to respect Nature. Tagore's love and care for Nature has become one of the major thrust of field of concern for environmentalist throughout the world today.

The development and progress of civilization is always taking place at the cost of Nature which includes not only non-human beings but also human beings of marginalised class. The logic behind to build a dam on the river, or more nuclear power stations, or to open a new mine on the edge of a National Park, is to increase employment or to bring comfort for the human beings. All these are being done through the destruction of biological diversity and disturbing the harmony of Nature.

Rabindranath Tagore's oeuvre shows us ways of tackling the many challenges that we face today. This could be viewed in the context of conservation of environment; threat to the world peace; and ways to expand the human mind and its potential. Through his writings and speeches Tagore has spoken about the kinship of man and Nature, the breaking of which, according to him, brings sorrow and misery. He admits the intrinsic value of Nature. Tagore's poetry is permeated with every seasonal hue, propelled with the flora and the fauna reflecting all possible moods. It is not an exaggeration to surmise that Rabindranath's poems on Nature outnumber that of any other poet in any other language.

He wrote poems, plays, short stories and also a separate group of lyrics in the form of poems for songs under the name of "Prakriti Parjaay" (here, prakriti means nature and parjaay means genre), emphasising the need to protect nature as well as our Mother Earth. Tagore not only wrote extensively on man's relationship with the environment but implemented it too by building Santiniketan. It is surrounded by greenery on all sides. He created an example for the whole world in terms of the relationship between nature and humans. According to him, the unit of man

and Nature was felt by the ancient seers of India. The Indian seers "felt in serene depths of their minds that the same energy which vibrates and passes into endless forms of the world, manifests itself in our inner beings as consciousness and there is no break in this unity" (Tagore, 1972, p. 21). In his opinion there is no such thing, which is absolutely isolated in existence. He feels that because of wrong perspective of man, Nature appears separate or alien or antagonistic to us. He brings the analogy of the goal and road, sometimes using the metaphor 'the river and its bank'. In his notion of man, the concept of 'unity' and 'harmony' has always been emphasized. In the true sense of the term Tagore was an Upanishadic poet who harmonised the man and Nature and recognised the diversity and interconnectedness among human beings and other like forms.

For the poet, Nature is never a mere backdrop or an inanimate present. It is breathed with a presence that the poet is also a part of. Proximity with the pantheism of Wordsworth's nature poetry is discernible, but the richness of description and mood is far superior. Moreover, Rabindranath infuses Nature with a joy and vitality that the nature of Wordsworth does not display, unless referring to the coarser periods of childhood. Tagore combines the imaginative vitality of Shelley, the richness of Keats' imagery and dictation of infused spirituality of Wordsworth.

An essential part of Tagore's poetry is man's deep attachment with natural phenomenon which is revealed in an earlier poetic drama *Prakitir Pratisodh* (The Ascetic, 1884). The skeletal plot deals with the ascetic who renounces nature as a deterrent to wisdom and higher knowledge:

*I sit with the hymn of destruction on my lips  
Slowly but surely I'll destroy the evil of this illusion  
As I sit, I extinguish the sun and moon  
The boundaries of the world keep collapsing  
Site, sound, taste, smell have receded  
All the fears and illusions have ruptured  
What pain have you given me  
O Demon of Nature in your trap!  
... I had promised to revenge myself  
To free from your bind.*

**(Prakitir Pratisodh, trans Amrit Sen).**

However, he gives refuse to a young orphan girl who reminds him that wisdom does not lie in renunciation but forces him to recognise the presence that leads him, all men in nature in a continuous cycle:

*I throw away the vestiges of sanyas  
I inhale the joy of living  
Where the great vessel of world floats  
I submit o tits motion - I live  
With the million who travel on it*

**(Prakitir Pratisodh, trans Amrit Sen).**

This text confirms Rabindranath thesis that human salvation does not lie in an ascetic segregation from Nature. It lies in acknowledging humanity as part of Nature and sharing its creative joy. How do we work for the conservation of ecology? How to deal with the threat of global warming? Tagore wanted us to use our machine not for conquest of nature bit for conservation of ecology. He abhorred concentration of wealth in the hands of the few and recommended traditional institution of Cooperatives and Panchayat to work for restoration of human - animal balance in habitats and for conservation of ecology.

It may be noted here that the contemporary environmental ethics speak about unity and harmony between man and Nature. It recognises the interdependence of living species and eco system. In a short story titled 'Balai', Rabindranath has shown the unity of man and Nature very beautifully. Balai, the central character of the story, expands his consciousness to the whole Nature by uniting himself with the black clouds of the sky, with the raindrops, with the sunshine. He feels the harmony of the Nature at the time of his playing with the crisis of grasses and feels sorrow when the grasses are cut by the gardener. Such attitude leads to a loving and protective attitude towards the world. In the same way Rabindranath points out the kinship of man and Nature in his another story titled 'Athithee'. Tarapada, a boy realizes his freedom in the lap of nature in playing with nature and emancipates himself from the bondage of home. The home and the social custom appear to him as a cause of his alienation from the Nature and it makes a road block to unite him with Nature.

Apart from the creative joy of such story and poem, it is important to note that at every point

Rabindranath is at pains to remind us of the role nature plays in both the material and the aesthetic embellishment of the human. The essay written as an introduction to L K Elmhirst's book "The Robbery of the Soil" and delivered at the extension lecture at Visva - Bharti in Calcutta on 28th July 1922, reveals Tagore's deep unhappiness at the systematic exploitation of Nature by civilization. On 7th March 1922 he had indicated his interest in the Sriniketan experiment by writing a poem on the same theme, a return to the soil:

*Let us all return to the soil  
That lays the corner of its garment  
And waits for us.  
Life rears itself from her breast,  
Flowers bloom from her smiles  
Her call is the sweetest music;  
Her lap stretches from one corner to the other,  
She controls the strings of life.  
Her warbling waters bring  
The murmur of life from all eternity.*

**(Palliparkiti, I)**

We must hasten to add here that Tagore was not advocating a return to a primitive agricultural mode. He was conscious of the need to overhaul the rural economy by importing modern scientific technique. But he also sought to limit the extent of greed and exploitation. Rabindranath saw the transformation of rural life through the principal of cooperation - between man and Nature, man and Science and man and man.

In the other poem Briksha - Bandana (Homage to the tree, 1926), the tree is seen as a heroic figure that brings life to the universe in triumphing over dreariness:

*From the deep bowels of the earth you heard  
The call of the Sun, O Tree, you witnessed  
The first beat of life, you uttered  
The call of the life in the dreariness.  
Brave son of the earth, you declared  
War to liberate the soil from the  
Sterility of the desert; the battle continues  
To establish the throne of green  
On every page of rock  
You extend your path to every space.*

*Your life and shade sustain me  
I come forward, a messenger of man;  
Dressed in your garland I offer,  
My poetry to you as my humble offering.*

**("Briksha Bandana", Bonabani, Rabindra Rachnavali, Vol 8, 89-90, Trans by Amrit Sen)**

Two factors stand out here - firstly Rabindranath recognised the need to acknowledge and reiterate Nature as the force that sustained man. Thus any threat to this could be constructed as a very threat to the basis of civilization. Tagore also recognised that to generate this awareness and respect he required a language of his spirituality and deification that would formalise and aestheticize this awareness to inculcate the sense of importance of Nature among his fellow citizens and ashramites. The poetic, aesthetic, environmental and the pedagogic came together within these writings wore a mythical presence of Nature within the human.

It is startling to find the relevance of Tagore's thoughts in the theorisation of the modern ecologists of today. Henry Frankfort reiterates the same idea:

*"Man remained outside Nature, exploiting it for a livelihood, offering its first fruit as a sacrifice to God, using its imagery for the expression of its mood but never sharing its mysterious life."*

**(Kingship and the Gods, 343).**

The nature, in the view of Rabindranath should be preserved because it, with all its enthralling beauty causes our aesthetic appreciation. L. E. Johnson, the writer of "A Morally Deep World", describes the environmental degradation as a time bomb which can explode any time unless man changes his present attitude to Nature which is a suicidal attitude. According to him, we need an eco-centric view which "recognises that life in Nature (which includes human beings) is maintained by means of cooperation, and mutual care and love" (Mies and Shiva, 2010, P.6).

From this perspective Rabindranath is rightly considered as one of the leading thinker of the world of environment. Tagore's attitude to Nature can provide a single motivating force for all the activities and movements aimed at saving the planet from human exploitation and domination.

Tagore's thinking on fresh water and public health is reminiscent of his thoughts on the environment. Tagore wanted to implement the call to satisfy all his wants in the village, through the medium of model work at Sriniketan. Classes in Santiniketan were in the shade of trees, not simply as a romantic idea but as a deliberate way of bringing students closer to nature so that they would unconsciously learn to respect it. He also started an annual celebration of the arrival of the monsoon at the end of the dry season (Borsha Mongol).

Environmental issues like river erosion and deforestation may be hot topics today, but Tagore had been conscious about the exploitation of environment even a century ago. What Tagore said on environmental crisis, modern technology and rural thinking in his lecture in 1922 on agricultural matters in honour of Leonard Elmhurst (Director, Sriniketan) comprises an important document even for today. Tagore believed that it was impossible to achieve overall development without rural development.

Nature conservation begins with the love and devotion to Nature and the Natural. In Tagore's works we find the idea of conservation and preservation of Nature and environment. We over exploit our natural resources and remorselessly indulge in species obliteration, incurably poison our rivers and seas over and above damming and polluting them, smoke out holes in our atmosphere and engage in a hundred different ways of self-destruction, we need to set up and take stock before things go out of our hands. If only we listen to our great thinkers like Tagore, we can positively inculcate eco-insight which is the need of the time. Eco-feeling, transformed his thoughts and shifted in his creative work to reach us and make us feel what he felt in communion with Nature. What we understand by Nature most certainly has a bearing on what we make of ourselves and our understanding need necessarily be holistic and not discriminative. People like Tagore enable us to understand the reflective implication of the natural environment and our ways of responding to it. Thus in our understanding of the world we live in we need to re-orient ourselves with regard to the values and our ways of response.



In short, we can say that today man's ecological status replaces power of muscles with the power of machine, knowingly or unknowingly we transform our competence to intervene in natural processes of every kind. We have changed not only the lives of the entire populace but also our relationship with every other part of the ecosystem. For enhanced existence of mankind and to heal future generation of eco-phobia on this planet we need to explore the profound green thinking in Literature of divinities like Rabindranath Tagore. Amidst the environmental degradation of the present time, making human habitation

environment-friendly is a recurring issue all over the world. For good reason, in the control of terrible air and water pollution, waste disposal, noise and visual pollution and others, alongside technological planning, various aspects of human behaviour, too, have come up for consideration. I feel that we should bring to light all of Tagore's highly motivating and touching words and inspire people to love nature and give our Mother Earth a reason to smile. The beauty of his conception was that he sought to inculcate this rubric not through slogan and pamphlets but over a cultural framework. May Rabindranath Tagore continue to be our guide.

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# Sustainable Development and Environment

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*It is a general belief that we can't have both economic development and environmental quality simultaneously, that if we want to improve economically we must sacrifice the environment. Often in the past Economic Development has been given importance over the environment and society. There is a mutual connection between environment and economy that is often not recognized. We need greater expertise in the country in the field of "Do Ecology", so that we can show how to achieve developmental goals without ecological harm. Instead of just saying "don't do this", we should learn to say, "do this way so that your action confers lasting benefits to the people".*

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## Introduction

The OECD defines natural capital as "natural assets in their role of providing natural resource inputs and environmental services for economic production". This ranges from clean air and water, to the soils we use to grow crops and the minerals and ores we extract from the earth.

The natural environment is an important content of the economic system, and without the natural environment the economic system will not be able to function. Hence, in recent years economist have started the natural environment in the same way as they treat labor and capital as an asset and a resource. According to environmental economists, environmental degradation is the result of the failure of the market system to put the deserving value on the environment, even though the environment sub economic functions and provides economic and other benefits. It is argued that, because environmental assets are free or under priced, they tend to over used and abused, resulting in environmental damage.

It has taken a long time to realize that the paradigm of development that largely ignored the environment was a disaster. The journey from Stockholm to Rio and onto Johannesburg took thirty years. Now, at long last, there is the acceptance that we need to move towards a more sustainable form of development.

All economic activities either affect or are affected by natural and environmental resources. Activities such as extraction, processing, manufacture, transport, consumption and disposal change the stock of natural resources add stress to the environmental systems and introduce wastes to environmental media. Moreover, economic activities today affect the stock of natural resources available for the future and have inter-temporal welfare effects. From this perspective, the productivity of an economic system depends in part on the supply and quality of natural and environmental resources.

Sustainable development, at present time is a most concern phenomena. It is a way of thinking by which we can secure our present and future generation. The right to development means the right to improvement and advancement of economic, social, cultural and political conditions that can be improved the global quality of life. Improvement of global quality of life means the implementation of changes that ensure every person's life of dignity and at same time citizens realise their human rights. These changes must include the eradication and alleviation of widespread conditions of poverty, unemployment, and inequitable social conditions. In this context the statement of Mrs. Indira Gandhi would like to quote in which she was emphasized on environmental security for sustainable development. At the UN

Conference on Human Environment at Stockholm in 1972 she said that, the removal of poverty is an integral part of the goal of an environmental strategy for the world.

Sustainable development ensures the well-being of individual by integrating social development, economic development, and environmental conservation and protection. The most frequently used definition of sustainable development is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' The meaning of needs is something that is necessary for the organism to live a healthy life. It is necessary for the sustainable development that the policies and technologies should be green so that environmental ability meets present and future generation in equal manner. It was coined in 1987 by the United Nations-appointed World Commission on Environment and Development, also known as the Brundtland Commission after its chair, former Norwegian Prime Minister Gro Harlem Brundtland.

Natural and environmental resources have three economic roles: waste disposal services, related to the environment's assimilative capacity; natural resource inputs into production; and directly consumed life support services and aesthetic amenities. The natural and environmental resource input function is central to understanding the relationship between economic growth and environment. Water, soil, air, biological, forest and fisheries resources are productive assets, whose quality helps determine the productivity of the economy. Focusing on this role of environment as a producer good highlights the direct effect environmental problems have on economic growth. Thus, economic management impacts on the environment and the environmental quality impacts on the efficient working of the economy. Environmental degradation imposes costs on the economy which results in output and human capital losses. 5. Lost labour productivity resulting from ill health, foregone crop output due to soil degradation and erosion, lost fisheries output and tourism receipts from coastal erosion or lost soil productivity from deforestation can be some of the manifestations of such reduced output. Moreover, a growing body of epidemiological studies suggest that air and water pollution are taking a heavy toll, particularly of people in the developing world,

through ill health and premature mortality. The impact of water and air pollution is particularly adverse to the younger, the very aged and poor. Pollution control is thus linked to sustainable development and not a "luxury good" to be afforded after the development process has taken off.

### **Chronological Milieu of Sustainable Development**

In the mid-20th century world community highlights four points of collective desire and aspiration of the people - peace, independence, development and environment. After this first time Rachel Carson represented the conflict between economic development and environment in his book 'Silent Spring' in 1966. D. H. Meadows in his book 'Limit to Growth' centralised the attention on environment degradation occur due to development in 1972. This report challenged the idea of progress that compares the present with the past, and considers the future an endless possibility for further growth and improvement, on the grounds that it failed to acknowledge the obvious truth that resources are finite, and hence growth dependent on resources cannot be endless. The implicit message of The Limits to Growth was that growth needed to be replaced with no growth. UNEP introduced in 1972 in Nairobi for thinking about to environmental problems. The World Conservation Strategy published in 1980 by the International Union for the Conservation of Nature and Natural Resources (IUCN), and Our Common Future (also known as the Brundtland Report after the chairman of the committee"), published by the UN appointed World Commission on Environment and Development seven years later, provided the answer as "sustainable development"- and thus the concept of sustainable development was born. The United Nations Conference on Environment and Development, held in Rio de Janeiro in June 1992, was a remarkable event. The heads of 179 states and representatives of numerous countries, international organisations and non-governmental organisations were in attended the conference. This conference demonstrated that humanity could no longer treat the environment separately from economic development. The conference led to the acceptance of a world action plan called Agenda 21, an action programme spanning

the next 100 years. The Rio Declaration contains the basic principles that must underline future state decisions and policies. After ten year of Rio de Janeiro summit Johannesburg Summit 2002 held in Johannesburg. The focus of this summit was on the need to remove the barriers to sustainable development in modern societies. Alleviate poverty and disease, manage natural resources rationally, and promote responsible consumption and production. The main emphasis was to use the benefits of globalisation to establish a balance between development and environment.

### **Need for Sustainable Development**

Economic development without environmental considerations can cause serious environmental damage in turn impairing the quality of life of present and future generations. Sustainable development attempts to strike a balance between the demands of the economic development and the need for protection of the environment. It seeks to combine the elements of economic efficiency, intergenerational equity, social concerns and environmental protection. Although, the term 'sustainable development' has many interpretations, it generally refers to non declining human wellbeing over time. Sustainable development was defined by the 1987 Brundtland Commission as the meeting of "the needs of the present without compromising the ability of future generations to meet their own needs."

The concept of sustainable development aims at maximising the net benefits of economic activities, subject to maintaining the stock of productive assets (physical, human and environmental) over time and providing a social safety net to meet the basic needs of the poor. Whereas some analysts support a "strong sustainability" rule which requires a separate preservation of each category of critical asset, assuming these to be complements rather than substitutes, others have argued in favour of "weak sustainability" which seeks to maintain the aggregate monetary value of the total stock of assets, assuming a high degree of substitutability among the various asset types. Sustainable development, therefore, attempts to accelerate development in an environmentally responsible manner keeping in mind the intergenerational equity requirements.

### **Challenges of sustainable development**

The challenges of sustainable development and its consequences are clearly visible. It is only invisible if we not want to see. Population is a major challenge for the sustainable development. In the beginning of the 21st century the population of the Earth reached 6 billion, and is expected to level out between 10 and 11 billion over the next 50 years. The basic challenges will be shortages of drinking water and arable land for food production. Poverty is another major challenge because almost 25% of the world's population lives on less than USD 1 per day. Inequality continues to be a serious obstacle to sustainable development with the number of people suffering from undernourishment. The fall of food prices over the past 30 years may have contributed to increases in consumption, but in many regions of the world arable terrains are limited, and the creation of new ones has a destructive effect on the remaining ecosystems. In the future, the growth of food production should not come at the expense of nature. By 2010 the current step of biodiversity loss should be significantly slowed. The shortage of drinking water in many regions of the world is a major barrier to sustainable development. It is expected that, at the current rate of development, every second person will suffer from water shortage by the year 2025. Human health is also an obstacle in sustainable development. In many cases, deaths in developing countries are avoidable. Humanity should direct more attention and money in the coming years to the struggle against diseases. The imminent task is to reduce the death rate among children under five years of age by two-thirds, and the death rate of young mothers by 75% by 2015. Consumption of energy is a major challenge for the sustainable development. Consumption of all forms of energy is continually rising. The improvement of access to reliable, sustainable and environmentally friendly energy sources and services, as well as the creation of national programmes for energy effectiveness, is a particularly important task for the next 10-15 years. Deforestation is particularly great challenge before the sustainable development. The world's forests diminish mainly due to expansion of agriculture. In the coming years, improving the recovery and management of the forests will be of utmost importance. Petrol consumptions constantly rising. The

Summit emphasised the need to realise the decisions of the Kyoto Protocol for reaching an agreement on emissions norms for greenhouse gases in developed countries.

### Strategies for Sustainable Development

The conceptual meaning of sustainable development is not to create an obstacle in development process but this concept belongs to how we utilize our resources so that an inter-relationship can be established among present and future generation. To attain sustainable development many probable strategies can be useful. Input Efficient Technology can be reducing the exploitation of resources. So this technology may good for sustainable development. Via Using of Environmental friendly Sources of Energy, such as LPG and CNG which are eco-friendly fuel, we can reduce the greenhouse gases from the earth. Delhi Transport Corporation's initiative to CNG Buses in Delhi is the one of the best effort to reduce CO<sub>2</sub> and other harmful gases. Government should pay attention on Integrated Rural Development Programmes. Through this the burden and interdependency on cities for employment can be decrease. To focus on renewable sources of energy like solar and wind for energy needs. It will be beneficial for the country like India, where is enough sun light, to Convert Sun light into solar Energy and Solar Energy in Electricity. It will create an atmosphere for green development. For attaining the sustainable development it is necessary for the government and society to control on the Tragedy of Commons. It

means to stop the maximum use of easy available resources. With above these government should stimulate the organic forming and recycle the wastes. Last but not least, it is responsibility of citizens to encourage the awareness to conserve the natural assets for inter-generational equality.

### Conclusion and suggestion

Sustainable development is a vision and a way of thinking and acting so that we can secure the resources and environment for our future generation. It will not be brought about by policies only - it must be taken up by society at large as a principle guiding the many choices each citizen makes every day, as well as the big political and economic decisions that affect many. It is clear that environmental degradation tends to impose the largest costs on those generations that are yet to be born. Future generations are disadvantaged with regards to present generations because they can inherit an impoverished quality of life, share a condition of structural weakness in having no voice and representation among the present generation and so their interests are often neglected in present decisions and planning while it is very much needful that we think about our generation. We can only improve sustainable development when it will put an emphasis on involving citizens and stakeholders. Ultimately, the vision will become reality only if everybody contributes to a world where economic freedom, social justice and environmental protection go hand in hand, making our own and future generations better off than now.

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# Interdependence between Economic Growth and Environment

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*Economic growth and environmental performance must go hand in hand. The natural environment is central to economic activity and growth, providing the resources we need to produce goods and services, and absorbing and processing unwanted by-products in the form of pollution and waste. Environmental assets contribute to managing risks to economic and social activity, helping to regulate flood risks, regulating the local climate (both air quality and temperature), and maintaining the supply of clean water and other resources. This underpins economic activity and wellbeing, and so maintaining the condition of natural assets is a key factor in sustaining growth for the longer term. Correspondingly, economic growth contributes to the investment and dynamism needed to develop and deploy new technology, which is fundamental to both productivity growth and managing environmental assets. Along with it, economic growth can contribute in protecting and conserving environment by making more people aware about the importance of natural resources. Government's role is to send clear signals and set a long-term policy framework. It is also essential that government listens to and works with business, so that policies are designed in a way that avoids unnecessary burdens and removes potential barriers to success. Moving to a sustainable economic growth path will not happen overnight, but it is essential if we are to secure long-term economic growth and make the economy resilient to risks in the future..*

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A healthy environment supports healthy human beings and increases productivity. It is a general belief that we can't have both economic development and environmental quality simultaneously, that if we want to improve economically we must sacrifice the environment. Often in the past, economic development has been given importance over the environment and society. There is a widely held theory that resource management practices and policies which protect the environment are most likely to harm the economy and reduce employment opportunities. Similarly, economic growth has also been blamed for environmental degradation. However, empirical data supporting this theory are rare. In recent years, economists and ecologists have increasingly begun to use quantitative methods to test this theory. Studies examining industrial emissions, endangered species, air quality and other issues have found no evidence that economies suffer as environmental policy strength increases. On the contrary, numerous researchers have reported slight positive correlations between environmental and economic indices, suggesting that environmental health may help to improve the economy. There is a mutual

connection between environment and economy that is often not recognized.

This paper aims to explore the interdependence between natural environment and economic growth and the role of environmental policy in achieving improved environmental outcomes in ways that are compatible with the long-term health and stability of the economy. It sets out an approach for securing environmentally sustainable economic growth - for current and future generations.

The natural environment is an important component of the economic system, and without the natural environment the economic system will not be able to function. Hence, in recent years economists have started treating the natural environment in the same way as they treat labor and capital as an asset and a resource. The natural environment plays an important role in supporting economic activity. It contributes:

- directly, by providing resources and raw materials such as water, timber and minerals that are required as inputs for the production of goods and services; and

- indirectly, through services provided by ecosystems including carbon sequestration, water purification, managing floods risks, and nutrient cycling.

Environmental resources such as minerals and fossil fuels directly facilitate the production of goods and services. The environment provides other services that enable economic activity, such as sequestering carbon, filtering air and water pollution, protecting against flood risk, and soil formation. It is also vital for our wellbeing, providing us with recreational opportunities, improving our health, and much more. Natural resources are, therefore, vital for securing economic growth and development, not just today but for future generations.

The demand for a clean and healthy natural environment provides opportunities for employment and wealth creation; for example, organic agriculture and industries responsible for managing and protecting natural resources. Other industries aim to reduce the environmental impacts of economic activity; for example, through generating renewable energy, through waste management techniques, and through products and technologies that reduce air and noise pollution from production processes. Yet others aim to mitigate adverse environmental impacts and restore natural assets to their previous condition, such as water treatment services and land remediation. Thus, natural environment is fundamental to the economy, providing both direct and indirect inputs to economic activity and acting as a sink to absorb the by-products of production and consumption.

Economic growth, in turn, is important for the prosperity and wellbeing of the economy and its citizens - in both advanced economies and in the developing world. It stimulates advances in technology, such as those that will be needed to continue decoupling consumption and production from their environmental impacts. Economic growth contributes to the investment and dynamism needed to develop and deploy new technology, which is fundamental to both productivity growth and managing environmental assets.

Economic growth remains essential to support continued improvements in factors that affect people's wellbeing, from health and employment to education and quality of life, and to help the government deliver on a range of policy objectives - economic, social, and environmental. Economic growth can contribute towards conservation of environment. As the economy grows, it raises the living standards and educational level of people. People become more aware and

conscious about the importance of environment and hence, can play an important role in the conservation and protection of environment.

Economic growth is vital for supporting continued improvements in material living standards, for example, by creating employment opportunities and by creating an attractive environment for private investment. Through the tax system, economic growth also supports other factors affecting wellbeing, for example, through continued improvements in the provision of public services and in support for lower income households that reduce poverty, improve health outcomes, and lead to greater educational attainment and improving quality of life across the world.

However, economic growth has also resulted in the depletion of natural resources and the degradation of ecosystems. There has been much debate over whether or not it is possible to achieve economic growth without unsustainably degrading the environment, and a growing realization that economic growth at the current rate of depletion and degradation of environmental assets cannot continue indefinitely. According to environmental economists, environmental degradation is the result of the failure of the market system to put the deserving value on the environment, even though the environment serves economic functions and provides economic and other benefits. It is argued that, because environmental assets are free or under-priced, they tend to be overused and abused, resulting in environmental damage. The solution offered to the above problem is to put a price on the environment so that it can be incorporated into the economic system and taken seriously by those who make decisions.

Economic growth and environmental performance must go hand in hand. The relationship between economic growth and the environment is complex. Several different drivers come into play, including the scale and composition of the economy - particularly the share of services in GDP as opposed to primary industries and manufacturing - and changes in technology that have the potential to reduce the environmental impacts of production and consumption decisions whilst also driving economic growth. With many key natural resources and ecosystems services scarce or under pressure, achieving sustained economic growth will require absolute decoupling of the production of goods and services from their environmental impacts. This means consuming environmental resources in a sustainable manner - whether by improving the efficiency of resource

consumption or by adopting new production techniques and product designs. It also means avoiding breaches in critical thresholds beyond which natural assets cannot be replaced and can no longer support the desired level of economic activity. Existing commitments to avoid dangerous climate change exemplify the need for absolute decoupling, requiring a reduction in greenhouse gas emissions, even in the face of an expanding global economy.

There has been debate over whether it is possible to achieve economic growth whilst also tackling these challenges. This paper does not try to answer the question of what the sustainable level of economic growth might be, but instead examines the link between economic growth and the environment, and the role of environmental policy in managing the provision and use of natural assets. The potential trade-off between desired environmental outcomes and economic growth in the near-term highlights the importance of well-designed environmental policies that tackle environmental problems in efficient manner and minimize regulatory burdens on businesses and the economy. To the extent that environmental policy incentivizes resource efficiency, innovation and the development of new technologies, it can deliver environmental improvements whilst producing long-term growth benefits and reducing the economic costs of achieving the desired environmental outcome. The role of environmental policy is to manage the provision and use of environmental resources in a way that supports continued improvements in prosperity and wellbeing, for current and future generations.

Effective environmental policy is likely to require the use of multiple instruments, each tackling a different part of the problem, while avoiding duplication and unnecessary regulatory burdens. Pricing environmental inputs correctly helps manage the sustainable provision and use of natural resources. A

consistent and coherent environmental policy provides greater certainty about the value of investments and encourages long-term business investment in new technology and innovation.

Finally, environmental policy, including infrastructure and other investments, can reduce the vulnerability of the economy and businesses to adverse environmental events - both by reducing environmental risk and by increasing the economy's resilience to these risks. For example, not just investments that facilitate emissions reductions to avoid dangerous climate change, but also those investments that help the economy adapt to climate impacts already locked-in by past and current emissions.

The relationship between economic growth and the environment is determined by a number of drivers and achieving sustained growth will require decoupling economic growth from its environmental impacts, not just nationally but globally.

Smart environmental policy-making can limit any short-term negative impacts of making the shift to a more resource-efficient and environmentally sustainable economy. Designing legislation that minimizes administrative burdens on businesses stimulates innovation and signals a coherent long-term regulatory framework that will help minimize the costs of environmental regulations on the economy. It is worth noting that any near-term costs of implementing environmental policy must be viewed in the context of the costs of not taking action. Designing policies such that the regulatory burden on the economy is minimized is essential for realizing all the potential growth benefits of environmental policy - in terms of improving overall economic efficiency and in terms of securing long-term growth. Through this, environmental policy can help increase prosperity and wellbeing - not just greater incomes but improved health, education and quality of life - for future generations.

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# Environmental Health and Malnutrition

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*A fundamental element of sustainable development is environment sustainability. Interest in environmental health is mounted in recent years, emerging from concern that the most vulnerable groups including children under five years of age are disproportionately exposed to and affected by health risk from environmental. This paper focuses on the link between infection caused by poor environmental factors and malnutrition. This paper also demonstrates the importance of environmental health on child survival and growth. In developing countries, under five mortality is largely a result of infection and neonatal death. If the child is malnourished, the mortality risk is associated with respiratory infection, diarrhea, malaria, measles and other infectious diseases are increased. Three specific environmental risk factors that influence a child's health are poor sanitation access, indoor air pollution and inadequate malaria vector control. Infection and malnutrition operate in vicious cycle to affect child health. Though the effect of malnutrition on disease is generally recognized but the role of infection in the worsening the nutritional status has been relatively neglected. In the life cycle of a child, from womb of mother to the age of about two years, environmental health intervention such as access to water and proper hygiene practices, proper vector control and use of cleaner practices is especially critical for preventing growth faltering in the fetus and infant.*

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## **Introduction**

Environment and health are inextricably interlinked. The physical environment, such as drinking water, sanitation, housing, and air, has considerable effects on the health status and well being of people, contributes to communicable diseases, and prolongs the epidemiological transition. The socio-cultural environment, such as changing lifestyles, modernization, occupational differentiation, and aspirations to improve the quality of life, not only results in new health problems but also places new demands on health systems. These socio-cultural and physical environmental factors cumulatively lead to a greater burden of disease. In the medical sense, the environment includes the surroundings, conditions or influences that affect an organism. Along these lines, Last (2001) defined the environment for the International Epidemiological Association as: "All that which is external to the human host, can be divided into physical, biological, social, cultural, etc., any or all of which can influence health status of populations".

According to this definition, the environment would include anything that is not genetic, although it could be argued that even genes are influenced by the environment in the short or long-term.

Health outcomes that are a result of environmental conditions are classified under the category of "environmental health". The World Health Organization (WHO) has defined environmental health as those "aspects of human health, including quality of life that is determined by chemical, physical, biological, social and psychosocial factors in the environment." In general, environmental health risks are grouped into two broad categories: Traditional hazards are closely linked with poverty. They refer to health risks that are a consequence of lack of access to clean water, inadequate sanitation, poor waste disposal, indoor air pollution and vector-borne diseases such as malaria. Modern hazards are caused by development that lacks environmental safeguards, such as urban air pollution and exposure to agro-industrial chemicals and waste.

## **The Drivers of Change**

Environmental change and its attendant health impacts are driven by many factors, including economic growth, population growth and movements, urbanization, transportation, and war, to name just a few. The three broad trends - the intensification of agriculture, industrialization, and rising energy use -- which stand out in terms of their profound impacts on the physical environment and their enormous potential for influencing human health. But all these changes are essential for economic development and improved welfare of our wellbeing. Yet, all lead to pressures on the environment, such as pollutant emissions and resource depletion that in turn can increase human exposure to threats in the environment.

Intensification of agriculture is essential for producing more food but, when not well managed, creates substantial risks, such as exposing workers and communities to toxic pesticides, contaminating groundwater supplies, and creating pesticide-resistant pests. Land clearing, irrigation, and dams can bring increases in vector-borne diseases such as malaria and schistosome misses, both of which exact a huge toll in rural areas of the developing world.

Industrialization is the key player of economic growth and, like urbanization to which it is closely related, is associated with major gains in health. Yet, along with rising standards of living--at least for a majority of the population--industrialization often means increased exposure to heavy metals, persistent chemicals such as polychlorinated biphenyls (PCBs), and other toxic chemicals. This is close to factories. Such exposures are likely to be increasingly pronounced in the developing world, where the most rapid industrialization is occurring.

Energy demand, which is already huge in the developed countries, is rising fastest in the developing world. Rising energy use is needed to fuel industrial growth but brings many attendant problems. Local air pollution from industrial and vehicle emissions has proved difficult to manage even in developed economies. Fossil fuel use also has the potential to alter the Earth's climate, with a predicted range of impacts from severe storms, to drought, to flooding, to an increase in insect-borne diseases such as malaria.

In the real world, these three trends rarely occur in isolation. Rising energy use, for instance, is part

and parcel of industrialization and intensification of agriculture. The effects of industrialization are often difficult to disentangle from those of and predictable (for example, increased air pollution that accompanies rising use of fossil fuels, or exposure to toxic chemicals through improper disposal of industrial wastes). Others, however, are far less certain, though potentially large, such as those associated with global climate change and wide-scale ecological disruption. Until recently, discussions of environmental threats to health have tended to focus on direct toxicological effects of specific insults or exposures.

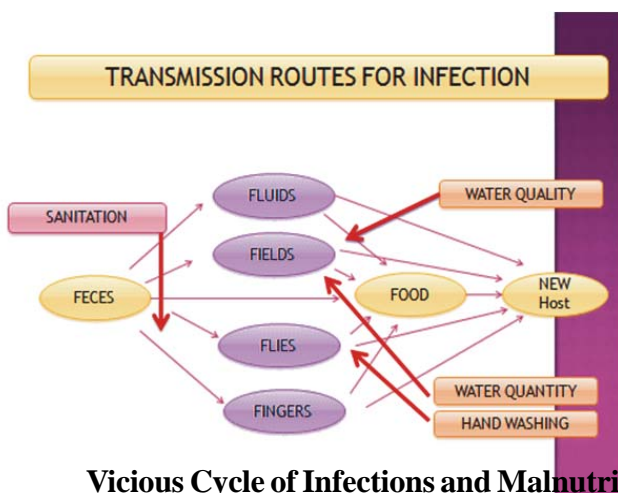
Now, awareness is growing that changes in the environment can affect health in indirect and often unexpected ways as well, by disrupting local or global ecosystems. For instance, soil erosion stemming from poor agricultural practices can result in reduced crop yields; which could have important on sequences for nutrition. Farm animal wastes in the eastern United States are suspected of causing toxic algal blooms, leading to massive fish kills and potential harm to humans. Even well-intended development projects can have unexpected outcomes, as occurred in Africa's Senegal River Valley, where the construction of two dams set off a cascade of events that ultimately contributed to nutritional problems for the population and a dramatic increase in schistosomiasis.

## **Environmental Factors, Exposure, and Transmission Pathways**

Environmental health focuses on disease transmission routes rather than on how people are treated when they are sick. The identification of transmission routes, rather than the diseases themselves, is the important conceptual framework, and because diseases can be transmitted by more than one route, environmental health interventions often make more sense at a community level than at the level of individuals (Yacoub and Kelly 1999). Such transmission routes have largely been blocked in the developed world. In developing countries, the poor continue to be exposed to many transmission routes at one time. Understanding how different transmission routes affect disease outcomes-especially for diarrhea-is important because even when an intervention may aim at blocking one transmission route, the effect on the disease may be limited because the population is

still exposed through another transmission route. This concept is known as residual transmission (Briscoe 1987; Cairncross 1987; Eisenberg, Scott, and Porco 2007). As Cairncross and Valdmanis (2006: 775) point out, "practically all potentially waterborne infections that are transmitted by the feco-oral route can potentially be transmitted by other means (contamination of fingers, food, field crops, other fluids, flies, and so on) all of which are water-washed route.

The provision of clean water (one transmission route) has often produced less-than-anticipated outcomes because water may be scarce or hygiene practices poor (thus exposure remains through another transmission route). The emphasis on drinking water possibly occurs because those living in affluent conditions (with substantial water quantity and proper sanitation in their homes) often ignore the other water-washed transmission routes for diseases that poorer households (with inadequate water for proper hygiene practices) face. This idea also has its roots in the historical drama of single-source epidemics rather than in the long term tragedy of endemic diarrhea.

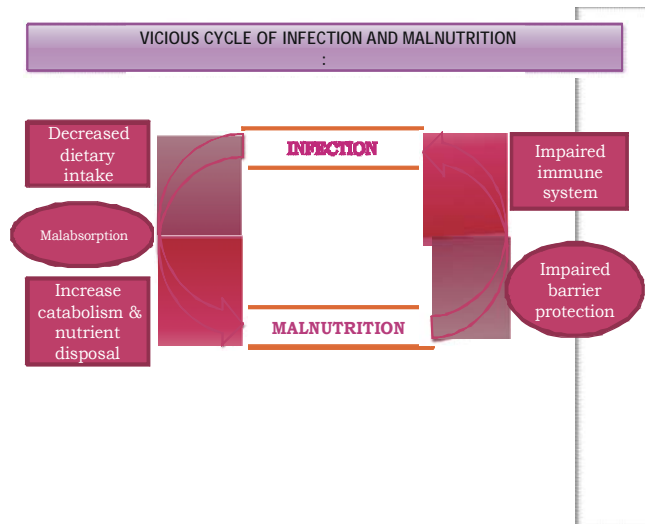


### Vicious Cycle of Infections and Malnutrition

Infections and malnutrition operate in a vicious cycle to affect child health. Though the effect of malnutrition on disease is generally recognized, the role of infections in the worsening of nutritional status has been relatively neglected.

#### Effect of Malnutrition on Disease

Poor nutritional status, especially in infants and young children, makes infections worse and often more



frequent. Data from a number of studies reviewed by Scrimshaw, Taylor, and Gordon (1968) provide evidence that moderate and severe under nutrition increases the seriousness of infections such as diarrhea and acute lower respiratory infection. Increased mortality is an effect of malnutrition, which makes individuals susceptible to infectious disease; when illness occurs, it is more severe and prolonged and carries an increased risk of death (Scrimshaw, Taylor, and Gordon 1968). As predicted in 1968, malnutrition was convincingly established as a potentate of mortality in young children, with the risk of death from all infections increasing exponentially with decreasing nutritional status (Caulfield and others 2004; Fishman and others 2004; Pelletier 1994; Pelletier and others 1994).

Malnutrition can increase a child's susceptibility to infection by negatively affecting the barrier protection afforded by the skin and mucous membranes and by inducing alterations that reduce the child's immunity (Brown 2003). For example, in a malnourished child, diarrhea can quickly result in life-threatening dehydration caused by loss of water and minerals (Thapar and Sanderson 2004). Malnutrition also increases the duration of many infections: the more severe the level of malnutrition, the longer the illness lasts, and the longer the child takes to recover (Thapar and Sanderson 2004).

#### Effect of Infections on Malnutrition

Up until the middle of the 20th century, nutrition textbooks hardly ever mentioned the role of infections

in the worsening of nutritional status, which, in turn, reduces growth in children (Keusch 2003; Scrimshaw 2003). Even though, historically, vitamin deficiencies were known to be aggravated by infections, the effect of diseases such as diarrhea and respiratory infections on malnutrition in children was not recognized, and poor diets were considered to be predominantly responsible for poor growth in children (Scrimshaw 2003).

Over the past several decades, dozens of studies—many of them long-term cohort studies—have investigated the causal relationship between disease and malnutrition and have provided conclusive evidence of how almost all infections influence a child's nutritional status. These nutrient losses have implications for tissue synthesis and growth in young children—and lead to growth faltering (Brown 2003). The effect of infections on the nutritional status of young children appears to be directly proportional to the severity of the infection (Powanda and Beisel 2003), which means that children with more serious infections, such as dysentery, measles, or pneumonia, are more likely to become stunted than those with acute diarrhea.

Numerous cohort studies have researched the impact of infections (mostly diarrheal disease) on weight and linear growth. A recent Peruvian study found that children ill with diarrhea 10 percent of the time during the first 24 months of life were 1.5 centimeters shorter than children who never had diarrhea (Checkley and others 2003). Another study from Brazil found that, on average, 9.1 diarrheal episodes before two years of age were associated with a 3.6 centimeter growth shortfall at age seven years (Moore and others 2001). Similarly, Moore and colleagues (2001) found that early childhood helminthiasis (infections caused by parasitic worms such as hookworms) led to a further 4.6 centimeter growth reduction by age seven. Because early childhood growth faltering is known to predict height in adulthood (Martorell 1995), the effects of infections on linear growth are considered irreversible (Checkley and others 2003). In general, effect on weight have been easier to demonstrate than effects on linear growth, even in shorter follow-up studies (Stephenson 1999).

### **Environmental Role in Early Childhood Health**

Environmental health inputs—at both the household and the community levels—play a critical role in a child's

survival and growth. In the life cycle of a child, from the womb to the age of about two years, environmental health interventions such as access to water and sanitation, proper hygiene practices, proper vector control, and the use of cleaner fuels for cooking and heating—are especially critical for preventing growth faltering in the fetus and infant, which has consequences for a child's subsequent health. These impacts on a child's growth have also been seen to result in cognition and learning problems as well as chronic diseases later in life.

### **Pregnancy: Protecting the Foetus**

Nutrition plays a crucial role in the growth and the development of the fetus.

During pregnancy, the mother's own nutritional status and exposure to infections have an important effect on the fetus (Fishman and others 2004). The impact of infections on malnourishment of the fetus and subsequent growth faltering has been inadequately studied (Bremner, Alilio, and Mills 2004). Whereas some infectious diseases (for example, rubella) can infect the fetus through the placenta, other infections (for example, malaria and hookworm) can induce fetal death, stillbirths, and perinatal deaths, as well as contribute to poor fetal growth, without infecting the fetus (van Geertruyden and others 2004).

In addition to experiencing micronutrient deficiencies, pregnant women in developing countries are exposed to numerous environmental risks. Malaria is endemic across the tropics and subtropics, and it thrives in areas with poor drainage and stagnant water. Areas with bad sanitation provide prime conditions for hookworm infections (Hotez and others 2006). In many developing countries, and especially among the poor, malaria and hookworm infections coexist—both synergistically affecting the health of the pregnant woman and her unborn child. Anemia in pregnancy, which is associated with increased risks of premature labor and low birth weight (Watson-Jones and others 2007), is a multifactor condition and is often caused by a combination of malaria, hookworm infections, and dietary deficiencies.

### **Malaria**

Every year approximately 50 million pregnant women worldwide are exposed to malaria; 30 million

of these women live in the African region (Crawley and others 2007). Malarial infection during pregnancy is an important, and preventable, environmental cause of low birth weight. Malaria is thought to affect a child's birth weight in two ways: first, through placental infection, and second, through malaria induced maternal anemia (Menendez, Fleming, and Alonso 2000). Placental infection appears to be associated with a significant reduction in birth weight and with increased risk of "low" (that is, under 2 kilograms) birth weight (Menendez, Fleming, and Alonso 2000). One review estimates that in areas where malaria is endemic, one-fifth of babies with low birth weight are underweight because of malarial infection of the placenta while the mother was pregnant.

### **Hookworm Infections**

Hookworm infections are common worldwide but thrive in poor communities in the tropics where poor water supply and poor sanitation are common (Steketee 2003). Data from the early 1990s suggested that about a third of the pregnant women in the developing world harbored hookworm infection (Steketee 2003). Few studies have looked at the impact of hookworm infection on pregnant women (Steketee 2003). Some studies in Nepal, however, showed that hookworm infection exacerbated iron deficiency and anemia in pregnant women.

### **Indoor Air Pollution**

Apart from parasitic infections such as malaria and hookworms, indoor air pollution adversely affects the health of pregnant women. Biomass is often used for cooking and heating in developing countries, leading to smoky kitchens and high levels of particulate matter. These conditions have been shown to lead to various respiratory infections in women and young children—who are the most exposed because of time spent near the stove.

### **Early Infancy: The "Window of Opportunity"**

Several studies that looked at the impact of infections on child growth have shown that exposure to environmental health risks in early infancy leads to permanent growth faltering, lowered immunity, and increased mortality. Averting repeated disease episodes, especially in the first two years of life—the

"window of opportunity"—prevents the more permanent and devastating wasting and stunting, which have longer-term implications for a child's health and prognosis. Neonates and infants up to about six to nine months of age acquire immunity from their mothers, which often prevents ARIs (Sato and others 1979). The immaturity of the infants' immune responses (Marodi 2006; Nair and others 2007; Wilson 1986), however, helps explain why early exposure to diarrheal pathogens, especially in early infancy, is so critical in the development of malnutrition. Thus, the same infections that cause disease in the developed world only among those with impaired immune systems (for example, AIDS patients) lead to diarrhea and growth faltering in infants in developing countries.

Neonates and infants up to about six to nine months of age acquire immunity from their mothers, which often prevents ARIs (Sato and others 1979). The immaturity of the infants' immune responses (Marodi 2006; Nair and others 2007; Wilson 1986), however, helps explain why early exposure to diarrheal pathogens, especially in early infancy, is so critical in the development of malnutrition. Thus, the same infections that cause disease in the developed world only among those with impaired immune systems (for example, AIDS patients) lead to diarrhea and growth faltering in infants in developing countries.

Breastfeeding is considered an effective means of protecting infants from diarrheal diseases (Dai and Walker 1999; Van Derslice, Popkin, and Briscoe 1994). The stress and fever caused by disease increase the child's food requirements while also reducing the intake and absorption of nutrients. Proper feeding practices during diarrheal episodes are critical for a child's health and recovery. In most cultures, the common practice is to restrict food from sick children, often for too long a time (Brown 2003). Only in recent years has the medical profession emphasized the need for continuous feeding during diarrheal episodes (Brown 2003). Reducing the level of environmental contamination similarly reduces the risk of diarrhea (Van Derslice, Popkin, and Briscoe 1994). Good sanitation practices protect infants by creating barriers to keep pathogens out of their environment.

### **Averting Cognition and Learning Impacts**

Cognitive function in children—reflecting an ability

to learn-is affected by environmental and health-related factors (Berkman and others 2002). Risk factors that interfere with cognition are especially important in the first two years of a child's life, which marks a period of rapid growth and development (Berkman and others 2002). In early childhood, diseases attributed to environmental factors, such as diarrhea and helminthes infections, also have the potential to affect a child's later cognitive functions. Over the past several years, studies have begun to investigate the impact of diarrheal illness and helminthes infections during early childhood on verbal fluency, cognitive function, and school performance. In addition to diarrheal illness and helminth infections, severe or cerebral malaria in children under five years of age is associated with subsequent neurological and cognitive impairments.

### Conclusion

Malnutrition, poor environmental conditions, and infectious diseases are highly associated geographically and take their heaviest tolls on children under five years

of age in Sub-Saharan Africa, South Asia, and certain countries in the Eastern Mediterranean region.

- Infections and malnutrition operate in a vicious cycle to affect child health. Until recently, however, the role of infections in the worsening of nutritional status, which, in turn, reduces growth in children, was not addressed. Over the past several decades, several cohort studies have provided strong evidence of how almost all infections influence a child's nutritional status.
- The impact of infections on child growth has shown that exposure to environmental health risks in early infancy leads to permanent growth faltering, lowered immunity, and increased mortality. In the life cycle of a child, the period from the womb to the age of about two years—the so-called window of opportunity—is critical in terms of environmental health interventions. The infections that adversely affect a child's growth have also been seen to result in cognition and learning impacts as well as chronic diseases later in life.

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# Cultural Ethos and The Issue of Environment Protection

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*In human history, eighteenth and nineteenth centuries were the period which witnessed great human development, in terms of scientific growth and logical thinking. Earlier to scientific age, man dwelled in theological age and later on entered the metaphysical age. Theological era was dominated by the belief in supernatural power; metaphysical age was the age of the quest for ultimate truth. Now in contrast to the first stage, modern -scientific age gave precedence to rational, logical and scientific thinking. Consequently, there was the advent of era of scientific advancement and inventions. As human history advanced, there was accelerated growth and progress of human society. Modern-industrial society got established in one part of the world. It was prophesied by August Comte that the new scientific- industrial society will become the society of all mankind. Ironically modern -scientific approach overemphasized belief in reason/ science but overlooked the highly damaging effects of applied science on environment, humanity and nature, above all failure to comprehend the risks and destructive consequences of the pursuit of progress. Modernist failed to anticipate the bearing which cultural traditions have for environment. Science and reason wrongly and irresponsibly penetrated into the ecological boundaries of primitive and traditional cultures, that they almost ruined the environmental ethos of these long standing cultures.*

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History of human evolution shows, that there was intimate and close connection of man with nature. The man dwelled, lived and survived in his natural surroundings and was predominantly dependent on his environment. He awed and revered the environment simultaneously. Durkheim while analyzing primitive cultures; he coined the concept of 'totem'. The totem could be any object of the nature. It could be anything such as fire, trees, plants, sun, moon, bird, animal etc. Durkheim, while defining 'totem' in his book 'Elementary forms of religious life', explained, how any animate and inanimate object could be considered as the totem of the clan and therefore protecting that totem was the duty of the members of the clan. It was taboo to kill the totem. Functionalist argument could be - 'inadvertently man was protecting the nature'. This was the first stage of human evolution i.e. Theological stage.

Nevertheless, man entered the second stage, which was metaphysical stage, where the quest began for ultimate truth. Now in contrast to the first stage, modern-scientific age gave precedence to rational, logical and scientific thinking. Consequently, there was

the advent of era of scientific advancement and inventions. As human history advanced, there was accelerated growth and progress of human society (western societies). Modern - industrial society got established in one part of the world. In this regard Comte had argued that the new scientific-industrial society will become the society of all mankind. He propounds "this ultimate stage in a series of successive transformations the human race goes through and each stage is decidedly superior to the previous one. The new system is built upon the destruction of the old, and, with the evolution, come progress and emancipation of the human mind." (Abraham & Morgan, 2005:8).

Now this notion of progress and growth raised many imperative and pertinent questions. The age of modernity, modernized our thought process which consequently ushered the era of modern scientific growth. This was the period (and still it is) which witnessed substantial breakdown from tradition. There was accelerated growth of industrialization and urbanization, this pace of development, however paved way for some unintended, unassumed urban problems.

Like for example all the major cities in India are facing acute air, water and other kind of environmental pollution, there is continuous immigration of population from rural areas into urban centers, their habitat in the congested areas as a consequence there is unplanned expansion of cities (Bhengra,155).

This unplanned and reluctant development paved way for unsustainable development, taking the future humanity into the critical stage of human progress. India as a society, since independence is witnessing rapid industrialization, urbanization and modernization simultaneously giving rise to population explosion, environmental problems and the increased problems of poverty. Now overall scenario raises some fundamental questions regarding modernity and the whole process of modernization.

Those dealing with modernity perceive scientist as objective experts, science as seeking to discover the laws of the universe, human being as capable of acquiring great control over the nature and the environment, and reason as ability to improve the human condition, i.e. to achieve progress (Ahuja, 2008:480).

Now here problem arise with this statement 'acquiring great control over nature and the environment'. This very notion has enunciated great deal of environmental damage. To illustrate further, the school text books, whether they are of NCERT or of ICSE or of any other boards, teach children, that for the economic progress of any country, one of the underlying point is 'exploitation of natural resources and optimum utilization of natural resources'.

Twentieth century has been dominated by these statements without realizing the unintended consequences. Post independent India adopted Nehruvian model where emphasis was on rapid industrialization. The model accelerated building of dams, roads and massive infrastructure, without assuming future consequences. The problem was not in adopting modernization process, perhaps problem was in irresponsibly adopting the developmental model and more so having disregard for nature. All the plans and policies were so designed that they failed to comprehend future needs and sustainability of natural resources.

It is observed, the post independent state failed to build up a development agenda based on the needs of people and continued to advocate the modern

capitalist agenda which led to the destruction of environment, poverty and marginalization of rural communities. Environmentalist advocated the revival of traditional 'self sufficient village economy' ... local communities were best suited to conserve natural resources as their survival depended in the sustainable use of such resources (Bhengra,148). There has been vociferous demands coming from environmentalists and local people affected by the shortsighted policies and plans of the governmental agencies and other profit making agencies.

The environmental movements in India and different kind of local struggles and conflicts related to the concerned issue has questioned the whole developmental and modernization model adopted by India (as well as whole world). If we look back into the history of environmental movements and struggles, it can be traced from 1970's and 80's and till today. The infamous 'Chipko movement' in 1973 of Garhwal region of Uttaranchal, was one of the most effective and eye opener kind of environmental movement. This movement is also appreciated, because the lead in this movement was predominantly taken by women.

### Chronology of Powerful Environmental Movements in India

S.	Name of the movement	Region	Year
1.	Chipko Movement	Gharwal (Uttarakhand)	1973
2.	Silent Valley movement	Kerala	1978
3.	Narmada Bachao Andolan	Madhya Pradesh and Gujarat	1989
4.	Appiko Movement	Karnataka (Balegadde)	1983

*Source:* Bhengra, Anupam, Environmental Movement in India: Issues and Concern, 2009.

Era of 1970's and 1980's witnessed several struggles in India around issues of rights to forest and water which raised larger ecological concerns, like rights of communities in forest resources, sustainability of large scale environmental projects like dams, issues of displacement and rehabilitation (Bhengra, 148).

Nevertheless, these movements and struggle, bring under scrutiny the concept of modernity, progress and development. Modernity represents substantial break from traditional society (Ahuja, 2008:479).



Stuart (1997:40) gives five distinctive characteristics of modernity-

1. Emphasis on reason.
2. Belief in progress.
3. Control over nature and environment.
4. Dominance of secular authority and marginalization of religious influence from state/political matters.
5. Economy in which money system provided the medium of exchange.
6. Decline of religion and rise of secular materialist culture.

The notion of 'substantial break from tradition' and 'control over nature and environment' are the underlying characteristics of modernity, which in turn inconspicuously created a crisis and inconceivable damage for environment viz.viz natural and cultural ecology. Postmodernist argue that there has been some of the worst, unintended, destructive or damaging consequences of modernity, such as industry on environment.Pollution,proliferation of nuclear weapons of 'mass destruction' are example of unintended destructive and damaging consequences of modernity (Ahuja,2008:480). The issue of major concern among postmodernist has been that, modernist approach has over emphasized the belief in reason/science, social progress but overlooked the highly damaging effects of applied science on environment, humanity and nature,above all failure to comprehend the risks and destructive consequences of the pursuit of progress (Ahuja,2008:480).

Twenty first century can be witnessed as the age of crisis.The crisis subsumes the social, political, economic, cultural and environmental spheres. Global alarm bell rang on environmental crisis subsequently documentation of convention and policies began, regarding the sorry state of ecological disbalance. Framework of international policies started long back, to address the issues of global warming, sustainable development and climatic change, as an effort there was commencement of Rio Earth Summit(1992), followed by Kyoto protocol. These summit and conference harped on the global contributions made by the nations in global emissions of hazardous gases, manufacturing of products and their over consumption which gravely contributed in increasing the environmental crisis.

It is observed, overemphasis on reason and objectivity lead to some serious repercussion for the humanity. These notions somewhere or the other fell short of subjectivity and empathy. To have disregard for tradition and cultural ethos of the communities became vogue. Modernist failed to anticipate the bearing which cultural traditions have for environment. Drawing again reference from Durkheim, who advocated the theory of totem, reflects the valuable tradition in various cultures to safeguard and protect their 'sacred natural symbols'. What is primitive is closely associated with the nature. Science and reason wrongly and irresponsibly penetrated into the ecological boundaries of primitive and traditional cultures that they almost ruined the environmental ethos of these long standing traditions.

There has been false notion generated by all those who preached positivism, consequently overlooking and undermining traditional values.Yogendra Singh opined, ...there may always be a possibility of unique combination of traditional values with modern ones; the categorical values can hardly be falsified by scientific proof and hence the spread of science may not logically lead to obsolescence of traditional categorical values (Singh, 1996:214).

Henceforth those cultures and traditions which played instrumental role in sustainability of environment are to be analyzed and incorporated into the whole programme and effort designed for environment protection. Duxbury and Gillette considered culture as the key dimension of sustainability. They argued culture is an important aspect of sustainable development; it refers to understand and appreciate natural resources and each other (Drexhage, J&Murphy, D, 2010).

In 'Our creative diversity' (World Commission of culture and development1995), the report resulting from the UNESCO decade of cultural development (1988-1997),culture was acknowledged to play both instrumental role in promoting economic progress and have a constituent role as desirable end in itself. Thus it becomes essential to intertwine traditional viable structures with modern well equipped sustainable structures, such that, social progress with some sense of responsibility towards future generation can be realized.

There are many anthropological and cultural ecological works, where great emphasis has been laid on human and environment interactions, which in turn try to resolve the question of sustainability and proper management of natural resources to a great extent. Cultural ecology/ecological anthropology have opened new vistas of research into the multifaceted interrelationships between culture and ecosystems (Hasnain, 92:71).

Anticipating the future worries regarding environment and depletion of resources, Rio Summit declared 27 principles on environment and development, where emphasis has been on sustainable development. Two most highlighting principles are-

- Role of man - where human beings are at the centre for sustainable development. They are entitled to a healthy and productive life in harmony with nature.
- Reduction of unsustainable patterns of production and consumption.

The debate on environmental concern does not end here. Present scenario of global warming and climate change compelled the whole world to come out with their worries in World Congress in Copenhagen in December 2009. The conference centered on the issue of enormous emission of carbon dioxide by the highly industrialized countries. It is an issue of global concern on one hand and on the other hand developing countries are left with the dilemma of commitment to accelerating pace of industrialization. Developed countries are building pressure on developing countries to reduce emission rate of hazardous gases, though developed nations are themselves guilty of shaping environmental crisis. Thus politics has entered this debate (Atal, 2012:412).

Population explosion, global warming, climate change pollution, depletion of resources etc has

jeopardized the notion of human progress and process of modernization. Human society seems tracing 'parabolic evolutionary curve', entering again into first stage of progress but with some transformations.

To illustrate further, Indian society has a long tradition of human and ecological interaction. Nature was worshipped (it is still worshipped but just as a ritual). Everything that was a source of energy and life, like the sun the moon, rivers, mountains, animals, trees and plants were revered and have even been relegated to the position of god. All that was considered sacred cannot be destroyed; hence to preserve and conserve them was the prime duty of an individual and the community.

As the society grew and got expanded,, revering the nature just became a ritual, the underlying motive to preserve nature faded. The sincerity and seriousness of action and effort to protect and preserve the ecology diminished. Consequently, India became a land of most polluted rivers, soils and environment. "All that was sacred became polluted" on one hand and on the other hand science and reason encouraged the disengagement with nature. Modernity propagated - 'don't worship nature, harness nature'.

The present day crisis of modernity in the context of environment and ecology can be best addressed if the takers of modernity adopt and absorb some of the functional alternatives provided by every culture to preserve our natural heritage. World over every primitive society, culture or religion has an ethos of surviving with the nature. India by modernizing its cultural tradition of preserving ecology (by rejecting those cultural elements that are obsolete and redundant) can initiate the process of sustainable development. India as a nation has to show haste in improving its environmental policies, otherwise it may fall prey to international political hegemony.

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# Role of Education in Preventing Pollution and Environmental Degradation

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*The most precious gift given to us by God is our "Environment". Without the available environment, life can't exist on Earth. Environment plays a vital role in the sustenance of life. Environment can be classified in two categories:- First being the natural environment & second is the artificial environment.*

*Pollution is one of the major factors to be looked at. It is very harmful for us. Human activities cause different types of pollution such as air pollution, water pollution, soil pollution and noise pollution, pollution is destroying our atmosphere. The atmosphere of the Earth serves as a key factor in sustaining the planetary ecosystem. The thin layer of gases that envelops the earth is held in place by the planet's gravity. Dry air consists of 78% nitrogen, 21% oxygen, 1% argon & other inert gases such as carbon dioxide. The remaining gases are often referred to as trace gases, among which are the greenhouse gases such as water vapor, carbon dioxide, methane, nitrous oxide & ozone.*

*To prevent environment at degradation some strict measures should be taken. Awareness should be created among the people by organizing seminars or plays on the environment protection. People should be aware of consequences of their activities and should make efforts to preserve the environment. Thus, education plays an important role in environment protection and conservation. Education encourages learners' awareness of their environment's ambient conditions, as well as their active participation in solving local problems. Education in the environmental health field have yet to be developed. The students have to be invited to participate in an educational process which includes various activities allowing them to construct broader ideas on pollution. Environment should be introduced as a subject for the children so that they become aware of the harm we people are causing to the environment and how it is going to affect us in the long run.*

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The most precious gift given to us by God is our "Environment ".The word " environment " has been derived from the French word " environner " meaning to encircle or to surround. Without the available environment, life can't exist on Earth. Environment plays a vital role in the sustenance of life. Environment can be classified in two categories - first being the natural environment and second is the artificial environment.

Natural environment encompasses all living and non - living things occurring naturally on Earth. It encompasses the interaction of all living species. The balance in the ecosystem is maintained as each specie is interlinked. Absence of any one of them disturbs the whole ecological balance.The natural environment is not influenced by humans. It includes vegetation, microorganisms, soil, rocks and atmosphere. It involves all the natural resources and physical phenomena such as air, water, climate as well as energy, radiation,

electric charge and magnetism which are not originating from human activities. A geographical area is regarded as a natural environment. Natural environment is often referred as a "habitat".

Now, coming to the second category i.e. Artificial environment. It is highly influenced by humans or we can say it created by the humans itself. The artificial environment includes aquarium, wildlife sanctuaries, national parks, botanical gardens etc. This is artificially created by the humans to help sustenance of plants and animals.

On the basis of structure, environment may be divided into two basic types i.e. physical or abiotic environment and biotic environment. on the basis of physical characteristics and state, a biotic or physical environment is subdivided into three broad categories viz. (I) solid, (ii) liquid and (iii) gas which represents the lithosphere (solid earth), the hydrosphere (water component) and the atmosphere respectively. Thus

the three basic divisions of physical environment may be termed as (i) lithosphere environment, (ii) atmospheric environment and (iii) hydrospheric environment They may be further broken into smaller unites based on different spatial scales e.g. Mountain environment, plateau environment, plain environment, maritime environment, desert environment and many more.

The biotic component of the environment consists of plants (flora) and animals (fauna) including man as important factor. Thus, the biotic environment may be divided into floral environment & faunal environment. All the organisms work to form their social groups and organization at several levels and thus is formed social environment wherein the organisms work to derive matter from the physical environment for their sustenance and development.

Though, natural environment does not require human involvement yet humans are constantly disrupting its functioning by their activities. Nowadays, human are playing with the environment just to fulfill their own needs. This selfish behavior of human being is degrading the environment day by day. This can harm us to the extent which is beyond repair human activities such as deforestation, burning of fossil fuels, mining etc cause a great damage to the environment. It leads to pollution. Humans without being aware of the consequences of their activities are constantly polluting the environments.

"Pollution" is defined as an undesirable change in the physical, chemical or biological characteristics of air, water or land that can harmfully effect health, survival or activities of humans and other living organism " It is very harmful for us. It is one of the major factor to be looked or talked about the elements or compounds responsible for pollution are known as "pollutants". From biological point of view, pollution can be classified in two major categories, (i) Degradable pollutants (ii) Non degradable pollutants

Degradable pollutants can be decomposed, removed and consumed and thus reduced to acceptable levels either by natural process or by human engineered systems such as sewage treatment plants.

A non degradable pollutant is not taken down by natural processes. These are harmful to the environments as they are not decomposed. Such

pollutants must be prevented from entering the air, water and soil. Some examples to non degradable pollutants are mercury, lead and plastic.

The increasing pollution is destroying our atmosphere. The atmosphere of the earth severe as a key factor in sustaining the planetary ecosystem. The thin layer of gases those envelopes the earth is held in place by the planet's gravity. Dry air consists of 78% Nitrogen, 21% oxygen, 1% argon and other inert gases such as carbon dioxide the remaining gases are often referred to us trace gases among which are the greenhouse gases such as water vapours, carbon dioxide, methane, nitrous oxide and ozone. But the increasing pollution is disturbing the composition of air present in the atmosphere. It is increasing the amount of the greenhouse geese in the atmosphere which is leading to the greenhouse effect. Due to greenhouse effect, ozone layer is depleting gradually and hole in the ozone layer is allowing harmful ultraviolet radiations to reach the Earth. These radiations cause various diseases like cataract, skin cancer etc. Humans being, unaware of the damage are constantly polluting the environment. Different types of pollution are Air pollution, water pollution, soil pollution and noise pollution.

Air is the most vital component without which the question of survival dose not arises. But the air is getting polluted by human activities like burning of fossil fuels, mining, exhaust from automobiles, thermal power paints etc. Air pollution should be controlled in order to obtain a healthy environment for the future generations 3ms Man, Material, Machine must be the ultimate object behind the measures to control the environments pollution.

Water is more prone to pollution as compared to air pollution as compared to air pollution because air is available in the environment in much larger proportion than water. The pollutants in air are quickly diluted and dispersed away along with the wind reducing pollution load drastically. The sources of water pollution are industrially effluents, sewage opening in rivers, washing of clothes etc.

The unwanted sound is termed as Noise. Noise is complex mixture of a number of pure tones of various frequencies and amplitudes. These sound waves fluctuate and repeat themselves in themselves in highly hap hazard manner and Noise pollution has become a

part of industrial life in modern times. Urban people are at constant exposure to such pollution caused by under maintained vehicles. In rural areas, noise pollution is caused by loud speakers, amplifier of music especially during social function. It can be controlled by installation of decibel meters to check degree of noise, greenbelt vegetation around the unit as tree absorbs noise and by having legal control on noise.

Soil sustains innumerable microbes and a large number of plants and animals along with plenty of mineral reserves. There are numerous sources of soil pollution but the important among these are indiscriminate discharge of industrial effluents on land, disposal of solid waste on land and deforestation which cause soil erosion. It should be prevented by avoiding such activities.

Thus to prevent the environment some strict measures should be taken. Awareness should be created among the people by organizing seminars or plays on environment protection. Education thus plays an important role in environment protection & conservation. Education encourages learners' awareness of their environment's ambient conditions as well as their active participation in solving local problems. Education in the environment's health field

has yet to be developed. The students have to be invited to participate in an educational process which include various activities allowing them to construct broader ideas on pollution, Environment should be introduced as a subject for children so that they get aware to the harm we people are causing to the environments and how it will going to affect us in the long run. Education about environment has now become the basic necessity because if we continue to degrade it at the same pace then the day is not far when life will vanish from our planet. Apart from the role of the formal education of schools, Education for adults male & female is also required to be enriched. This can be provided by various programs such as adult education program, informal education program, social forestry program, women education program etc. so it's us only who have to join hands to save our environment and thus our planet. Education is important to create awareness among the people so that they make efforts to protect the environment. People should actively participate in the conservation of environment and ensure better living standards for their future generations. They should be aware of the consequence of their activities and should keep a check on it to preserve our most precious gift. i.e. "Environment".

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# Environmental Crisis and Human Health

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*Our mother earth is the most precious gift of the universe. It is the sustenance of "nature" that is a key to the development of the future of mankind. With the rapid expansion of urban population around the world there has arisen a wide awareness about minimizing the environmental costs of urbanization. The mad rat race among nations over the globe for development, progress in agriculture and industry resulted into unlimited exploitation of every bit of natural resource. Such activities of man has resulted in impoverishment of biological systems and degeneration of biodiversity. As the new century begins, natural resources are under increasing pressure, threatening public health and development. Most developing countries with rapid population growth face the urgent need to improve living standards. As we humans exploit nature to meet present needs, we are destroying resources needed for the future. Climate and weather affect human health. The changes in our environment induced by human activities is evident every sphere of life and has an influence on our health patterns. The assumption that the only indicator of human progress is economic growth is not true. We expect urbanization and industrialization to bring in prosperity, but on the downside, it leads to diseases related to overcrowding and poor quality drinking water. Thus environmental health and human health are closely interlinked. Happiness cannot be achieved by destructive means. It is time now to awaken in each of give the respect and attention the our beloved mother earth deserves.*

*You that have to decide whether development means affluence or whether development means peace, prosperity and happiness...*

**-Sunderlal Bahuguna**

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## Traditional Values and Environment

Respect for nature and all living creatures is not new to India: all our traditions are based on these values. Thus, most traditions refer to our environment as 'Mother Nature' and most traditional societies have learned that respecting nature is vital to protect their own livelihoods. Emperor Ashoka's edict proclaimed that all forms of life are important for our well-being, and this was as for hack as the 4th century BC.

Mahatma Gandhi had deep insights into the need to conserve resources. 'Mam needs hut not his greed can be supported by our Earth' was an important concept that was initiated by him when people had not fully realized how short the world would be of resources in future. It has become obvious that the quality of human life has worsened as economics grew and traditional values declined.

## Population Explosion and Environment

The world population is growing by more than 90 million per year of which 93% is in developing countries. The greatest challenge the world now faces is how to supply its exploding human population with the resources it need. It will be impossible to meet the demands for food from existing agro systems. Pastures will be overgrazed by domestic animals and industrial growth will create ever greater problems due to the pollution of soil, water and air. Larger ozone holes will develop due to the discharge of industrial chemicals into the atmosphere, which will affect human health. Global warming due industrial gases will lead to a rise in sea levels and flood all low-lying areas, sub-merging coastal agriculture as well towns and cities. The degradation of ecosystems will lead to extinction of thousands of species, destabilizing natural

ecosystems of great value.

Growing human populations will inevitably expand from farm lands into the remaining adjacent forests. Many such encroachments in India have been regularized over the last few decades. But forest loss has long-term negative effects on water and air quality. Unfortunately, the loss of bio diversity is still not generally seen as a major deterrent to human well-being.

The first 'green revolution' in the 1960s produced a large amount of food, but has led to several environmental problems. Now, a new green revolution is needed, to provide enough food for our growing population that will not damage land, kill rivers by building large dams, or spread at the cost of critically important forests, grasslands and wetlands.

In rural areas, population growth has led to increased fragmentation of farmlands and unemployment. In the urban sector, it has led to inadequate housing and an increasing level of air pollution from traffic, water pollution from sewage and an inability to handle solid waste. By the 1970s, most countries in the developing world had realized that if they had to develop their economics and improve the lives of their citizens they would have to curtail population growth.

A growing realization of the development strategy that Mahatma Gandhi had suggested many decades earlier is now accepted by experts on development across the world. This is based on his concept that the world could support peoples' needs but not their greed. It has become obvious that the quality of human life has worsened as economies grew. The world has taken the path of short-term economic growth & now suffers the consequences of environmental degradation at the cost of loss of 'quality of human life'. The earth cannot supply the amount of resources used and wasted by the economically well-off sectors of society as well the day-to-day needs of the ever-growing population in less developed countries. Society must thus change its unsustainable development strategy to a new form where development will not destroy the environment. This form of sustainable development can only be brought about if each individual practices a sustainable life style based on caring for the Earth.

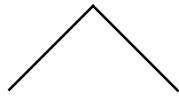
## **Environmental and Human Health**

Environmental health, as defined by WHO, comprises those aspects of human health, including the quality of life, that are determined by physical, chemical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing; correcting, controlling and preventing those factors in the environment that adversely affect the health of present & future generations.

Our environment affects health in a variety of ways. Climate and weather affect human health. Public health depends on sufficient amounts of good quality food, safe drinking water & adequate shelter. The changes in our environment induced by human activities in nearly every sphere of life have had an influence on our health patterns. The assumption (that the only indicator of human progress is economic growth is not true. We expect urbanization and industrial location to bring in prosperity, but on the downside, it leads to diseases related to overcrowding and poor quality drinking water, resulting in an increase in water-borne diseases like infective diarrhea and air-borne bacterial diseases like tuberculosis. High density city traffic leads to an increase in respiratory diseases like asthma. Agricultural pesticides that enhanced food supplies during the green revolution have affected both the farm worker & all us who consume the produce. Modern medicine promised to solve many health problems, but many drugs have been found to have serious side-effects.

Thus development has created several long-term health problems. While better health care has led to longer life-spans, coupled with lowered infant mortality, it has also led to an unprecedented growth in our population which has negative implications on environmental quality. A better health status of society will bring about a better way of life only if it is coupled with stabilizing population growth. Development strategies that do not incorporate ecological safeguards often lead to ill health, while strategies that can promote health invariably also protect the environment. Thus environmental health & human health are closely interlinked. An improvement in health is central to sound environmental management.

## Sustainable Development



**Healthy Environment**

**Healthy People**

### **Environmental Sensitivity and Role of an individual in the Conservation of Environment**

Environment sensitivity in our country can only grow through a major public awareness campaign. This has several tools-the electronic media, the press, school and college education, adult education, which are all essentially complementary to each other. Green movements can grow out of small local initiatives to become major players in advocating environmental protection to the government. Orienting the media to project pro-environmental issues is an important aspect.

There are a host of environmental problems caused by human actions on the environment. If we are to respond to these problems, we have to recognize that each of us is individually responsible for the quality of the environment we live in. Our personal actions can either worsen or improve our environmental

quality. Majority of individuals want a cleaner environment, not many of them want to make the major changes in their freestyle that would contribute to a cleaner environment. To a large extent the decisions and actions of individuals determine the quality of life for everyone. This necessitates that individuals should not only be aware of various environmental issues and the consequences of their actions on the environment, but also make a firm resolve to develop environmentally-ethical lifestyles.

### **Conclusions**

Our traditional values have love and deep respect for nature. But as civilization developed & population exploded the Earth's natural resources started dwindling rapidly & our environment increasingly degraded by human activities. But if we go on endangering our environment, there is no way in which the government can perform all these clean-up functions. It is the prevention of environmental degradation that must become a part of all our lives. Just as for any disease, prevention is better than cure, protecting our environment is economically more viable than cleaning it up once it is damaged.

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# Impact of Household Products on Health and Environment

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*Most people spend about 90 percent of their time indoors. Household products are hazardous during use, storage, or disposal, pose dangers to human health or the environment. The main objective of the present study is to investigate the impact of household products on health and environment and to know the awareness of people about their household products. For the present study, we have taken some household products like- motor oil, pesticides, oil-based paints, mothballs, weed killers, household cleaners, garden pesticides, paints, batteries, stain removers, detergents, air freshening sprays, flea powders furnishings, office equipment such as copiers and printers, correction fluids, glues and adhesives, permanent markers etc.*

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## Introduction

Environment is the principal catalyst that controls the happiness of man. Environment means the sum of all living and non-living things that surround an organism, or group of organisms. Environment includes all elements, factor and conditions that have some impact on growth and development of living organisms. The scientific and Industrial revolution during the last century, developments of new technologies, modernization and urbanization have caused serious environmental crisis. When people think of 'Environmental Pollution', they usually imagine of water or air pollution outside of the homes but it also includes air inside our homes and other indoor location as well. Most people spend about 90 percent of their time indoors.

Household products are hazardous if they include ingredients that, during use, storage, or disposal, pose dangers to human health or the environment. A wide variety of household products are hazardous such as motor oil, pesticides, oil-based paints, mothballs, weed killers, household cleaners, garden pesticides, paints, batteries, stain removers, detergents, air freshening sprays, flea powders furnishings, office equipment such as copiers and printers, correction fluids, glues and adhesives, permanent markers can be hazardous to our health and the environment.

## Effect of Toxic Household Products Exposure on Human Body

The body is a very complex system that is designed to withstand chemical assaults from a myriad of sources. When these household products are used they can enter the body by different ways ingestion, inhalation and absorption through the skin, eyes and mucous membranes.

Most products bear the warning "Keep out of Reach of Children" in bold type on the label. Children are frequently in contact with the chemical residues housecleaning products leave behind, by crawling, lying and sitting on the freshly cleaned floor and thus reach on higher risk.

In a Swiss study Mehta (2012) found that use of air freshening sprays 4-7 days a week was associated with reduced heart rate variability, a marker of automatic cardiac dysfunction.

For each chemical there is a specific and often unique method that the body uses to dispose of. The primary organ used in the disposal process is the liver.

The liver is a very resilient organ that is capable of adaptation and self repair under most circumstances. Many of the chemicals to which we are exposed, can either damage the liver.

## Symptoms suggesting Toxic Exposure of Household Products

There are many symptoms that may be related to environmental pollution created by the frequent use of certain types of consumer products. The symptoms are rarely life threatening, but many are annoying and may in time lead to a decreased level of functioning and decreased quality of life. For example- headache, backache, fatigue, joint pain, dizziness, nausea, diarrhea, memory loss, sudden mood swings, dyslexia, inability to concentrate, allergies, sinus problems, eye,

Skin, and respiratory tract irritation, asthma or other breathing difficulties, tingling and frequent infections; some have been shown to cause cancer in people exposed to large amounts. Some evidences suggest that long term exposure of household environment can cause serious health problems, such as cancer, lung disease reproductive system problems, cardiovascular and lung diseases, including high blood pressure, chronic obstructive pulmonary disease, premature puberty, low sperm count, birth defects, and asthma and even disability.

## Objectives

The main objective of the study was to illustrate how the household products can impact our health and environment, in what extent people are aware about their household environment and what steps can be taken to safeguard our health and environment.

## Methodology

**Sample Selection** - The study was conducted on urban area of Ghaziabad district as it was convenient to the researcher. Sample of 100 respondents aged 21-35 years were selected randomly for the present study. The Stratified Random Sampling Technique was used for the selection of the unit of information.

**Tools** - In the present study, Interview Schedule prepared by investigator was used to collect the data.

## Result and Discussion

The collected data was tabulated and the results obtained are presented under the following tables:-

**Table 1: Distribution of respondents according to knowledge regarding hazardous household products.**

Knowledge of Hazardous Household Products	Percentage (%) (N=100)
Yes	95 %
No	5 %
Total	100 %

The above table shows the distribution of respondents according to knowledge regarding hazardous household products. Out of the total respondents 95% people knew about hazardous household products, while only 5 % did not know about hazardous household products, due to low educational status & lack of awareness about the environment.

**Table 2: Distribution of respondents according to knowledge regarding hazardous household products.**

Hazardous Household Products	Number (N = 100)	Percentage (%)
Cleaners	75	75 %
Detergents	80	80 %
Paints & Varnishes	72	72 %
Building Materials	62	62 %
Pesticides	95	95 %
Personal Care Products	48	48 %
Furniture Sprays	68	68 %

The above table shows the distribution of respondents according to knowledge regarding hazardous household products. The result indicated that usually people were aware of those toxic elements which are used to make Pesticides (95%), Paints (72%), Detergents (80%) & Cleaners (75%). The result shows that products contain many harmful chemicals as lead, mercury, formaldehyde, glycols etc. Only 48% knew the hazardous effect of Personal care products (e.g. Perfumes, deodorants, shampoos etc.) that use in their daily life, also contain toxic elements as nitrates, ammonia, phenols etc.

**Table 3: Distribution of Respondents According to knowledge content regarding Hazardous Household Products.**

Most Harmful Household Products	Number (N=100)	Percentage (%)
Car Cleaners	42	42 %
Rat Poison	94	94 %
Nail Polish	40	40 %
Insect Sprays	95	95 %
Wet Cell Batteries	65	65 %
Toilet Cleaners	90	90 %
Moth Balls	82	82 %

The above table shows the distribution of respondents according to knowledge content regarding Hazardous Household Products. The result indicated that 95% people think that insect sprays are most harmful product for environment. Rat poison with 94% and toilet cleaners with 90% are also very harmful for health and environment. Moth balls (82%) and wet cell batteries (65%) are also suggested as hazardous household products.

**Table 4: Distribution of respondents according to use of Pesticides and Cleaners.**

Products	Everyday	Twice a week	Monthly	Occasionally
Pesticides	10 %	18 %	35 %	37 %
Cleaners	25 %	40 %	22 %	13 %

Above table indicates that distribution of respondents according to use of pesticides and cleaners indicated that people (37%) use pesticides occasionally or monthly (35%). It means they use pesticides in fewer amounts. On the other hand they use cleaners more in twice a week as 40%. Percentage of using cleaners everyday (25%) and in twice a week (22%) is almost same.

**Table 5: Distribution of respondents according to knowledge regarding household practices.**

Household Practices	Percentage (%) (N= 100)
Dry cleaned clothes	35 %
Wet cell batteries	56 %
Carpets	25 %
Re-use of cooking oil	40 %
Air conditioner	90 %

Fridge	80 %
Cell phones	95 %
Generator at home	42 %

The above table shows the distribution of respondents according to knowledge regarding household practices. Out of the total respondents majority of them 95 % knew hazardous effect of cell phones, followed by 90 % knew hazardous effect of A.C. While 80 % knew hazardous effect of fridge. The result shows that the household appliance consumes more energy, water and electricity. Generators at home are main source of air pollution in cities.

**Table 6: Distribution of respondents according to suffered health problems from household products.**

Suffering Health Problems	Percentage (%) (N=100)
Yes	83 %
No	17 %
Total	100 %

The above table shows the distribution of respondents according to suffered health problems from household products. Out of the total respondents 83% people suffered health problems from household products, while only 17% did not suffered any health problems from household products.

**Table 7: Distribution of respondents according to suffered health problems from household products.**

Health Problems	Number (N= 100)	Percentage (%)
Headache	80	80 %
Fatigue	30	30 %
Nausea	28	28 %
Inability to concentrate	21	21 %
Allergies	78	78 %
Sinus Problem	40	40 %
Eye, skin & respiratory tract problem	65	65 %

The above table shows the distribution of respondents according to suffered health problems from household products. Out of the total respondents

majority of 80% people suffered headache, followed by 78% suffered allergies. While 65% suffered eye, skin & respiratory tract problem.

**Table 8: Distribution of respondents according to knowledge regarding quality and safety features of the products while purchasing.**

Quality & Safety features	Percentage (%)
Yes	62 %
No	38 %
Total	100 %

The above table shows the distribution of respondents according to knowledge regarding quality and safety features of the products while purchasing. Out of the respondents, majority of them 62 % followed quality & safety features of the products while purchasing, while 38 % did not follow quality & safety features of the products while purchasing.

### Conclusion

The result indicated that people living in affluent society try to keep their home clean every time. So they use Cleaners, pesticides, paints and Detergents very frequently without thinking of its adverse effect

on our environment or health. Though they know very well that these products are made of very toxic and harmful chemicals, while using these products they do not keep this thing in their mind that they are making their environment harmful for themselves. It was also found that though people are aware of their surroundings and environment, they feel helpless to reduce the use of these household products as they want the best result in least time and one with minimal effort.

### Suggestions

In process of protecting our environment, as an informed consumer, we can have an impact on the amounts and types of household products produced. By purchasing less toxic or non toxic products, we can send a message to manufacturers which encourages them to produce safer alternatives to hazardous household products. Being an aware consumer we must always follow label instructions carefully. The products should be used and stored properly and hazardous waste should be disposed legally and safely. Using rechargeable power can significantly reduce the number of batteries which end up in landfills.

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# Literature and Environment Education

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*"Three years she grew in sun and shower,  
Then Nature said, "A lovelier flower  
On earth was never sown;"*

—William Wordsworth

*"Environment" this word is very huge in itself. Life begins with environment - the soul of existence. To comprehend it in the light of literature renowned and universally known poets personify nature remarkably beautiful as a teacher, preacher, nurse, mother and a good friend.*

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Environment train the mankind by showering the blessings of all the seasons : Summer, Winter, Autumn, Rainy and Spring through their unique qualities respectively. It educate by opening the tunnels of philosophy wherein lies the happiness, grief, peace, disturbance, control, restlessness, sweetness, bitterness, silence, thought processing, competition, contempt and much more in the form of emotions too.

The nerves, veins, heart, mind, conscience and sub conscience all receives the actions and reactions in the laboratory of Nature. Human being goes in the company of nature to fulfill his need of peace, sympathy, love, joy, music and color which is all the mild and soft aspect of nature. Also the wild, vast and unfamiliar nature gives us rocks, caves, storms, lighting and thunder to soar into the realm of sun and light, the wild aspect of nature. The beginning is nature and the end is nature.

Literature and Environment both in collaboration romanticize, stimulate, provoke and supervise our lives quantitatively and qualitatively. The environment, the nature engulfs everything within in such cozy and embraced manner that famous poets like William Wordsworth, P.B. Shelley, John Keats, Whitman and many more got so much inspired and motivated by it that they describes all the shades of nature strongly aesthetic in wide spectrum.

*Like a poet hidden  
In the light of thought,  
Singing hymns unbidden,  
Till the world is wrought  
To sympathy with hopes and fears it headed  
not :*

P.B.Shelley

## **Nature : Sustaining a Peaceful Mind Through Wordsworth's Poetry**

Environment consists of every minute creature irrespective of their size, strength, visibility and power. Living or non living in the nature all play their role in contributing what the best can be to the environment. No single and smallest part can be ignored to acquire a best form of environment. To talk in terms of literature, environment has a peaceful, beautiful, preaching, sheltering, protecting, inspiring, motivating and spiritualizing nature within it.

We come into this world with nature like a sheet of white paper, waiting for all the inscriptions to be written there on. The laws of environment (the nature) condition all human life. Nature is to be thought sometimes and should be loved sometimes. A passion and sensuous warmth of imagination of nature and an indefinable exultation of nature goes hand in hand. Nature is considered as a victorious lover. It inspires the mankind to pour out the cry of the heart, with all

its intense yearning, its disappointment, its sufficiency. Nature is to be described with admirable simplicity but with a terseness and exquisiteness of expression.

The feeling of delight is expressed by the beauty of nature getting thrilled with joy. The poetic thought consists of a fine harmonious past, present and future as well. It makes a stream flow of warm poetic feelings whose flow is spontaneous. The solitude of nature enralls a sense of loveliness. Nature inspires a full flood of creativity which leads to poetic expressions, thoughts and compositions. The recollection of beautiful objects from the nature thrills the mankind with sensational joy and gives a great mental peace.

Nature takes us away from the suffocating atmosphere of cities into the fresh and health giving company of the out-of-door world. We are blessed then by the sensuous beauty of nature and also look deep into the 'heart of things' and reveal the soul that lies behind them. Nature fills the heart with floods of sympathy for the poor and downtrodden. The innocence and simplicity of a common man gets glorified and a claim is put for equal rights and liberties for the humblest. Nature is not only a procession of seasons and seasonal fruition, she is the eye of all things natural and supernatural into which the observant soul can peer and behold the spirit that inhabits all things. But the inhabitants of this world do not care for all these beauties of the Nature. We have much time to observe the natural phenomena remarkable for our eyes and mind. But we all waste our precious time in useless gossips. We seldom care to see the beautiful Nature and her lovely gifts bestowed to human being.

The contemporary people are little interested in Nature and her enchanting deeds. With the waves of tides of the sea, a deep affection and attachment is shown towards the heavenly objects. Nature has its own law, also has a strong capacity to inspire. The air also moves here and there in the vast sky and makes the atmosphere festive and hilarious. And the swift passes the wind to create the garland of airy things, which makes enclosure a beautiful thing of Nature.

The man of today is so unlucky and unfortunate that he never thinks of such a thing and never bothers about captivating things scattered in Nature. The beauty of nature and her things now activates us no more due to humanly negligence.

Nature in imagination observes to grow a best child in its custody. Nature trains this child according to the rules of her own, unlike the rules of mankind. It comprise of stony areas as well as plain fields, snowy and forest areas. Nature knows all the mannerisms and etiquettes; it has a check for any kind of extremity. A school of all the virtues is undoubtedly in existence with nature. The state of fawn talks about being playful and merry. Natural atmosphere is filled with sweet smell which is the biggest healer of all the pains. The movement of clouds delivers slow, comfortable and pleasant motion. The trees guide to be soft and flexible so as to maintain a manner of graceful walking. The secret of beauty is always a joy to contemplate at the pleasant motions.

Silent and peaceful state of nature inscribes merits of being into peace of heart and mind. Mother Teresa said -

*" See how nature - trees, flowers, grass - grows in silence; see the stars, the moon and the sun, how they move in silence. We need silence to be able to touch souls "*

For Wordsworth the idea of the living personality of Nature is a definite reality. It's a vast embodied Thought, a Presence not merely capable of inspiring delightful ardour, but of elevating man by noble discipline. Nature as endowed with personality is - "the mighty Being", and its wisdom can be learnt if we want and human life is vain and incomplete without it. Nature produces an impression on his own spirit. It is in the power of Nature to penetrate his spirit, to reveal him to himself, to communicate to him Divine instructions, to lift him into spiritual life and ecstasy decorating all peace within and outwardly. Lines from "The Daffodils" -

*They flash upon the inward eye,  
Which is the bliss of solitude;*

These lines portrays a joy, an intuition, a hope, and through the vision an undying impulse of delight,

peace and illumination. Nature is "tranquil restoration," the sensations sweet, "felt in the blood, and felt along the heart," which is wrought deep within filling mind, heart and body with peace -

*While with an eye made quiet by the power  
Of harmony, and the deep power of song,  
We see into the life of things.*

Nature not merely works delight in the blood, but flashes illumination on the soul It can be felt as the presence of something deeply interfused through all the inanimate world. The world indeed is no longer dead to us, but animate, and we feel the spirit and motion of Nature like the actual contact of a living soul and a larger soul -

*"A motion and a spirit, that impels  
All thinking things, all objects of all thought,  
And rolls through all things".*

The evils of life spring from the perverse disregard of his true instincts, to which a man is prone. The child loves Nature, and is happiest in contact with Nature, and it is for that reason Wordsworth urges the absolute need for communion with Nature in the perfect human life. In the natural instincts of the child's heart we have, if we only knew it, the true indications of the highest possible development of human nature. They are the pointer-stars by which we can measure the firmament of human life, and ascertain the true bearings and infinite courses of human destiny. "dream-like vividness and splendor which invests objects of sight in childhood," - the child's spiritual aloofness from the world, in his sense of forgiveness of life as he finds it, is the intimation of his previous existence in the purer realms of spirit, and of his ultimate return to a spiritual existence attaining all peace. "*Our birth is but a sleep and a forgetting*".

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# Organic Farming for Environment Conservation

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*India economy is basically an agricultural economy and its problem include degradation of land in term of soil erosion lowering water table multiple cropping pattern, Excessive use of chemical fertilizers, insecticides and fertilizer is a serious issue, To protect the environment from this degradation sustainable development through organic farming is very important for an agrarian economy like India, Educating farmers about changing practices leading to a better environment through organic farming is essential, not only to promote sustainable agriculture but also to help fight global warming and climate change.*

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Today, man has conquered the circularity of the earth. He has dived deep into the seas, crossed the oceans flown into the air and breaking the shackles of gravity, is also all set to venture into space tourism. This march from primitive age to the modern age is described as the process of growth and development. But for this growth and development we have paid a huge cost, which is in the form of environmental degradation and resource depletion.

Since the dawn of civilizations agriculture is one sector that impacts and in turn is impacted the most by environment. Hence sustainability of the human race and this world depends a lot on the environmental friendliness of our agriculture. India is facing a food crisis due to the systematic destruction of farmlands and food production systems over the last five decades through uncontrolled use of chemical fertilisers, pesticides, mono-cropping and other intensive agricultural practices. Instead of looking at the real problem the government is favouring false solutions like genetically engineered (GE) food crops.

India has a long history of agriculture. Over centuries, farmers in this country devised practices to keep our farms sustainable. Practices like mixed cropping, crop rotation, using organic manure and pest management kept our agriculture sustainable. But things changed for the worse with the onslaught of a

chemical intensive model of agriculture, imposed through the so called Green Revolution in 1965.

## **Environmental Challenges in Indian Agriculture**

The challenge for Indian agriculture, is to increase production, while minimizing environmental impact. This includes conserving and protecting the quality of the resources that determine the performance of agriculture like land, water and air. Reductions in yield, although determined by many factors, may be partially a consequence of land and water exploitation.

Land degradation is one major constraint for Indian agriculture. By the early 1980s approximately 53 percent (173.6 million hectares) of India's geographical area had been considered degraded according to the Ministry of Agriculture. Water is another major constraint for Indian agriculture. Agriculture, through irrigation, accounted for 83 percent of the total water use in the country during 1990. During the Green Revolution period water consumption in agriculture rose sharply. The introduction of modern technology based agricultural systems, in addition to encouraging increased water usage, meant the application of inputs like chemical fertilizers, chemical pesticides and high yielding varieties (HYVs). Although, the Indian government



has recognized the necessity of managing and conserving resources for agricultural development since the First Five Year Plan, the measures initiated have been inadequate..Both pesticides and fertilizers pollute environment and are harmful for human health also, moreover pesticides also affect animals and their health thereby disturbing the biological chain.Increased use of fertilizers and pesticides was propagated in order to solve the food problem especially in the populated countries of the world like China and India. India followed the path and chemical fertilizers and pesticides were recommended to augment the production of agriculture produce. We might have proved Malthus wrong up until now as we can produce enough food to feed the world with the use of inorganic fertilizer and pesticides but we have to face serious repercussion of this in the form of environmental degradation.

To prevent the mother earth from this degradation and conserve the natural resources from being depleted, the answer is sustainable development and organic farming. It will also keep agriculture sustainable. This form of agriculture conserves our soil and water resources, protects our climate, enhances agro-diversity, ensures biodiversity, meets the demand for food and safeguards livelihoods. In short, it ensures that the environment thrives, the farm is productive, the farmer makes a net profit and society has enough nutritious food organic farming is essential not only to promote sustainable agriculture but and degradation of land in term of soil erosion lowering water table multiple cropping pattern, excessive use of chemical fertilizers insecticides and fertilises is a serious issue, to protect the environment from this degradation sustainable development through organic farming is very important for an agrarian economy like India, educating farmers about changing practices leading to a better climate change.

Organic farming does not require big capital and it also helps to reduce green house gas (GHG) effect which is a major contributor to global warming. In fact agriculture contributes to 30% of total GHG emitted into the atmosphere. Organic farming is a key

to sustainable agriculture as it helps the farmer veer away from the excessive use of chemical fertilizer, pesticides and chemically treated seeds. It makes use of indigenous material that can be found in farms to produce plant growth boosters which farmers can use in lieu of the expensive chemical fertilizers and pesticides currently used in conventional farming. Aside from an increase in the farmer's income organic farming also promotes better health and safer environment for all.

Traditional farming was the original type of agriculture, and has been successfully practiced for thousands of year especially in India. This type of traditional farming is now considered to be "organic farming". After Industrial revolution introduced inorganic methods, some of which had serious side effects. In India itself beside environmental degradation they affect the health of thousands of people leading to occurrence of diseases like cancer in the area which are subject to excessive use of pesticides like Punjab. So to prevent the population from suffering from serious aftermath organic farming is highly useful.

Farmers in India should be educated about the use of organic farming as it conserves the environment in following ways:

- It uses inputs that don't leave toxic residue in soil and general environment.
- It promotes biodiversity of crop and animals to ensure complete and sustainable ecological system with each species complimenting the other for common good of Man and nature.
- It encourages recycling of biodegradable material of organic matter is composted to fertilize the soil as well as get rid of hazardous rotting materials from environment.
- Organic farming is- reduced cost of inputs in agriculture, use of compost, natural or botanical pesticides and other local inputs have reduced cost and farmers see organic farming that is affordable and manageable.
- Organic farming improves soil structure through double digging and incorporation of organic matter in soil.

- Organic farming conserves resources; thus soil and water conservation is enabled through organic farming.

Organic farming is a form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control. It uses fertilizers and pesticides only if they are natural, but it excludes the use of inorganic methods for the reasons including sustainability, openness, independence, health and safety. Thus organic farming is an appropriate

technology and homemade - do it yourself technology that makes farmers self sufficient, increases production using herbal treatment, above all it conserves resources, thus soil and water is conserved. And as a citizens, we can call on policy makers to increase funding for research to improve sustainable practices, provide incentive and support to farmers to adopt or expand their use, and invest in local and regional food system, which connect farmers with consumers while creating jobs and stimulating rural economies.

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# Planning and Policies to Eradicate Poverty

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*The dimensions of poverty have been changing from time-to-time and place-to-place. There are two inter-related aspects of poverty-urban and rural. The main causes of urban poverty are predominantly due to impoverishment of rural peasantry that forces them to migrate to big cities to find livelihood. In this process they lose even the open space or habitat they had in villages, albeit without food and other basic amenities. In the cities, though they get food but other sanitary facilities including clean water supply still elude them. They are compelled to live in sub-human conditions. There is really a very paradoxical situation, when wealth and prosperity is concentrated in a few homes while millions have to go to bed without food. A select few enjoy the standards of living comparable to the richest in the world while the majority fails to meet both their ends.*

*Unemployment and low-productivity have been significant causes of rural poverty. It is to address this problem that a national public work scheme, the Jawahar Rozgar Yojana was launched in 1989 to provide unemployment at the statutory minimum wage for unskilled manual labour, besides low-cost housing and to supply free irrigation well to poor and marginalised farmers. The programme has had a significant impact on poverty reduction. Besides, a number of other programmes for poverty alleviation are being carried on by government-Central and State.*

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## Introduction

Poverty is one of the major problems in India. It is the root cause of many socio-economic problems including population explosion, unemployment, and child labour and rising graph of crimes. Poverty alleviation should be the main target of the nation so as to make it a prosperous and developed country. Thus, poverty elimination is a matter of fundamental importance.

Poverty implies a condition in which a person finds him unable to maintain a living standard adequate for his physical and mental efficiency. He even fails to meet his basic requirements. Poverty is in fact a relative concept. It is very difficult to draw a demarcation line between affluence and poverty. According to Adam Smith, "Man is rich or poor according to the degree in which he can afford to enjoy the necessaries, the conveniences and the amusements of human life."

The pathos of Indian story is that 220-230 million of Indian population, which constitutes 22 per cent of the total population, is poor, as per the findings of the

National Sample Survey Organisation. This makes India home to the world's largest proportion of the poor, even if the percentage of the people living below poverty line reduced from 36 per cent in 1993-1994 to 22 per cent in 2004-05. The problem of poverty is acute in villages. More than 75 per cent people live in villages. Even prevalence of poverty is not uniform all across India. The poverty level is below 10 per cent in states like Delhi, Goa, Punjab, etc. while it is nearly 50 per cent in socio-economically backward states like Bihar and Orissa. The percentage of poverty fluctuates between 30 to 40 in north-eastern states of Assam, Meghalaya, and in Tamil Nadu and Uttar Pradesh.

## Planning

India is a haven to 22% of the world's poor. Such a high incidence of poverty is a matter of apprehension, in view of the fact that poverty eradication has been one of the major objectives of the development process. Really, poverty is a global dialog. Poverty eradication is considered integral to

humanity's mission for sustainable development. Thus, reduction of poverty in India is vital for the attainment of international goals. The philosophy underlying the poverty alleviation programs is to tackle the rural poverty by endowing the poor with productive assets and training for raising their skills so that they are assured of a regular stream of employment and income in raising themselves above the poverty line. At the macro-level, there is a need to co-ordinate a myriad of poverty alleviation programmes of the central government and the State governments. The transfer of central funds to the States for different programmes should be efficient. Currently, such funds and goods like food grains are not fully utilized by the States. There is a need to strengthen the financial management capacity of certain States to use the funds efficiently. Although concerned efforts have been initiated by the Government of India through several plans and measures to alleviate poverty in rural India, there still remains much more to be done to bring prosperity in the lives of the people in rural areas.

### **Poverty Alleviation Programmes of Government**

**1. PRIME MINISTER EMPLOYMENT GENERATION PROGRAMME (PMEGP) :** This programme was introduced by the govt. in 15th August 2008. In it two employment programmes have been merged. (i) Prime Minister Rozgar Yojana (ii) Rural Employment Generation Programme. The main objective of this programme is to generate new employment opportunities through micro enterprises. About 37 La oppertunities would be generated.

**2. SWARAN JAYANTI GRAM SWAROZGAR YOJANA (SGSY) :** SGSY, launched in April 1999, aims at bringing the assisted poor families (Swarozgaris) above the poverty line by organizing them into Self Help Groups (SHGs) through a mix of Bank credit and Government subsidy. In this scheme IRDP and other programmes have been included. Under this scheme, poor are granted bank loans and subsidies to establish small enterprises. This scheme is centrally sponsored on 75: 25 basis, by centre and states. From this programme about 121 lakh self-employed persons were benefited upto 2009. Rs. 27183 crore was spent on this plan in 2008-09.

**3. ANNPURNA YOJANA :** This scheme was initiated on 1st April, 2000. It is 100% centrally

sponsored plan. It provides foodgrains to senior citizens. It involves those citizens who come under old age pension scheme, yet do not get any pension and 10 kgs of foodgrains, free of cost is given to each individual.

**4. NATIONAL FOOD FOR WORK PROGRAMME :** In line with the NCMP, National Food for Work Programme was launched on November 14, 2004 in 150 most backward districts of the country with the objective to intensify the generation of supplementary wage employment. The programme is open to all rural poor who are in need of wage employment and desire to do manual unskilled work. It is implemented as a 100 per cent centrally sponsored scheme and the food grains are provided to States free of cost. However, the transportation cost, handling charges and taxes on foodgrains are the responsibility of the States.

**5. PUBLIC DISTRIBUTION SYSTEM :** Poor people are provided food grains on cheaper rates through 4 Lakh fair price shops so as to assure food security to them. In some states, this scheme is implemented in both rural and urban areas. Almost 3% of government budget is spent on this scheme. Public distribution system has helped the poor people to some extent. For the success of this plan PDS system has been computerized in 2007-08. Under this scheme, there was a provision of Rs. 32667 crore for food subsidy in 2008-09.

**6. INDIRA AWAAS YOJANA (IAY) :** This is a major scheme for construction of houses of unserviceable kutchha houses to semi-pucca houses has also been added. From 1999-2000, the criteria for allocation of funds to states/UTs has been changed from poverty ratio to the housing shortage in the state. Similarly, the criteria for allocation of funds to a district have been changed to equally reflect the SC/ST population and the housing shortage. During 2007-08 Rs. 4033 crores have been earmarked for constructing 21.27 lakh houses. As per information by the states 9.40 Lakh houses have been built upto 2008. The Ministry of Rural Development (MORD) provides equity support to the Housing and Urban Development Corporation (HUDCO) for this purpose.

### **More Expectations**

1. To promote growth in agricultural productivity and non-farm rural activities.

2. Public investment in rural infrastructure and agricultural research. Agricultural research benefits the poor directly through an increase in farm production, greater employment opportunities and growth in the rural non-farm economy.
3. Credit policies to promote farm investment and rural micro enterprises Policies to promote human capital to expand the capabilities of the poor Development of rural financial markets.
4. Self-Help Group Approach to be strengthened as it is a proven method of empowerment of the poor.
5. Involvement of local communities and people's participation in NRLM and MGNREGS.
6. Decentralization of the programmes by strengthening the panchayati raj institutions.
7. Public Distribution System (PDS) needs to be reformed and better targeted.
8. Provision of safety nets like targeted food subsidies, nutrition programmes and health.
9. Targeted poverty alleviation programmes to continue as the poor of the developing world may not have the patience to wait for the trickle-down effect.

## **Conclusion**

The main objective of Indian planning is to alleviate poverty. In this regard government has launched many poverty alleviation programmes. Even

then no radical change has been undergone in the ownership of assets, process of production and basic amenities to the poor. In this way poverty alleviation programmes have proved failure due to insufficient resources and lack of proper implementation, active participation of poor, proper identification of poor and infrastructure.

As a consequence of attempts made by government, poverty showed a sharp decline in 1980s. This decline in poverty, to some extent, is also attributed to agriculture development of 1970s and 1980s resulting from the Green Revolutions. However, much more needs to be done, for India is the home to the largest poor population in the world. Basic necessities of life such as drinking water, health care facilities, etc. are still inaccessible to majority of population.

In this regard community participation and awareness campaign can make a difference. The media and the NGOs, besides other institutions have crucial role to play. The machinery involved in poverty alleviation need to be accountable, sensitised and sincere. New laws have to be evolved to ensure more accountability. The lack of transparency and accountability has hampered our economic development at all levels. A system of incentives and disincentives can also be of great importance. Thus, the situation is bound to change and society will be free from deprivation.

# Need of Environmental Education in Addressing Environmental Degradation for Sustainable Development

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*The natural environment comprises the entire basis for life through all its ecosystem services on the planet. Its value is therefore impossible to quantify or even model. The state of ecosystems influences nutrient cycling, primary production, waste degradation, carbon sequestration, and climate regulation, intellectual and spiritual inspiration. When there is any disturbance in the ecosystem services and environment becomes less valuable or damaged, environmental degradation is said to occur. The United Nations International Strategy for Disaster Reduction defines environmental degradation as "The reduction of the capacity of the environment to meet social and ecological objectives, and needs". Degradation may be natural or through human processes. Environmental degradation due to unsustainable human practices and activities now seriously endangers the entire production platform of the planet. Unsustainable human activities include socio- economic factors, land use changes and habitat fragmentation, transportation activities, industrialization and urbanization. India is a fast growing economy and various environmental challenges come as a part of development. Environmental issues are one of the primary causes of diseases, health issues and long term livelihood impact for India. According to data collection and environment assessment studies of World Bank experts, between 1995 through 2010, India has made one of the fastest progresses in the world, in addressing its environmental issues and improving its environmental quality. Still, India has a long way to reach environmental quality similar to those enjoyed in developed countries. Environmental education could be the best tool for sustainable development. It will improve public awareness and understanding of the environment and will help to promote the conservation and sustainable use of nature and natural resources for a better environment and a better quality of life.*

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## Introduction

Environment is the interaction between living and nonliving components of the earth. The term environment encompasses the physical and biotic conditions influencing the responses of organisms. Along with the biophysical factors the human interactions with surroundings also influence the environment. These interactions in the form of urbanization, population and economic growth, intensification of agriculture, transportation and industrialization beyond the tolerance level have hastened the process of environmental degradation. Environmental degradation is now apparent on a global scale. In addition to the deterioration of natural resources, deforestation, desertification and threatened bio-diversity are now commonplace across the

spectrum. "Environmental degradation is neither the inevitable price of, nor a desirable path for, economic development." (United Nations Development Programme, 2005). Needless to say that deterioration in environmental conditions is one of the major global issues. The High Level Threat Panel of the United Nations has cautioned environmental degradation as one of the ten major global threats. Since the 1980s, environmental considerations are playing crucial role in the global political economy and need for sustainable development is constantly gaining importance. The concept of sustainable development popularised by the publication of the Brundtland Commission's report, Our Common Future, in 1987 has become the latest paradigm in development thinking. The United Nations Conference on Environment and Development held

in Rio in 1992 focused attention on the relationship between environmental degradation, poverty, development, social justice and trade. Now governmental and non-governmental organizations are promoting sustainability as a prime goal. Environmental Education is the key to attain the goals of sustainable development.

### **The Idea of Sustainable Development**

The idea of sustainable development came into light when the world realized that economic development had brought deterioration in environmental conditions. In the mid-20th century world community highlighted four points of collective desire of the people - peace, independence, development and environment. Rachel Carson (1966) represented the conflict between economic development and environment in his book 'Silent Spring'. In the book 'Limit to Growth' D. H. Meadows (1972) said that environment degradation occurred due to development. This report has challenged the idea of progress that considers the future as an endless possibility for growth and improvement and fails to acknowledge the obvious truth that resources are finite, and hence growth dependent on resources cannot be endless. Grundtland Commission's Report, Our Common Future provided the answer as "sustainable development"- and thus the concept of sustainable development was born. The United Nations Conference on Environment and Development, held in Rio de Janeiro in June 1992, was a remarkable event. The heads of 179 states and representatives of numerous countries, international organisations and non-governmental organizations attended the conference and a world action plan as Agenda 21 was accepted for the sustainable development.

### **Sustainable Development in India**

India is booming and sustainable development becomes increasingly more important for a growing economy. To meet the challenges of continuing growth without destroying the environment, smart planning for sustainable development is crucial. Population and poverty are the major challenges for the sustainable development. In 1972, the then Prime

Minister of India, Mrs. Indira Gandhi emphasized, at the UN Conference on Human Environment at Stockholm, that the removal of poverty is an integral part of the goal of an environmental strategy for the world. Apart from these challenges, unplanned industrialization, land use changes, pollution, transportation and urbanization are the main threats to the environment. Lack of proper policies and their implementation is the biggest hurdle towards the attainment of sustainable development.

### **Environmental Education and Sustainable Development**

Education for Sustainable Development means adopting a more holistic approach to education with the aim of 'creating a better world for this generation and future generations of all living things on planet Earth'. The environmental education includes all educational activities consciously confronting and attempting to overcome the environmental crisis (Grundtland, 1989). This allows every child to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future (Disinger, 1994). Humans tend to look at development as a needed and normal process, but when this process becomes increasingly dependent on over-exploitation of our natural resources, the replenishment of these reserves and supplies is affected and managing this imbalance demands a slightly different vision. One way to cultivate this vision in youth is by encouraging sustainable lifestyles through Education for Sustainable Development. Living sustainably is about transforming our lives into something that doesn't impact too heavily on our current routines, while using the planet's resources in moderation. UNESCO, through its different world conferences on the topic of the environment, has made very valuable efforts to encourage work that is needed to improve life conditions for all humankind. One of these efforts is the Decade of Education for Sustainable Development 2005-2014 where significant advances have been made in the awareness of the importance of education for sustainable development. Education for Sustainable Development is not only about being environmentally-friendly, it also involves developing life-skills including leadership, communication and management, all of

which are extremely important for personal development. These capabilities in youngsters will not only inculcate the feeling of care towards environment but respect for humanity and for our planet's resources too.

### **Conclusion**

Sustainable development is a vision and a way of thinking and acting so that we can secure the resources and environment for our future generation. It is clear that environmental degradation tends to impose the largest costs on the coming generations.

The promotion of environmental awareness-raising for sustainable and equitable development is necessary for the survival of the human race now and for always. Whoever learns about environment, develops problem oriented and action oriented capabilities and insights. Education for Sustainable Development can help change our future. Continued support from authorities, appropriate policies and laws, responsible action by individuals and communities, and above all a deep compassion for our planet will together serve to alleviate the global environmental crises we face today.



# Environmental Protection and Conservation Through Education and Technology

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*Education and technology plays very important role in conservation and protection. Environmental Education (EE) refuses to organize effort to teach how natural environments function and particularly, how human beings can manage their behavior and ecosystems in order to achieve sustainable development. Some tools of ICT are now available for environmental resource management, agriculture management forest and wild life management and natural disaster management. Due to pressure of population and technology, the bio physical environment is degraded, some times permanently. Only education can provide awareness of conservation and protection in environment. The whole Brahmanda was full of happiness and peace because life and environment were closely related. So it is very essential to conserve our environment.*

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Many countries of the world are facing social, economic and environment crises today. Kautilya, the wise minister of Chandra Gupta Maurya said 'stability of an empire depends on the stability of its environment'. World conservation strategy is argued that three priorities should be incorporated into all development programmes.

- Maintenance of ecological process
- Sustainable use of resources
- Maintenance of genetic diversity

Environmental education refers to organized efforts to teach about how natural environments function and particularly, how human being can manage their behaviour and ecosystem in order to live sustainably. Due to pressure of population and technology, the biophysical environment is being degraded, sometimes permanently.

Academic institution now offer courses, such as environmental studies, environmental management and environmental engineering, that teach the history and method of environment protection. Protection of the environment is needed due to various human activities. Waste production, air pollution and loss of biodiversity are some of the issues related to environmental protection.

Information technology has tremendous potential in the field of environmental education and health as in any other field like business economics, politics or

culture. Development of internet facilities, word-wide web, geographical information system(G I S) and information through satellite has generated a wealth of up to date information on various aspect of environment and health.

A number of software have been developed for environment and health studies which are user friendly and can help an early learner in knowing and understanding the subject.

The Ministry of Environment and Forest Government of India has taken up the task of compiling a database on various biotic communities. The comprehensive database, forest cover database etc.

The Ministry of Environment an Forest, Government of India has created and information system called Environmental Information System (ENVIS). The ENVIS centre works for generating a network of database in areas like pollution control, clean technology, remote sensing, biodiversity, renewable energy etc.

Geographical Information System (GIS) has proved to be a very effective tool in environmental management. GIS is a technique of superimposing various thematic maps using digital data on a large number of inter-related or interdependent aspects. Several useful software have been developed for working in the field of GIS. Our satellite data also helps in providing correct, reliable and verifiable information

about forest cover, success of conservation efforts etc. They also provide some information like approach of monsoon, ozone layer, depletion, inversion phenomena, smog etc. We are able to discover many new reserves of oil minerals etc with the help of information generated by remote sensing satellites.

There are a number of international and national organisations agencies and programmes involved in different area of environment, forestry, wild life and other relevant aspect. Some of the important bodies are-

1. Environmental Protection Bodies EPA
2. International Union for Conservation of Nature and Natural Resources (IUCN)
3. United Nation Educational, Scientific and Cultural Organisation (UNESCO)
4. United Nations Environment Programme (UNEP)
5. World Commission on Environment and Development (WCED)

The movement named science, technology, society and environment (STSE) is also helpful to environment conservation. STS came to prominence in the United Kingdom and the united state in the early (1980S).

In the view of science education student are encouraged to engage in issues pertaining to the impact of science on everyday life and make responsible decision about how to address some issue related with environment such as animal testing, environmental pollution and growing impact of technological innovation on social infrastructure.

A framework for k-12 science education (NRC-2012) satisfies core idea that relate. Science and Technology, Society and the environment: The interdependence of science, engineering and technology, and the influence of science, engineering and technology on society and the natural world.

Together, advance in Science, engineering and technology can have-and indeed have had-profound effect on human society, in such areas as agriculture, transportation, health care and communication, and on the natural environmental conservation. Each system can change significantly when new technology are introduced with both desired effects and unexpected outcomes [NRC;2012,P-210]. This idea has two complementary parts.

The first is that scientific discoveries and technology decision affects human society and the natural environment. The second is that people make decision affect human society and the natural environment.

In the last I would like to conclude that Education and Technology play very important role in conservation and protection of environment. By studying the programmes related with environment on T.V, Internet we can make full effort to conserve and protect our environment. Remote sensing and GIS play key role in resource mapping Environmental Conservation; Management, Planning and Environmental input assessment. In conclusion we say that world education and environment specialist have repeatedly pointed out that any solution to the environment crises will require environmental awareness and understanding to be deeply rooted in the educational system. It is also important for teachers to engage their student in learning about the complex interaction among science, technology and the environment.

According to Tickell-

"Without the mass involvement of young people in caring for the environment there is no hope of sustainability."

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# Green IT Technology- The Concept and Recent Trends

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*All the Green and Environmental concepts lead to a universal goal- sustainable development i.e. utilizing the current resources to meet the current human requirements without adversely compromising with the future coming generation needs.*

*The "Green" approach is vital in the IT and Computing Industry considering the heavy power consumptions, elevated annual thermal emissions and the considerable amount of Lead, Cadmium, brominated fire retardants and plastics used in the manufacturing processes. It is therefore required to promote the "green" concepts which include:*

- *Usage of Bio-Degradable computer components,*
- *Active response towards purchase of refurbished parts or computers than new ones,*
- *Reducing the amount of paper consumed for printed documentations of the product and its packing materials.*
- *Using the modern Energy Star-compliant equipments which consume less energy and cost less to run.*

*The Technology keeps getting better and better with the advance of time. Though it leads to obsolescence of our current hardware, it provides us better and economic alternatives. Some of the recent innovations in this sector have provided us with many economic and environmental- friendly products. Some of them are:*

- *MicroPro, a company based in Dublin, Ireland manufactures 100% biodegradable computer components.*
  - *Universal Serial Bus (USB) 3.0, Launched by Intel which accounts for 10 times faster data transfer and less energy consumption.*
  - *Bluetooth 4.0, providing for low energy technology with wider scopes.*
  - *The Apple Mac mini, the world's most energy-efficient desktop computer which requires a mere 85 Watts to operate.*
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## **Green IT Technology : Concepts & Ideas Behind**

The basic aim of the Green IT Technology is the achievement of sustainable development in an eco-friendly manner. Sustainable development is the core of environmental technologies. When applying sustainable development as a solution for environmental issues, the solutions need to be socially equitable, economic, and environmentally sound. The most important focus of green technology in any sector is changing the production and waste patterns. This part of the technology refers an out with the old and in with the new attitude. This method is the process of throwing out old methods of productions and waste that harm the environment, and creating new ones that produce the same result, however are beneficial to the environment and the people in it.

Recently, the power cable of my laptop adapter happened to be malfunctioned and unfortunately, the

laptop manufacturers don't cover the peripherals and adapters attached to the laptop for a period of more than six months under their warranty terms. However, I was amazed to see that the brand wasn't able to provide service for the malfunctioned adapter and thus I had to purchase a new one. By now, I am having three malfunctioned adapters with me which have no use at all. (Yes, I am giving away non-functional adapters for free! Any takers?)

The above illustration may seem familiar to many among us. Without proper recycling means, the heaps of such unusable computer peripherals can be seen in anyone's drawers. Similar controversial situation occurred a few years ago when laptops and notebooks were achieving widespread popularity. Some of the Consumer Product Companies which used to manufacture batteries started to work on setting a standard for portable computer batteries, so that they

were interchangeable and usable by many different computers from different manufacturers. The word was that the company got no support from computer manufacturers, who all insisted on producing their own proprietary batteries. So if you buy a spare battery for your current computer, it will be useless for your next computer.

Some old hardware might become collectors' items some day, such as my old Pentium P-III computer, the upgrade cost for which is way higher than getting a new PC for the similar configuration. With the P-III gone obsolete, so are the hardware and peripherals associated with it. Floppies are rare nowadays, and so is my USB compatible External Floppy Drive I bought in the early 2000's!

There are also old cell phones, digital cameras, and DVD players that are discarded when they stopped working, or when the owner is upgrading to the latest and greatest "smart-phones" and "blu-rays". So is the case with the cords and cables associated with them.

The major cause behind the obsolescence of older computers and peripherals is that the computers are difficult to recycle because the computers are made with a decent amount of lead, cadmium, brominated fire retardants and plastics. An estimated amount of 85% of the total annual power consumed on computers globally is consumed idling. As a result, computers have been blamed for causing as much global warming as the airline industry.

However, the computer industry has been working on going green the last few years. Many computer users don't realize that if your computer is plugged in, it is continuing to use electricity even if it is off or in standby mode. A computer uses up to 10 watts when it is turned off but still plugged in. Various energy- star compliant computers are available in the market, providing sophisticated power saver and hibernation modes as well as laptops that don't drain the battery as fast. Liquid crystal displays (LCDs) are considered a much economic alternative option over the traditional cathode ray tube (CRT) technology.

## **Green IT Technology- Recent Milestones achieved**

### **MICROPRO**

100% biodegradable computer components have

arrived from MicroPro, a company based in Dublin, Ireland who produces eco-friendly computers, keyboards, mice and flat-panel monitors. The company, established in 1992, has just 17 engineers but has made a big impact with their innovative designs.

The product is named iameco, and is the brainchild of MicroPro's Managing Director, Paul Maher. By now, Micropro Computers are the largest computer vendors in Ireland.

The life span of these computers is 7-10 years, up to 3 times the lifespan of an average computer. The computers are a third smaller than average computers on the market, requiring less energy to manufacture. They require less energy to run as well: "this runs on low power - 35W in normal mode, whereas other computers use 300W, and 4W in standby mode, says Maher. Many of the keyboards, mice and monitors have a wood based frame and are made from the waste product of the pulp industry in Europe.

## **USB 3.0 and Bluetooth 4.0 Promise Great Energy Savings**

The two main goals of SuperSpeed USB (USB 3.0) are to boost the data transfer rate by 10 times and to dramatically reduce power consumption. The USB 3.0 has officially deployed by new series of Sony VAIO laptops that will include USB 3.0. The new models in the Dell XPS series are to include USB 3.0 too.

Bluetooth low energy wireless technology allows devices such as watches and toys to be enhanced with Bluetooth wireless technology and will also provide the ability for new functionalities to be incorporated in two types of devices that can already be enabled by Bluetooth technology such as sports & fitness, health care, human interface (HIDs) and entertainment devices. For example, sensors like those in pedometers and glucose monitors will run only low energy technology. These single-mode devices will benefit from the power savings provided by v4.0 as well as a low cost of implementation. Watches will take advantage of both low energy technology while collecting data from fitness sensors on the body as well as Classic Bluetooth technology when sending that information to a PC, or separately displaying caller ID information when wirelessly connected to a mobile

phone. Mobile phones and PCs, which support the widest range of use cases for this new version of the Specification, utilizing the full dual-mode package with Classic, low energy and high speed versions of the technology running side by side.

The Bluetooth 4.0 consumes only a fraction of the power that classic Bluetooth does, enabling a lifespan for devices. The Bluetooth Special Interest Group says devices powered by single button-cell batteries can operate for more than a year without recharging.

USB 3.0 and USB 2.0 when compared with respect to the transfer times with for a typical Hard Disk (Figure1)

**Figure 1 : (Done by Amazon.com on a Toshiba Canvio 1.0 TB USB 3.0 Portable Hard Drive)**



**The Apple Mac Mini - Sleek, Powerful and Still Eco-friendly**

With the planet's natural resources under increasing pressure from over production and the rapidly increasing global population, it's important to start to think about conserving as much energy as possible. This is added to by the pressure of the economic downturn, which has forced us to scrutinize our energy bills even more than we would do ordinarily. Apple Mac Mini is one such approach towards efficient IT hardware without compromising on efficiency of the same.

The power supply for Mac mini requires only 85W and is up to 89 percent efficient. Low power consumption reduces energy bills and lessens the environmental impact of greenhouse gas emissions from power plants. A built-in power supply means no plastic housing, less weight, and less cable clutter. It also allows Mac mini to take up a tiny amount of space and fit into a tiny package.

The new Mac mini is a great example of Apple's energy-efficient design philosophy. Even though it offers up to twice the processor performance and up to 65 percent faster integrated graphics performance compared with the previous generation, it uses less than 11 watts of power when idle.

And unlike a lot of Windows-based PC systems, Mac mini uses energy-efficient hardware components that work hand in hand with the operating system to conserve power. OS X spins down hard drives and activates sleep mode after a period of inactivity. It balances tasks across both central and graphics processors. OS X never misses a power-saving opportunity, no matter how small. It even regulates the processor between keystrokes, reducing power between the letters you type. That's just one of many ways Apple manages small amounts of power that add up to big savings.

Mac mini meets the stringent low power requirements set by the EPA, giving it ENERGY STAR qualification. ENERGY STAR 5.2 sets significantly higher efficiency limits for power supplies and aggressive limits for the computer's typical annual power consumption. Mac mini doesn't just meet the ENERGY STAR requirements; it meets them with an 87 percent margin.

One of the greatest environmental challenges facing the computer industry today is the presence of brominated flame retardants (BFRs) and polyvinyl chloride (PVC) in products. Apple engineers have worked hard to eliminate BFRs and PVC from Mac mini circuit boards, internal cables, connectors, insulators, adhesives, and more, and they've eliminated many other toxins that are a common part of desktop computer manufacturing.

The Mac mini retail packaging and shipping box are also mini, which is better for the planet and means a smaller carbon footprint. It's one seemingly minor change. But it has a major positive impact on our environment.

**Amazon Web Services**

The primary goal is to help developers and business leaders quantify the economic benefits (and costs) of cloud computing. It gives access to compute, storage, database, and other in-the-cloud IT infrastructure services on demand, charging you only

for the resources you actually use.

A recent EPA report found that data centers in the U.S. have the potential to save up to \$4 billion in annual electricity costs through more energy efficient equipment and operations, as well as management best practices. According to a recent survey of senior IT executives by data center operator Digital Realty Trust, about 55 percent of companies have already established detailed strategies for improving the energy efficiency of their data centers. AWS allows you to add or remove resources as needed based on the real-time demands of your applications. This minimizes both the financial risk of owning too many servers and the business risk of not owning enough servers by using AWS's elastic, on-demand cloud infrastructure. Figures 4 and 5 show how Amazon Web Service make optimized use of resources as per the capacity, thereby leading to way lesser customer dissatisfaction.

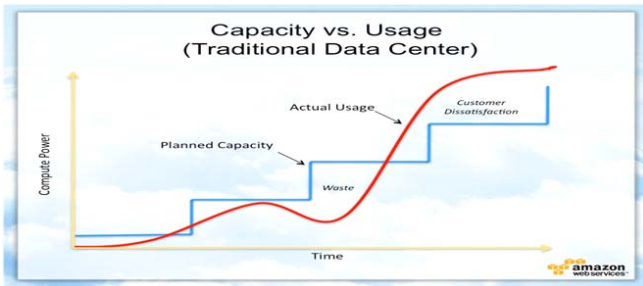


Figure 4

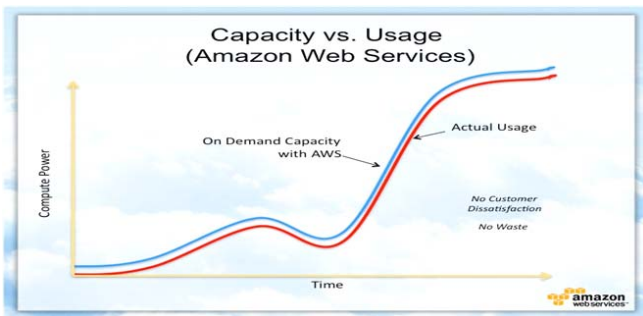


Figure 5

## GREEN SNAPPER- Tool for Economic Power Consumptions

Information technology today produces globally as much Carbon Dioxide emissions as air travel. In this situation the companies are balancing with environmental issues and cost effective IT solutions. In the past these two have not been walking hand in

hand, but today things are different. Today there are multiple cost efficient solutions available that are also environment friendly.

The operating costs of the IT hardware will reduce starting from the energy consumption and the administration of the hardware will become easier. We also have to remember the company and brand image, to which the environment friendly actions are only welcome. According to the research by Info-Tech Research Group, companies see decreasing electricity use and decreasing of operational costs of IT as the most important source of cost savings. At the same time only few companies have actually taken actions on the matters, meanwhile the majority have raised the issue in their schedule for the coming year. Forrester Research report indicates that only 13% of the companies are monitoring the IT energy consumption. It is important to carefully evaluate and analyze the current situation of the company.

It is important to start the changes as soon as possible, but everything does not have to be done at once. For example the hardware can wait until they are in the end of their lifecycle in the company, but the plans for the next generation of hardware has to be made in advance to successfully implement the environmentally friendly change in full.

Green Snapper is the right tool for PC power management and consumption. With Green Snapper it is possible to monitor the electricity consumption of the computers and evaluate short and long-term reports of the consumption. It is also possible for the administration to determine the power settings of all computers in for example one department without the need to physically visit the computers. All the computers can be configured to power-on at specific time so they are on when employees arrive in the morning and valuable working time is not spent waiting for computers to power up. However, the Green Snapper releases are available only in Spain and Portugal.

## Features

- Remote installation possible,
- No changes in Network Settings required,
- Produces reports about energy consumed and savings achieved,
- Integrates the IT environment and the management tools.

Figure 6 shows that a considerable amount of energy is spent with just the monitors switched off.

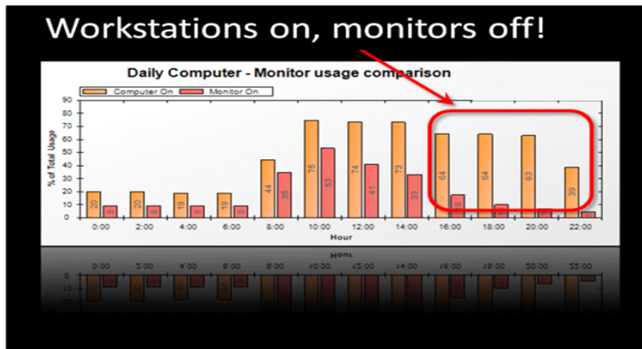


Figure 6

## Energy Star: Not Just a Star

Energy Star is a voluntary labeling initiative taken in the United States towards green computing. The Environmental Protection Agency (EPA) adopted it in 1992 to set benchmarks in energy efficiency in hardware of all sorts. Soon the Energy Star label was everywhere, especially in computing devices. Similar programs have been adopted in Europe and Asia.

But all such initiatives just hint at some of the philosophies while working on such hardware. Our working habits can be modified to minimize adverse impact on the global environment. Here are some steps that can be taken:

- CPUs and other attached devices should be powered off when not in use for a long time.
- Organize and optimize your computer-use time i.e. finish off the job in a single go rather than doing it in a number of chunks.
- Replace Cathode Ray Monitors which are too old with some energy-optimized alternative. The cost will break even when all the factors like electricity saving, wear and tear of the old device are taken into account.
- Use the power-management features to turn off hard drives and displays after several minutes of inactivity.
- Minimize the use of paper and properly recycle waste paper. For example, print on both sides when needed, also print using "Light" settings when printing not-so-important documents.

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# India's Economic Development and its Responsibility Towards Environment

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*Today, we are pre-occupied with economic growth and increasing the GDPs of our economy, forgetting the huge damage being caused to our bio eco-system by unsustainable lifestyles and reckless, irresponsible business policies, which if quantified monetarily could even be higher than the increase in economic output.*

*India's environmental outcomes have a special significance. She possess plenty of the world's freshwater resources, enough of the forests, much of the coral reefs, and valuable biodiversity. But India also faces massive degradation of air, forest, land, freshwater and marine resources with the rise in population. In India, air & water pollution is severely impairing people's health and productivity in the workplace with a direct impact on growth prospects.*

*The most recent and apparent example to adduce the impact of unplanned, rushed development is calamity in Utrakhand, decaying of Yamuna and other life harbinger rivers of the nation. The pollution and lives dependent of this pollution are increasing.*

*The climate is changing, getting warmer, causing unprecedented natural calamities resulting in huge human loss. The economic meltdown being global is pointing out to one essential fact that there is no regional or national solution to any problem. These problems include extreme poverty, economic disparities, and social injustice in all its forms, war, terrorism, & climate chaos.*

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## Introduction

The past decade of rapid economic growth has brought many benefits to India, but on the flip side the environment has suffered the most, exposing the population to serious air and water pollution. India's remarkable growth record, however, has been clouded by a degrading environment and growing scarcity of natural resources. Mirroring the size and diversity of Indian economy, environmental risks are wide ranging and are driven by both prosperity and poverty. A new report by the World Bank finds that environmental degradation costs India \$80 billion per year or 5.7% of its economy. For an environmentally sustainable future, India needs to value its natural resources, and ecosystem services to better inform policy and decision-making especially since India is a hotspot of unique biodiversity and ecosystems.

## Methodology

The sources for the literature review consisted for the greater part of books and articles about the

subject. Other sources were books, articles and websites about organisational structure, historical significance and legacy for both trading blocs. Exhaustive data is available on World Wide Web with latest developments. Exclusive Govt. web sites are available from both environment and economic development with respect Joint Action Plan and augmenting steps towards enhancing mutual collaborations. The websites have only been used if the source of the information was clear and was deemed reliable for the kind of information sought. Many websites were either official websites of the governments. The data availed from the source described above have been utilized to bring out a clear distinct picture in each case.

## Environment Damage Status

In a recent survey of 132 countries whose environments were surveyed, India ranked 126th overall and last in the 'Air Pollution (effects on human health)' ranking. The survey concluded that India has



the worst air pollution in the entire world, beating China, Pakistan, Nepal and Bangladesh. Also, according to another recent WHO survey, across the G-20 economies, 13 of the 20 most polluted cities are in India. Simultaneously, poverty remains both a cause and consequence of resource degradation: agricultural yields are lower on degraded lands, and forests and grasslands are depleted as livelihood resources decline. To subsist, the poor are compelled to mine and overuse the limited resources available to them, creating a downward spiral of impoverishment and environmental degradation.

Over the last decade, India's strong growth has increased employment opportunities and allowed millions to emerge from poverty. Among the three striking findings of the report, environmental sustainability could become the next major challenge as India surges along its projected growth trajectory.

### **Economic Progress and Pollution Damage**

Besides, for an environmentally sustainable future, India needs to value its natural resources, and ecosystem services to better informed policy and decision-making. "But does growth so essential for development - have to come at the price of worsened air quality and other environmental impacts? Green growth is necessary. With cost of environmental degradation at 5.7% of GDP, environment could become a major constraint in sustaining future economic growth. Further, it may be impossible or prohibitively expensive to clean up later," reads the report.

As a result of economic growth, India is experiencing vast changes in the country's social, political, and environmental landscape. One such change is the rapid increase in automobile usage. This drastic increase has serious environmental implications, but addressing the issue - and solving the problems that it creates - will not be an easy task. India is riddled with transportation problems. As India's population increases, this problem further intensifies. Economic growth has precipitated the expansion of India's cities and suburbs. Between 1980 and 2003, India's urban population nearly doubled, and it is expected that in 2031, 40 percent of India's total population, estimated to be 1.42 billion, will reside in urban areas.

1. Predictably, India's urban growth is accompanied by a sharp increase in motor vehicle ownership: "the total number of registered motor vehicles increased from 1.86 million in 1971 to 62.7 million in 2003." As India's urban population expands, so do the geographic boundaries of Indian cities.
2. Poorly-planned urban and suburban expansion often leads to environmentally-unfriendly sprawl, longer commutes, and bad traffic caused by an increasing dependence on automobiles. One of the numerous negative results of increased urban air pollution is the emission of greenhouse gases, which contribute to the global problem climate change.
3. Locally, the impacts of climate change are evidenced by the shrinking of the Himalayan glaciers, reminding lawmakers that this problem cannot be ignored. A number of policies have already been implemented in different parts of India to deal with automobile pollution. In Delhi, for example, pursuant to Supreme Court orders, the city's fleet of 80,000 buses, taxis, and auto-rickshaws has been converted to run on Compressed Natural Gas.
4. The cleaner public transportation requirements resulted in a noticeable improvement to the city's air quality. Delhi has also completed the first stage of a massive, ultra-modern subway system, designed to decrease road traffic. While these improvements are a step in the right direction, they are not enough, and, more importantly, they have not been implemented in other Indian cities.

The major cities of India need to take further steps by improving public transportation infrastructure, putting more resources and effort into sustainable urban and suburban planning, and implementing stricter emissions regulations on private automobiles. While automobile pollution may be just one factor affecting global climate change, it is an important factor, and it needs to be addressed in India, where economic growth is bringing opportunities to implement sustainable development. India must take advantage of these opportunities immediately, as the shrinking Himalayan glaciers are proof that the disastrous effects of climate change are not too far in the future.

Since the advent of industrial and technological revolutions, economic indicators have been considered

as the principal criteria for measuring progress. The industrial and technological progress however, has been accompanied by a growing negative impact on the environment in terms of its pollution and degradation. Industrialisation carries with it the seeds of environmental damage, assisted and abetted by both needs and greed of man. Activities such as manufacturing, processing, transportation and consumption not only deplete the stock of natural resources but also add stress to the environmental system by accumulating the stock of wastes. The productivity of the industries, however, depends on the supply and quality of natural and environmental resources. While water, soil, air, forest and fishery resources are productive assets, the pollution of water, air, atmosphere and noise are the by-products of economic development, particularly industrialisation and urbanisation. "Green house effects", "global warming" and "acid precipitation" are cases in point. Pollution is an "external cost" (sometimes called a "spill-over cost" or a "neighborhood cost"). Untreated or improperly treated waste becomes pollution, increasing not only private costs but also social costs. Environmental degradation often tends to become irreversible and imposes damaging costs on the economy resulting in output and human losses, loss of labour productivity from ill- health and loss of crop output. The ecological and social costs of such unrestrained pollution and degradation have put a big question mark on the perceived notion of industrialisation as a way of economic development. Industrialisation is on the increase, which of course is necessary for the progress of human civilization but so is the environmental pollution due to emissions and waste generated from these industries. The industrial pollution due to its nature has the potential to cause irreversible reactions in the environment and hence is posing a major threat to our very existence. Since the carrying capacity of the environment is not unlimited and some areas or ecosystems are more susceptible to adverse environmental impacts than others, unplanned and haphazard industrialisation has substantially increased the risk to the environment.

### **Combined Efforts**

A number of studies have shown that air and water pollution are taking a heavy toll of human life,

particularly, in the developing countries through ill-health and premature mortality. Pollution control, thus, assumes greater significance in the context of ensuring sustainable development through planned industrialisation. The environmental pollution and ecological degradation because of unplanned industrialisation first became issues of international concerns in the 1970s when it was recognised that mass production by industry and mass consumption by society are depleting the resources and are generating huge amounts of solid waste and hazardous substances. The environmental challenges and the natural resources management were first focused in 1972 at the United Nations Human Environment Conference at Stockholm. Since then, a much greater awareness has been created not only amongst the developed countries but also the developing ones with regard to the environmental issues. A number of international committees were formed at different levels to address the environmental issues and cope up with the fast development. The World Commission on Environment & Development issued a report titled "Our Common Future" and appealed for the application of principles of sustainable development in 1987, the Inter Governmental Panel on Climate Change, (IPCC) was organised jointly by the United Nations Environmental Programme (UNEP) and World Meteorological Organisation (WMO) with support from the G-7 nations in 1989.

The catastrophic social and economic consequences of global climate change by the end of 21st century were described in the first report of IPCC in 1990. As a result, the United Nations Conference on Earth & Development (Earth Summit) was held in Rio de Janeiro in 1992 where more than 180 nations participated. The Rio Declaration, Agenda 21, Framework Convention on Climate Change, Biodiversity Convention, and Forest Declaration were signed in a historic effort to cope with the global problem of the 21st century. In the central Agenda 21, the concept of "Green Productivity" is a holistic evolutionary outcome of traditional principles and practices of productivity during the past half a century. It is seen as a key to achieving sustainable development at local, national and international levels. "Green Productivity" signifies a new paradigm of

socio-economic development aimed at the pursuit of economic and productivity growth while protecting the environment. To combat the adverse effect of Industrialisation on the environment, India has initiated some major activities, a few of which are:

- Policy initiatives to improve environment like the National Conservation Strategy and Policy Statement for Environment & Development, 1992, Policy Statement for Abatement of Pollution, 1992 and National Forest Policy, 1988
- Identification and Action Plans for 17 categories of major polluting industries.
- Notification and implementation of emission and effluent standards for air, water and noise levels. Standards are formulated by a multidisciplinary group keeping in view the international standards, existing technologies and impact on health and environment
- Identification of 24 critically polluted areas for pollution abatement and improving environment
- Use of beneficiated coal with an ash content not exceeding 34% irrespective of their distance from pit head
- Action Plans for 141 polluted river stretches to improve quality of river water
- Identification of clean technologies for large industries and clean technologies/processes for small scale industries
- Setting up of Common Effluent Treatment Plants (CETPs) for clusters of SSI units
- Implementation of an Eco-mark scheme to encourage production/ consumption of environment - friendly products
- Preparation of a Zoning Atlas, indicating status of the environment at district levels to guide environmentally sound location/siting of industries.
- Mandatory submission of annual Environmental Statement which could be extended into Environmental Audit
- Initiation of environmental epidemiological studies in seven critically polluted areas to study the impact of the polluted environment on health
- Setting up of authorities like the Environment Pollution (Prevention & Control) Authority for the National Capital Region for protecting and improving the quality of environment and

preventing, controlling and abating environmental pollution.

- Provision of fiscal incentives for installation of Pollution control equipment and also for shifting of industries from congested areas

It is common knowledge that increased industrial activity worldwide requires the use of natural resources which are depleting day-by-day. It is also true that the need for resource conservation, efficient use of resources and environment friendly corporate policies and behaviour has now been recognised worldwide. In the industrial and business society, it is observed that many people are still half heartedly subscribing to the concept of sustainable development. They consider that sustainable development is a kind of compromise between industrial development and environmental protection. This perception must change. The ultimate objective of industrialisation is to achieve a better quality of life for everyone. A degraded environment means a direct threat to the quality of life and therefore poses a challenge to industrialisation. Industrialisation has to be there but not at the cost of the environment or for that matter our existence. For this, there has to be greater awareness about the need for protecting the environment, effective planning and the ability to strike a fine balance between industrialisation and environmental protection.

India is quickly becoming an economic, technological, and diplomatic leader. Yet this growth has come at a cost. Rapid urbanization is placing a burden on infrastructure, energy consumption and public services. Already the fourth-largest economy, India is the world's third-largest greenhouse gas emitter and fourth-largest electricity consumer. The economic and development decisions that the country makes over the next few decades will pose profound implications for the global environment.

Few points to be noteworthy:

First, Environmental sustainability could become the next major challenge as India surges along its projected growth trajectory

Second, A low-emission, resource-efficient greening of the economy should be possible at a very low cost in terms of GDP growth. While a more aggressive low-emission strategy comes at a slightly higher price tag for the economy it promises to deliver greater benefits.

Third, For an environmentally sustainable future, India needs to value its natural resources, and ecosystem services to better inform policy and decision-making.

## Key Findings

**Green growth is necessary.** With cost of environmental degradation at 5.7% of GDP, environment could become a major constraint in sustaining future economic growth. Further, it may be impossible or prohibitively expensive to clean up later.

**Green growth is affordable.** Model simulations suggest that policy interventions such as environmental taxes could potentially be used to yield positive net environmental and health benefits with minimal economic costs for India.

**Green growth is desirable.** For an environmentally sustainable future, India needs to value its natural resources, and ecosystem services to better inform policy and decision-making especially since India is a hotspot of unique biodiversity and ecosystems.

**Green growth is measurable.** Conventional measures of growth do not adequately capture the environmental costs, Therefore, it is imperative to calculate green Gross Domestic Product (green GDP) as an index of economic growth with the environmental consequences factored in.

## What Can be done?

A low-emission, resource-efficient greening of the economy should be possible at a very low cost in terms of GDP growth. A more aggressive low-emission strategy comes at a slightly higher price tag for the economy while delivering greater benefits. Emissions reduction would have a minimal impact on GDP which would be offset by savings through improving health while substantially reducing carbon emissions.

- A 10% particulate emission reduction will lower GDP only modestly. GDP will be about \$46 billion lower in 2030 due to interventions, representing a loss of 0.3 % compared to business as usual.
- A 30% particulate emission on the other hand reduction will lower GDP by about \$97 billion, or 0.7 %.
- GDP growth rate will be negligibly reduced by about 0.02 to 0.04% in both scenarios. There will be significant health benefits under both scenarios which will compensate for the projected GDP loss.
- The savings from reduced health damages will range from \$105 billion in the 30% case and by \$24 billion with a 10% reduction.
- Under both the scenarios, another important benefit would be a substantial reduction in CO<sub>2</sub> as a co-benefit which has a potential of being monetized

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# Nature as a Teacher in William Wordsworth's Poetry

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*In the poetry of William Wordsworth, we are told that Nature is the best teacher of man. Man finds a peculiar joy and peace in meadows, groves and hills but as he grows up, the corrupting influences of material considerations draw him away from Nature and God, and he can no longer find that joy. But by remembering childhood experiences, he understands the immortality of the soul as in "The ode on the Immortality". In his another poem "Tintern Abbey" three different attitudes to Nature are focused, each with its peculiar formative impact on the character of human being. In the poem the poet tells his sister Dorothy Wordsworth and by implication, to the reader "Nature never did betray the heart that loved her". In his "Lucy Poems" we read how Nature took the education of 'Lucy' in her own hands. Lucy under the influence of Nature would grow, not only physical beauty but a moral sense and wisdom. The child can feel the spirit of divinity from everything surrounding him. Spiritual power of Nature always heal and evoke nobler thoughts in man's mind is portrayed by Wordsworth in all his poems. For the poet Nature held a spiritual significance; he personally feels spiritual exaltation, when his heart and worldly being seem to fade away and the poet becomes a living soul in close communion with Nature. He shares this experience in 'Tintern Abbey'. Natural aspects are symbols and signs of eternity.*

*Wordsworth portrayed the peasants and humble folk as fit subjects for poetry, as he saw and thought them as symbols of simplicity, having close relations, contact with Nature and had the power born out of humility.*

*The aim of the paper is to depict the Nature as environmental educationist in William Wordsworth's Poetry.*

*"Three years she grew in sun and shower,*

*Then Nature said, 'A Lovelier flower*

*On earth was never sown;*

*This child I to myself will take;*

*She shall be mine, and I will make*

*A Lady of my own."*

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Nature is the best described as man's guide and teacher; instead of bookish knowledge she brings 'sweet love'. Nature was 'both law and impulse' with energy to restrict and kindle so that her beauty and fear were equally needed for the development of poet's mind. Above all, Wordsworth focused the moral influence of Nature. He provided spiritual touch to Nature and thought her as a great moral teacher, as the best mother, guardian, caretaker and nurse of human being. He also believed that there is always spiritual communion, 'mystic intercourse' and mutual consciousness. He also considered that man who grows up in the lap of Nature are perfect in every way.

William Wordsworth, one of the central personality in the Romantic Movement, stands

supreme. As a worshipper of Nature he is called the priest of Nature. His love of Nature is tender and real than any other English poets. He considered and perceived that there is a divine spirit in Nature. He had a strong belief that in the open lap of Nature man receives inner joy and real consolation to his conflict heart. Above all he believed her as a unique and great teacher and guide. He thought "Nature is a teacher whose wisdom we can learn if we will, and without which any human life is vain and incomplete." He had faith in the education of human being by Nature. Wordsworth has mystical sense of life in natural aspect. The poet is disconnected with the spiritual significance of Nature. It contains its message for man. The flowers of primrose and the daffodils are

the symbols to provide Nature's message to man. The poet writes this thought very sweetly in his poem "The Tables Turned" 'come forth into the light of things let Nature be your teacher'

*"One impulse from a vernal wood  
May teach you more of man,  
Of moral evil and of good,  
Than all the Sages can.*

A perfect philosophy of Nature can be perceived in Wordsworth's poetry. His passion for Nature is well known. Wordsworth felt a deep attachment for all objects of Nature. The heavenly aspect of Nature which started in the modern world at the Renaissance and extended during the eighteenth century, culminates for English literature in Wordsworth.

"It was Wordsworth's aim as a poet to seek beauty in meadow, woodland, and the mountain top, and to interpret this beauty in spiritual term."

William Wordsworth, S.T. Coleridge, Lord Gordon Byron, John Keats, P.B. Shelley were all poets of Nature, but in what different ways.

"Coleridge, Sympathizing as he does intellectually with his friend's transcendentalism, is far more readily influenced by the multifold sensuous appeal of Nature, while Byron and Keats delight with a frankly pagan joy in landscape, and are content to worship the goddess, not to consult the oracle."

The Romantic poet whose outlook towards Nature comes nearest to Wordsworth is Shelley unlike other poets of the time, they intellectualized Nature. Not only they are poets of Nature but also prophets of Nature. But we have great dissimilarity with Wordsworth Nature is 'both law and impact ;with Shelley, it is only 'impulse'. It was the firm faith of Wordsworth that there is pre-existing connection between man and Nature. Herbert Read remarks:

"Man and Nature, Mind and the external world geared together in union complete the motive principle of the universe. They act and react upon each other, so as to produce an infinite complexity of pain and pleasure'. The exquisite functioning of this interlocked universe of Mind and Nature is for Wordsworth the highest theme of poetry, in poetry the process actually receives its final consummation"

To know what's the importance of Nature to Wordsworth, due weight and stress should be provided to the healing power of the impersonal for a sick heart and brain. It was the revolutionary environment 'fretful stir unprofitable, and the fever of the world' had long

'hung upon the beatings of my heart' he looked to Nature and found 'for this uneasy heart of ours a never-failing principle of joy'.

"Thus Nature's healing power, which for some may be merely an outworn doctrine, was for him a fact of experience, and the rapture of that experience, which glows through "Tintern Abbey" and much of his best poetry, can be caught by any reader, without reference to the ethical and philosophical theories which Wordsworth evolved from it."

Wordsworth considered Nature as a living creature. He thought the divinity of Nature many times. Man can learn more moral from Nature than any other philosophies. He always believed Nature as a teacher and educationist of Man. In this way he was somewhat affected by Rousseau. There is an inter-relation of Nature and Man. In "Tintern Abbey" all the objects of Nature may be depicted as mystical Pantheism and the same thought is portrayed by the poet in Book 2nd of "The Prelude". In these poems Wordsworth traces the development of his love for Nature. In his childhood Nature was just a playground for him. On the second stage he began to like and search solace but he was allured purely by its sensuous and aesthetic appeal. Finally till the last stage poet's attraction for Nature changed a spiritual and intellectual character, and he became conscious about Nature's role as a teacher and educator.

*"If I were not thus taught,  
Should I the more  
Suffer my genial spirits to decay  
For thou art with me here upon the banks,  
Of this fair river; thou my dearest friend,"*

In the poem "The daffodils" the poet was aimlessly roaming near a lake. In his loneliness he could be compared to a drifting cloud in the sky over hills and dales. The flowers of daffodils stretched along the bank of lake in row that scattered as far as the poet can gaze. The flowers were so countless that the poet thought he could observe ten thousand of them at a glance. They were moving their heads as they were dancing.

*"I wandered lonely as a cloud  
That floats on high o'er vales and hills,  
When all at once saw a crowd,  
A host, of golden daffodils;  
Beside the lake, beneath the trees,  
Fluttering and dancing in the breeze.  
Ten thousand saw I at a glance,*

*Tossing their heads in sprightly dance."*

The poem "Lines written in early spring" is composed when he was sitting by the side of the brook that runs down from Combe in which Alford (the village) was situated. Wordsworth the poet divided it into two parts. 1- celebration of "Nature's holy plan" and inner joy. 2- and "what man has made of man" the interpretation of humanity. Both these ideas are in this poem. The flowers, birds, leave etc. are freely joyful in Nature, but human beings are untouched from this real joy. Man has become a stranger to this happiness and contentment. The poet says:

*"I heard a thousand blended notes,  
While in a grove I sat reclined,  
In that sweet mood when pleasant thoughts  
Bring sad thoughts to the mind  
To her fair works did Nature link  
The human soul that through me ran;  
And much it grieved my heart to think  
What Man has made of Man."*

In the Book 14th of "Prelude" entitled "Renewal of Faith in Nature and in Man" the poet says about the expectation that he and his bosom friend S.T. Coleridge have learnt and shared in their poetry would inspire the people Wordsworth and Coleridge are Prophets of Nature, and they explain the moral learning going from Nature to the people. In this way people would be lastingly inspired. The theme of the last book of "The Prelude" was the impact of French Revolution. It traces poet's bitter disillusion and his gradual regain of confidence. The poet would be joyful due to his strong belief. He will teach the people to love things which he loved and how thinking of man is so lofty and exalted so that it transcends the worldly or physical plane. Intellectual the power transcends outer events due to it has godly virtue.

In the concluding lines of "The Prelude" Wordsworth expresses imagination in its various

aspects as the faculty of creation. In the end the poet was very hopeful in life. The faith in man and Nature has been renewed now although the subject taken by the poet was full of violence and bloodshed due to the French Revolution. And at same time in his personal life he was facing difficulties and problems. He was struggling to seek for himself a contentful life. It was the time of crisis and confusion individually for the poet himself. But now he regained the hope and confidence in himself. For this he feels gratitude to his sister Dorothy Wordsworth and Coleridge. In the concluding lines of the last book of 'The Prelude' contains a didactic note. Here the poet presents the poet as a teacher.

*"...What we have loved,  
Other will love, and we will teach them now,  
Instruct them how the mind of man becomes  
A thousand times more beautiful than the earth  
On which he dwells, above this frame of things  
[Which, 'mind all revolution in the hopes  
And fears of men, doth still remain unchanged]  
In beauty exalted, as it is itself  
Of quality and fabric more divine."*

Chief originality of Wordsworth is of course to be sought in his poetry of Nature portrayal that can be clearly differentiated him from that of the other great poets of Nature. He never like to depict the wild and stormy aspects of Nature like Byron, sensuous beauty of Nature like Keats. What makes him unique is the fact that he is of all English poets, who has presented the most emotional satisfying account of Man's connection to Nature. Cazamian remarks rightly that "To Wordsworth, Nature appears as a formative influence superior to any other, the educator of sense and mind alike, the shower in our hearts of the deep-laden seeds of our feelings and beliefs. It speaks to the child in the fleeting emotions of early years, and stirs the young poet to an ecstasy, the glow of which illuminates all his work and dies of his life."

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# Chemistry to Green Chemistry : A Way Towards Sustainable Development

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*"Sustainability" is a concept that is used to distinguish methods and processes that can ensure the long-term productivity of the environment, so that even subsequent generations of humans can live on this planet. Sustainability has environmental, economic, and social dimensions.*

*Over the years, the industry and wider public have become aware of the damaging effect of the past practices and the need to protect the environment. Now the scientists and technologists have realized the threat to the sustainability of the environment. And in this very sequence, Green chemistry or sustainable chemistry had to be invented in early 1992. Green chemistry is defined as "the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances". And Green engineering is considered to be "the development and commercialization of industrial processes that are economically feasible and reduce the risk to human health and the environment". In the proposed work we are going to deal with the sequential development of Green chemistry and their graph of achievements.*

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A traditional concept in process chemistry has been the optimization of the time-space yield. In the last 250 years Chemistry has improved our quality of life, and made thousands of useful products and materials possible. This has been proved as a boon to the humankind. But this achievement has come at a price. And people today perceive chemistry as harmful to the environment. Issues like climate change, pollution, severe effects of global warming, increasing scarcity of water, energy crisis etc. make the headlines and have become increasingly important in today's life. Many chemicals have got entry in the food chains and are circulating round the globe. Pesticide residues are found in the tropics and the arctic, flame retardants from electronics are now commonly found in the aquatic organisms. Thus in the modern perspective, this limited viewpoint had to be elaborated. As for example, toxic and harmful wastes can destroy natural resources and especially the means of livelihood for future generations.

In addition, many processes, for the production of chemicals, are based on petroleum, which is not a renewable resource. Thus the question arises is - what alternatives can we develop so as to maintain the co-

ordination between the progress and optimum exploitation of resources along with contributing least to the toxicity of the environment?

In the last decade's 600-700 million tonnes of chemical materials are produced every year (excluding fossil fuel, fertilizer and medicines) from the chemical industries. As well as more than 120000 chemicals are in circulation for various applications.

Despite the strict laws and regulations in developed countries various environmental problems and adverse effects have originated.

When the chemical community began exploring waste minimization, in the late 1980s and early 1990s there was a considerable amount of commitment for the minimization of wastes through designing new chemical processes and products. This idea of waste reduction eventually evolved into pollution prevention practices. In the mid-1990s a series of textbooks and course modules on pollution prevention began appearing. In year 2000 it was realized that the current and future education focus should progress from greening the chemical engineering curriculum to incorporating some green concepts into other engineering disciplines. For many years it remained



as a relatively abstract idea with no basic principles and steps of practical applications.

At the forefront of the green chemistry and engineering movement is Dr. Paul Anastas, director of the American Chemical Society (ACS) Green Chemistry Institute (GCI). According to the GCI, the overall goal of green chemistry and green engineering is to unleash "the creativity and innovation of our scientists and engineers in designing and discovering the next generation of chemicals and materials so that the chemicals and materials provide increased performance and value while meeting all goals to protect and enhance human health and the environment." Paul Anastas of the U.S. Environmental Protection Agency formulated twelve simple rules of thumb for how sustainability can be achieved in the production of chemicals - the "Green chemical principles". The number twelve is highly significant and symbolic (like the twelve month of the year) as a complete sum of the most important things that we have to do to accomplish a multiple task.

1. Waste prevention instead of remediation
2. Atom economy or efficiency
3. Use of less hazardous and toxic chemicals
4. Safer products by design
5. Innocuous(harmless) solvents and auxiliaries
6. Energy efficiency by design
7. Preferred use of renewable raw materials
8. Shorter syntheses (avoid derivatization)
9. Catalytic rather than stoichiometric reagents
10. Design products to undergo degradation in the environment
11. Analytical methodologies for pollution prevention
12. Inherently safer processes

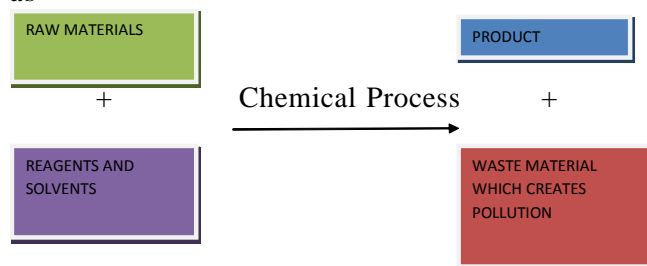
These principles are obviously very difficult to apply immediately for various chemical processes; still it is amazing to see many creative innovations at various scientific processes in the recent 20 yrs. of green chemistry. When we try to implement these Green Chemical Principles, it can require a certain investment, since the current, very inexpensive chemical processes must be redesigned. However, in times, when certain raw materials will become more expensive and the costs for energy increase, such an investment will of course pay back, as the newly designed processes can become less expensive than the unoptimized ones. The development of greener

procedures can therefore be seen as an investment for the future, which also helps to ensure that the production complies with possible upcoming future legal regulations.

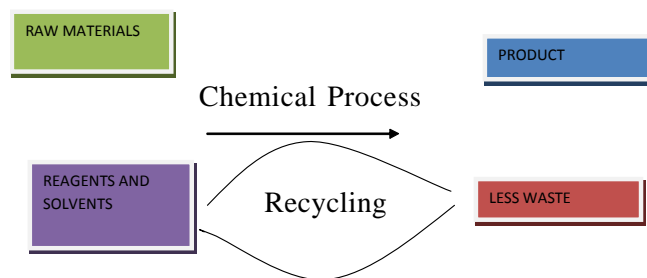
The cooperation of chemists, engineers, material scientists bio scientists technologists has achieved very significant results. The interdisciplinary approach has expanded the fields of green chemistry and produced some excellent nontoxic materials and feedstock savings in chemical industries.

Dr. David Allen (director, Centre for Energy and Environmental Resources, University of Texas, Austin) identifies two tools in teaching green engineering: (1) Assessment and (2) Improvement. He uses assessment tools to determine what constitutes a green product or process and improvement tools to answer the questions, "Will new engineering design tools be necessary, or will our existing tools that allow us to minimize mass and energy consumption be sufficient? Assessment in itself is a big task. As the impact of a newly designed process or reagent or method should be successful on a large scale of environmental impact.

A typical chemical process can be understood as



Now if we want to proceed with sustainable process, we will have to ensure waste minimization, which can be achieved by using more and more recyclable solvents and reagents.



On the basis of such practice any chemical process can be made more environment friendly.

For industrial processes E factor is calculated by using the following formula.

$$\text{E factor} = \frac{\text{Mass of wastes}}{\text{Mass of product}}$$

The ideal E factor, approx... Zero, is found for petroleum refining processes. While for pharmaceutical processes, it lie between 25 to 100. Here weight of water is not added. Still such kind of E factor, in any way does not account for toxicity of the waste.

### **Designing Products Under the Holistic Approach "Cradle to Cradle"**

The "Cradle to Cradle" design (also k/a C2C or Regenerative design) is a new philosophy of how to make green things without pollution and wastes. Its basic idea is to model human industries on nature's processes in which materials are viewed as nutrients circulating in healthy and safe metabolism.

The American architect William McDonough and the German chemist professor Michael Braungart in

2002 published the book, "Cradle to Cradle - Remaking the way we make things", presenting the idea on the concept with a simple way and excellent methodological examples. The book became a bestseller and their idea was promoted all over the world and implemented by the companies, organizations and governments.

According to them certain materials can be reused without causing any harm to the environment, for example metals fibres and dyes etc. they are called "technical nutrients" and these maintain their integrity even after being used in different products. Similarly some organic or Biological nutrients may be used and returned to the environment to decompose. In either case these provide regenerative.

Green Chemistry principles have advanced considerably from theory to practice in the last decades. Research on various industrial applications have been very successful and has considerable advantage for less energy consumption, less toxic products and minimum waste, which is not only an economic advancement but also an environmental achievement.

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# Human Rights and Environment

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*Healthy ecosystems are the foundation for human life and for the fulfilment of the rights that are inherent to human life. Further, the existence and exercise of human rights can be an incentive to making the right decisions for the environment. Human rights and the environment are inextricably linked and in respect to sustainable development, natural allies. Ecosystem services - including food, clean water, medicinal substances, recreation, and protection from natural hazards such as floods and droughts - are indispensable to the well-being of all people in all places. Loss of such services will increasingly threaten humanity's 'right to development' This paper addresses how human rights and the environment can play an integral, indivisible role in achieving sustainable development and equality of access to basic needs such as freshwater food and employment while demonstrating how environmental and human rights policies affect each other and can support each other in common cause.*

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## **Introduction**

All human beings depend on the environment in which we live. A safe, clean, healthy and sustainable environment is integral to the full enjoyment of a wide range of human rights, including the rights to life, health, food, water and sanitation. Without a healthy environment, we are unable to fulfil our aspirations or even live at a level commensurate with minimum standards of human dignity. At the same time, protecting human rights helps to protect the environment. When people are able to learn about, and participate in, the decisions that affect them, they can help to ensure that those decisions respect their need for a sustainable environment.

In recent years, the recognition of the links between human rights and the environment has greatly increased. The number and scope of international and domestic laws, judicial decisions, and academic studies on the relationship between human rights and the environment have grown rapidly.

Many States now incorporate a right to a healthy environment in their constitutions. Many questions about the relationship of human rights and the environment remain unresolved, however, and require further examination.

Without integrating human rights and

environmental protection, sustainable development and the green economy will not succeed.

Almost from the emergence of contemporary concern with environmental protection in the late 1960s, the impact of environmental sustainability on the enjoyment of human rights was strongly perceived. The linkage figured prominently in the United Nations Conference on the Human Environment, held in Stockholm in 1972, and later on in the 1992 Rio Earth Summit and the 2002 World Summit on Sustainable Development, as well as in the case law of international courts, such as the International Court of Justice.

At the regional level, the linkages between human rights and the environment have been recognized in binding agreements, such as the African Charter on Human and Peoples' Rights, the European Convention on Human Rights, the American Convention on Human Rights, and the UNECE's Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (usually known as Aarhus Convention).

At national level, lawmakers in many countries have drafted constitutional and legislative provisions setting forth the right to an environment of a specified quality, such as healthy, safe, secure, clean, or

ecologically sound. Some 130 constitutions in the world, including the overwhelming proportion of those amended or written since 1970, include a state obligation to protect the environment or a right to a safe, healthy, ecologically balanced (or other adjective) environment

The protection of the environment and the promotion of human rights are increasingly seen as intertwined, complementary goals, and part of the fundamental pillars of sustainable development. The two fields share a core of common interests and objectives indispensable for sustainable development. Each human being depends on ecosystems and the services they provide, such as food, water, disease management, climate regulation, spiritual fulfilment, and aesthetic enjoyment. At the same time, all human activities have an impact on the environment.

Human activities have changed ecosystems more rapidly and extensively in the past half-century than in any comparable period of time in history. While this transformation has contributed to substantial net gains in human well-being and economic development in many regions of the world, not all people or regions have benefited equally; indeed conditions for many have deteriorated. Sustainability must be incorporated into an accounting system that measures the currently unaccounted for economic losses that are experienced by using renewable and non-renewable resources in the environment. By incorporating these losses into all levels of economic accounting, all parts of the economic sectors can make informed decisions that support long-term sustainable development and help strengthen human rights affected.

If the enjoyment of human rights depends on environmental protection, in turn, environmental protection depends on the exercise of certain human rights, such as the rights to information, public participation in decision-making and access to justice. Effective compliance with environmental laws and standards necessitates knowledge of them as well as of environmental conditions. In addition, local communities play a vital role in preserving the resources upon which they depend. Allowing those potentially affected to participate in decision-making processes concerning harmful activities may prevent or mitigate the threatened harm and contribute to public support for environmental action, as well as lead

to better decisions consistent with sustainable development.

A global green economy will necessitate an emphasis on coordination and implementation, better incorporating public, private, and civil society, including at the national and sub-national levels. This will require multilevel governance. Many existing institutions at both the global and the national level have the mandate to address environmental protection, while others are devoted to human rights. Both sets of institutions face a variety of challenges related in part to the need for greater cooperation across sectors and the need for coordinated responses at multiple levels. In particular, there is no comprehensive international agreement addressing these matters in a holistic manner, nor is there a single agency addressing the problems. The lack of coordination among different agencies and treaty bodies has had some negative effect on the success of integrative laws and policies and should be a priority issue for the future.

## **Environment and Rights**

Human rights have been a focus of international law for over sixty years now. A human rights approach to environmental concerns was only introduced long after that.

The United Nations Charter of 1945 marked the beginning of modern international human rights law, whereas the Stockholm Declaration of 1972 is generally seen as the starting point of a rights based approach to environmental protection.

This declaration formulated several principles, including that " Man have the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations."

Human rights and environmental law have in common that they are both seen as a challenge to, or limitation on, the traditional understanding of state sovereignty as independence and autonomy.

Despite their separate initial stages, it has become more and more acknowledged over the years that human rights and the environment are inherently interlinked. To give a clear example; the right to life, personal integrity, family life, health and development

of each human being depends on protecting the environment as the resource base for all life.

### **What are human rights?**

Human rights refer to the most fundamental rights and freedoms to which all humans are entitled. Human rights are inherent to all human beings, whatever our nationality, place of residence, sex, national or ethnic origin, colour, religion, language, or any other status. We are all equally entitled to our human rights without discrimination. These rights are all interrelated, interdependent and indivisible. Universal human rights are often expressed and guaranteed by law and international human rights law lays down obligations of governments to act in certain ways or to refrain from certain acts, in order to promote and protect human rights and fundamental freedoms of individuals or groups.

Human rights are universal and absolute. The principle of universality, as first set out in the Universal Declaration on Human Rights in 1948, is the cornerstone of international human rights law. This principle has been reiterated in numerous international human rights documents. That human rights are absolute means they should never be taken away, except in specific situations and according to due process.

Non-discrimination is a cross-cutting principle in international human rights law. The principle is present in all the major human rights treaties and provides the central theme of some of international human rights conventions.

Human rights entail both rights and obligations. States assume obligations and duties under international law to respect, to protect and to fulfil human rights. The obligation to respect means States must refrain from interfering with or curtailing the enjoyment of human rights. The obligation to protect requires States to protect individuals and groups against human rights abuses. The obligation to fulfil means that States must take positive action to facilitate the enjoyment of basic human rights. At the individual level, while we are entitled our human rights, we should also respect the human rights of others.

### **Human Rights and the Environment**

The following human rights are often affected by environmental harms.

***Rights to Life*** The right to life has extensive environmental links. It could be linked to any environmental disruption that directly contributed to the loss of lives - including to the mentioned air pollution causing 2.4 million deaths per year.

***Right to Health*** This right, closely linked to the right to life, is often violated in cases of pollution of air, land or water.

***Right to Water*** Although not specifically codified in an international treaty, (access to) water is more frequently invoked and accepted as a human right. It's obviously linked to life and health.

***Right to Food*** Due to the environmental disruption, the right to physical and economic access to adequate food, is progressively under pressure.

***Right to Development*** Sustainable development recognises that environmentally destructive economic progress does not produce long-term societal progress.

***Right to Property*** With sea levels rising, more and more people living on islands and in coastal areas, have and will be deprived of (parts of) their property.

***Right to Shelter and Housing*** When environmental degradation displaces individuals and communities or compels them to live in unhealthy, hazardous conditions.

***Right to Information and Right to Participate*** These rights have elements of obtaining government-held information and government's duty to apprise the people. Right to Work Along with environmental disruption often comes deprivation of the right to work. An example would be industrial overfishing putting small local fishermen out of work.

***Right to Culture, Family life and Rights of Indigenous People*** The UN Declaration on the Rights of Indigenous Peoples, for the first time recognises the conservation and protection of the environment and resources as a human right.

***Rights and Equity, non-discrimination*** Where they have least contributed to the problems, impacts of climate change and other environmental harms are expected to be bigger on the poorer parts than in the more wealthier parts of the world.

***Women and Children's Rights*** Women and children are even more impacted by environmental disruption than men and because their immune systems have not fully been developed, children are vulnerable to toxics, bacterial and viral contamination.

These examples only provide a sampling of many connections between human rights and environmental protection. Other substantive areas that combine human rights and environmental considerations include humanitarian law, environmental refugees issues and the effects of development projects funded by development banks.

### **Importance of the relationship between these two spheres**

Over the years, the international community has increased its awareness on the relationship between environmental degradation and human rights abuses. It is clear that, poverty situations and human rights abuses are worsened by environmental degradation. This is for several obvious reasons;

- *Firstly*, the exhaustion of natural resources leads to unemployment and emigration to cities.
- *Secondly*, this affects the enjoyment and exercise of basic human rights. Environmental conditions contribute to a large extent, to the spread of infectious diseases. From the 4,400 million of people who live in developing countries, almost 60% lack basic health care services, almost a third of these people have no access to safe water supply.
- *Thirdly*, degradation poses new problems such as environmental refugees. Environmental refugees suffer from significant economic, socio-cultural, and political consequences. And fourthly, environmental degradation worsens existing problems suffered by developing and developed countries. Air pollution, for example, accounts for 2.7 million to 3.0 million of deaths annually and of these, 90% are from developing countries.

Environmental and human rights law have essential points in common that enable the creation of a field of cooperation between the two:

- *Firstly*, both disciplines have deep social roots; even though human rights law is more rooted within the collective consciousness, the accelerated process of environmental degradation is generating a new "environmental consciousness."
- *Secondly*, both disciplines have become internationalized. The international community has assumed the commitment to observe the

realization of human rights and respect for the environment. From the Second World War onwards, the relationship State-individual is of pertinence to the international community. On the other hand, the phenomena brought on by environmental degradation transcends political boundaries and is of critical importance to the preservation of world peace and security. The protection of the environment is internationalized, while the State-Planet Earth relationship has become a concern of the international community.

- *Thirdly*, both areas of law tend to universalize their object of protection. Human Rights are presented as universal and the protection of the environment appears as everyone's responsibility.

### **Linkages between Human Rights and Environment**

The linkages between human rights and environmental protection are multi-dimensional and reciprocal. Through legislation and jurisprudence, it has become generally accepted that:

- Failure to respect, ensure and fulfill internationally- and domestically-guaranteed human rights can lead to environmental destruction by ignoring the needs of individuals and groups who can contribute to environmental protection and economic development if they are consulted and are able to participate in decision-making about activities, programmes and policies that may impact them or their surroundings;
- Failure to conserve natural resources and biodiversity can undermine human rights, e.g. by destroying resources and ecosystem services on which many people, especially indigenous and local communities, depend;
- Economic and other public activities, programmes and policies can either undermine or support the goals of environmental protection, human rights and sustainable development. Failure to provide information or consult affected persons, as well as activities that displace local communities, can negatively impact both human rights and environmental protection. Conversely, environmental protection supports human rights through securing sustainable availability of critical natural resources and ecosystem services.

The Commission on Human Rights adopted a new resolution entitled "Human Rights and the Environment as part of sustainable development", 162 which represents without doubt the most comprehensive document ever adopted by the Commission on this topic. In this resolution, the Commission took stock of developments relating to procedural and substantive rights at the international and regional levels and:

- Reaffirmed the importance of peace, security, good governance and respect for human rights and fundamental freedoms for the achievement of sustainable development
- Restated that environmental damage can have potentially negative effects on the enjoyment of some human rights
- Encouraged efforts towards the implementation of the principles of the Rio Declaration, and in particular principle 10, in order to contribute to effective access to judicial and administrative proceedings, including redress and remedy

Welcomed actions taken by States, such as legal measures and public awareness activities, that promote and protect human rights and that also assist in the promotion of environmental protection and sustainable development

- Called upon States to take all necessary measures to protect the legitimate exercise of everyone's human rights when promoting environmental protection and sustainable development
- Stressed that States should take into account the negative effects that environmental degradation may have on disadvantaged members of society when developing their environmental policies

## Conclusions

The advancement of the relationship between human rights and the environment would enable the incorporation of human rights principles within an environmental scope, such as anti-discrimination

standards, the need for social participation and the protection of vulnerable groups. At the same time, the human rights system would be strengthened by the incorporation of environmental concerns, enabling the expansion of the scope of human rights protection and generation of concrete solutions for cases of abuses. Of course, one of the most important consequences, is to provide victims of environmental degradation the possibility to access to justice. Given the occasional helplessness suffered by victims of environmental degradation, linking human rights and the environment brings such victims closer to the mechanisms of protection that are provided for by human rights law.

It is apparent that environmental and human rights are inextricably linked. As we increasingly recognize the serious impact of a degraded environment on human health and well being, we are better placed to adjust our policies and cultural practices to reflect our enhanced understanding. As a result, we should be able to protect human rights and human dignity within its broader social, economic and cultural context by drawing from and contributing to those who are actively engaged in the environmental and public health arenas.

This should also facilitate those who are working in the environmental and conservation fields to develop a better working relationship with those in the human rights arena. This will eventually lead to the articulation of a more integrated approach to dealing with socio-economic and environmental problems, encouraging the development of a sustainable model for the preservation of biological resources and natural ecosystems, for the use and enjoyment of both present and future generations. A healthy environment is a vital factor in promoting human health and life, basic human rights, and creating sustainable development. Ecosystems provide basic necessities of life, especially to the most poor and vulnerable. Therefore, ensuring human rights and protecting the environment must be incorporated to achieve sustainable development.

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# Importance of Environmental Education for Sustainable Development

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*In the present scenario, due to anthropogenic activities, environmental degradation is in an alarming rate and it results in various environmental issues such as global warming, ozone layer depletion, greenhouse effects, raise in sea water level, improper monsoon and acid rain. Science and technology have brought immense benefits but we are paying a high 'price' for it. There is a wrong myth that economic development is based only in industrialisation. But in the international organisations such as World Bank and International Monetary Fund, environmental degradation is considered as the norm. Science and advanced technology can however only help the process of global sustainable environment in a limited way but they cannot deliver it. The success of the technology lies in its implementation part. In spite of conducting more conferences, seminars and world summits towards the protection of environment for the past two decades, the present world is environmentally less sustainable than in the previous days. The progress whatever the rich developed countries have made so far has largely been achieved through the relocation of their dirty manufacturing facilities to poor developing countries. However the relocation of the manufacturing facilities in this way cannot address the growing problem of anthropogenic pollution - it merely changes the jurisdiction of the pollution created from the 'rich' to the 'poor' world. Therefore in order to achieve the acceptable level of global environmental sustainability, the citizens must be empowered with essential knowledge and information especially in developing countries like India. Since educational institutions are the places where the contact of the society is more, it is possible to bring remarkable changes in the mindset of the public. To protect children living in polluted regions, environmental education represents a relevant means of prevention because this type of education encourages learner's awareness of their environment's ambient conditions, as well as their active participation in solving local problems. It is the need of the hour to propose environmental education with the essential elements of moral philosophy. Conventional educational methods are no longer adequate for the real needs of tomorrow. Future engineers and also other students of specialised areas must acquire knowledge and skills in their own field and keep pace with rapid advances in practically all branches of engineering as well as the other areas of specialisation. The communication perspective opens the door to other kinds of tools that environmental educators can use in order to improve the educational practice.*

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## **Introduction**

For the past one decade much effort was expended in the global level to achieve sustainable development. In spite of conducting more number of conferences, seminars and world summits towards the protection of environment, the present world is environmentally less sustainable than in the previous days. The reason is very predictable that the poor developing countries had been seriously thwarted by the lack of financial and skilled manpower resources whereas the rich developed countries appeared to be reasonably content with the progress they had made. The progress whatever the developed countries have

made so far has largely been achieved through the relocation of their dirty manufacturing facilities to poor developing countries. However the relocation of the manufacturing facilities in this way cannot address the growing problem of anthropogenic pollution - it merely changes the jurisdiction of the pollution created from the 'rich' to the 'poor' world. Therefore in order to achieve the acceptable level of global environmental sustainability, the citizens must be empowered with essential knowledge and information. Then only they can exert pressure on their elected representatives to develop and implement policies for securing environmental sustainability. The awareness among



the public and industrial generators have to be created and motivated by the updated techniques and incorporating the innovative and implementable solutions to reform our economy. These can be achieved through environmental education.

Thus, environmental education has two essential components:

- Alerting the public to the need to achieve global sustainable development and the likely consequences of failing to do so.
- Focusing the educational curricula for global sustainable development by incorporating the know-how and skills and also the moral imperatives.

To have a clear idea about the environmental education, more awareness about the following issues are needed.

- Difference between sustainable development and environmental sustainability.
- Unique definition for sustainable development
- Depending on Science and Technology alone will deliver environmental sustainability?

### **Sustainable development and environmental sustainability**

Unfortunately, experience shows that in the environmental community there are many who do not understand the true meaning of sustainable development. In addition, the environmental community must discharge its collective professional responsibility in ways that are consistent with the core requirements of sustainable development and global environmental sustainability.

The common definition for sustainable development is as follows:

"Development that meets the needs of the present without compromising the ability of future generation to meet their own needs"

The resource base is not inexhaustible, it follows that there must exist some limit beyond which the rate of exploitation of natural resources to supply the open ended and increasing demand for goods and services will compromise the ability of future generations to meet their own needs. Therefore, it is clear that sustainable development is economic development that exclusively relies upon and is firmly rooted in the integrity and sustainability of the natural environment.

National resources management has emerged in line with the evolving concept of sustainable development over the past three decades. If nature's resource base is irredeemably depleted or irreversibly degraded, the means of wealth creation for social welfare will be seriously jeopardised. Without environmental sustainability, it is impossible to achieve sustainable development.

### **Unique definition for sustainable development**

At present, there is no unique operational definition for sustainable development. The reason is that there is no single indicator for comparing the relative progress made by different countries or regions towards sustainable development at a given time or for measuring progress made by a given country or region over time. This lack has been impeding progress towards global sustainable development.

The operational definition of sustainable global development:

"Sustainable global development requires that those who are more affluent adopt lifestyles within the planet's ecological means - for example, in their use of energy."

Therefore, if the international community is at all serious about achieving even a modest degree of global sustainable development, its operational definition must be based on the reduction in consumption of goods and services by the affluent within and between nations. Such a definition will pave the way both to developing a simple and unique indicator to measure sustainable development and to a more equitable distribution of wealth and resources among nations. The production and consumption must be curbed to achieve even a modest degree of sustainable development and determined efforts must be made to reduce consumption through formal education. The eminent French anthropologist Levi - Strauss's view is that "Man is not a privileged inhabitant of the universe, but merely a passing species that will leave only a few faint traces of its passage when it becomes extinct".

### **Role of science and technology in delivering environmental sustainability:**

There is a strong belief in the international scientific community that the environmental

problems can be solved and sustainable development and global environmental sustainability achieved only with the application of science and technology alone. But the progress towards sustainable development is dependent upon a fundamental change in societies' attitude to nature and the environment. It is only with such enlightenment that the affluent would be willing to adopt less consumptive lifestyles commensurate with the Earth's ecological capacity. Science and technology, however advanced, cannot help in this matter. Hence, what is needed to bring about this change of attitude is education in moral and ethical philosophy. In the young minds, it is essential to reinforce the environment-respecting moral values.

### **Understanding environmental behavioural change through communication**

In many of the conferences it was presumed that in order to solve environmental problems, it was necessary, besides the technical and scientific solutions that everybody adopted a different behaviour towards the environment. Developing a 'responsible environmental behaviour' became one of the tasks of environmental education. Unfortunately changing behaviour through environmental education confirmed itself as a difficult task. A communication approach can give us a new perspective of responsible environmental behaviour. It allows us to consider it not only from the individual perspective but also from a social perspective [1].

The first approaches linking knowledge to attitudes and attitudes to behaviour proved wrong in practice and environmental education was forced to change and evolve its practices. Many environmental education researchers and practitioners consecrate themselves to understand the responsible environmental behaviour in order to improve environmental education. The 'responsible environmental behaviour' is defined as "the whole of actions of an individual within the society, that takes into account, in a conscious way, the perennial and harmonious relationship between these actions and environment". Communication is a way of approaching and explaining processes in society and it can be defined as "the exchange processes among the individual and group members of a given society".

In the field of environmental education, the research on responsible environmental behaviour has been directed in two main directions:

- The predictors of a responsible environmental behaviour within the individual,
- The link between environmental behavioural change and its outcomes in practice.

The responsible environmental behaviour is the product of personality factors, action skills and knowledge that influenced the intention to act.

The communication approach explains the difficulties to change behaviour from the lack of stability of the innovation. In this case, the fact that the individuals susceptible to learn and change their behaviour towards the environment are influenced by the interactions they have with other individuals.

### **Conclusion**

The international community is serious about achieving even a modest degree of global environmental sustainability and sustainable development. Effective policies must be implemented to curb consumption by the affluent. We need moral education to instill genuine environment respecting moral values in the young budding engineers and other specialised area students who, in their professional careers as planners, designers, builders and decision makers, will bear considerable responsibility for mankind's impact on nature and the natural environment. Conventional engineering education is no longer adequate for the real needs of tomorrow. Future engineers must acquire knowledge and skills in engineering and keep pace with rapid advances in practically all branches of engineering and other areas too.

Following interventions based on observations, discussion, research, writing, reflection and idea comparison, young children seem to be able to construct the conception that pollution can be hazardous to their health; starting from the idea that pollution only constitutes visible waste. We believe experiential learning and the socio-constructivist approach, as experienced, contribute to significant learning and encourage learning. Indeed, Novak [18] explains that at the point where significant learning occurs, new concepts are integrated into the previous cognitive structure as long as sufficient effort is made to favour that integration. This significant learning is

opposed to learning 'by heart' (memorisation), an approach often used in schools.

Perhaps the effort required of these last interventions that sustain the cognitive conflict between peers' and adults' ideas favours learning better than traditional methods of information-explanation and

learning by heart. As Hassard [10] would say, hands-on experience is not enough; we also need minds-on experiences.

The communication perspective opens the door to another kind of tools that environmental educators can use in order to improve the educational practice.

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# Economic Growth and Environmental Damage

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*Global attention is shifting to how best to sustain a durable economic growth. But what does sustained and durable economic growth mean in the context of the natural environment? The global economy face significant environmental challenges, from averting dangerous climate change to halting biodiversity loss and protecting our ecosystems. There has been debate over whether it is possible to achieve economic growth whilst also tackling these challenges. Moving to a sustainable economic growth path will not happen overnight, but it is essential if we are to secure long-term economic growth and make the economy resilient to risks in the future.*

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Economic and environmental performance must go hand in hand. The natural environment is central to economic activity and growth, providing the resources we need to produce goods and services, and absorbing and processing unwanted by-products in the form of pollution and waste. Environmental assets contribute to managing risks to economic and social activity, helping to regulate flood risks, regulating the local climate (both air quality and temperature), and maintaining the supply of clean water and other resources.

This underpins economic activity and wellbeing, and so maintaining the condition of natural assets is a key factor in sustaining growth for the longer term. Correspondingly, economic growth contributes to the investment and dynamism needed to develop and deploy new technology, which is fundamental to both productivity growth and managing environmental assets. It is critical that we address these issues now. We face significant environmental challenges globally, from tackling dangerous climate change to managing threats to our water resources and biodiversity. Far from reducing the urgency of this challenge, the economic downturn and subsequent recovery provides an opportunity to shape the future economy and set us on a sustainable growth path.

Though nowadays it is more often claimed that humanity can develop without causing damage to nature, there still exists strong opposing arguments to

this hypothesis. Development assumes economic growth, and economic growth is impossible without industry, which needs energy resources. Currently, the range of goods required by common people has expanded significantly compared to the times before modern industrial technology was employed on a mass scale. People feel the need, not only for primary essentials, such as a piece of bread and a roof over their heads, but also for various facilities and luxuries. Providing humanity with these objects involves the exploitation of natural resources. In turn, the conventional sources of energy we use today cause pollution, so economic growth is almost inevitably associated with environmental damage.

One of the aspects of economic growth which affects the environment most of all is that in order to produce more goods and products at a faster rate, the construction of large industrial plants is required. These enterprises generate mass amounts of pollution in the form of liquid waste and gaseous fumes. The liquid waste is frequently dumped in fresh water bodies, while the gaseous fumes are released into the atmosphere. The liquid waste leads to the pollution of water and the damaging of aquatic ecosystems (Jion 365). The gaseous fumes pollute the atmosphere, which may cause negative, long-term health effects to nearby populations of animals or people. They also lead to the degradation of the ozone layer, which is one of the main reasons for the acceleration of global warming.

The conventional energy sources that are commonly used nowadays are considered to be the greatest polluters of the environment, and intensive rates of industrial manufacturing lead to constantly increasing energy consumption. One might say that the solution lies in the usage of so-called non-conventional sources of energy, such as tidal, geothermal or wind energy. They are preferred due to their environmentally-friendly means of energy generation, but at the same time, they possess several critical drawbacks. The high installation cost is one of them. Besides, they are yet less effective than conventional ones, and need the accompanying political will to initiate. Transiting from one energy source to another also requires time, during which people have to make some sacrifices to support these undertakings. In a democratic country, making people accept this would pose a challenge (Robert 209).

Simultaneously, even if implemented, non-conventional sources of energy still do not resolve the problem of inflicting damage to the environment. In order to produce economically viable energy, utilizing tidal and geothermal sources, a sometimes significant distortion of the natural site is often inevitable (Robert 201). This is expensive and has substantial harmful effects on the environment. The application of wind energy would necessitate blocking airflows' natural velocity, which is the reason for their decrease in strength after crossing the windmill. Consequently, the pressure balance that is brought about by this current will be affected, and it is important to remember that the environment and weather conditions are directly affected by atmospheric pressure.

The role of environmental policy is to manage the provision and use of environmental resources in a way that supports improvements in prosperity and wellbeing, for current and future generations. There are a number of reasons why government intervention is needed to achieve this. In particular, market failures in the provision and use of environmental resources

mean that natural assets would be over-used in the absence of government intervention. These market failures arise from the public good characteristics of the natural environment; 'external' costs and benefits where the use of a resource by one party has impacts on others; difficulties in capturing the full benefits of business investment in environmental R&D; and information failures.

Effective environmental policy is likely to require the use of multiple instruments, each tackling a different part of the problem, while avoiding duplication and unnecessary regulatory burdens. Pricing environmental inputs correctly helps manage the sustainable provision and use of natural resources. A consistent and coherent environmental policy provides greater certainty about the value of investments and encourages long-term business investment in new technology and innovation. Finally, environmental policy, including infrastructure and other investments, can reduce how vulnerable the economy and businesses are to adverse environmental events - both by reducing environmental risk and by increasing the economy's resilience to these risks. For example, not just investments that facilitate emissions reductions to avoid dangerous climate change, but also those investments that help the economy adapt to climate impacts already locked-in by past and current emissions.

As one can see, economic growth is connected to environmental damage, and at the current level of development, humanity can hardly avoid harming nature. This is caused by a number of factors, such as the inaccessibility and costliness of alternative sources of energy. But the most significant reason is that constant economic growth leads to the increase in the rate of industrial production. With the expansion of industry, more conventional resources are needed, and since their usage causes severe pollution, it can be concluded that economic growth is inseparable from the damage inflicted on the environment.

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# Environment Design for Transpiring Fake Societies

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*The NewTies project is developing a system in which societies of agents are expected to develop autonomously as a result of individual, population and social learning. These societies are expected to be able to solve the environmental challenges that they are set by acting collectively. The challenges are intended to be analogous to those faced by early, simple, small-scale human societies. Some issues in the construction of a virtual environment for the system are described and it is argued that multi-agent social simulation has so far tended to neglect the importance of environment design.*

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## 1. Introduction

The goal of social simulation is to develop models that shed some light on the functioning of human societies. The advantages of a simulation approach to understanding human societies include the requirement to express theories in complete and unambiguous terms; the opportunity to derive the implications of proposed social mechanisms; and the possibility of performing experiments on the simulated society. As a result of these advantages, there has been a rapid growth in the popularity of social simulation over the last decade.

There are two main current approaches to the construction of simulation models of society. One approach starts with data observed or collected from a human society and tries to find a model that reproduces the observations. This approach, which generally yields results that are complex but can be compared directly with the observed data, has been labelled KIDS (Keep It Descriptive). The other approach, named KISS (Keep It Simple), begins by attempting to simplify the putative social phenomena to its essence and models only an abstract version of the society. The model tends to be easier to explore and understand, but validation against human societies is much harder.

This paper, like the New Ties project of which it is part1, takes a third approach. We aim to see whether an artificial society can 'construct itself' with only the

bare minimum of experimenter provided rules or theory. We take our inspiration partly from work on the evolution of language, which has shown that, given a capacity to learn, artificial agents are capable of developing a simple 'language' with which to communicate for an overview. Initially agents utter only random noise with no information content, but through repeated interactions, some of which are rewarded, the agents gradually develop a shared lexicon.

If agents can develop a lexicon from 'nothing', could they also develop a shared culture? This is the hypothesis underlying the New Ties project. Taken strictly, the answer must be 'yes', since language and thus a lexicon is an important part of human culture. But we wish to see whether agents can develop culture in a wider sense, as a set of shared behaviours and understandings of the society and environment in which they live. This culture, like the shared lexicon, must be developed collaboratively by the agents from 'nothing'. This means that we give the agents the ability to learn, but do not direct them about what to learn, and initialise them with a bare minimum of knowledge about their worlds. However, the agents are given a rich and extensive simulated environment in which they have to learn how to survive. The next section of the paper reviews the types of learning available to agents. The following two sections introduce the environment and the challenges that the agents face. The fifth section describes the proposed interface between the

environment and an agent. Agents perceive their surroundings and act in their world through this interface.

The paper concludes by emphasising the importance of the design of the environment for social simulation and suggesting that this aspect has too often been neglected.

## 2. Learning

The agents are constructed to be able to learn in three ways:

- a. Individual learning through trial and error.** Agents act according to their genetic predispositions, overlaid with random variations. Some actions are more effective than others. Those actions that succeeded in the past are remembered and the agent is then more likely to repeat those actions than the others.
- b. Population learning through reproduction and selection :** Agents with predispositions to carry out effective actions more frequently are more capable and are therefore more likely to reproduce, transferring a version of their genetic material to their offspring. Thus the population of agents as a whole will tend to become more successful over the course of many generations.
- c. Social learning:** Neither individual nor population learning require any communication between agents. However, these types of learning could be the means by which the agents begin to develop a language for communication. If they do so, they can start to use a more direct and effective mode of learning: that of one agent teaching another.

## 3. Environmental challenges

If agents are to learn, they must have some motivation to do so. In the New Ties project, that motivation is ultimately that of their survival. Agents are placed in a environment which they find individually and collectively challenging. Unless they master survival in this environment they will 'die'. This notion is operationalised by constructing environments in which there is a limited amount of 'food' to provide agents with energy and requiring the agents to maintain at least a minimum energy level. At first, agents have

to act on their own, since they have not yet learnt to act collectively. Those that manage to collect sufficient food from the environment may survive long enough to breed, while those that are less successful are more likely to 'starve'. The environment thus imposes a strong selection pressure on the agents. Eventually, the agents may discover how to communicate and then be able to engage in collective action. This is likely to be more effective than individual acts in obtaining food from the environment.

The fine detail of the environmental challenge is an extremely important factor in the agents' development. If obtaining food is too easy, the agents will not need to learn much, and will probably not do so. If the environment is too unfriendly, all the agents will die of starvation before they have had a chance to learn anything. Secondly, if the environment requires agents to engage in activities which they are not able to carry out, the agents will surely fail, since they are only able to increase their knowledge through learning, but not their repertoire of basic actions. For example, humans have learned to fly, not by growing wings, but by learning how to build aircraft. Thirdly, the long-term objective of the research is to understand human societies better. The environment must set challenges that are analogous to those faced by humans if there is to be even the possibility of reading across from the simulation to human development.

We have designed four environmental challenges, each based on a well studied aspect of human society. In the descriptions below, the human system is first summarized, the challenge stated in terms of the simulated environment, and the observable outcome that might be expected is specified.

### 3.1 The Kula Ring

A complex system of visits and exchanges among the Trobriand Islanders of the western Pacific was first described by Bronislaw Malinowski (1922 [1978]). Necklaces were exchanged in one direction among the residents of a chain of islands and armbands exchanged in the opposite direction (hence the notion of a ring). These exchanges did not primarily serve an economic function but created a network of social obligations among peoples which could be depended upon at various times in an individual's life. In

particular, the social network seems to have been the basis for economic relationships such as trading food for pottery.

**The challenge parameters:** Food is distributed in spatial patches and the amount of food in a patch varies over time. The overall quantity is more than enough to feed the population, but there may be short-term local shortages. These can be alleviated by trading or by theft. Trade is less costly in energy, but requires the prior development of mutual trust by the traders.

**Expected outcome:** The establishment of a 'gift-exchange' system in which not only food but also tokens are exchanged.

### 3.2 Herders in a semi-arid area

Nomadic herding is another human solution for dealing with variable and uncertain shortages.

Herders and their cattle move to where food is available, leaving exhausted areas until the grass has re-grown. This requires herders to find ways of managing common pool resources (the grass) so that no individual herder overgrazes the grass. The human solution involves well developed status hierarchies and no private property.

**The challenge parameters:** Food is randomly distributed with the mean level of food just sufficient to support the population. The rate of food growth varies randomly over time. Food is perishable. Some food must be left uneaten on each patch since subsequent growth is proportional to amount of food left uneaten.

**Expected outcome:** Agents leave uneaten food when they move away, even if they leave hungry.

### 3.3 Central place theory

Walter Christaller developed Central Place theory in 1933 (King, 1985) to explain the size and spacing of cities that specialize in selling goods and services.

The theory consists of two basic concepts:

**threshold :** the minimum market needed to bring a firm or city selling goods and services into existence and to keep it in business

**range :** the average maximum distance people will travel to purchase goods and services The theory predicts that settlement size will follow the rank size rule. It works well for human settlements.

**The challenge parameters:** The distribution of types of food is such that agents need to trade food with other agents. The food types vary in their transportability. Agents can move to find the best location to maximise their income from trade.

**Expected outcome:** Agents settle into spatial clusters separated by relatively empty areas. The size of the clusters is power law distributed.

### 3.4 Branding

When producers produce and consumers consume complex goods (i.e. ones with a large number of distinct attributes), and there are a large number of producers and consumers, search problems occur. Producers find it hard to locate consumers that desire goods having the precise set of attributes that a producer is selling, and consumers find it hard to identify producers with the desired goods. One 'solution' to the problem each side faces is for producers to brand their range of goods (targeting them at a subset of consumers) and for consumers to use the brand as the major preference criterion. Similar processes may help to account for prejudice and discrimination among human populations.

**The challenge parameters:** Agents have characteristic sensible attributes ('tags'). Agents seek to locate other agents with a similar or identical set of tags (through movement and communication), but this search is expensive. Agents are able to create additional tags (the brand) by collecting tokens and carrying them around.

**Expected outcome:** Agents either generate one additional tag or specially distinguish an existing tag and this becomes a linguistic category that labels agents and leads to differences in behaviour towards those agents that are labelled and those that are not.

## 4. The virtual environment

An environment that offers these challenges to agents must be sufficiently rich in features to allow each challenge to be constructed, but also no more complicated than necessary. Any features beyond the minimum required would slow down the simulation and, crucially, make the agents' task of learning how to manage in the environment more difficult, because they would need to learn to disregard irrelevant features.



The environment we have designed consists of a very large simulated flat surface over which the agents are able to move. The surface is divided into small patches or 'locations'; an agent or other object is of a size that it occupies exactly one location. A virtual clock counts 'time steps', used primarily to synchronise the agents' actions. To remain in accord with the real world, agents do not have direct access to their location on the surface, nor to the time. They are, however, able to detect geographical features ('places') and the relative position of the 'sun', an object which slowly traverses the surface, crossing it once per simulated day (there is no night - the sun is always visible). Places are bounded areas of the landscape which differ from the rest of the surface in having a varied, but lesser degree of roughness, making it easier for agents to move within places than in the wilderness outside places. On the landscape are a number of objects as well as the agents: tokens, plants, and paving stones. Tokens are distinguishable, moveable objects, some of which can be used as tools to speed up the production of food, but most of which have no intrinsic function, but can be employed by agents as location markers, symbols of value ('money'), or for ritual purposes.

Plants are the source of food. They are annuals, living for one year. At the beginning of the year, eating them gives agents little energy, but as the year progresses, they ripen and become better food. In the 'autumn', their energy value decreases again, and is entirely lost at the end of the year when they die. However, before they die, they produce two seeds, one at the parent plant's location and one in an adjacent location. If a seed is the only one in the location, it grows, but if there are more than one, only one will survive. If a plant is picked by an agent, it starts decomposing and will lose all its goodness if not consumed or replanted within a few days.

Agents lose energy (the rate depending on the roughness of the location) when they move over the landscape. The effort required to move can be reduced by building roads. Roads are constructed from paving stones laid end to end. With these simple ingredients, we can construct scenarios corresponding to each of the challenges. For example, the Trobriand Islands can be represented as places, with the rest of the surface (having a very high value of roughness) representing

the sea. The varied availability of food among the Islands (and the seasonal availability of crops) can be represented by arranging the plants in the places. The agents can learn to use tokens as symbolic gifts.

Economic trading between islands could involve exchanges of food and of token tools. The other challenges could be modelled by constructing 'scenarios' in similar ways. For example, the 'branding' challenge would involve agents trading many similar but not identical tokens between themselves, with search being costly (i.e. the roads are rough).

## 5. Agent interface

To survive in this environment, agents need to be able to perceive the landscape and the objects in it, and also need to be able to act on objects and other agents. Moreover, it is expected that experiments will be carried out using a variety of agent designs, possibly including agents constructed outside the New Ties project, and so a simple and precisely specified interface between the agents and the environment is desirable.

At each time step, every agent is given a slice of computational resource. During this step, it must complete two phases in sequence: a perceive phase and an act phase. During the perceive phase, an agent is given the following information about the environment:

- a. A list of the attributes (type, characteristics, colour, heading, and weight) of each object located within a segment defined by the direction in which the agent is facing, plus or minus 45°. The information returned about each object also includes its distance and direction from the agent and, if the object is an agent, its age and sex. These data do not include any direct indicator of the objects' identities; the agents have to infer these from the objects' attributes..
- b. A list of the places in which the agent is located (places can overlap, so there may be more than one).
- c. The agent's current energy level.
- d. A list of the attributes of all the objects that the agent is currently carrying.
- e. The roughness at the current location.
- f. The result of the action performed in the Act phase of the previous time step, if any.

g. A list of messages that other agents have sent during the preceding Act phase.

The agent is able to process this information as it wishes, and can then carry out one action, chosen from the following:

**Move:** The agent moves from its present location to an adjacent location in its forward direction.

**Turn left / turn right:** the agent rotates in the indicated direction by 45 degrees.

**Pick up object:** The agent acquires the object. The object remains with the agent until the agent puts it down or eats it (if the object is food).

**Put down object:** The agent puts the object down at the current location.

**Give object:** The agent transfers an object in its possession to another agent. The receiving agent must be in an adjacent location.

**Take object:** The agent takes an object from another agent. The donating Agent must be in an adjacent location.

**Build/improve road:** The agent builds (if there is no road already) or improves (i.e. reduces the roughness of) the road at the current location.

**Talk to agent:** The recipient agent must be 'visible' to the speaker (An agent cannot talk to another agent while facing away from that Agent, but the hearer does not have to be facing the speaker). A character string emitted by the speaker is conveyed to the listener. The effect is that both the listener and the speaker are given the character string during the next Perceive phase.

**Shout:** A character string emitted by the shouter is conveyed to all agents within a short distance (including the shouter itself) during the next Perceive phase.

**Hit:** The agent chooses, first, the amount of energy to expend on the blow, which must be less than the current energy level of the Agent, and, second, which agent will be the victim (the victim must be in an adjacent location). Both the aggressor agent and the victim lose energy proportional to the ratio of the weights of the aggressor and the victim. If the victim's weight decreases to zero or less as a result of the violence, the victim dies.

**Eat food:** The agent must already be carrying the food (see Pick up object). The energy of the food is added to the agent's energy and the food 'disappears'.

The information given to agents about their environment is intended to reflect the information which would be available to a human. Particular care is taken not to give agents information which would not be accessible to people. For example, the identity of other agents is not provided, only some descriptive characteristics through which agents may be recognised. However, there is no guarantee that all agents will necessarily have a unique set of these characteristics. Also, in a small group, only a subset of the characteristics may in fact be needed to distinguish agents. Utterances are labelled by the system, not with the identity of the speaker, but with its characteristics for the same reason. Speakers hear their own utterances reflected back to them, again because this is the experience of humans, who are able to monitor their own speech.

Initially, agents will have no common lexicon and therefore no understanding of what other agents say to them; we expect, in the light of studies on the evolution of language, that in time the agents will develop a shared vocabulary and ultimately a shared idea of grammar (see Vogt & Divina (2005) for details on language evolution in NewTies). However, because of the design of the agents and the environment, it is not necessary or even likely that this vocabulary will be entirely composed of utterances (i.e. 'words'). Because talking is just one of the actions available to agents, it would be expected that some actions other than talking will come to take on meaning for the agents - in the same way as human gestures, for example, can substitute for or even be preferred to speech for conveying some meanings.

This is in contrast to current studies of the evolution of language, which have generally taken a more purely linguistic approach to interaction.

Although the list of possible actions may seem long, it is intended to be the minimum set that would enable the challenges to be met by the agents while yielding social behaviour comparable to that of human societies. For instance, the actions 'give object' and 'take object' are required in order to make trade a possibility. Without these actions, the only way to transfer an object from one agent to another would be for one agent to put the object down and another subsequently to pick it up. However, there would be

no way for the first agent to guarantee that the second agent is the recipient, and thus directed personal transfers (required for trade) would be difficult or very risky. The justification for the 'hit' action (aside from the fact that violence is an endemic feature of human societies) is that without violence, private property cannot be preserved. An agent wanting an object in the possession of another could simply remove it and the owner would have no recourse if there were no possibility of violence.

To match the human situation, an aggressor will only be effective if it is stronger (i.e., heavier) than the victim, so we can expect weak (light) individuals to be subject to theft which they cannot resist, at least until a protective social system evolves. In this environment, agents have only one overriding 'motivation': to obtain sufficient food to survive.

Human requirements are of course more complex, involving not just a reasonably balanced diet, but also warmth and water, but we are assuming that 'food' is an adequate abstraction for these more complex needs. It is intrinsic to the implementation of population learning that agents are born, reproduce and so pass on their genotype, and die. New agents result from the coupling of a male and a female agent (hence agents need to have a gender) and are born in an adjacent location to their parents. Parents have no predisposition to attend to their offspring, but because they are nearby, are likely to interact with them more than with other agents. Parental care of offspring is likely to be selected for since neglected children will find survival even more difficult than their parents (since they have had no opportunity for individual learning). To enable adults to identify children, one of the characteristic features of agents, perceptible by other agents, is their age.

## 6. Conclusions

We have outlined a design for an environment which can be tuned in ways that are expected to promote the emergence of agent social behaviour to solve environmental challenges analogous to those that human societies have been able to overcome. If such behaviour does arise, the simulation could serve as an invaluable test bed for examining a wide range of social theories. Its great advantage is that while one cannot experiment on human societies, one can on artificial

societies. It will be possible, for example, to determine the conditions under which particular social phenomena emerge and survive in a way undreamt of by social theorists who can observe only a small number of human societies as cases on which to test their ideas. Even these few societies have been subject to an unknown amount of cross-fertilisation (for example, it is believed that the practice of agriculture was only discovered in two or three places in the world's history; all other agriculture was learned by copying these early innovations).

Nevertheless, there must be some caveats about making too close a link between the simulation and human societies. On the one hand, the simulated agents are lacking many of the qualities of humans, and we do not know to what extent the differences between humans and the agents are important for the generation of analogous social phenomena (for example, we noted above that the simulation does not treat 'warmth' as a distinct need for the agents, although in cold climates it is for humans).

On the other hand, what we observe in human societies is one outcome from an unknown number of other possibilities. For example, it has been pointed out that, although most simple societies engage in some form of trade with other communities, the Kula Ring is unique. No other society has ever been discovered in which there is a two-way flow of symbolic goods. It follows that if the agent society does not generate an institution resembling the Kula Ring, this may simply be because an alternative institution has evolved, as it did in the great majority of human societies faced with similar challenges.

This is of course a question that can be explored using the simulation: the experiment can be repeated many times to see whether a Kula phenomenon ever appears.

In contrast to most social simulation research, we have been almost exclusively concerned in this paper with the design of the environment; what in the environment is perceived by the agents; and the actions that the agents can take on the environment. The 'internal' design of the agents has been given little attention because it is entirely generic: agents are required to have:

a means of generating actions as a function of their past history and current perceptions (but the form

of this (phenotype) function is not of direct interest other than to the extent that it is affected by the agent's genotype),

a genotype which, through some reproduction process, is able to generate copies with variation, and an algorithm for categorising objects and associating them with actions (including uttered 'words').

The details of how these internal processes work is little consequence for the simulations proposed here

(which is not to say that these processes are trivial or easy to design). Their only important feature is that they should be effective and efficient. Perhaps the fact that the agents can be black boxes, and yet the simulation can be interesting, should not be surprising, for this is the case with human societies also. We have only the flimsiest understanding of how humans 'work', yet both our social scientific and our everyday understanding of how societies work is increasingly sophisticated.

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# Environmental Pollution and its Remedies

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*Today millions of people are without the basic human needs of food, clothes, health, education and employment. This is not due to overpopulation alone but also due to environmental consequences. The loss of forests, fertility of soil, productivity and energy crises have created many problems. In basic words pollution is "Changes in physical, chemical and biological characteristics of air, water and soil that become harmful for plant, animal and human being to carry on their life function." This paper explains the Environmental Pollution and its remedies in an objective manner.*

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Environment Pollution is the greatest challenge not only to the human kind but also to the entire world of living creatures as well as to the entire gamete of vegetable kingdom. Air, water, soil, light, sound etc are the principle ingredients of the environment. These ingredients, with their standard values provide life cover to the human, animals and vegetation. Any deterioration of the quality of these components of the environment seriously jeopardizes the survival of the animal kingdom and the vegetation.

The major forms of pollution are listed below along with the particular contaminant relevant to each of them<sup>1</sup>:

- **Air pollution:** - the release of chemicals and particulates into the atmosphere. Common gaseous pollutants include carbon monoxide, sulfur dioxide, chlorofluorocarbons (CFCs) and nitrogen oxides produced by industry and motor vehicles. Photochemical ozone and smog are created as nitrogen oxides and hydrocarbons react to sunlight. Particulate matter or fine dust is characterized by their micrometre size PM10 to PM 2.5.
- **Light pollution:**- includes light trespass, over-illumination and astronomical interference.
- **Littering:**- the criminal throwing of inappropriate man-made objects, unremoved, onto public and private properties.
- **Noise pollution:**- which encompasses roadway noise, aircraft noise, industrial noise as well as high-intensity sonar.
- **Soil contamination** occurs when chemicals are released by spill or underground leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, MTBE, herbicides, pesticides and chlorinated hydrocarbons.
- **Radioactive contamination**, resulting from 20th century activities in atomic physics, such as nuclear power generation and nuclear weapons research, manufacture and deployment.
- **Thermal pollution**, is a temperature change in natural water bodies caused by human influence, such as use of water as coolant in a power plant.
- **Visual pollution**, which can refer to the presence of overhead power lines, motorway billboards, scarred landforms (as from strip mining), open storage of trash, municipal solid waste or space debris.
- **Water pollution**, by the discharge of wastewater from commercial and industrial waste (intentionally or through spills) into surface waters; discharges of untreated domestic sewage, and chemical contaminants, such as chlorine, from treated sewage; release of waste and

contaminants into surface runoff flowing to surface waters (including urban runoff and agricultural runoff, which may contain chemical fertilizers and pesticides); waste disposal and leaching into groundwater; eutrophication and littering.

Air pollution is a major environmental health problem affecting the developing and the developed countries alike. The effects of air pollution on health are very complex as there are many different sources and their individual effects vary from one to the other. It is not only the ambient air quality in the cities but also the indoor air quality in the rural and the urban areas that are causing concern. In fact in the developing world the highest air pollution exposures occur in the indoor environment. Air pollutants that are inhaled have serious impact on human health affecting the lungs and the respiratory system; they are also taken up by the blood and pumped all round the body. These pollutants are also deposited on soil, plants, and in the water, further contributing to human exposure. As you read on you can learn about health impacts of specific air pollutants<sup>2</sup>.

Air pollutants consist of gaseous pollutants, odours, and SPM, (suspended particulate matter) such as dust, fumes, mist, and smoke. The concentration of these in and near the urban areas causes severe pollution to the surroundings. The largest sources of human-created air pollution are energy generation, transportation, and industries that use a great deal of energy sources. Depending on their source and interactions with other components of the air, they can have different chemical compositions and health impacts. Since these pollutants are generally concentrated in and around urban areas, the outdoor urban pollution levels are far higher than in the rural areas.

Fires are another major source of air pollution and can lead to severe problems if the smoke is inhaled for a period of time. These fires can either be forest fires, oil well fires, burning of leaves in the backyard or as in the case of rural areas, large-scale burning of agricultural waste. Other sources include industries and power plants located in these areas.

### Common atmospheric pollution sources and their pollutants

Category	Source	Emitting pollutants
Agriculture	Open Burning	Suspended particulate matter, carbon monoxide, volatile organic compounds
Mining and quarrying	Coal mining; crude oil and gas production; stone quarrying	Suspended particulate matter, sulphur dioxide, oxides of nitrogen, volatile organic compounds
Power generation	Electricity; gas; steam	Suspended particulate matter, sulphur dioxide, oxides of nitrogen, carbon monoxide, volatile organic compounds, sulphur trioxide, lead
Transport	Combustion engines	Suspended particulate matter, sulphur dioxide, oxides of nitrogen, carbon monoxide, volatile organic compounds, lead
Community service	Municipal incinerators	Suspended particulate matter, sulphur dioxide, oxides of nitrogen, carbon monoxide, volatile organic compounds, lead

### Impact of air pollution on health

Indoor air pollution can be particularly hazardous to health as it is released in close proximity to people. It is stated that a pollutant released indoors is many times more likely to reach the lung than that released outdoors. In the developing countries a fairly large portion of the population is dependent on biomass for their energy requirements. These include wood, charcoal, agricultural residue, and animal waste. Open fires used for cooking and heating are commonly found in the household both in the rural and the urban areas. The main pollutant in this environment is the SPM. In fact, death due to indoor air pollution, mainly particulate matters in the rural areas of India, are one of the highest in the world. Many of the deaths are due to acute respiratory infections in children; others are due to cardiovascular diseases, lung cancer, and chronic respiratory diseases in adults. If emissions are high and

ventilation is poor, household use of coal and biomass can severely affect the indoor air quality.

Pollutant emissions per meal are also very high compared to those of other fuels. Household use of fossil fuel is also fairly common in the developing countries, particularly coal-both bituminous and lignite. These are particularly damaging as they burn inefficiently and emit considerable quantities of air pollutants. If emissions are high and ventilation poor, then the exposure levels to the gases emitted are far higher. The most harmful of the gases and agents that are emitted are particulate matter, carbon dioxide, polycyclic organic matter, and formaldehyde. The indoor concentrations of these are far higher than the acceptable levels and is cause for concern in rural areas.

### Health impact of specific air pollutants

Excess of green housegases in the atmosphere can seriously and adversely affect the health of the people. Continuous increase of green house gases in the atmosphere results into the rise in the temperature on earth that causes the problems to living world The gases mentioned below are mainly outdoor air pollutants but some of them can and do occur indoor depending on the source and the circumstances<sup>3</sup>.

Tobacco smoke. Tobacco smoke generates a wide range of harmful chemicals and is a major cause of ill health, as it is known to cause cancer, not only to the smoker but affecting passive smokers too. It is well-known that smoking affects the passive smoker (the person who is in the vicinity of a smoker and is not himself/herself a smoker) ranging from burning sensation in the eyes or nose, and throat irritation, to cancer, bronchitis, severe asthma, and a decrease in lung function.

- **Biological pollutants.** These are mostly allergens that can cause asthma, hay fever, and other allergic diseases.
- **Volatile organic compounds.** Volatile compounds can cause irritation of the eye, nose and throat. In severe cases there may be headaches, nausea, and loss of coordination. In the longer run, some of them are suspected to cause damage to the liver and other parts of the body.

- **Formaldehyde.** Exposure causes irritation to the eyes, nose and may cause allergies in some people.
- **Lead.** Prolonged exposure can cause damage to the nervous system, digestive problems, and in some cases cause cancer. It is especially hazardous to small children.
- **Radon.** A radioactive gas that can accumulate inside the house, it originates from the rocks and soil under the house and its level is dominated by the outdoor air and also to some extent the other gases being emitted indoors. Exposure to this gas increases the risk of lung cancer.
- **Ozone.** Exposure to this gas makes our eyes itch, burn, and water and it has also been associated with increase in respiratory disorders such as asthma. It lowers our resistance to colds and pneumonia.
- **Oxides of nitrogen.** This gas can make children susceptible to respiratory diseases in the winters.
- **Carbon monoxide.** CO (carbon monoxide) combines with haemoglobin to lessen the amount of oxygen that enters our blood through our lungs. The binding with other haeme proteins causes changes in the function of the affected organs such as the brain and the cardiovascular system, and also the developing foetus. It can impair our concentration, slow our reflexes, and make us confused and sleepy.
- **Sulphur dioxide.** SO<sub>2</sub> (sulphur dioxide) in the air is caused due to the rise in combustion of fossil fuels. It can oxidize and form sulphuric acid mist. SO<sub>2</sub> in the air leads to diseases of the lung and other lung disorders such as wheezing and shortness of breath. Long-term effects are more difficult to ascertain as SO<sub>2</sub> exposure is often combined with that of SPM.
- **SPM (suspended particulate matter).** Suspended matter consists of dust, fumes, mist and smoke. The main chemical component of SPM that is of major concern is lead, others being nickel, arsenic, and those present in diesel exhaust. These particles when breathed in, lodge in our lung tissues and cause lung damage and respiratory problems.

The importance of SPM as a major pollutant needs special emphasis as

- a) It affects more people globally than any other pollutant on a continuing basis;
- b) There is more monitoring data available on this than any other pollutant; and
- c) More epidemiological evidence has been collected on the exposure to this than to any other pollutant.

## Water Pollution

Clean water is absolutely essential for healthy living. Freshwater resources all over the world are threatened not only by over exploitation and poor management but also by ecological degradation. The main source of freshwater pollution can be attributed to discharge of untreated waste, dumping of industrial effluent, and run-off from agricultural fields. Industrial growth, urbanization and the increasing use of synthetic organic substances have serious and adverse impacts on freshwater bodies. It is a generally accepted fact that the developed countries suffer from problems of chemical discharge into the water sources mainly groundwater, while developing countries face problems of agricultural run-off in water sources. Polluted water like chemicals in drinking water causes problem to health and leads to water-borne diseases which can be prevented by taking measures can be taken even at the household level.

Many areas of groundwater and surface water are now contaminated with heavy metals, POPs (persistent organic pollutants), and nutrients that have an adverse affect on health. Water-borne diseases and water-caused health problems are mostly due to inadequate and incompetent management of water resources.

Water sources can be contaminated through following sources.

**Pesticides.** Run-off from farms, backyards, and golf courses contain pesticides such as DDT/BHC that in turn contaminate the water. Leechate from landfill sites is another major contaminating source. Its effects on the ecosystems and health are endocrine and reproductive damage in wildlife. Groundwater is susceptible to contamination, as pesticides permeate into the soil

**Sewage.** Untreated or inadequately treated municipal sewage is a major source of groundwater

and surface water pollution in the developing countries. The organic material that is discharged with municipal waste into the watercourses such as the rivers, ponds, lakes uses substantial oxygen for biological degradation thereby upsetting the ecological balance of rivers and lakes. Sewage also carries microbial pathogens that are the cause of the spread of disease.

**Nutrients.** Domestic waste water, agricultural run-off, and industrial effluents contain phosphorus and nitrogen, fertilizer run-off, manure from livestock operations, which increase the level of nutrients in water bodies and can cause eutrophication in the lakes and rivers and continue on to the coastal areas. The nitrates come mainly from the fertilizer that is added to the fields.

**Synthetic organics.** Industrial chemicals and agricultural pesticides can accumulate in fish and cause serious damage to human health.

**Acidification.** Acidification of surface water, mainly lakes and reservoirs, is one of the major environmental impacts of transport over long distance of air pollutants such as sulphur dioxide from power plants, other heavy industry such as steel plants, and motor vehicles. This problem is more severe in the US and in parts of Europe.

## Health hazards of water pollution

Water-related diseases include:

- Those due to micro-organisms and chemicals in water people drink( Cholera, Typhoid, Dysentery, Diarrhea, etc);
- Diseases like schistosomiasis which have part of their lifecycle in water;
- Diseases like malaria with water-related vectors;
- Drowning and some injuries;
- And others such as legionellosis carried by aerosols containing certain micro-organisms.

## Remedies

Remedies to control environmental pollution lies in the following factors:-

1. Legislative measures to control air pollution, water pollution and may others. Government of India has enacted the following laws in this regard:



The EPA (Environment Protection Act), 1986  
The Indian Forest Act and Amendment, 1984  
The Wildlife Protection Act, Rules 1973 and  
Amendment 1991  
The Water (Prevention and Control of Pollution)  
Act 1974  
The Factories Act and Amendment in 1987  
The Air (Prevention and Control of Pollution) Act  
1981  
The Atomic Energy Act 1982  
The Air (Prevention and Control of Pollution)  
Amendment Act 1987

The Motor Vehicles Act 1988  
2. Society itself can control the damage to  
environmental factors by adopting the following  
measures<sup>5</sup>: Creating awareness about the hazards of  
environmental pollution  
a. Population Control  
b. Tree Plantation  
c. Use of natural manure  
d. Increase the Use of Either Cloth or Paper Bags  
e. To stop Filth Completely:  
f. Use Alternate Sources of Energy  
g. Make Your Home Pollution Free

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# Green Banking - A Positive Step Towards Environmental Development

## (Special reference to SBI Green Channel Counter)

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*Banking sector is one of the major economic agents influencing overall industrial activity and economic growth. Since banking sector is one of the major stake holders in the Industrial sector, it can find itself faced with credit risk and liability risks. Further, environmental impact might affect the quality of assets and also rate of return of banks in the long-run. Thus the banks should go green and play a pro-active role to take environmental and ecological aspects as part of their lending principle, which would force industries to go for mandated investment for environmental management, use of appropriate technologies and management systems. Green banking means promoting environmental friendly practices and reducing carbon footprint from banking activities. To aid the reduction of external carbon emission, bank should finance green technology and pollution reducing projects. Green banking is a component of the global initiative by a group of stakeholders to save environment. This paper explores the features, benefits of Green Banking, and highlights the working of green channel of State Bank of India in the environmental development of India.*

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### Introduction

Green banking is like a normal bank, which considers all the social and environmental factors; it is also called as an ethical bank. Ethical banks have started with the aim of protecting the environment. These banks are like a normal bank which aims to protect the environment and it is controlled by same authorities as what traditional banks do. How Green/Ethical banking does differ from Normal banking? There are many differences compared with normal banking and Ethical bank they give more weight to environmental factors, their aim is to provide good environmental and social business practice, they check all the factors before lending a loan, whether the project is environmental friendly and has any implications in the future, you will awarded a loan only when you follow all the environmental safety standards. Banking sector is one of the major sources of financing investment for commercial projects which is one of the most important economic activities for economic growth. Therefore, banking sector can play a crucial role in promoting environmentally sustainable and socially responsible investment. Banks may not be the polluters themselves but they will probably have a banking relationship with some companies/

investment projects that are polluters or could be in future. This concept of "Green Banking" will be mutually beneficial to the banks, industries and the economy. Not only "Green Banking" will ensure the greening of the industries but it will also facilitate in improving the asset quality of the banks in future. Internationally, there is a growing concern about the role of banking and institutional investors for environmentally responsible/socially responsible investment projects. Banking and other financial institutions are more effective towards achieving this goal for the kind of Intermediary role they play in any economy and for their potential reach to the number of investors. Environment is no longer the exclusive concern of the government and the direct polluters, but also the other partners and stake- holders in the business like financial institutions such as banking institutions can play a very important role in fostering linkage between economic development and environmental protection.

### Objectives

1. To provide awareness about green/ethical banking among general public.
2. To highlight Indian initiatives by State Bank of India adopting green channel banking in India.

## Research Methodology

The present empirical study has based on secondary data. All the information and opinion are collected which have a direct or indirect relevance to the information.

## The First Green Bank

Based in Eustis and Clermont Florida USA, First Green Bank is the first bank of its kind to promote positive environmental and social responsibility while operating as a traditional community bank providing excellent service to investors and clients. The progressive approach to the community and the Earth sets it apart from other banks.

## Green Banking in India

Green banking is growing popular to developing countries including India. Indian banks use green banking along with their traditional banking system. It introduces eco-friendly green products which targets to cure the environmental challenge of the country. In India the scheme of green banking was first applied by SBI as step towards green Earth. On 23 April, 2010 at Coimbatore windmill was installed for generating green power. Since 2010 SBI initiates many activities as part of green banking scheme, hence SBI in India promoted an operational part of green banking. RBI even passed a circular for application of green banking to all commercial bank in India by 2013, further RBI provided permission to open new branches basically based and regulated on the principle of green banking. Green banking requires wider change in thinking about finance, economics and business. World governments' initiative could bring more success to application of green banking scheme. It should revise their economic principle from being 'monetary economics' to 'ecological economics' and focus transformation in their accounting principles of financial benefits to ecological/operational energy attaining benefits. Hence if green banking being applied appropriately at both global and national level it will surely account for environmental protection.

India's second largest private sector lender, HDFC Bank is all set to launch green banking for which it has constituted an Environment Management Committee to implement its green banking initiatives. The bank has

rolled out gamut of initiatives on the environment fronts that promise to make it India's only "green" bank. A high level three - member committee has been formed to drive the organization wide campaign that will encompass organization and employee level initiatives, the bank spokesperson told UNI. Headed by the bank's Executive Director Paresk Sukthakar, the high power committee will have HR Head Mandeep Maitra and finance Head Sashi Jagdishan respectively, of the bank and will be responsible for planning and implementation of environment-friendly initiatives across the country through bank's branches. HSBC Bank, ICICI and HDFC Bank, the entities who received green leaders award in the banking industry, are not only keen on investing in green energy projects but also leads the way in cutting their own carbon emissions through unique initiatives. Country's largest private sector lender ICICI Bank said they have been a part of clean development for years and will continue providing financial support to the project. Banks like State Bank of India and YES Bank are generating additional business income through carbon credit financing and advisory services.

## Features of Green Banking

Today environmental issues are gaining greater attention due to critical environmental condition, now pressure is being shifting on all industries including financial services, to regulate green initiatives. The various features of green banking are as follows-

- **Expand eco-friendly business and industries-** The most striking feature of green banking is that it works and operated within same traditional banking under separate green banking cells which incorporate Environmental Risk Management (ERM) strategies to expand eco-friendly business and industry which involves adopting business and financial policies that are not dangerous to the environment and are eco-friendly.
- **Create climate-risk funds-** Green banking scheme focuses to provide climate risk funds including large variety ranging from flood, cyclone and drought-prone areas. The banks are directed not to charge additional risk premium rather provide regular interest rate.
- **Raising awareness for environmental protection-** Green banking generates awareness

for environmental protection. It involves large section of people contributing towards earth's protections either as producer producing and promoting eco-friendly products, supporting training programmers etc. or as consumer contributing indirectly but of huge mechanism.

- **Promote environment sensitive sector**-One of the vital notion of Green banking is to promote environment sensitive sector such as agriculture, sugar and distilleries, construction, poultry, dairy, farming, tannery, fisheries, renewable energy, pulp and paper textile apparels, chemicals, rubber and plastic industry, hospital/clinic, chemical trading, and housing, engineering and basic metal, brick manufacturing and ship breaking. Green branches will set up by all banks to maximize the use natural light, renewable energy, energy saving light bulbs and other equipment within the specified timeframe.
- **Rely on online/electronic transactions**-Green banking involves online and electronic transaction to avoid the use of paper work as much as possible, hence less paperwork means less cutting of trees and finally promoting sustainable and protected environment.

### **Benefits of Ethical/ Green Banking**

Paperless banking can be adopted as almost all banks in India are computerized or operate on a core banking solution (CBS) creating awareness to bank people about environment by bank can help to brighten the image of the bank. Provision of loans with financial concession for environment friendly products and projects can be an excellent idea for green banking. Moreover, following certain environmental standards for lending will make business owners to change their business to environment friendly which is good for future generations. Major benefits of green banking are listed below:-

- Promotes ethical (Green) banking which involves less use of paper and finally promoting better condition for environment by saving plants
- Green banking promotes environmental friendly business practice by Creating awareness among business people about environmental responsibility and motivating towards green Earth.

- Green (Ethical) banks adopt and implement futuristic idea of sustainable environmental earth. The bank's scheme of green banking system really promotes a proactive idea that would regulate eco-friendly business practices with long lasting results.
- Bank stimulating green banking scheme give more preferences to ecological gains arising from any environmental friendly factors and projects.
- Notification by e-mail for service reasons rather writing it up. This made the process faster and even promotes less use of paper.
- Promotes no paper-based marketing- Green banking strategy prohibits the use check- book or paying-in book for any current account.
- The Bank can easily promote the nature and environment by involving Projects in the field of renewable energy (wind energy & hydro-electric projects), organic agriculture etc.

### **Various Initiatives Under Green Banking**

Green Banking scheme promotes use of less paper is its day to day functioning where customers make withdrawals, paperless deposits and remittances The various initiatives under green banking scheme are as follows-

- **Green Checking**- Under this part of green banking the checking accounts converted to online banking. Requirement of paper statements disappears completely, the detail of all statements and charges summaries will be delivered electronically with the application of Internet Banking.
- **Green Money Market Accounts** -Green money market accounts includes conversion of savings accounts to online banking Opening. It promotes interest earning account having free e-statement and flexible withdrawal. Opening such account is as easy as printing the account application.
- **Green Loans**-Under this better rates on loans is provided for energy-efficiency projects which focuses at environment protection and led to sustainable development. Any customer seeking loan for project including environment protection given quick assistance and preference.

- **Green Mortgages** -Under this bank gives better rates for energy-efficient home. A green mortgage means a type of mortgage that includes a discount on money or a bigger loan for purchasing a house that meets certain energy-efficiency qualities promoting energy-efficient improvements. Green mortgages promotes energy-efficient home which includes lower utility bills. These mortgages are even known as Energy Improvement Mortgages (EIMs) or Energy Efficient Mortgages (EEMs)
- **Online Bill Payment** Under green banking online bill payment is promoted in which payment o bill is made easy and even eco-friendly.

### State Bank of India - Green Channel

State Bank of India (SBI), India's largest commercial bank, took the lead in setting high sustainability standards and completed the first step in its 'Green Banking' initiative with Shri O.P. Bhatt, Chairman, SBI, inaugurating the bank's first wind farm project in Coimbatore. Recent Green Bank initiatives include a push for solar powered ATMs, paperless banking for customers, clean energy projects and the building of wind mills in rural India. State Bank of India is a leader in Green Banking.

Green Banking is a combination of Electronic Banking and Branch Banking. Recent studies have indicated that more and more consumers prefer face to face banking rather than faceless banking. Hence, Banks in India too have started to respond to this new customer's need. From 01/07/2010, State Bank of India, at Select Branches has launched the Green Channel Banking.

### Green Channel Banking

The details of Green Channel Counter of State Bank of India are as under:-

- v The customers need not to fill up any pay-in-slip or draw cheques for depositing or withdrawing money from their accounts.
- Processing time is reduced, as duplication in writing/ feeding account details and transaction details by the customer as well as the person behind the counter is avoided by simply capturing these details by swiping the SBI Shopping Cum ATM card (STATE BANK SHOPPING CARD)

on a device available at the single window operator's (SWO) counter.

- At the Green Channel Counter, there is a point of sale machine (POS), on which the customer swipes his card. He is then asked by the machine to select the type of transaction, viz.
  - (0) Cash Deposit
  - (1) Cash Withdrawal and
  - (2) Funds Transfer
 " Once the customer selects the type of transaction by entering the option, the message 'Enter the Amount' is displayed.
- At present the maximum amount is Rs. 40,000/.
- The Customer is asked to confirm the input amount followed by a message "Please Enter the Pin".
- When the pin is entered by the customer, the transaction gets transferred to the terminal of SWO who after entering the denomination of the cash to be paid/ received pays/receives cash and the transaction gets completed.
- The customer will be provided with a machine generated printed receipts with previous balance, amount of transaction and closing balance.
- Odd Amount (In Rounded Rupees) transaction is possible.
- While withdrawing, the customer can have denomination of currency of his/her choice, subject to its availability at the branch.
- Fees/Charges- Free - There will be a nominal charge for remittance from non- home branches as given below :-
  - UP TO RS 20000 - FREE
  - ABOVE RS 20000 UP TO RS 40000 - @RS 1.5 PER EVERY RS 1000 and part thereof.

### Conclusion

1. Basically Green banking avoids as much paper work as possible and rely on online/ electronic transactions for processing so that we get green credit cards and green mortgages. Less paperwork means less cutting of trees. It also involves creating awareness to banking business people about environmental and social responsibility enabling them to do an environmental friendly business practice.

2. Green Ethical banks adopt and implement environmental standards for lending, which is really a

proactive idea that would enable eco-friendly business practices which would benefit our future generations.

3. When we are awarded with a loan, the interest of that loan is comparatively less with normal banks because green banks give more importance to environmental friendly factors - ecological gains.

4. Natural resources conservation is also one of the underlying principles in a green bank while assessing capital/operating loans to extracting/ industrial business sector.

5. Green Banking as a concept is a proactive and smart way of thinking with a vision for future sustainability of our only Spaceship Earth - as design science explorer Richard Buckminster Fuller called our Earth.

Overall Green banking is really a good way for people to get more awareness about global warming. Each businessman will contribute a lot to the environment and make this earth a better place to live. Thanks to green banking.

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# Rainwater Harvesting for Conservation of Water Resource

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*An old technology is gaining popularity in a new way. Rain water harvesting is enjoying a renaissance of sorts in the world, but it traces its history to biblical times. Extensive rain water harvesting apparatus existed 4000 years ago in the Palestine and Greece. In ancient Rome, residences were built with individual cisterns and paved courtyards to capture rain water to augment water from city's aqueducts. As early as the third millennium BC, farming communities in Baluchistan and Kutch impounded rain water and used it for irrigation dams. Artificial recharge to ground water is a process by which the ground water reservoir is augmented at a rate exceeding that obtaining under natural conditions or replenishment. Any man-made scheme or facility that adds water to an aquifer may be considered to be an artificial recharge system. In this study the methods and techniques for Rain water harvesting for conservation of Water resource have been taken into account.*

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## **Introduction**

Though man began to interfere with the natural processes right from the beginning of sedentary life but the impact of man on the environment and its processes assumed greater proportion after industrial revolution (1860)

*(Monkhouse, F.J. and small J.A. Dictionary of Natural Environment, p. 38)*

Man equipped with modern technologies and advanced scientific knowledge has become a very important factor in changing the environmental processes. The realisation of the impacts of man on environmental processes began even in the beginning of the nineteenth century but G.P. Marsh's book 'Man and Nature' (1864) may be taken as the pioneer work which demonstrates the effects of human activity upon environmental processes and caution the society against the magnitude of changes brought by man.

With scientific growth and technological development since 1860 in general and after Second World War in particular man has emerged as a significant geomorphic agent/process and is capable of changing the earth's surface many times faster than natural geomorphological processes. Thus now geomorphological processes fall in two broad

categories viz. (i) natural geomorphological or physical environmental processes and (ii) anthropogenous geomorphological processes. Thus the study of mode of changes brought in physical natural systems by man through his economic activities and several developmental works may be called anthropogenic geomorphology and the modified natural processes by human activities and the mechanism through which natural geomorphological processes and physical landscapes are change and modified may be termed as anthropogenous geomorphological processes. This aspect of geomorphology comes under broad branch of applied geomorphology wherein the main focus of study rests on man as a geomorphic agent and inadvertent and planned effects of his economic activities on geomorphic processes and forms (land forms).

The human impact on natural environment is one of the most pressing issues of contemporary times and a subject of discussion in geographical literature. The ways in which human beings have changed and are changing the face of the earth and the human role in the natural processes and systems, have drawn the attention not only of natural scientists but also of social scientists as well as of planners and policy makers.

Artificial recharge to ground water is a process by which the ground water reservoir is augmented at a rate exceeding that obtaining under natural conditions or replenishment. Any man-made scheme or facility that adds water to an aquifer may be considered to be an artificial recharge system. Rain water harvesting is essential because :-

- Surface water is inadequate to meet our demand and we have to depend on ground water.
- Due to rapid urbanization, infiltration of rain water into the sub-soil has decreased drastically and recharging of ground water has diminished.
- As you read this guide, seriously consider conserving water by harvesting and managing this natural resource by artificially recharging the system. The examples covering several dozen installations successfully operating in India constructed and maintained by CGWB, provide an excellent snapshot of current systems.

### Rain Water Harvesting Techniques

There are two main techniques of rain water harvesting.

- Storage of rainwater on surface for future use
- Recharge to ground water.

The storage of rain water on surface is a traditional techniques and structures used were underground tanks, ponds, check dams, weirs etc. Recharge to ground water is a new concept of rain water harvesting and the structures generally used are:

**Pits:** Recharge pits are constructed for recharging the shallow aquifer. These are constructed 1 to 2 m, wide and to 3 m. deep which are back filled with boulders, gravels, coarse sand.

**Trenches:** These are constructed when the permeable stream is available at shallow depth. Trench may be 0.5 to 1 m. wide, 1 to 1.5m. deep and 10 to 20 m. long depending up availability of water. These are back filled with filter. materials.

**Dug wells:** Existing dug wells may be utilised as recharge structure and water should pass through filter media before putting into dug well.

**Hand pumps:** The existing hand pumps may be used for recharging the shallow/deep aquifers, if the availability of water is limited. Water should pass through filter media before diverting it into hand pumps.

**Recharge wells:** Recharge wells of 100 to 300 mm. diameter are generally constructed for recharging the deeper aquifers and water is passed through filter media to avoid choking of recharge wells.

**Recharge Shafts:** For recharging the shallow aquifer which are located below clayey surface, recharge shafts of 0.5 to 3 m. diameter and 10 to 15 m. deep are constructed and back filled with boulders, gravels & coarse sand.

**Lateral shafts with bore wells:** For recharging the upper as well as deeper aquifers lateral shafts of 1.5 to 2 m. wide & 10 to 30 m. long depending upon availability of water with one or two bore wells are constructed. The lateral shafts is back filled with boulders, gravels & coarse sand.

**Spreading techniques:** When permeable strata starts from top then this technique is used. Spread the water in streams/ Nalas by making check dams, nala bunds, cement plugs, gabion structures or a percolation pond may be constructed.

### Diversion of run off into Existing Surface Water Bodies

Construction activity in and around the city is resulting in the drying up of water bodies and reclamation of these tanks for conversion into plots for houses.

Free flow of storm run off into these tanks and water bodies must be ensured. The storm run off may be diverted into the nearest tanks or depression, which will create additional recharge.

Methods of artificial recharge in urban areas

- Water spreading
- Recharge through pits, trenches, wells, shafts
- Rooftop collection of rainwater
- Road top collection of rainwater
- Induced recharge from surface water bodies.

### Conclusion

Ground water exploitation is inevitable is Urban



areas. But the groundwater potential is getting reduced due to urbanisation resulting in over exploitation. Hence, a strategy to implement the groundwater recharge, in a major way need to be launched with concerted efforts by various Governmental and Non-

Governmental Agencies and Public at large to build up the water table and make the groundwater resource, a reliable and sustainable source for supplementing water supply needs of the urban dwellers.

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# Environmental Pollution and Society : A Study

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*This paper presents the impact of pollution on society as a whole. Every day we pour or release harmful substances such as poisonous gases, chemicals and garbage into our environment. These harmful substances that end up damaging the environment, are called pollution. Most pollution comes from factories and transportation. As we all know that pollution in our world effects two essential aspects of our planet: air and water. Over the last three decades there has been increasing global concern over the public health impacts attributed to environmental pollution, in particular, the global burden of disease. The World Health Organization (WHO) estimates that about a quarter of the diseases facing mankind today occur due to prolonged exposure to environmental pollution.*

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Generally speaking, 'pollution: is the release of matter into a medium such as water, air or soil where such release harms or may harm the quality of that medium or the health or survival of any plant or animal living within it. Environmental pollution is any discharge of material or energy into water, land, or air that causes or may cause acute or chronic detriment to the Earth's ecological balance or that lowers the quality of life. Pollutants may cause primary damage, with direct identifiable impact on the environment, or secondary damage in the form of minor perturbations in the delicate balance of the biological food web that are detectable only over long time periods.

The industrialization of society, the introduction of motorized vehicles, and the explosion of the human population, however, have caused an exponential growth in the production of goods and services. Coupled with this growth has been a tremendous increase in waste by-products. The indiscriminate discharge of untreated industrial and domestic wastes into waterways, the spewing of thousands of tons of particulates and airborne gases into the atmosphere, the "throwaway" attitude toward solid wastes, and the use of newly developed chemicals without considering potential consequences have resulted in major environmental disasters, including the formation of smog in the Los Angeles area since the late 1940s

and the pollution of large areas of the Mediterranean Sea. Technology has begun to solve some pollution problems (see pollution control), and public awareness of the extent of pollution will eventually force governments to undertake more effective environmental planning and adopt more effective antipollution measures.

## **Major forms of pollution and major polluted areas: Water pollution**

Pollutants are generally associated with the direct input of human waste products. Rapid urbanization and rapid population increase have produced sewage problems because treatment facilities have not kept pace with need. Untreated and partially treated sewage from municipal wastewater systems and septic tanks in unsewered areas contribute significant quantities of nutrients, suspended solids, dissolved solids, oil, metals (arsenic, mercury, chromium, lead, iron, and manganese), and biodegradable organic carbon to the water environment. These pollutants may cause a myriad of water pollution problems. Excess suspended solids block out energy from the Sun and thus affect the carbon dioxide-oxygen conversion process, which is vital to the maintenance of the biological food chain. Also, high concentrations of suspended solids silt up rivers and navigational

channels, necessitating frequent dredging. Excess dissolved solids make the water undesirable for drinking and for crop irrigation. Although essential to the aquatic habitat, nutrients such as nitrogen and phosphorus may also cause over fertilization and accelerate the natural aging process of lakes. This acceleration in turn produces an overgrowth of aquatic vegetation, massive algal blooms, and an overall shift in the biologic community--from low productivity with many diverse species to high productivity with large numbers of a few species of a less desirable nature. Bacterial action oxidizes biodegradable organic carbon and consumes dissolved oxygen in the water.

### **Air pollution**

Air pollution is the accumulation in the atmosphere of substances that, in sufficient concentrations, endanger human health or produce other measured effects on living matter and other materials. Among the major sources of pollution are power and heat generation, the burning of solid wastes, industrial processes, and, especially, transportation. The six major types of pollutants are carbon monoxide, hydrocarbons, nitrogen oxides, particulates, sulfur dioxide, and photochemical oxidants.

Smog has seriously affected more persons than any other type of air pollution. It can be loosely defined as a multisource, widespread air pollution that occurs in the air of cities. Smog, a contraction of the words smoke and fog, has been caused throughout recorded history by water condensing on smoke particles, usually from burning coal. Another type, ice fog, occurs only at high latitudes and extremely low temperatures and is a combination of smoke particles and ice crystals.

As a coal economy has gradually been replaced by a petroleum economy, photochemical smog has become predominant in many cities. Its unpleasant properties result from the irradiation by sunlight of hydrocarbons (primarily unburned gasoline emitted by automobiles and other combustion sources) and other pollutants in the air. Irradiation produces a long series of photochemical reactions. The products of the reactions include organic particles, ozone, aldehydes, ketones, peroxyacetyl nitrate, and organic acids and other oxidants. Sulfur dioxide, which is always present to some extent, oxidizes and hydrates to form

sulfuric acid and becomes part of the particulate matter. Furthermore, automobiles are polluters even in the absence of photochemical reactions. They are responsible for much of the particulate material in the air; they also emit carbon monoxide, one of the most toxic constituents of smog.

Air pollution on a regional scale is in part the result of local air pollution--including that produced by individual sources, such as automobiles less than has spread out to encompass areas of many thousands of square kilometers. Meteorological conditions and landforms can greatly influence air-pollution concentrations at any given place, especially locally and regionally. For example, cities located in bowls or valleys over which atmospheric inversions form and act as imperfect lids are especially likely to suffer from incidences of severe smog. Oxides of sulfur and nitrogen, carried long distances by the atmosphere and then precipitated in solution as acid rain, can cause serious damage to vegetation, waterways, and buildings.

Soil contamination occurs when chemicals are released by spill or underground storage tank leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, MTBE [4], herbicides, pesticides and chlorinated hydrocarbons. Soil pollution is the degradation of the Earth's land surface through misuse of the soil by poor agricultural practices, mineral exploitation, industrial waste dumping, and indiscriminate disposal of urban wastes.

### **Soil Erosion**

Soil erosion--a result of poor agricultural practices--removes rich humus topsoil developed over many years through vegetative decay and microbial degradation and thus strips the land of valuable nutrients for crop growth. Strip mining for minerals and coal lays waste thousands of acres of land each year, denuding the Earth and subjecting the mined area to widespread erosion problems. The increases in urbanization due to population pressure presents additional soil-erosion problems; sediment loads in nearby streams may increase as much as 500 to 1,000 times over that recorded in nearby undeveloped stretches of stream. Soil erosion not only despoils the Earth for farming and other uses, but also increases the suspended-solids load of the waterway. This

increase interferes with the ecological habitat and poses silting problems in navigation channels, inhibiting the commercial use of those waters.

## Noise Pollution

Noise pollution encompasses roadway noise, aircraft noise, industrial noise as well as high-intensity sonar. Noise pollution has a relatively recent origin. It is a composite of sounds generated by human activities ranging from blasting stereo systems to the roar of supersonic transport jets. Although the frequency (pitch) of noise may be of major importance, most noise sources are measured in terms of intensity, or strength of the sound field. The standard unit, one decibel (dB), is the amount of sound that is just audible to the average human. The decibel scale is somewhat misleading because it is logarithmic rather than linear; for example, a noise source measuring 70 dB is 10 times as loud as a source measuring 60 dB and 100 times as loud as a source reading 50 dB. Noise may be generally associated with industrial society, where heavy machinery, motor vehicles, and aircraft have become everyday items. Noise pollution is more intense in the work environment than in the general environment, although ambient noise increased an average of one dB per year during the 1980s. The average background noise in a typical home today is between 40 and 50 decibels. Some examples of high-level sources in the environment are heavy trucks (90 dB at 15 m/50 ft), freight trains (75 dB at 15 m/50 ft), and air conditioning (60dB at 6m/ 20 ft). Any noise sustained at this level will cause a permanent threshold shift or permanent partial hearing loss at the uppermost level of noise (greater than 150dB), even a single short-term BLAST may cause traumatic hearing loss and physical damage inside the ear.

## Sources and Causes

Some of the more common soil contaminants are chlorinated hydrocarbons (CHL), heavy metals MTBE, zinc, arsenic and benzene. Pollution can also be the consequence of a natural disaster. For example, hurricanes often involve water contamination from sewage, and petrochemical spill from ruptured boats or automobiles. Larger scale and environmental damage is not uncommon when coastal oil rigs or refineries are involved. Some sources of pollution, such

as nuclear power plants or oil tankers, can produce widespread and potentially hazardous releases when accidents occur.

In the case of noise pollution the dominant source class is the motor vehicle, producing about ninety percent of all unwanted noise worldwide.

## Effects on Society

Adverse air quality can kill many organisms including humans. Ozone pollution can cause respiratory disease, cardiovascular disease, throat inflammation, chest pain, and congestion. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage- in developing countries. Oil spills can cause skin irritations and rashes. Noise pollution induces hearing loss, high blood pressure, stress, and sleep disturbance.

## Environmental protection

- Pollution control is a term used in environmental management. It means the control of emissions and effluents into air, water or soil. Without pollution controls the undesirable waste products from human consumption, industrial production, agricultural activities, mining transportation and other sources will accumulate or disperse and degrade the natural environment. In the hierarchy of controls, pollution prevention and waste minimization are more desirable than pollution control.

- As we know that the smoke of the vehicles plays an important role in spreading the air pollution and is very harmful for the human life. So, to avoid or prevent the air pollution we should select those vehicles that reduce such type of pollution by emitting no or less smoke or we should convert our fuel consumption from petrol or diesel to such alternatives that help to reduce air pollution. These vehicles which are used for reducing the air pollution are called as green vehicles.

- From the new researches it is confirmed that turning off unused lights also helps in reducing the pollution. When we don't turn off the unwanted lights, the electricity plant continuously produces the electricity with the help of different types of nuclear reactions of fossil fuels that pollute the air, so we should turn off the unwanted lights to reduce the pollution.

- We should not discard the unwanted goods with our or hand or with our own techniques such as burning. We should call the special department to dispose them.

- We should avoid developing different types of manufacturing industries in the cities to prevent the contamination of water and soil as well with poisonous gases.

- We should use the process of recycling because if used new material to produce new products it would require a lot of energy that would be achieved with help of burning of chemicals.

- We should grow different types of plants to avoid the air pollution created by the carbon dioxide and many gases

- We should use different type catalytic converters to reduce the emission of smoke during burning of materials such as wood etc

- We should use the Eco friendly products to avoid air pollution and also some other kinds of pollutions.

The entire atmosphere is composed primarily of nitrogen, oxygen, argon and carbon dioxide as well as neon, krypton, helium and methane. It is these gases

which make up the many ton "shell" that surrounds our planet. However, humans, animals and vegetation in the Unites State alone emit 264 million tons of substances into the atmosphere each year. Environmental protection as well as conservation is influenced by three interwoven factors: environmental legislation, ethics and education. Each of these factors plays its part in influencing national-level environmental decisions and personal-level environmental values and behaviors. Despite the growing interest in exploring environmental impacts on the health of men and women, more attention needs to focus on assessing the effect of air pollution on women's health.

Hence it is the necessity of time to protect our environment by awareness, appreciation, understanding, evaluation and solution methods. Academic institutions also offer courses, such as environmental studies, environmental management and environmental engineering, that teach the history and methods of environment protection and conservation.

# Role of Education For Environmental Sustainability

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*A bird can fly in air, a fish can swim in water, a horse can run fast, But we the humans have been supernaturally gifted with mind, the ability to think and bring the change, so let us reach out and grab the clock's needle and extend the life span of our birth place, our reason for existence, our mother earth. To protect children living in polluted regions, environmental education represents a relevant means of prevention because this type of education encourages learner's awareness of their environment's ambient conditions, as well as their active participation in solving local problems. It is the need of the hour to propose environmental education with the essential elements of moral philosophy.*

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In the present scenario, due to anthropogenic activities, environmental degradation is in an alarming rate and it results in various environmental issues such as global warming, ozone layer depletion, greenhouse effects, raise in sea water level, improper monsoon and acid rain. Science and technology have brought immense benefits but we are paying a high 'price' for it. There is a wrong myth that economic development is based only in industrialization. But in the international organizations such as World Bank and International Monetary Fund, environmental degradation is considered as the norm. Science and advanced technology can however only help the process of global sustainable environment in a limited way but they cannot deliver it. The success of the technology lies in its implementation part. In order to achieve the acceptable level of global environmental sustainability, the citizens must be empowered with essential knowledge and information especially in developing countries like India. Since educational institutions are the places where the contact of the society is more, it is possible to bring remarkable changes in the mindset of the public. To protect children living in polluted regions, environmental education represents a relevant means of prevention because this type of education encourages learner's awareness of their environment's ambient conditions, as well as their active participation

in solving local problems. It is the need of the hour to propose environmental education with the essential elements of moral philosophy. Conventional educational methods are no longer adequate for the real needs of tomorrow. Students of specialized areas must acquire knowledge and skills in their own field and keep pace with the rapid advances in all areas of specialization. The communication perspective opens the door to other kinds of tools that environmental educators can use in order to improve the educational practice.

Colleges have a very unique role in environmental protection: They help students become conscientious stewards of (and advocates for) the environment, protecting it for themselves and generations to come.

The younger generations, students are the effective media to bring enormous changes in the society and hence educating about the environment to the young minds is the right step and also this is the right time for the same. The resource base is not inexhaustible and there must exist some limit beyond which the rate of exploitation of natural resources will comprise the ability of future generations to meet their own needs. Hence the focus must be on reducing consumption with a view to achieving sustainability. Wherever possible, strategies for reducing consumption of energy and materials, and greater use of renewable

resources, should be incorporated in design and construction.

Science and Technology, even though advanced, cannot help in bringing about the change of attitude. Hence education in moral and ethical philosophy is needed and Environmental study should be made a mandatory part.

### **Reasons for including moral education in Curriculum Development:**

- As future planners, designers, builders and decision makers students shoulder special responsibility in protecting the integrity of nature and the natural environment.
- Human beings are rational creatures who have an innate need to rationalise all their actions and thoughts. Moral philosophy provides this rationale, and by doing so gives us our humanity.
- Albert Einstein's statement "Science without philosophy is just mechanics".

This moral education reinforces environment - respecting moral values, especially in the young through formal education.

Mahatma Gandhi said "Earth has enough to satisfy everyone's need but no one's greed"

A bird can fly in air, a fish can swim in water, a horse can run fast, But we the humans have been supernaturally gifted with mind, the ability to think and bring the change, so let us reach out and grab the clock's needle and extend the life span of our birth place, our reason for existence, our mother earth.

### **Communication approach in responsible environmental behavior**

In everyday speaking communication is often reduced to providing information, marketing or technical means (television, telephone) that are part of the so-called information and communication technologies. This is not what communication is about from a scientific perspective. Communication as we use it is a way of approaching and explaining processes in society. Like mathematics or economics it fosters a particular way of describing the world. It is another hole in the box through which we can look at reality,

although reality can only be explained partially from our perspective.

We can define communication as "the exchange processes among the individual and group members of a given society" These processes, that involve interlocutors, codes, rules, networks, techniques and content, can represent a different point of view to observe social phenomena considering the individual level and also the individual in relation to other individuals, groups and institutions.

### **Conclusion:**

The international community is serious about achieving even a modest degree of global environmental sustainability and sustainable development. Effective policies must be implemented to curb consumption by the affluent. We need moral education to instill genuine environment respecting moral values in the young budding engineers and other specialized area students who, in their professional careers as planners, designers, builders and decision makers, will bear considerable responsibility for mankind's impact on nature and the natural environment. Conventional engineering education is no longer adequate for the real needs of tomorrow. Future engineers must acquire knowledge and skills in engineering and keep pace with rapid advances in practically all branches of engineering and other areas too.

Following interventions based on observations, discussion, research, writing, reflection and idea comparison, young children seem to be able to construct the conception that pollution can be hazardous to their health; starting from the idea that pollution only constitutes visible waste. We believe experiential learning and the socio-constructivist approach, as experienced, contribute to significant learning and encourage learning. Indeed, Novak explains that at the point where significant learning occurs, new concepts are integrated into the previous cognitive structure as long as sufficient effort is made to favor that integration. This significant learning is opposed to learning 'by heart' (memorization), an approach often used in schools.

Perhaps the effort required of these last interventions that sustain the cognitive conflict between peers' and adults' ideas favors learning better than traditional methods of information-explanation and learning by heart. As Hassard would say, hands-on

experience is not enough; we also need minds-on experiences.

The communication perspective opens the door to another kind of tools that environmental educators can use in order to improve the educational practice.

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## भारतीय संस्कृति में पर्यावरण शिक्षा

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प्रवक्ता, शिक्षा संकाय

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संस्कृति का अर्थ सामंजस्य, संतुलन, सद्बिवेक, संरक्षण व समत्व भाव है। प्रकृति के साथ सहअस्तित्व व सह-अनुकूलन ही भारतीय संस्कृति का आधार है। भारतीय संस्कृति प्रकृति के साथ संघर्ष तथा उस पर विजय पाने जैसे विचारों से विनिर्मित नहीं हैं। इसका मानना है कि प्रकृति के पास हमारी आवश्यकताओं की पूर्ति के लिए साधन है किन्तु हमारी लालसाओं की पूर्ति के लिए नहीं। इसलिए मनुष्यों द्वारा प्रकृति के अविवेक पूर्ण दोहन को रोकने की दृष्टि से हमारी संस्कृति में समस्त प्राकृतिक तत्वों को दैवत्व की श्रेणी में रखा गया है। हमारी भारतीय संस्कृति में विभिन्न त्योहार हो या दैनिक व नैतिक क्रियाकलापों के निर्देश सभी में प्रकृति संरक्षण व संवर्धन की शिक्षा ही निहित है।

मनुष्य और पर्यावरण एक सिक्के के दो पक्ष हैं। वैदिक युग से प्रकृति ने मानव विकास में एक बड़ी भूमिका निभाई है। इसलिए मनुष्यों द्वारा प्रकृति के अविवेक पूर्ण दोहन को रोकने की दृष्टि से हमारी संस्कृति में समस्त प्राकृतिक तत्वों को दैवत्व की श्रेणी में रखा गया है। भारतीय संस्कृति में पृथ्वी को मातृवत् स्थान दिया गया है। “माता भूमिः पुत्रोऽहं पृथिव्याः” कहकर पृथ्वी को माता के समान सम्माननीय माना गया है इसलिए प्रातः काल उठने पर धरती पर पैर रखने से पहले उससे क्षमा याचना माँगने का विधान है-

समुद्रवसने देवी पर्वतस्तन मण्डले,

विष्णुपत्नी नमस्तुभ्यं पादस्पर्श क्षमस्व मे।

यह पृथ्वी मानव के साथ-साथ समस्त प्राणियों का एकमात्र आधार है। यह भूमि हिरण्यगर्भा, वसुन्धरा, विश्वभंरा तथा बलबुद्धि प्रदायिनी है। अतः अथर्ववेद में इसकी स्तुति करते हुए कहा गया है-

विश्वम्भरा वसुधीनी प्रतिष्ठा हिरण्यवक्षा जगतो निवेशिनी,

वैश्वनरं बिभ्रती भूमिरग्निमिन्द्र ऋषभ द्रविणे नो दधातु।।

अतः जो माता हमारा पोषण करती है उसे शुद्ध व अक्षत बनाये रखना हम सबका पावन कर्तव्य है।

भारतीय संस्कृति में वृक्षों को अत्यधिक महत्व प्राप्त है। वनरक्षा, वृक्षरक्षा तथा वृक्षारोपण को मानव कर्तव्यों में सम्मिलित किया गया है। वस्तुतः वृक्ष हर रूप में मनुष्य के लिए उपयोगी और जीवन दायक होता है इसलिए भारतीय संस्कृति में सामाजिक अनुष्ठानों और त्योहारों में वृक्ष पूजा का विधान किया गया है। तुलसी के पौधे के औषधीय गुण को देखते हुए घर-घर में तुलसी पूजा को नैतिक कृत्य बना दिया गया है तुलसी का पौधा हमारी संस्कृति का प्रतीक है इसके विषय में प्रचलित है-

यन्मूले सर्वतीर्थानि, यन्मध्ये सर्वदेवता।

यदग्रे सर्ववेदाश्च, तुलसित्वा नमाभ्यहम्।

अर्थात् हे माँ तुलसी ! हम तुम्हें नमन करते हैं। आपमें सभी तीर्थों व सभी देवताओं का वास है और आपके अन्दर समस्त वेदों का ज्ञान निहित है।

सर्वविदित है कि पंचामृत व प्रसाद में तुलसी दल का समावेश अनिवार्य है इसके अभाव में इन्हें पूर्ण नहीं माना जाता है। तुलसी दल युक्त वासुदेव पूजा को फलदायी बताया गया है-

मन्त्रेनानेन यः कुर्याद् गृहीत्वा तुलसीदलम्।

पूजनं वायुदेवस्य लक्षपूजाफलं भवेत्।।

वस्तुतः वृक्षों के औषधीय गुणों, जीवनोपयोगी साधनों व सतत प्राणदायक वायु का संचार करने के कारण नमोवृक्षेभ्यः कहकर अनेकानेक रूपों में इनकी स्तुति भारतीय संस्कृति की मुख्य विशेषता है। तुलसी के समान पीपल का वृक्ष भी भारतीय संस्कृति में स्तुत्य है-

मूले ब्रह्मा, त्वचि विष्णुः शाखायां शंकरः एव च।

पत्रे-पत्रे सर्वदेवाः वासुदेवाय ते नमः।।

अर्थात् पीपल वृक्ष के अंग-अंग में देवताओं का वास है। अतः हमें इसे पूर्ण आस्था के साथ संरक्षित रखना चाहिए।

बरगद के वृक्ष के विषय में भारतीय संस्कृति की मान्यता है कि पशु-पक्षियों व मानवों को अपनी शीतल छाया में प्रश्रय देने वाला यह वृक्ष जनमानस की मनोकामना भी पूर्ण करता है। पुराणों में इसे विष्णु का अवतार भी बताया गया है। इसी प्रकार नीम के वृक्ष के औषधीय गुणों के कारण इसे संरक्षित रखने के विशिष्ट निर्देश दिए गये हैं। अशोक के वृक्ष का संरक्षण भी आवश्यक है। शुभ अवसरों पर इसी के

पत्तों से द्वार सजाने की प्रथा है तथा अशोकाष्टमी को इसकी विशेष पूजा का विधान है फलस्वरूप इसे संरक्षित रखना आवश्यक है। चन्दन की शीतलता से सभी सुपरिचित है। सौन्दर्यवर्धन के साथ-साथ भारतीय जनमानस विभिन्न अवसरों पर इसके लेप को मस्तक पर धारण कर अपने सांस्कृतिक अस्तित्व का परिचय भी देता है।

नारियल के वृक्ष का अपना विशिष्ट सांस्कृतिक स्थान है। कोई भी मांगलिक कार्य बिना नारियल के पूर्ण नहीं होता। विवाह, जन्मोत्सव, भूमि पूजन, गृह प्रवेश अथवा किसी भी नव कार्य की शुभ समाप्ति हेतु नारियल का चढाया जाना अनिवार्य माना गया है अतः इसका सर्वधन व पोषण आवश्यक माना गया है।

शिवरात्रि व सावन मास में शिव जी पर चढाये जाने वाले बेल के वृक्ष को क्षति पहुँचाना अक्षय्य अपराध माना गया है। इसी प्रकार आम्रवृक्ष, केला, आंवला, पान, केसर, इलायची लौंग इत्यादि अनेकानेक वृक्षों को भारतीय संस्कृति में सम्माननीय स्थान प्राप्त है। इन वृक्षों को धार्मिक कृत्यों एवं विश्वासों के साथ जोड़ने के पीछे इनके संरक्षण द्वारा पर्यावरण को समृद्ध व संतुलित बनाने का भाव ही निहित है क्योंकि भारतीय संस्कृति के अनुसार छोटे-बड़े वृक्ष ही प्राणियों के प्राण हैं। अर्थववेद में कहा गया है -

*यत् ते भूमेविश्वनामि क्षिप्रं तदपि रोहतु ।  
मा ते मर्म विभृग्वरि माते हृदयमपिमम् ।।*

उसकी प्रेरणा है कि पृथ्वी पर उगने वाले वृक्षों को मत काटो। यदि काटने की आवश्यकता हो तो इस प्रकार काटो जैसे एक उत्तम वैद्य शरीर को और अधिक स्वस्थ बनाने हेतु जर्जरित अवयव को काट देता है। वृक्षों को इस प्रकार काटो कि वह पुनः अंकुरित हो उठे।

वनस्पतियाँ न केवल हमें आहार, ईंधन, औषधियाँ तथा अन्य बहुमूल्य वस्तुएँ प्रदान करती हैं वरन् सूक्ष्म वातावरण का संचालन भी करती हैं। इसी कारण भारतीय संस्कृति में सामाजिक, धार्मिक अनुष्ठानों में वृक्ष पूजा का विधान रखा गया है। वनों व वृक्षों का संरक्षण एवं संवर्धन किसी भी राष्ट्र की सुख-शान्ति की अनिवार्य कडी है। दुर्गासप्तशती के अनुसार जब तक यह पृथ्वी वनाच्छादित रहेगी तब तक इस धरती पर जीवन क्रम चलता रहेगा-

*यावत् भूमण्डलं धत्ते सशैल वन-काननम् ।  
तावत् तिष्ठति मेदिन्या सन्ततिः पुत्र पौत्रिकी ।।*

हमारी संस्कृति पर्यावरण संरक्षण की यह परम्परा मात्र इतने तक सीमित नहीं हैं वरन् विभिन्न भारतीय त्योहारों व पर्वों का निर्धारण प्राकृतिक चक्र को ध्यान में रखकर किया गया है।

शरद पूर्णिमा का पर्व जनमानस को प्रकृति के अधिकाधिक समीप्य का संदेश देता है इसकी चाँदनी रात्रि में शीतलता से युक्त खीर वस्तुतः अमृत तुल्य हो जाती है। इस पर्व में चाँद के प्रकाश में धागा पिरोना उज्ज्वल दृष्टि के साथ-साथ इस बात का संदेश भी देता है कि

जो प्रकृति के जितना करीब होगा उतना ही कांतिमय व व्याधि रहित रहेगा। बसंत पंचमी में जहाँ सम्पूर्ण प्रकृति उल्लासपूर्ण समृद्धिशाली व प्रदूषण रहित दिखाई देती है वहीं जनमानस भी बसन्तोत्सव के उल्लास में उल्लासित होकर माँ सरस्वती की उपासना द्वारा प्रकृति के सानिध्य में निर्मल ज्ञान का वरदान प्राप्त कर लेता है। भारत में अनेक स्थानों पर मनाया जाने वाला वट सावित्री का पर्व भी पर्यावरण को संरक्षित करने की प्रेरणा देता है। इसमें बरगद के वृक्ष की पूजा आराधना कर अपने पति की लंबी आयु के लिए बाँधा जाने वाला धागा वृक्ष को संरक्षित करने की अनुपम प्रत्याशा है। श्रावण मास में प्रकृति के स्वाभाविक सौन्दर्य की अनुपम छटा सहज ही जन-मानस के हृदय को आह्लादित कर देती है तथा वृक्षों पर झूले डालकर गाये जाने वाले गीतों के माध्यम से नर-नारी प्रकृति के प्रति अपने जीवन में लाने वाले उमंग व प्रसन्नता हेतु कृतज्ञता व्यक्त करते प्रतीत होते हैं।

नागपंचमी का पर्व प्रकृति के अनन्य अंग जीव जगत का भी संरक्षण करता प्रतीत होता है। जीव जन्तु पर्यावरण की दृष्टि से आवश्यक है व प्राकृतिक पर्यावरण को संतुलित बनाने में उनका भी महत्वपूर्ण योगदान है इसीलिए धातक होते हुए भी सर्प को दूध पिलाकर प्रकृति के अंग के रूप में नाग-पंचमी का पर्व उनके संरक्षण की प्रेरणा देता है।

करवा चौथ में चाँद को तथा छटपूजा में सूर्य को अर्घ्य देना भी प्रकृति के प्रति हमारी श्रद्धा भावना का प्रतीक है। श्राद्ध के अवसर पर पितरों के साथ-साथ गाय, कुत्ता व कौवें के लिए निकाला जाने वाला भोज्य पदार्थ भी यही इंगित करता है कि प्रकृति का प्रत्येक घटक हमारे जीवन में महत्वपूर्ण है व सबका संरक्षण आवश्यक है। भारतीय संस्कृति में गाय का विशिष्ट महत्व है। यह दूध प्रदान करने के साथ-साथ हमारे परलोक को भी सुधारने का कार्य करती हैं, इसीलिए उसे वैतरणी से पार लगाने वाली कहा गया है। गोदान का भी हमारी संस्कृति में विशिष्ट महत्व है। इन सबके पीछे भाव यही है कि गाय को संरक्षित रखना चाहिए।

ज्वार, मक्का, बाजरा मूंगफली और रेवडियों के साथ मनाया जाने वाला लोहडी का पर्व प्रदूषण को नष्ट करने में महत्वपूर्ण भूमिका निभाता है क्योंकि स्थान-स्थान पर नृत्य करने के लिए प्रज्वलित की गई अग्नि कीटाणुओं का विनाश कर पर्यावरण को शुद्ध बनाती हैं। इसी प्रकार रंग-बिरंगे होली के त्योहार में भी होलिका जलाने के बहाने पर्यावरण की शुद्धि पर ही बल दिया गया है। पर्यावरण को प्रदूषण मुक्त रखने में दीपावली का भी विशिष्ट स्थान है। इस पर्व में घर-घर में होने वाली सफाई, लिपाई-पुताई प्रदूषित करने वाले कीटाणुओं का नाश कर स्वच्छता प्रदान करने वाली है। यह प्रकाश की अभ्यर्थना का त्योहार है, जिसमें ज्ञान का प्रकाश, उमंग व उल्लास का प्रकाश व प्राकृतिक शुद्धता का प्रकाश समाहित हैं इस प्रकार प्रत्येक उत्सव का सामाजिक मूल्य है।

धर्म का अंग होने से उनमें स्थायित्व आता है, विशेष श्रद्धा का संचार होता है और अप्रत्यक्ष रूप से पर्यावरण संरक्षण होता है। विदित है कि भारतीय संस्कृति में यज्ञ का विशिष्ट महत्व है। इसकी पृष्ठभूमि में भी पर्यावरणीय दृष्टि ही हैं। मनुस्मृति में कहा गया है कि अग्नि में अच्छी प्रकार से दी हुई आहुति सूर्य को जाती है, सूर्य से वृष्टि होती है, वृष्टि से अन्न व अन्न से प्रजा उत्पन्न होती है-

*अग्नौ प्रास्ताहुतिः सम्यगादित्यमुपतिष्ठते ।*

*आदित्याजजायते वृष्टिवृष्टेरन्नं ततः प्रजाः ॥*

यज्ञ की आहुतियों, हव्य पदार्थ यज्ञीय धूम्र आदि से पर्यावरण की शुद्धता की वैज्ञानिकता सर्व विदित हैं।

भारतीय धर्म व संस्कृति में अवतारवाद की संकल्पना वस्तुतः पर्यावरणीय तत्वों के संरक्षण व संवर्धन की पृष्ठभूमि प्रस्तुत करती है। वैष्णव धर्म में दशावतारों का उल्लेख किया गया है यथा- मत्स्य, सूर्य, वराह, नृसिंह, वामन, परशुराम, राम, कृष्ण, बुद्ध व कल्कि। भारतीय समाज में जैविक, भौतिक, एवं सांस्कृतिक पर्यावरण चेतना के विकास में प्रत्येक अवतार की महत्ता है। ईश्वर के मत्स्यावतार रूप में प्रलयकाल के बाद जीव जगत की रक्षा का ही तत्त्व निहित है। भगवान विष्णु के इस अवतार द्वारा सम्पूर्ण जीवों की सुरक्षा व्यवस्था है जिससे पारिस्थितिकी संतुलन बना रहे। वस्तुतः मत्स्य जल का प्रतीक है और इस अवतार द्वारा जल संरक्षण व शुद्धीकरण पर बल दिया गया है। श्री विष्णु के कूर्मावतार में भी पर्यावरणीय संरक्षण समाहित है सृष्टि के आदि में सर्वत्र जल की स्थिति होने के कारण प्रजापति विष्णु को जलीय जीवों के संरक्षण हेतु इस रूप में अवतरित होना अवश्यभावी था। वराहावतार

पृथ्वी पर विद्यमान सभी पदार्थों, जीव, वनस्पतियों की रक्षा का ही प्रतीकात्मक रूप है। एक पशु-जीव के रूप में भी वराह पर्यावरण की शुद्धता का प्रतीक हैं। विष्णु का वामनावतार त्रिविक्रम के रूप में प्रसिद्ध हैं। इस अवतार से जगत का भौतिक परिवेश संरक्षित हुआ है। लघु से लघुतम जागतिक इकाइयों में सत्व की स्थापना वामनावतार की पर्यावरणीय दृष्टि है।

वैष्णव अवतारों में रामावतार पर्यावरण की दृष्टि से महत्वपूर्ण अवतार हैं। श्रीराम ने वनवास अवधि में उन शक्तियों का विनाश किया जो प्रकृति, वन सम्पदा, वन्यजीव, जल-चर, नभ-चर सभी के लिए संकट थे। इस कार्य में उन्होंने वन्य जीवों को भी संगठित किया। रामावतार वस्तुतः जैविक, भौतिक एवं सांस्कृतिक पर्यावरण का संरक्षण हैं।

पर्यावरण संरक्षण में रामावतार की भाँति कृष्णावतार का भी विशिष्ट महत्व है। श्री कृष्ण का परिवेश आदर्श पर्यावरण का जीवंत स्वरूप है। श्री कृष्ण ने भौतिक पर्यावरण की शुद्धि के साथ-साथ सांस्कृतिक पर्यावरण की शुद्धता पर भी बल दिया। बुद्धावतार के रूप में भी जीव-जन्तुओं की हिंसा को निषेध किया गया है तथा पर्यावरण की स्वाभाविकता पर बल दिया गया है। इस प्रकार भारतीय संस्कृति में अवतारवाद की मान्यता पर्यावरण को संरक्षित रखने के पावन उद्देश्य पर आधारित है।

अतः स्पष्ट है कि हमारी भारतीय संस्कृति में विभिन्न त्यौहार हो या दैनिक व नैतिक क्रियाकलापों के निर्देश सभी में प्रकृति संरक्षण व संवर्धन की शिक्षा ही निहित है।

## संदर्भ

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- कुलश्रेष्ठ सुषमा, संस्कृत साहित्य एवं पर्यावरण, ईस्टर्न बुक लिंकर्स, दिल्ली।
- गोडिका निर्मला, पर्यावरण चेतना एवं संरक्षण, अविष्कार पब्लिशर्स एण्ड डिस्ट्रीब्यूटर्स, नई दिल्ली।
- द्विवेदी कपिलदेव, वेदों में आयुर्वेद, विश्व भारती अनुसंधान परिषद् भदोही, ज्ञानपुर।
- द्विवेदी कपिलदेव, वैदिक साहित्य एवं संस्कृति, विश्व भारती अनुसंधान परिषद् भदोही, ज्ञानपुर।
- व्यास किशोरीलाल, भारतीय संस्कृति और पर्यावरण संरक्षण, क्लासिकल पब्लिशिंग कम्पनी, नई दिल्ली।
- विश्नोई कृष्णाराम, धर्म और पर्यावरण, दयापब्लिशिंग हाउस, दिल्ली।

## पर्यावरण प्रदूषण एवं समाज

डॉ. मनोज कुमार

प्रवक्ता, समाजशास्त्र विभाग

रमाबाई अम्बेडकर राजकीय महाविद्यालय, गजरोला (अमरोहा)

पर्यावरण शब्द में वह सब कुछ आ जाता है जो जीव को बाहर से प्रभावित कर रहा है, और उसमें दोनों प्रकार के कारक शामिल हैं-भौतिक और जैविक कारक। हर जीव का अपना एक विशिष्ट परिवेश अथवा माध्यम होता है जिसके साथ वह लगातार परस्पर क्रिया करता रहता है, जिसके प्रति वह पूरी तरह अनुकूलित रहता है। “प्राकृतिक पर्यावरण” यही परिवेश है। किन्तु वर्तमान में मानव के सम्भववादी दृष्टिकोण कि मानव प्रकृति का स्वामी या विजेता बने, ने आपसी सम्बन्धों में विष घोल दिया है। जिस गति से हम विकास की ओर बढ़ रहे हैं क्या उसी गति से विनाश हमारी ओर नहीं बढ़ रहा है? फिर नतीजा क्या होगा? मानवता के सामने यह एक विराट प्रश्नचिह्न है। यदि इसका उचित समाधान कर लिया गया तो ठीक वरना संपूर्ण जीव-जगत एक विराम की स्थिति में खड़ा हो जाएगा।

प्रत्येक जीव को जीवन के लिए अजीबों (वायु, जल, मृदा, पेड़-पौधे) की एक उचित मात्रा की आवश्यकता होती है। जब तक जैविक एवं अजैविक घटकों की उचित मात्रा प्रकृति में विद्यमान रहती है, तब तक प्राकृतिक संतुलन बना रहता है। इस प्रकार पर्यावरण जैव (सजीव) और अजैव (निर्जीव) घटकों और किसी जीव के आस-पास के व्यवहार, प्रभाव और घटनाओं का कुल युग है।

### पर्यावरण के घटक

अजैविक घटक-प्रकाश, वर्षण, आर्द्रता तथा जल, तापमान, वायुमण्डलीय गैसों, तुंगता (altitude) ऋतुपरक परिवर्तन स्थलाकृति जैविक घटक-पौधे, प्राणी, जिनमें मानव, परजीवी तथा सूक्ष्मजीव भी आते हैं।

### विघटक (Decomposers)

**प्रदूषण** पर्यावरण घटकों अर्थात् वायु, जल और मृदा की भौतिक, रासायनिक अथवा जैविक विशिष्टता में लाया जाने वाला कोई भी अवांछनीय परिवर्तन जिससे जीवन स्वरूपों पर बुरा प्रभाव पड़ता है। मानव क्रिया-कलापों द्वारा पैदा होने वाला कोई भी प्रतिकूल परिवर्तन प्रदूषण है। पर्यावरण घटक को संदूषित करने वाला साधन प्रदूषक कहलाता है। पर्यावरण का कोई भी सामान्य रचक जब अपने साद्रण की सीमाओं से इतना अधिक मात्रा में पहुँच जाता है कि उसकी उपयोगिता नष्ट हो जाए, तो वह प्रदूषक बन जाता है।

प्रदूषक को दो क्षणियों में विभाजित किया जा सकता है-

(i) **अनिम्नीकरणीय प्रदूषक** ये प्रदूषक बहुत लम्बे समय तक अपरिवर्तित रूप में कायम रहते हैं जैसे पीड़कनाशी, भारी धातुएं, रबड़, नाभिकीय अपशिष्ट आदि प्लास्टिक भी इसी श्रेणी में आते हैं।

(ii) **जैवनिम्नीकरणीय प्रदूषक** कागज, उद्यान कचरा, घरेलू जल-मल, कृषि आधारित अपशिष्ट तथा उर्वरक आदि।

समस्त जीवधारी पर्यावरण के साथ बहुत निकटता से परस्पर क्रिया करते हैं। परंतु इन सब में केवल मानव ही ऐसा जीव है जिसमें पर्यावरण को बदल सकने की क्षमता है और जैसा कि देखा गया है कि अधिकतर ये परिवर्तन स्वयं उसके लिए तथा अन्य जीव-जन्तुओं के लिए हानिकारक पाए जा रहे हैं। आज विकसित तथा विकासशील दोनों ही प्रकार के देश पर्यावरण के दुरुपयोग एवं संसाधनों का नानाविध रूप में अविवेकशील उपयोग के दुष्परिणाम भुगत रहे हैं। समस्त विश्व के अधिकतर देशों ने जो विकास-मार्ग अपनाया है उससे अनेकानेक समस्याएँ आ खड़ी हुई हैं जो एक ओर वनस्पतियों एवं जन्तुओं के विनाश से लेकर दूसरी ओर वायु, जल एवं मिट्टी के प्रदूषण तक फैली हुई है। पर्यावरण प्रदूषण से उत्पन्न प्रभाव किसी एक देश-विशेष अथवा क्षेत्र तक ही सीमित नहीं रहते। उदाहरण के लिए, वायुमण्डल में कार्बन-डाईआक्साइड के बढ़ते जाते स्तर अथवा ओजोन परत का हास समस्त वैश्विक समस्याएँ हैं।

अतः पर्यावरण के प्रति जागरूकता लाना और उसकी सुरक्षा की चिंता पैदा करना आवश्यक है। हमें उन गंभीर परिणामों से अवगत होना बहुत जरूरी है जो पर्यावरण संरक्षण एवं संसाधन की ओर

यथोचित ध्यान न दिए जाने पर इस ग्रह पर विद्यमान जीव-सृष्टि पर निश्चित आनेवाले हैं। अब सारा विश्व मानने लगा है कि कोई भी विकास-प्रतिरूप हो उसे साथ-साथ निर्वाहशील विकास सुनिश्चित करना होगा, जिसका अर्थ इस ग्रह पर रह रही समस्त जीव-सृष्टि के लिए बेहतर जीवन का होना है।

### पर्यावरणीय नैतिकता तथा पर्यावरण संरक्षण का भारतीय दर्शन

96 करोड़ देवी देवताओं की भूमि भारत अपने धर्म, साहित्य, संस्कृति और परम्पराओं, वनस्पति, जल, पर्वत, नदियों एवं पशु-पक्षी एवं मानव में सम्बन्धों की अपनी आस्थाओं को इस तरह समाहित किये है कि हम पत्थर, पशु, पेड़, जल से लेकर मुनष्य, धरती व आकाश सभी को हमारे तन-मन व आचरण में एकात्म पाते हैं। भारत की धरती केवल भू-भाग नहीं है यह जगत-जननी है। पेड़, पशु, पक्षी, पर्वत, नदियाँ, जल व मानव सभी इसी की कोरव से जन्में सहोदर भाई-बहन हैं। भारत की परम्परायें धर्म व सभ्यता में प्रकृति संरक्षण हेतु भावनात्मक एवं नैतिक रूप में पर्यावरण संरक्षण के चिन्तन की एक प्रगाढ़ता सदैव वैदिक काल से चली आ रही है भारतीय दर्शन अरण्यक संस्कृति को जीवन में आत्मसात् करने की व्यवहारिकता पर बल देता है। जिसमें वृक्ष पूजन व संरक्षण ने मानवीय जीवन में धार्मिक आस्था को जीवन्त किया है। हम वृक्ष एवं परोपकार की महिमा को अंगीकार करके ही मानव सभ्यता के विकास व कल्याण की सोच सकते हैं, अन्यथा नहीं। प्रकृति एवं मानव के मध्य संतुलन बनाये रखने के लिये हमारे धर्म में उत्तरदायित्व व नैतिकता की व्यवस्था पर्यावरण संरक्षण हेतु की गयी है। भारत की आयुर्वेदिक चिकित्सा पद्धति प्रकृति पर निर्भर है। अरण्यक में रहते-रहते हमारे कुलगुरुओं ने वनस्पति, पशु-पक्षी प्रकृति में ईश्वरीय व्यक्तित्व का आरोपण कर पूजनीय व सम्मानित बनाकर अपरोक्ष रूप से हजारों वर्ष पूर्व पर्यावरण संरक्षण की पर्यावरणीय नैतिकता को स्थापित किया था। यदि हम अपने धर्म एवं संस्कृति के नीति मानदण्डों को आज पुनः स्वीकार करें तो पर्यावरण संरक्षण में महत्वपूर्ण योगदान कर सकते हैं।

### पर्यावरण की समस्याएं और समाधान : भारतीय सन्दर्भ में

औद्योगिक एवं तकनीकी विकास, तीव्र जनसंख्या वृद्धि शहरीकरण आदि के कारण पर्यावरण के दबाव में निरन्तर वृद्धि होने लगी। इस समय सबसे महत्वपूर्ण प्रश्न पर्यावरण को विकृत होने से बचाना तथा उसे सन्तुलित बनाये रखना है विकास आवश्यक है लेकिन पर्यावरण के मूल्यों पर नहीं आज भारत की सबसे महत्वपूर्ण जरूरत है विनाश रहित विकास पर्यावरण प्रदूषण आज भारत की एक गम्भीर समस्या है,

जिसका सम्बन्ध मात्र वर्तमान से ही नहीं, बल्कि भविष्य से भी है।

**1. वायु प्रदूषण** वायु प्रदूषण भारत में मुख्य रूप से उद्योगों एवं परिवहन की देन है। दिल्ली में प्रतिदिन औसतन 400 कि.ग्रा. सीसा हवा में मिलता है। इसी प्रकार की अवस्था, कोलकाता, मुम्बई, चेन्नई आदि महानगरों की भी है। अकेले मुम्बई नगर में 4000 औद्योगिक इकाईयां हैं। मुम्बई-चेम्बर एक "गैस चेम्बर" के समान है। अलग-अलग ऊर्जा स्रोतों के माध्यम से भी भारत में पर्यावरण प्रदूषण होता है जैसे लकड़ी, कोयला, गैस, डीजल, पेट्रोल।

**2. जल प्रदूषण** भारत में जल प्रदूषण के अन्य स्राव औद्योगिक वहिस्त्राव, कृषि वहि स्त्राव घरेलू वहि स्त्राव, तेल प्रदूषण, वाहित मल, रेडियोधर्मी प्रदूषण।

**3. ध्वनि प्रदूषण** नगरीकरण में वृद्धि के साथ-साथ वाहनों की संख्या में वृद्धि से तथा कल-कारखानों से होने वाले शोर में ज्यादा वृद्धि होती जा रही है।

**4. ठोस अपशिष्ट प्रदूषण** भारतीय नगरों में ठोस अपशिष्ट जिसमें घरेलू कचरा मलके अतिरिक्त कांच, कागज, प्लास्टिक, गत्ता, डिब्बे-कनस्तर, पैकिंग का सामान, पॉलिथिन के थैले आदि की इतनी ज्यादा बढ़ोतरी हो रही है कि ये प्रदूषण के कारण तो है ही साथ ही इसको समाप्त करना भी एक गंभीर समस्या बन गई है।

### भविष्य के लिए उत्तरदायित्व

प्रश्न यह है कि अपनी भावी पीढ़ियों के लिए हम क्या कर सकते हैं आधुनिक प्रौद्योगिकी से पर्यावरण इस प्रकार प्रभावित हो रहा है कि उसका असर सैकड़ों तथा हजारों वर्ष तक चलता रहेगा। विशिष्ट चिंताएं इस प्रकार हैं।

- भूमि उपयोग परिवर्तनों, नगरीकरण तथा प्रौद्योगिकी क्रियाकलापों से पैदा होने वाले दीर्घ कालिक जलवायु परिवर्तन।
- वनों तथा उपजाऊ कृषि मृदाओं का विनाश
- नाभिकीय बिजली घरों से निकलने वाले रेडियो सक्रिय अपशिष्ट
- गैर-रेडियो सक्रिय विषैले रसायनों का विश्वव्यापी फैलाव
- तापनाभिकीय युद्ध के पर्यावरण पर प्रभाव
- मानव जनसंख्या में तीव्र वृद्धि के प्रत्यक्ष प्रभाव
- आभासी तौर पर अल्पकालिक प्रौद्योगिकी लाभों का दीर्घकालीन प्रभाव जैसे कि आनुवंशिक इंजीनियरी में होने वाली तीव्र प्रगति से प्राकृतिक तंत्रों पर पड़ने वाला प्रभाव।

### पर्यावरण से सम्बद्ध सामाजिक मुद्दे

विकास का आशय केवल राष्ट्रीय उत्पाद में विकसित देशों की वृद्धि ही नहीं है। इसका अर्थ है सभी को फायदा और वह भी मात्र वर्तमान पीढ़ी के लिए नहीं अपितु भविष्य में आने वाली पीढ़ियों के

लिए भी वर्तमान समय में सुस्थिर विकास एक ज्वलन्त मुद्दा है। भारत सुस्थिर विकास की मंजिल से कोसों दूर है। लोगों में पर्यावरण चेतना अभी अपने वाल्यावस्था में ही है। हमारा ज्ञान तुलनात्मक रूप से केवल प्रदूषण तक ही सीमित होकर रह गया है। विकास के साथ जीवन स्तर तो ऊँचा उठा है लेकिन इससे पर्यावरण हास की दर भी बढ़ी है। यहाँ बुद्धिमत्ता पर्यावरण के साथ सन्तुलन बनाकर परस्पर सहयोग करने में है। विज्ञान तथा तकनीकी के दौर में पर्यावरण को नजरअंदाज किया गया है। अधिक विकास और लाभ हमारी प्राथमिकता रही है। आज पर्यावरण के सभी पहलुओं को जानने तथा समझने की जरूरत है क्योंकि पर्यावरण सभी की साझी पूंजी है समाज के हर नागरिक को पर्यावरण का ज्ञान होना जरूरी है। सभी को पर्यावरण के प्रति जागरूक करने के लिए हम विभिन्न साधनों का प्रयोग कर सकते हैं। जैसे :-

1. विद्यार्थियों में पर्यावरण के प्रति जागरूकता लाने के लिए प्रारम्भिक स्तर से ही जोर दिया जाना चाहिए।

लोगों में जन जागृति लाने के लिए संचार के साधनों का प्रयोग किया जाना चाहिए। लेख, नाटक, कहानी और फिल्मों के द्वारा लोगों को पर्यावरण का ज्ञान दिया जा सकता है।

—नीति-निर्धारक विशेष सेमिनार, वर्कशाप, गोष्ठियाँ आदि करके पर्यावरण के प्रति जनचेतना पैदा कर सकती है।

### प्रदूषण नियन्त्रण में नागरिकों की अहम भूमिका

प्रदूषण नियन्त्रण में आम नागरिकों की अहम भूमिका है। सभी मानव सभ्यता, जो धरती पर निवास करती है, की जिम्मेदारी है कि वे अपने आवास, आसपास के जीव-जन्तु तथा वनस्पति की रक्षा करें।

### प्रदूषण सम्बन्धी प्रबंधन

उपयोग-अभिमुख प्रौद्योगिकी और आर्थिक विकास पर्यावरण के लिए आज गंभीर संकट उत्पन्न कर रहे हैं। पर्यावरण का संरक्षण और प्रबंधन अत्यंत आवश्यक हो गया है। दुनिया भर के सभी समाजों में कितनी खुशहाली होगी यदि हम सभी मिलजुल कर निर्वाहशील विकास को अपने साझे कार्यक्रम के रूप में आगे बढ़ायें।

यद्यपि इसके लिए सरकारी स्तर पर और अंतर्राष्ट्रीय संस्थानों द्वारा प्रयास किया जा रहा है। जिसमें गैर सरकारी संस्थाओं एवं अन्य समुदाय-आधारित समूहों से भी सक्रिय सहायता प्राप्त हुई है। आधुनिक समाजों में विकास की जिन विधियों को अपनाया गया है वे विभिन्न संसाधनों के अत्यधिक इस्तेमाल पर आधारित हैं विश्वस्तर पर पर्यावरण के प्रति बढ़ी हुई चेतना और आंदोलनों के वावजूद इस बात की कम ही संभावना दिखाई पड़ती है कि आधुनिक समाज निकट भविष्य में मितव्ययी और आवश्यकता के अनुसार जीवन-यापन अपनाने लगेगा। वास्तव में जो स्थिति है उसमें सभी प्राकृतिक संसाधनों की आवश्यकता

प्रचुर मात्रा में होगी। अविवेकी इस्तेमाल के कारण आज आधुनिक औद्योगिक समाज को सभी संसाधनों की कमी महसूस हो रही है। अतः आधुनिक समाज को उन उपायों के बारे में सोचने की आवश्यकता है जिन से इन संसाधनों की पुनः प्राप्ति की जा सके। इसलिए आज पर्यावरण के बारे में सबसे प्रमुख सोच यह है कि पर्यावरण को अवक्रमित किए बगैर निर्वाहशील तरीके से प्राकृतिक संसाधनों का प्रबंधन किस प्रकार किया जाये और साथ ही निरंतर बढ़ती हुई जनसंख्या की आवश्यकताओं की पूर्ति अनुकूलतम रूप से होती रहें। प्राकृतिक संसाधनों के प्रबंधन से संबंधित विभिन्न समस्याएं और उन्हें सुलझाने के विभिन्न प्रयास।

### जल

सभी जल का केवल 3 प्रतिशत भाग ही अलवण जल है जिस पर इस ग्रह पर स्थित जीवन निर्वाह करता है। लाखों-करोड़ों लोगों के लिए अलवण जल की कमी का अर्थ है अपर्याप्त मात्रा तथा अपेयजल। विकासशील देशों में जितना भी मल जल बनता है उसका 90 प्रतिशत से भी अधिक भाग बगैर उपचारित किए ऐसे ही जमीन और जल में वापस पहुँच जाता है।

जनसंख्या वृद्धि, औद्योगिकरण और शहरीकरण के कारण झीलों नदियाँ और जलभर कम और प्रदूषित होते जा रहे हैं। नई प्रौद्योगिकियों के कारण हम जमीन से आपूर्ति दर से कहीं अधिक तेजी से पानी खींच लेते हैं। कृषि में कुल मिलाकर पानी की खपत सब से ज्यादा होती है। देश में हरितक्रांति से ऊर्जा और संसाधन गहन कृषि के युग का आरम्भ हुआ।

जल-प्रबंधन के व्यावहारिक और बेहतर विकल्प पर ध्यान देने की जरूरत है जैसे— “वर्षा-जल को जमा करना, जोहड़, तालाब और कुंडों का संरक्षण-शुद्धीकरण, कुल सिंचाई। कुल वे मोड़ नहर होती हैं जिन्हें पानी को हिमनदियों से गांवों तक पहुँचाने के लिए इस्तेमाल किया जाता है।

### भूमि और मृदा

पर्यावरण-अवक्रमण से भूमि अवक्रमण, मृदा अपरदन और मरुस्थलीकरण भी बड़े पैमाने पर हुआ है। भारत में अनुमानतः 30 और 50 प्रतिशत के बीच व्यक्तिगत तथा साझी भूमि “बंजर” है। मृदा को उर्वर बनाने और उसे बनाए रखने का एक तरीका यह है कि उसमें कार्वनिक पदार्थ (हरी खाद, भूसा आदि) मिला दिये जायें, इससे मृदा की संसजकता बढ़ती है और उसकी जल धारक क्षमता बढ़ती है। क्षारीय मृदाओं का प्रभावकारी उपचार यह है कि उसमें जिप्सम मिला दिया जाये।

## ऊर्जा

भारतवर्ष में ऊर्जा की खपत विश्व के मानकों के साथ मेल नहीं खाती और अपने लोगों की ऊर्जा आवश्यकताओं को पूरा करने के लिए हमें काफी प्रयास करने की जरूरत है। फिर भी व्यक्तिगत स्तर पर हमें ऊर्जा के अपव्यय को रोकने की और अपने घरों तथा कार्यस्थलों में इसके इस्तेमाल को यथासंभव अनुकूलतम बनाने की आवश्यकता है।

## पर्यावरण सम्बन्धी प्रबंधक

जीव संहति एक नवीकरणीय ऊर्जा स्रोत है जो पादप संसाधनों, प्राणि अपशिष्टों और विभिन्न मानव क्रियाकलापों से उत्पन्न अपशिष्टों से व्युत्पन्न होती है। इससे वायुमण्डल में कार्बन डाइआक्साइड की वृद्धि नहीं होती क्योंकि अपनी वृद्धि के दौरान यह कार्बन की उतनी ही मात्रा को अवशोषित कर लेती है जितनी कि यह ईंधन के रूप में निर्मुक्त करती है। अपशिष्ट प्रबंधन, विशेष रूप से नगरपालिका ठोस अपशिष्ट का प्रबंधन जिसमें उसे कम करने फिर से इस्तेमाल करने और पुनः

चक्रण पर जोर दिया जाता है। संसाधनों के संरक्षण का एक सबसे अच्छा तरीका है। व्यक्तिगत और सामुदायिक पहल कार्यक्रम के जरिए संसाधन पुनर्जनन और प्रबंधन में सफलतापूर्वक हस्ताक्षर करना संभव है जैसा कि सुखोमाजरी, रैलीगन सिद्धी, चिपको आंदोलन, मिट्टी बचाओ आंदोलन, मुम्बई बचाओ आंदोलन, मूक घाती आंदोलन, महाराष्ट्र की पानी पंचायतों और ऐसे ही अन्य उदाहरणों से प्राप्त अनुभवों से स्पष्ट होता है।

किसी भी राष्ट्र के विकास में विभिन्न प्राकृति संपदाएँ जैसे-वन, पानी, भूमि, भोजन, खनिज एवं ऊर्जा महत्वपूर्ण योगदान देती है लेकिन इनका अति उपयोग या शोषण जो आधुनिक समाज में हो रहा है, उनसे ये संपदाएँ क्षीण हो रही हैं, तथा विभिन्न प्रकार की समस्याओं को जन्म दे रही हैं। यदि समाज में खुशहाली चाहिए तो इन संपदाओं का संरक्षण अत्यंत आवश्यकता है। जहाँ तक भारत का प्रश्न है अतीत में समाज का दृष्टिकोण प्रकृतिवादी था अतैव पर्यावरणीय सम्बन्ध मधुर थे। आज से लगभग 2600 वर्ष पूर्व ही वन संरक्षण के प्रयास जारी थे। ईसा पूर्व छठी सदी में भगवान बुद्ध ने कहा था कि प्रत्येक नर-नारी को प्रतिवर्ष एक पेड़ लगाना चाहिए।

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## वैश्विक राजनीति और पर्यावरण प्रबंधन

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मिहिर भोज बालिका डिग्री कॉलेज  
दादरी, गौतमबुद्ध नगर (उ.प्र.)

इस शोधपत्र का उद्देश्य पर्यावरण संरक्षण की वैश्विक होड़ में भारतीय पद्धति 'पावन वन प्रांतर' द्वार वनों, नदियों का संरक्षण करना तथा अपने पुराने ऋषि मुनियों द्वारा बनाये गए रास्तों को विश्व के ज्ञान के लिए खोलना है जिससे भारत सहित समस्त विश्व की रक्षा हो सके। किसी भी राज्य एवं राजा का यही लक्ष्य भी होता है।

*'यस्या वृक्षा वानस्पतया ध्रुवास्तिष्ठन्ति विश्वहा'  
पृथ्वीं विश्वधायसं धृतामच्छावदामसि।*

अथर्व. 12.1.24

*“पर्यावरण हमारी सम्पत्ति नहीं है बल्कि हमारी धरोहर है  
हमारी विरासत है जिसे हमारे पूर्वजों ने हमें दिया है और  
ये धरोहर हमें आने वाली पीढ़ी को हस्तान्तरित करनी है।”*

जीव-जन्तु एवं पौधे सब पर्यावरण की देन हैं। स्वच्छ वातावरण में ही मानव एवं जीव-जन्तु स्वस्थ रह सकते हैं। वर्तमान समय में मानव भौतिकता की अन्धी-दौड़ में जाने-अनजाने में पर्यावरण को हानि पहुँचा रहा है। वर्तमान मौसम में बदलाव, ओजोन क्षरण, विश्व तापमान, ग्रीन हाउस गैस का बढ़ता प्रभाव, अम्लीय वर्षा, बढ़ती प्राकृतिक आपदाएँ व जन-जीवन पर उसके दुष्परिणाम इत्यादि इसके जीते-जागते उदाहरण हैं।

विश्व के विकासशील राष्ट्र अपने औद्योगिक तथा तकनीकी विकास के कारण प्राकृतिक स्रोतों का अधिकतम उपयोग करना चाहते हैं। जिसका परिणाम ही पर्यावरण की समस्या तथा परिस्थितिकी असन्तुलन होता है। यह राष्ट्र अपने तक ही सीमित नहीं रहते अपितु सम्पूर्ण विश्व को प्रभावित करते हैं। इन राष्ट्रों की नीति अधिकतम उत्पादन करना व कम व्यय करना है जिससे लाभ अधिक हो सके। विश्व के सभी राष्ट्र तथा अन्तर्राष्ट्रीय संस्थाएँ इसकी गम्भीरता का अनुभव कर रहे हैं। और प्रत्यक्ष हैं कि विषैली गैसों मानव को नुकसान न पहुँचायें। पर्यावरण संरक्षण वैश्विक राजनीति का एक महत्वपूर्ण विषय बन गया है जिस पर वैश्विक चिंतन भी आरंभ हो चुका है। इस दृष्टि से समय-समय पर अन्तर्राष्ट्रीय स्तर पर विभिन्न देशों के बीच पारस्परिक सन्धियों पर हस्ताक्षर किए गये हैं। और सम्मेलन, सेमिनार, गोष्ठियों तथा कार्यशालाओं का आयोजन भी किया जाता है जिसमें पर्यावरण असंतुलन तथा परितंत्र की अस्थिरता की चर्चाएँ की

जाती हैं। इस सन्दर्भ में न केवल उत्तरी गोलार्द्ध के विकासशील राष्ट्र एवं आंदोलन में महत्वपूर्ण भूमिका सम्पादित कर रहे हैं बल्कि दक्षिण गोलार्द्ध के विकासशील राष्ट्र भी इस चिंतन आंदोलन में महत्वपूर्ण भूमिका सम्पादित कर रहे हैं और वैश्विक जागरूकता एवं चिंता के प्रति प्रयत्नशील हैं।

पर्यावरण संरक्षण की समस्या न तो नवीन है न ही इस दिशा में किया गया प्रयास ही नवीन माना जा सकता है। पर्यावरण शुद्धिकरण एवं संरक्षण से संबंधित अतीत में भी कुछ व्यवस्थायें प्रत्यक्ष एवं परोक्ष रूप से देखने को मिलती हैं। जैसे भारत में पावन वन प्रांतर की धार्मिक व्यवस्था थी।<sup>1</sup> प्राकृतिक संसाधनों, वृक्षों, नदियों, पहाड़ों का दुरुपयोग न हो सके इसके लिए उनसे सम्बन्धित धार्मिक अवधारणाओं की वर्जना स्थापित कर दी गई थी, जिसके भय से लोग इनकी पूजा किया करते थे, इन्हें नष्ट करने के प्रयास नहीं कर पाते थे। परन्तु आर्थिक विकास के कारण पर्यावरण पर पड़ने वाले प्रभावों ने 1960 के दशक में राजनीतिक चरित्र धारण कर लिया तथा वैश्विक घटनाओं के प्रति संवेदनशीलता में वृद्धि हुई। वैश्विक घटनाओं के प्रति संवेदनशील राष्ट्रों के समूह Club of Rome ने 1972 ई. में Limits to Growth नामक एक पुस्तक प्रकाशित की जिसमें विश्व में बढ़ती हुई जनसंख्या की पृष्ठभूमि में प्राकृतिक संसाधनों के विकास की आंशका को बड़े ही मार्मिक एवं सारगर्भित रूप में उपस्थित किया।<sup>2</sup> “पुस्तक में स्पष्ट रूप में स्वीकार किया गया कि यदि जनसंख्या की वृद्धि पर विकासशील राष्ट्रों द्वारा अंकुश नहीं लगाया गया तो विश्व पर्यावरण के समक्ष एक बड़ी चुनौती खड़ी हो



सकती है। स्वाभाविक है जनसंख्या की वृद्धि के साथ-साथ प्राकृतिक संसाधनों का भी दोहन होगा, क्योंकि राष्ट्रों के बीच आर्थिक प्रतिस्पर्धा बढ़ेगी जो अंततः पर्यावरण को ही क्षति पहुंचाएगी”।<sup>3</sup> और तबसे अन्तर्राष्ट्रीय स्तर पर पर्यावरण संरक्षण पर संस्थाओं एवं संगठनों द्वारा इस दिशा में सार्थक प्रयास किए जा रहे हैं। संयुक्त राष्ट्रसंघ द्वारा पर्यावरण कार्यक्रम अथवा UNEP संगठनों द्वारा विकासशील एवं विकसित राष्ट्रों में पर्यावरण सुरक्षा संबंधी जागरूकता उत्पन्न करने के लिए तरह-तरह की योजनायें चलाई जा रही हैं। राष्ट्रीय, अन्तर्राष्ट्रीय स्तर की गोष्ठियाँ सम्मेलन आयोजित हो रहे हैं तथा विद्यालय स्तर से लेकर विश्वविद्यालय स्तर तक प्रत्येक निकाय एवं विषय में पर्यावरण अध्ययन पर विशेष जोर दिया जा रहा है। इस प्रकार के प्रयासों का मुख्य उद्देश्य बिगड़ती हुई व्यवस्था के प्रति लोगों में जागरूकता लाना है जिससे प्राकृतिक आपदाओं के कुप्रभावों को कम करने का प्रयास किया जाये तथा मानव निर्मित पर्यावरण प्रदूषण को समाप्त नहीं हो तो कम तो अवश्य ही किया जा सके। उसी समय से पर्यावरण पर चर्चा वैश्विक राजनीति का एक महत्वपूर्ण विषय बन गया।

पर्यावरण के प्रति उत्तरदायित्व जगाने एवं चेतना को व्यापक बनाने के लिए 1972 ई. में स्टोकहोम में आयोजित पर्यावरण सम्मेलन में यह विचार रखा गया कि विश्व के सभी देश 5 जून को विश्व पर्यावरण दिवस मनायेंगे। ऐसा इसीलिए किया गया कि 1971 ई. में उत्पन्न ऊर्जा संकट ने पश्चिमी राष्ट्रों के विकास प्रतिमान में मूलभूत परिवर्तन लाया था। 1971 ई. का Founex स्वीटजरलैंड में संयुक्त राष्ट्रसंघ के महासचिव द्वारा आहूत सम्मेलन उसी की देन थी। इस सम्मेलन में मानवीय मूल्यों में हो रहे परिवर्तन पर विचार किया गया तथा विकासशील राष्ट्रों को पश्चिमी राष्ट्रों के विकासगति को प्राप्त करने की होड़ को पर्यावरण आदि का कारण मानते हुए उनसे बचने का निर्देश दिया गया। मूलरूप से इस सम्मेलन में अप्रत्यक्ष रूप से पर्यावरण प्रदूषण के लिए विकासशील राष्ट्रों की आर्थिक विकास की प्रक्रिया एवं प्रणाली को दोषी माना गया एवं उन्हें अपने बदलते हुए पर्यावरणीय संतुलन को दृढ़ रखकर विकास करने की सलाह दी गई इस सम्मेलन में मानवीय पर्यावरण संरक्षण के लिए एक कार्य योजना की अनुशंसा की गयी।

जिसमें विश्व-पर्यावरण एवं विकास आयोग द्वारा कुछ घोषणाएँ पर्यावरण संरक्षण के सन्दर्भ में की गई-

1. हम सबका भविष्य (Future of all)
2. विश्व को चुनौती (Challenges for the whole world)
3. विश्व जनसंख्या एवं मानव संशोधन का पोषण (World Population and Human Resources and Nutrients)

4. अन्तर्राष्ट्रीय सहकारिता और संस्थागत सुधार (International Co-operation and institutional improvement) तथा

5. व्यवहारिकता/कार्य सम्पादन की पुकार (Implementation in Practical from).

(उपरोक्त सभी बिन्दुओं का सारांश ‘मानव कल्याण’ है। पर्यावरण का महत्व केवल मनुष्य को शारीरिक रूप में ही जीवित नहीं रखता, अपितु मानसिक, सामाजिक, सांस्कृतिक तथा आध्यात्मिक विकास भी करता है। (स्वस्थ शरीर में ही स्वस्थ मस्तिष्क का निवास होता है।)

“इस सम्मेलन में भाग लेने वाले 114 राष्ट्रों की अनुशंसा पर संयुक्त राष्ट्रसंघ की महासभा द्वारा संयुक्तराष्ट्र पर्यावरण कार्यक्रम (यूनाइटेड नेशन्स एनवायरनमेन्ट प्रोग्रैम-यूएनईपी UNEP) स्थापित किया गया, जो एक प्रमुख वैश्विक पर्यावरणीय एजेन्सी के रूप में कार्य कर रहा है”।<sup>4</sup> वर्ष 1973 में संयुक्त राष्ट्र ने पश्चिमी अफ्रीका में मरुस्थलीकरण के विस्तार को घटाने के प्रयासों को बढ़ाने के लिए सूडानो-सहेलियन ऑफिस (यूएनएसओ) की स्थापना की।

1974 ई. में Cocoyoc मेक्सिको में UNEP का एक कार्यशाला हुआ इसमें विकास एवं आर्थिक विकास की संरचना पर विचार किया गया जिसमें मूलतः पर्यावरण को दूषित करने के लिए उत्तरदायी माना जा रहा था। जिसे बाद में Sustainable Groth के नाम से जाना गया। स्वीडन के प्रथम अन्तर्राष्ट्रीय सम्मेलन में पृथ्वी के बिगड़ते मौसम, लुप्त होते जंगल, पौधे, जीवों के साथ-साथ विकसित एवं विकासशील देशों के बीच बढ़ती खाई पर भी विचार किया गया।

वर्ष 1980 का दशक पर्यावरणीय विषयों पर सदस्य-राज्यों के मध्य उल्लेखनीय वार्ताओं का साक्षी रहा। इनमें ओजोन परत को सुरक्षित रखने एवं विषैले उत्सर्जन की गति को नियन्त्रित करने वाली सन्धियों का समावेश था जिसके उदाहरण इस प्रकार हैं-

1. आणविक अस्त्रों के परीक्षणों के निषेध की सन्धि, 1963
2. बाह्य अन्तरिक्ष सन्धि, 1967
3. आणविक अस्त्रों के अप्रसार की सन्धि, 1968
4. खुले समुद्र पर तेल-प्रदूषण से क्षति सम्बन्धी अधिनियम 1969
5. तेल-प्रदूषण से नुकसान के लिए नागरिकों के दायित्व सम्बन्धी अधिनियम, 1969
6. आणविक अस्त्रों को समुद्र तल पर रखने के निषेध की सन्धि, 1971
7. अन्तर्राष्ट्रीय महत्व के नभ, भूमि तथा विशेषकर पानी के आसपास रहने वाले पक्षियों के आवास स्थान का अभिरूपण, 1971
8. विश्व की सांस्कृतिक तथा प्राकृतिक विरासत के संरक्षण से सम्बन्धित अधिनियम, 1973

9. जोखिम में पड़े जंगली पेड़-पौधों के अन्तर्राष्ट्रीय व्यापार का अधिनियम, 1973
10. जल प्रोतों तथा हवाई जहाजों द्वारा ढेर करने में समुद्रीय प्रदूषण को बचाने के उपाय, 1973
11. विश्व पर्यावरण एवं विकास आयोग, 1975
12. अन्तर्राष्ट्रीय पर्यावरण सम्मेलन, 1982

(इन अधिनियमों तथा सन्धि-पत्र पारित करने से समस्या का समाधान सम्भव नहीं हो सकता है। इसके लिए सभी राष्ट्रों का सहयोग आवश्यक है।)

1983 में महासभा द्वारा स्थापित पर्यावरण एवं विकास पर विश्व आयोग ने, आर्थिक कल्याण को सुनिश्चित करने के साथ-साथ पर्यावरणीय संसाधनों को, जिन पर समस्त विकास अवलम्बित है, को संरक्षित रखने का वैकल्पिक तरीका प्रस्तुत किया। 1992 का ब्राजील का पृथ्वी सम्मेलन पर्यावरण रक्षा की दृष्टि से उल्लेखनीय है जिसमें 170 देशों के प्रतिनिधियों ने भाग लिया, हजारों की संख्या में स्वयंसेवी संगठनों एवं बहुराष्ट्रीय निगमों ने भी अपनी उपस्थिति दिखाई। यह इस बात को स्पष्ट करने के लिए काफी था कि वैश्विक राजनीति में पर्यावरण के बिगड़ते स्वरूप को लेकर चिंता है और विश्वस्तर पर लोग पर्यावरण सुरक्षा के प्रति संवेदनशील और गंभीर हैं। रियों सम्मेलन 1992 में यह स्पष्ट रूप से खुलकर सामने आया कि पर्यावरण सम्बन्धों मुद्दों पर उत्तर दक्षिण के विद्वानों के बीच साम्य नहीं है।<sup>16</sup> उत्तर के राज्य औद्योगिक दृष्टि से सम्पन्न राज्य है अतः जबकि दक्षिणी राज्य कि चिंता औद्योगिक विकास की तथा पर्यावरण प्रबंधन के पारस्परिक सम्बन्धों को समन्वित करने की है। राज्यों के बीच दृष्टिकोण में अंतर मुद्दों के प्रतिमानों में अस्पष्टता आदि के कारण कोई ठोस निर्णय नहीं हो पाया पर इतना तो संभव हो ही गया कि विभिन्न राज्यों के बीच इस बात पर सहमति बन गई कि आर्थिक विकास का ऐसा तरीका होना चाहिए जिससे पर्यावरण को क्षति नहीं पहुँचे। पृथ्वी शिखर सम्मेलन में यह सहमति हुई कि एजेण्डा 21 के लिए अधिकांश धन प्रत्येक देश के सार्वजनिक एवं निजी क्षेत्र से आएगा। तथापि, विकासशील देशों के टिकाऊ विकास पर अमल और वैश्विक पर्यावरण को सुरक्षित रखने के प्रयासों के लिए धन के कुछ नये एवं अतिरिक्त साधन आवश्यक समझे गये। इस निर्णय को विश्व के सभी राष्ट्रों ने मानने का संकल्प लिया।

1991 में प्रारम्भ एवं 1994 में पुनर्गठित वैश्विक पर्यावरण सुविधा (ग्लोबल एनवायरमेन्ट फेसिलिटी-जीईएफ 'जेफ') को इन निधियों को व्यवस्थित ढंग से देने का कार्य सौंपा गया। 'जेफ' निधियाँ वे प्राथमिक साधन हैं, जिनके जरिए विविधता एवं मौसम परिवर्तन सन्धियों के लक्ष्य तैयार किये जाते हैं। "1995 में 110 सरकारों द्वारा

एक वैश्विक कार्यक्रम की स्वीकृति सम्भव हुई। यह है 'धरती आधारित गतिविधियों से समुद्री पर्यावरण को बचाने के लिए वैश्विक कार्य योजना'। (ग्लोबल प्रोग्रैम ऑव एक्शन फार द प्रोटैक्शन ऑव मेरीन एनवायरनमेन्ट फ्रॉम द लैण्ड बेस्ड ऐक्टिविटीज) यह समुद्री पर्यावरण के लिए सेवाएँ प्रदान करता है"।<sup>16</sup> 'फाओ' के सहयोग के साथ यूएनईपी ने 'अन्तर्राष्ट्रीय व्यापार में कतिपय संकटास्पद रसायनों एवं कीटाणुनाशकों के लिए पूर्व सूचित सहमति प्रक्रिया पर रॉटरडम कन्वेंशन' 1988 में वार्ताओं को सम्पन्न किया।

2000 में वनों के निर्मित अन्तः सरकारी फोरम का गठन किया जिसका उद्देश्य वनों के टिकाऊ विकास को सुनिश्चित करना था। 26 अगस्त से 6 सितम्बर, 2002 तक दक्षिण अफ्रीका के नगर जोहान्सबर्ग में संयुक्त राष्ट्र संघ द्वारा प्रायोजित पृथ्वी सम्मेलन सम्पन्न हुआ जिसका प्रमुख विषय रहा-टिकाऊ विकास। (Sustainable development) धरती के बढ़ते तापमान को कम करने के लिए संयुक्त राष्ट्र जलवायु समझौता सम्मेलन कनाडा के मॉण्ट्रियल शहर में 13 दिन तक चली लम्बी बहस के साथ 10 दिसम्बर, 2005 को सम्पन्न हुआ। 15 दिसम्बर 2007 को बाली में सम्पन्न सम्मेलन ने वैश्विक स्तर पर पर्यावरण संरक्षण के प्रति जागरूकता एवं गतिशीलता का सन्देश दिया। 17-18 दिसम्बर, 2009 को डेनमार्क की राजधानी कोपेनहेगन में जलवायु परिवर्तन पर संयुक्त राष्ट्र सम्मेलन सम्पन्न हुआ। (लेकिन इस सम्मेलन को सर्वसम्मत नहीं कहा जा सकता क्योंकि बाद में अनेक राष्ट्रों ने इसका विरोध किया।

2010 में कानकून सम्मेलन हुआ, इसमें विकसित एवं विकासशील देश सम्मिलित थे जिनकी संख्या 76 थी। सम्मेलन का प्रमुख विषय रहा-ग्रीन हाउस गैसों के प्रभावों को नियंत्रित करना। वैश्विक तापमान में वृद्धि को रोकने के लिए 22 सितम्बर 2011 को डरबन प्लेटफार्म आयोजित हुआ। 20-22 जून 2012 को ब्राजील की राजधानी रियोडिजेनेरो में सतत् विकास, वैश्विक पर्यावरण एवं आर्थिक मुद्दों से सम्बन्धित 20वां संयुक्त राष्ट्र सम्मेलन हुआ 2012 कोदोआ कतर में "विश्व मौसम कार्यक्रम"(वर्ल्ड क्लाइमेट प्रोग्रैम) आयोजित किया गया जिसमें मौसम परिवर्तन पर बढ़ती चिन्ताओं से सम्बन्धित वार्ताएँ की गयीं। 11-23 नवम्बर 2013 को वर्साय 'पौलेण्ड' में "मौसम परिवर्तन से सम्बन्धित" सम्मेलन आयोजित किया गया। पृथ्वी को बढ़ते तापमान से बचाने और ग्रीन हाउस की गैसों के बढ़ते प्रभावों को देखते हुए क्योटो प्रोटोकॉल के तहत 2013 में एक सम्मेलन आयोजित किया गया। जिसमें मौसम परिवर्तन सम्बन्धित वार्ताएँ हुईं। इसमें यह भी कहा गया कि सन् 2020 तक गैसों के उत्सर्जन से सम्बन्धित कटौती प्रक्रिया जारी रहेगी।

## विश्व संगठन तथा पर्यावरण संरक्षण

“विश्व के सभी राष्ट्रों ने पर्यावरण-संरक्षण हेतु विश्व संगठनों की स्थापना की है। प्रमुख विश्व संगठन इस प्रकार हैं—

1. संयुक्त राष्ट्र संघ पर्यावरण कार्यक्रम (U.N.E.P)
2. अन्तर्राष्ट्रीय पशु कल्याण कोष, (I.F.A.W.)
3. विश्व वन्य जीव कोष (W.W.F.)
4. प्रकृति एवं प्राकृतिक संसाधनों के संरक्षण का अन्तर्राष्ट्रीय संघ (I.U.C.N.)” 17

विश्व के अन्य विभिन्न संगठन भी पर्यावरण-सुरक्षा के लिए युद्ध स्तर पर कार्य कर रहे हैं, जिनमें से प्रमुख इस प्रकार हैं—

1. इण्टरनेशनल एटॉमिक एनर्जी एजेंसी (I.A.E.A)
2. कार्गोसिल ऑफ एनवायर्नमेंटल क्वालिटी (C.E.Q)
3. यूरोपियन इकोनॉमिक कम्युनिटी (E.E.C)
4. एनवायर्नमेंटल प्रोटेक्शन एजेंसी (E.P.A)
5. इण्टरनेशनल कार्गोसिल ऑफ साइंटिफिक यूनियंस (I.C.S.U.)
6. इण्टरनेशनल मैरिन कंसल्टेटिव आर्गेनाइजेशन (I.M.C.O.)
7. नेचुरल कजरवेंसी कार्गोसिल आदि (N.C.C.)

इन सबका प्रमुख उद्देश्य है, औपचारिक, अनौपचारिक या प्रौढ़ शिक्षा अथवा सतत शिक्षा कार्यक्रमों की सहायता से जन-साधारण में पर्यावरण-सचेतना, अभिवृत्ति एवं मूल्यों का विकास किया जाए, तभी पर्यावरण संरक्षण सम्भव हो सकेगा।

## भारत में पर्यावरण प्रबन्धन

स्टॉकहोम सम्मेलन के पर्यावरण संरक्षण में प्रस्तावों को गति देने एवं उन्हें क्रियान्वित करने हेतु भारत सरकार ने प्रभावशाली कार्यवाही की। इस क्षेत्र में प्रदूषण को समाप्त करने या रोकने और पर्यावरण को संतुलित रखने हेतु अधिनियम (कानून) आदि बनाकर प्रशंसनीय प्रयास किए गए हैं। इनमें से मुख्य एक्ट निम्न प्रकार हैं—

- द वाटर प्रिवेंशन एण्ड कंट्रोल ऑफ पोल्यूशन एक्ट (1974)
- द एयर प्रिवेंशन एण्ड कंट्रोल ऑफ पोल्यूशन एक्ट (1981)
- भारतीय दण्डसंहिता की धारा 268, 269, 272, 277, 278, 284, 280, 298, 426 आदि
- द मोटर व्हीकल एक्ट (1938)
- द माइंस एण्ड मिनरल्स (रेगुलेशन एवं डेवलपमेंट) एक्ट, (1947)
- द दामोदर वैली कांफ़िरेण (प्रिवेंशन पोल्यूशन ऑफ वाटर ) रेगुलेशन एक्ट, (1948)
- द फैक्टरी एक्ट (पोल्यूशन एण्ड पोस्टिवाइड्स), (1947)
- द इंडस्ट्रीज डेवलपमेंट एण्ड रेगुलेशन एक्ट, (1951)

- द महाराष्ट्र प्रिवेंशन ऑफ वाटर-पोल्यूशन एक्ट, (1953)
- द उड़ीसा रीवनर-पोल्यूशन एण्ड प्रिवेंशन एक्ट, (1953)
- द आसाम एग्रीकल्चर, पेस्ट्स एण्ड डिजीज एक्ट, (1954)
- द यू.पी. एग्रीकल्चर, पेस्ट्स एण्ड डिजीज एक्ट, (1954)
- द रीवर बोर्ड एक्ट, (1956)
- द एनसिएण्ट मॉन्यूमेंट्स एण्ड आरकियोलॉजिकल सिटिज एण्ड रिमेंस एक्ट, (1958)
- द गुजरात समोक न्यूसेंस एक्ट, (1963)
- द राजस्थान नॉयज कंट्रोल एक्ट, (1961)
- द बीड़ी एण्ड सिगार कंट्रोल एक्ट, (1961)
- द एटॉमिक एनर्जी एक्ट (रेडिएशन प्रोटेक्शन रूल्स), (1971)
- द देहली रेस्ट्रिक्शन ऑफ लैंड यूजेज एक्ट, (1969)
- द इंसेक्वीसाइड्स एक्ट, (1968)
- द महाराष्ट्र वाटर पोल्यूशन प्रिवेंशन एक्ट, (1964)
- द वाइल्ड लाइफ (प्रोटेक्शन) एक्ट, (1972)
- मध्य प्रदेश गाँधी बस्ती क्षेत्र (सुधार तथा निर्मूलन) अधिनियम, (1976)
- नगरपालिका अधिनियम, 1959 की धारा 220, 222
- भारतीय मछली अधिनियम, (1987)
- भारतीय बन्दरगाह अधिनियम, (1901)
- द बंगाल स्मोक न्यूसेंस एक्ट, (1905)
- द एक्सप्लोसिव्स एक्ट, (1908)
- द बॉम्बे स्मोक न्यूसेंस एक्ट, (1912)
- द इंग्लैण्ड स्टीम वेस्टेज एक्ट, (1917)
- द मैसूर डिस्ट्रिक्टव इनसेक्ट्स एण्ड पेस्ट्स एक्ट, (1917)
- द पॉइजन एक्ट, (1919)
- द ए.पी. एग्रीकल्चर, पेस्ट एण्ड डिजीज एक्ट, (1919)
- द इण्डियन बॉयलर एक्ट, (1923) तथा
- द इण्डियन फॉरिटर एक्ट, (1927)।

पर्यावरण प्रदूषण की रोकथाम हेतु भारत में भी प्रयास किये गये हैं। जैसे सन् 1865 ई. में फारेस्ट एक्ट, 1889 ई. का अधिनियम, 1927 ई. भारतीय वन अधिनियम, सन्, 1952 राष्ट्रीय वन नीति, 1972 ई. राष्ट्रीय पर्यावरण में जल प्रदूषण अधिनियम 1986, वायु प्रदूषण विकरण एवं संसाधन विधेयक 1986 आदि। इन्हीं के अन्तर्गत विभिन्न कार्यक्रम भी चलाये गये हैं। जैसे—गंगा सफाई अभियान, यमुना सफाई अभियान, राष्ट्रीय अभ्यारण्य एवं राष्ट्रीय उद्यान आदि। सरकार ने ‘पर्यावरण प्रबन्धन’ को विकास के निर्देशन के रूप में स्वीकार कर लिया है। केन्द्र तथा राज्य स्तरों के संगठनों में समन्वय स्थापित किया है। एक राष्ट्रीय पर्यावरण परिषद की स्थापना (1937) भी की गई है।

“वैश्विक तापमान में वृद्धि धीरे-धीरे परन्तु विश्व के तापमान में औसतन वृद्धि को अभिव्यक्त करता है। इस क्षेत्र में वैज्ञानिक अनुसंधान किए जा रहे हैं। वैज्ञानिकों ने इसका एक प्रमुख कारण पर्यावरण में कार्बन डाईआक्साइड तथा अन्य गैसों का उत्सर्जन माना है जो धीरे-धीरे बढ़ता ही जायेगा एवं विनाशकारी रूप पकड़ लेगा। 1998 तथा 2001 का वर्ष विश्व का सबसे गर्म वर्ष रहा है अतः इस पर विश्वस्तर पर विचार होना आवश्यक है, क्योंकि ऐसा अंदाज लगाया जा रहा है कि अगले 50 वर्षों में विश्व के तापमान में 2 से 9 डिग्री फ़ैरनहाइट ताप की वृद्धि होगी। यह पर्यावरण में महत्वपूर्ण परिवर्तन का सूचक है। ऐसा भी अनुमान लगाया जा रहा है कि अगले दशकों में ध्रुवीय क्षेत्र में बर्फ पिघलने लगेगी जिससे समुद्र के जल स्तर में वृद्धि होगी जिसके फलस्वरूप समुद्र तटीय क्षेत्रों का अस्तित्व लुप्त हो सकता है। औद्योगिकरण बांग्लादेश, चीन, भारत के निचली सतह पर उनका विनाशकारी प्रभाव पड़ सकता है”<sup>18</sup> “आज अतिवृद्धि, अनावृद्धि की समस्या इसी वैश्विक बदलते तापमान का प्रभाव है। वैश्विक तापमान में वृद्धि विभिन्न गैसों के विशेषकर कार्बन डाईआक्साइड के उत्सर्जन के कारण है भारी मात्रा में मोटर गाड़ियों, ट्रैक्टर, फ़ैक्ट्रियों, कल कारखाने भी इसके लिए उत्तरदायी हैं। इन्हीं के कारण Green House Gases का निर्माण होता है। आज विभिन्न राज्यों में ग्रीन हाउस गैसों के उत्सर्जन की कीमत और उससे प्राप्त लाभों में समुचित अनुपातकायम नहीं हैं। कोई अकेला इस कार्य को नहीं कर सकता यह तभी संभव है जब विश्व के सभी राज्य समग्र रूप से इस प्रकार के परिवर्तन के लिए एकजुट हों”।

इस प्रकार शोध की गहराई में जाने से यह निष्कर्ष निकाला जा सकता है कि वैश्विक स्तर पर पर्यावरण सुरक्षा के लिए कोई एक मानदंड निर्धारित नहीं किया जा सकता। क्योंकि पर्यावरण के संरक्षण के प्रश्न पर उत्तर दक्षिण के राज्यों के बीच मत विभिन्नतायें कायम हैं”<sup>19</sup> जहाँ उत्तर के राज्य पर्यावरण क्षरण के लिए दक्षिण राज्यों को दोष देते हैं वहाँ दक्षिण के राज्यों (विकासशील) के अनुसार पर्यावरण को विकसित राष्ट्रों ने औद्योगिकरण की प्रक्रिया में ज्यादा हानि पहुँचाई है। अतः पर्यावरण संरक्षण का उत्तरदायित्व भी उन्हीं का है।

“विकासशील राष्ट्रों को अपने देश के औद्योगिक विकास की भी सोच है जो विकासशील राज्यों द्वारा बन्धित किया जा सकता है। इसलिए विकासशील राज्यों का मानना है कि पर्यावरण संरक्षण से सम्बंधित कानूनों के निर्माण, प्रयोग और व्याख्या में विकासशील राष्ट्रों की विशेष स्थिति एवं आवश्यकताओं को ध्यान रखना आवश्यक है। इसके लिए क्योटो प्रोटोकॉल जो एक अन्तर्राष्ट्रीय समझौता है, इस पर सभी राष्ट्रों को अमल लाना चाहिए।

## पर्यावरण प्रबन्धन में प्राथमिकता

पर्यावरण संरक्षण एक वैश्विक समस्या है जिसे वैश्विक स्तर पर खतरे भी हैं क्योंकि ग्रीन हाउस का कहर, समुद्रों की कलाबाजी, नदियों, पर्वतों का तांडव और वनों का तिरस्कार यह सभी किसी एक राष्ट्र को ही प्रभावित नहीं करते वरन सम्पूर्ण विश्व को प्रभावित करते हैं अतः इनके संरक्षण का वैश्विक प्रयास ही होना चाहिए।

इस सन्दर्भ में पर्यावरण-समस्यायें तथा चर्चायें अनेक हैं परन्तु वास्तव में निम्नांकित समस्याओं को प्राथमिकता दी जानी चाहिए और इस क्षेत्र में निम्न कदम उठाने चाहिए—

1. पर्यावरण शिक्षा तथा जानकारी
2. जनसंख्या की स्थिरता
3. भूमि उपयोग का समन्वित नियोजन
4. स्वस्थ उपजाऊ भूमि तथा घास का मैदान
5. जैविक विषमता का संरक्षण
6. जल तथा वायु प्रदूषण का नियन्त्रण
7. मानवीय आवास का विकास
8. अ-प्रदूषित ऊर्जा प्रणाली का विकास करना
9. पर्यावरण अधिनियम को तात्कालिक बनाना
10. राष्ट्रीय सुरक्षा के नवीन आयामों का विकास करना आदि।

## अन्य प्राथमिकता

1. विकासशील राष्ट्रों द्वारा औद्योगिकरण के द्वारा विकास के मॉडल को प्रकृति एवं प्राकृतिक साधनों द्वारा विकास, कृषि वन, पानी इत्यादि से जोड़ना चाहिए।
2. निजीकरण के कारण पृथ्वी की साझी संपदा, समुद्र प्रमुख पर्वत इत्यादि का आकार कम होता जा रहा है। इनकी गुणवत्ता में कमी आती जा रही है। और गरीब एवं अविकसित राष्ट्रों की उपलब्धता कम हो रही है इसकी रक्षा होनी चाहिए।
3. इसके लिए भारत के पावन वन प्रांतर को आधार बनाना चाहिए।
4. विकसित राष्ट्रों द्वारा साम्राज्यवादी नीति का त्याग होना चाहिए।
5. जनसंख्या पर नियंत्रण के लिए सभी राष्ट्रों को कटिबद्ध होना चाहिए। जनसंख्या विस्तार के कारण वनों की कटाई होती है, पर्वतों को तोड़ा जाता है, नदियों का दुरुपयोग होता है जिससे पर्यावरण भी बिगड़ता है।
6. ग्रीन हाउस गैस कुछ हद तक उपयोगी होती हैं परन्तु उनकी बढ़ती मात्रा पर्यावरण असंतुलन उत्पन्न करती है। आज अकेले अमेरिका 25 प्रतिशत ग्रीन हाउस गैस का उत्सर्जन करता है। वर्तमान में ग्रीन हाउस गैसों का 80 प्रतिशत भाग मूलतः औद्योगिक

दृष्टि से सम्पन्न राष्ट्रों द्वारा उत्सर्जित किया जाता है। वैज्ञानिकों को इसे संतुलित करने का प्रयास करना चाहिए।

ऐसी अनेक समस्याएँ हैं जो हमारे पर्यावरण के लिए हानिकारक तथा भयावह हैं जिससे परिस्थितिकी संतुलन तथा परिस्थितिकी तंत्र में स्थिरता को खतरा बना हुआ है। स्थिरता का प्रत्यय प्राकृतिक स्रोतों, जैसे—गैस, कोयला, तेल तथा अन्य पदार्थों व ऊर्जा शक्ति पर

निर्भर करता है यदि इन प्राकृतिक स्रोतों के उपयोग का समुचित प्रबन्धन नहीं होगा तब यह अस्थिरता अधिक हो सकती है और पर्यावरण की गुणवत्ता भी नहीं रह सकेगी। अतः यह एक वैश्विक समस्या है जिसके दुष्परिणाम भी वैश्विक हो रहे हैं सभी विकसित, विकासशील राष्ट्रों को मिलकर पूर्ण ईमानदारी से इसका निदान निकालना चाहिए।

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## रघुवंशमहाकाव्य के द्वितीय सर्ग में पर्यावरण चेतना

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भारतीय वाङ्मय की सर्वश्रेष्ठ विभूति, कविकुलगुरु महाकवि कालिदास की समस्त रचनाओं में पर्यावरण का विराट् उदात्त और व्यापक चिन्तन प्राप्त होता है। उनके काव्यों में प्रकृति की नानारूपिणी छवियों के नितान्त मनोरम एवं प्रभावशाली चित्र उपलब्ध हैं। जिनमें चिरपुरातन प्रकृति भी सर्वदा चिर नवीन परिलक्षित होती है। अतः तत्काव्यों को 'प्रकृतिकाव्य' कहा जाये तो अत्युक्ति नहीं होगी। 'प्रकृति के चित्तेरे' महाकवि कालिदास ने प्रकृति का मनोरम और मार्मिक चित्रण करते हुए उसके साथ जो भावपूर्ण तादात्म्य सम्बन्ध स्थापित किये हैं, उनमें उनकी पर्यावरणीय चेतना पूर्णतः दृष्टिगोचर होती है, जिसका उद्देश्य पर्यावरण संरक्षण की प्रेरणा ही है।

प्रकृति में जो कुछ भी परोक्ष और अपरोक्ष यथा-पृथ्वी, सूर्य, वायु, आकाश, जल, अग्नि, वनस्पति, मृदा, पशु-पक्षी, मानव आदि हैं, वे सभी पर्यावरण का निहितार्थ हैं। क्योंकि व्युत्पत्त्यात्मक अर्थ में भी 'परि+आवरण' का अर्थ है-चारों ओर का घेरा। इस घेरे में सजीव और निर्जीव दोनों तत्व विद्यमान हैं। अतः पर्यावरण एक आवरण है, जो जीव जगत् को चारों ओर से आवृत किये रहता है-परितः आवृणोति जीव जगदिति पर्यावरणम्।

यद्यपि महाकवि कालिदास की समस्त कृतियों में इन दोनों पर्यावरणीय तत्वों का चिन्तन और संरक्षण की चेतना प्राप्त होती है। किन्तु एक शोधपत्र में कालिदास की समस्त कृतियों की तो क्या, मात्र एक कृति की भी पर्यावरणीय अवधारणा को उद्घाटित करना अत्यन्त दुष्कर है। इसी कारण से प्रस्तुत शोधपत्र में कालिदास के 19 सर्गात्मक रघुवंश महाकाव्य के भी केवल द्वितीय सर्ग को आधार बनाया गया है।

रघुवंश कालिदास की प्रौढतम प्रतिभा की प्रसूति माना गया है। कतिपय विद्वानों का ऐसा अनुमान है कि संस्कृत आचार्यों ने महाकाव्य के जो लक्षण निर्धारित किये हैं, उनका स्रोत रघुवंश महाकाव्य ही है।<sup>1</sup> महाकाव्य लक्षण में 'प्रकृति वर्णन' भी समाहित है, जिसमें सन्ध्या, सूर्य, चन्द्रमा, रात्रि, प्रदोष, अन्धकार, दिन, प्रातःकाल, मध्याह्न, पर्वत, ऋतु, वन, समुद्र आदि का वर्णन महाकाव्यत्व हेतु आवश्यक है।<sup>2</sup> महाकवि कालिदास इसमें पूर्ण सफल हुए हैं। कालिदास के प्रकृतिवर्णन में कल्पना की नवीनता, कोमलता, भाव वैचित्र्य और सहृदयता प्राप्त होती है। उनकी प्रकृति मूक, चेतनाहीन अथवा निष्प्राण नहीं है। अपितु मानवों के सदृश सचेतन और सजीव वह उनके सुख-दुःख पर समवेदना प्रकट करती है। प्रकृति और मनुष्य का यह गम्भीर आत्मीयता बोध रघुवंश महाकाव्य के द्वितीय सर्ग में अनेक सन्दर्भों में व्यक्त हुआ है।

रघुवंश के द्वितीय सर्ग में नन्दिनी की परिचर्या करने में दत्तसंकल्प राजा दिलीप ने वनगमन के समय जब अपने समस्त अनुचरों का त्याग कर दिया, तब पार्श्वस्थ वृक्ष समूह स्वयं ही पक्षियों की ध्वनियों के ब्याज से उनकी जयध्वनि करने लगे।<sup>3</sup>

अग्नि की प्रतिमूर्ति राजा दिलीप पर वायु से आन्दोलित बाल लताओं ने पौरकन्याओं की भाँति पुष्पों की वर्षा की।<sup>4</sup> लता गृहों में वनदेवताओं ने कीचक संज्ञक बांसों से उनका यशोगान किया।<sup>5</sup> इतना ही नहीं छत्र चामर रहित राजा कहीं धूप से क्लान्त न हो जाये इसलिये निर्झरों के सूक्ष्म जलकणों से पृक्त, पुष्पगन्ध से युक्त मन्दवायु भी राजा दिलीप की सेवा में तत्पर है।<sup>6</sup> यहां वायु भी साधारण या प्रतिकूल नहीं है, अपितु कालिदास ने उसके शीतल, मन्द, सुगन्ध रूप में सर्वथा अनुकूल रूप का ही ग्रहण किया है। इस प्रकार महाकवि कालिदास ने समस्त प्राकृतिक उपादान प्रस्तुत किए हैं, जो मानवीकृत रूप में राजा दिलीप के सुख-दुःख में सहायक हैं।

पर्यावरण संरक्षण की चेतना भी इस सर्ग में अनेकशः दृष्टिगोचर होती है। धनुष धारण किये हुए राजा दिलीप की वन प्रदेश में उपस्थिति पर भी हरिणियां स्वयं को रक्षित अनुभव करती हैं। यहां हरिणियों के धनुर्धारी राजा दिलीप के निश्शंक भाव से दर्शन और निर्भयता का वर्णन है।<sup>7</sup> मानों उन हरिणियों को राजा के दयालु स्वभाव और रक्षार्थ ही धनुषधारण का ज्ञान हो। यहाँ संभवतः कालिदास यह संदेश प्रसारित कर रहे हैं कि पशु-पक्षियों का रक्षण करना चाहिये, न कि स्वस्वार्थलिप्सावश अथवा स्वसुख हेतु उनका शिकार।

पशुसंरक्षण का अप्रतिम उदाहरण राजा दिलीप द्वारा स्वशरीर की भी उपेक्षा करके नन्दिनी गाय की सेवा है। राजा नन्दिनी गाय के

अनुरूप ही स्वशारीरिक क्रिया करते थे।<sup>8</sup> उसके भोजन शरीर रक्षा, स्वतंत्रता आदि का पूर्ण ध्यान रखते थे।<sup>9</sup> नन्दिनी गाय की रक्षा में पूर्ण तत्पर राजा दिलीप स्वशरीर त्याग तक के लिये उद्यत हैं।<sup>10</sup> जब वे किसी भी प्रकार से सिंह से नन्दिनी की रक्षा नहीं कर पाते तो सिंह के समक्ष स्वशरीर को प्रस्तुत कर देते हैं, किन्तु गाय का कथमपि अशुभ, असुरक्षा उन्हें सहन नहीं है। 'एक तुच्छ प्राणी अर्थात् गाय के लिये चक्रवर्ती राजा का शरीर त्याग उचित नहीं' इस प्रकार सिंह द्वारा पुनः पुनः समझाने पर भी वे अपने निर्णय और त्याग पर अडिग हैं। पशुसंरक्षण के लिये मानव द्वारा शरीरत्याग का यह अद्वितीय उदाहरण अन्यत्र दुर्लभ है। जो अद्यावधि पशुप्रेम और तत्संरक्षण की प्रेरणा जाग्रत करता है।

वृक्षसंरक्षण का निदर्शन भगवान् शिव द्वारा पालित और माँ पार्वती द्वारा सिंचन से पल्लवित और पुष्पित देवदारु का वृक्ष है।<sup>11</sup> यह वृक्ष भगवान् शिव और पार्वती को पुत्र के समान प्रिय है। महाभारत में भी उल्लेख प्राप्त होता है कि वृक्षों का पुत्र के समान पालन करना चाहिये।<sup>12</sup> संभवतः तदनुसार ही महाकवि कालिदास ने वृक्षों के पालन

और रक्षण का संदेश दिया है। उन्होंने उस देवदारु वृक्ष की मात्र छाल उखड़ने से माँ पार्वती के अपार शोक<sup>13</sup> और तत्क्षार्थ 'कुम्भोदर' नामक सेवक की सिंह रूप में नियुक्ति का वर्णन किया है।<sup>14</sup> इस प्रकार उस वृक्ष का संरक्षण माँ पार्वती और भगवान् शिव को अत्यन्त अभीष्ट था। इसी में ही समस्त वृक्षों के रक्षण का भाव भी निहित है।

उपर्युक्त सम्पूर्ण विवेचन से स्पष्ट है कि प्रकृति चित्रण में निपुण महाकवि कालिदास प्रकृति से निरपेक्ष या तटस्थ होकर नहीं अपितु उससे पूर्ण तादात्म्य स्थापित करते हुए तत्त्ववर्णन और रक्षण में संलग्न है। जिसका उत्कृष्ट निदर्शन रघुवंश महाकाव्य के द्वितीय सर्ग में देखा जा सकता है। जहाँ प्रकृति का मानवीकरण उसका सूक्ष्मावलोकन, उसकी सहृदयता, चेतना, उदारता और सहयोग का भाव प्रस्तुत है। पशु-पक्षी, वृक्षादि के प्रति प्रेम और रक्षण का भाव संस्कृतवाङ्मय में अनुस्यूत पर्यावरण चेतना को निर्दिष्ट करता है। अन्ततः प्राचीन मनीषियों का यह पर्यावरणीय अवबोध और तत्संरक्षण का प्रयास अद्यावधि प्रेरणा स्रोत है।

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## पर्यावरण प्रदूषण से उपजती पर्यावरण प्रबन्धन की अवधारणा

डॉ. निधि रानी सिंह

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वी.एम.एल.जी. कॉलेज, गाजियाबाद

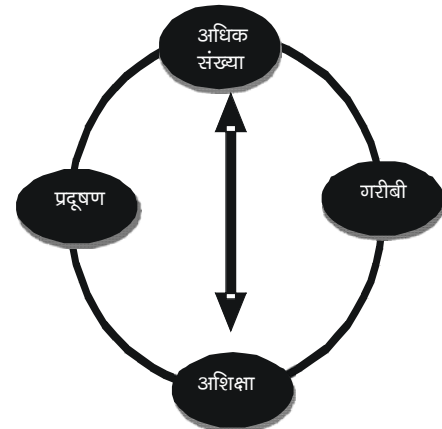
पर्यावरण (Environment) शब्द फ्रेंच भाषा के Environer शब्द से बना है, जिसका अभिप्राय परिस्थितिकी अथवा परिवृत्ति से होता है। इसके अन्तर्गत सभी स्थितियाँ, परिस्थितियाँ, दशायें तथा प्रभाव हैं जो कि जैव अथवा जैविकीय समूह पर प्रभाव डाल रहा है, सम्मिलित है। पर्यावरण वह परिवृत्ति है जो मानव को चारों ओर से घेरे हुये है तथा उसके जीवन व क्रियाओं पर प्रभाव डालती है। इस परिवृत्ति अथवा परिस्थिति में मनुष्य से बाहर के तथ्य, वस्तुयें तथा दशायें सम्मिलित होती हैं जिनकी क्रियायें मनुष्य के जीवन विकास को प्रभावित करती हैं। विशेष बात यह है कि पर्यावरण में हमारी विभिन्न सामाजिक, सांस्कृतिक और आर्थिक गतिविधियाँ भी समाहित होती हैं।

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इस प्रकार पर्यावरण और मानव सभ्यता का अटूट सम्बन्ध है। पर्यावरण जैविक भी हो सकता है और अजैविक भी। यह सजीव भी हो सकता है और निर्जीव भी। मानव स्वयं भी इस पर्यावरण का अंग है। इस रूप में यह पर्यावरण के कारक यथा ताप, वर्षा, गैसों आदि से प्रभावित होता है तथा स्वयं मनुष्य के क्रिया-कलापों जैसे आवास निर्माण, खान-पान, प्रौद्योगिकी विकास, यातायात और परिवहन, संचार साधन आदि से पर्यावरण को प्रभावित करता है। जनसंख्या का बढ़ना, नगरीकरण, औद्योगीकरण, रासायनिक प्रवाह, विज्ञान और तकनीक का अत्यधिक प्रसार, शोरगुल और वनों के कटान ने पर्यावरण को इतना ज्यादा प्रदूषित कर दिया है कि जीवन को जीवने देने वाले तत्व ही जीवन की मांग करने लगे हैं। बढ़ती हुई जनसंख्या विकास का एक महत्वपूर्ण कारण भी है। जब बढ़ती हुई जनसंख्या और प्राकृतिक संसाधनों में सन्तुलन स्थापित नहीं हो पाता तो जैवविविधता की हानि के साथ-साथ वायु प्रदूषण और जल प्रदूषण की समस्यायें भी विकराल

रूप धारण करने लगती हैं। इस रूप में गरीबी को पर्यावरण के पतन और प्रभाव दोनों रूपों में देखा जा सकता है।

बढ़ती हुई जनसंख्या और विकास की अन्धी दौड़ ने पर्यावरण के अवनयन को दिन-प्रतिदिन बढ़ाया है इसी पर्यावरण के अवनयन ने प्रदूषण की अवधारणा को जन्म दिया। विभिन्न मानवीय क्रिया-कलापों के कारण पर्यावरण के प्राकृतिक गुण परिवर्तित हो जाते हैं या नष्ट हो जाते हैं। इसे ही पर्यावरण का अवनयन कहते हैं। पर्यावरण के प्रत्येक घटक के कुछ लाक्षणिक गुण होते हैं, प्राकृतिक विशेषतायें होती हैं। विभिन्न मानवीय क्रियाकलापों के कारण पर्यावरण के विशिष्ट गुण प्रतिकूल रूप से प्रभावित होते हैं। इसे ही प्रदूषण कहते हैं। प्रदूषण से पर्यावरण के तत्वों की गुणवत्ता प्रभावित होती है और परिस्थितिकी-तंत्र असंतुलित होकर जीवधारियों के लिए खतरनाक बन जाता है। फलस्वरूप जीवन की गुणवत्ता नष्ट हो जाती है।





प्रदूषण शब्द की उत्पत्ति हिंदी के 'दूषण' शब्द से हुई है। दूषण का अर्थ है—खराब होना, अपवित्र होना या मिश्रित हो जाना। इस प्रकार प्रदूषण का अर्थ हुआ-पर्यावरण का खराब, अनुपयुक्त व स्वास्थ्य के लिए हानिकारक हो जाना। विश्व स्वास्थ्य संगठन ने प्रदूषण को परिभाषित किया है कि “जब हमारे बाहरी वातावरण में इस प्रकार के पदार्थ मिल जाते हैं, जिनसे वह मानव तथा उसके पर्यावरण के लिए खतरनाक बन जाता है तो इस अवस्था को प्रदूषण कहते हैं।

भारतीय मानक संस्थान ने कहा है कि प्राकृतिक वातावरण में किसी भी बाहरी पदार्थ का मिश्रण प्रदूषण कहलाता है यदि वह जैवमंडल के जीवों और वनस्पतियों को प्रतिकूल रूप से प्रभावित करता है। आजकल अनेक प्रकार के प्रदूषण से हमारा पर्यावरण प्रदूषित हो गया है, जिनमें मुख्य प्रदूषण निम्नलिखित हैं :-

1. वायु प्रदूषण, 2. जल प्रदूषण, 3. ध्वनि प्रदूषण
4. मृदा प्रदूषण, 5. तापीय प्रदूषण, 6. रेडियोधर्मी प्रदूषण

यदि वायुमण्डल न होता तो हमारी धरती की स्थिति भी अन्य ग्रहों के समान होती। धरती पर जीवन नहीं होता। आज धरती का अस्तित्व खतरे में है। विश्व स्वास्थ्य संगठन के अनुसार “वायु प्रदूषण एक ऐसी स्थिति है जिसमें बाह्य वायुमंडल में मानक से अधिक उसके पर्यावरण को हानि पहुंचाने वाले तत्व सघन रूप से एकत्रित हो जाते हैं।” हमारे वायुमंडल में नाइट्रोजन 78 प्रतिशत, आक्सीजन 21 प्रतिशत तथा शेष 1 प्रतिशत में अन्य गैस हैं। लगातार बढ़ती जहरीली गैसों से वायुमंडल में आक्सीजन की मात्रा कम हो रही है। परमाणु परीक्षणों के कारण हमारे वायुमंडल में लगातार गर्मी बढ़ रही है। यदि यह वृद्धि जारी रही तो हरित गृह प्रभाव की समस्या उत्पन्न हो जायेगी। जिनका दुष्परिणाम यह कि वर्षा की अनियमितता हो जायेगी और उत्तरी तथा दक्षिणी ध्रुवों पर जमी बर्फ पिघल जायेगी जिससे समुद्र का जलस्तर बढ़ जायेगा और जनसंख्या का बड़ा भाग डूब जायेगा।

जल ही जीवन है। परन्तु आज मानव इसी जल को प्रदूषित करने में लग गया है। विभिन्न उद्योगों से निकलने वाले अपशिष्ट कचरा निस्तारण, वाहित मल, उर्वरक कीटनाशक, रोगनाशक तथा खरपतवार दवाईयों का स्वच्छ जल में मिश्रण, तेल का रिसाव, रेडियोधर्मी पदार्थों का जल में निस्तारण आदि क्रियाओं से जल प्रदूषित हो गया है।

बढ़ते हुये ध्वनि प्रदूषण से आज मनुष्य अनेक बीमारियों का शिकार होता जा रहा है। दुनियाभर में सबसे ज्यादा शोर का स्रोत है परिवहन प्रणालियां और मोटर वाहन। औद्योगिक और आवासीय क्षेत्रों में ध्वनि प्रदूषण का कारण बन सकते हैं कार्यालयों के उपकरण, बिजली के उपकरण और ऑडियो मनोरंजन सिस्टम।

विभिन्न कीटनाशक एवं रासायनिक उर्वरक प्रदूषित जल एवं अपशिष्ट पदार्थ, भू-क्षरण नाभिकीय विस्फोट त्रुटिपूर्ण सिंचाई आदि

कारणों के कारण मिट्टी में विभिन्न तत्वों के मिश्रण में अनुपात भंग हो जाता है या ऐसे तत्व मिल जाते हैं जो इसकी गुणवत्ता को नष्ट कर देते हैं और मिट्टी प्रदूषित हो जाती है।

पर्यावरणी प्रदूषणों में रेडियोधर्मी प्रदूषण सबसे अधिक हानिकारक प्रदूषण है। इस प्रकार का प्रदूषण स्थल मंडल, जल मंडल वायुमंडल को भी दूषित कर देता है। इसे नाभिकीय प्रदूषण भी कहते हैं। नाभिकीय विस्फोट के द्वारा अल्फा, बीटा तथा गामा किरणें जीवधारियों के गुणसूत्र में तथा जीव में परिवर्तन कर देती हैं इससे उनके वास्तविक लक्षण और संरचना में परिवर्तन हो जाता है।

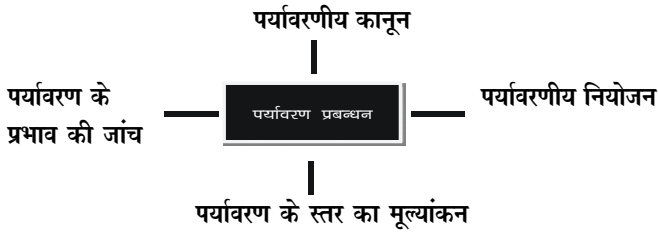
पर्यावरणीय प्रदूषण के उपरोक्त प्रकारों एवं उनके प्रभावों से यह स्पष्ट है कि मानव जाति के सम्मुख आज सबसे बड़ी चुनौती पर्यावरण को प्रदूषण से मुक्त रखना है। इस समस्या को पर्यावरण के प्रबन्धन के द्वारा ही सुलझाया जा सकता है। पर्यावरण प्रबन्ध का तात्पर्य मानवीय विकास के क्रियाकलापों एवं प्राकृतिक बहुमूल्य संसाधनों का सर्वोत्तम सामंजस्य बना रहे। पृथ्वी के प्राकृतिक संसाधनों का प्रयोग उस सर्वोत्तम तकनीक से करने का प्रयास किया जाय जिससे पृथ्वी के परिस्थितिक तन्त्र का सन्तुलन कायम रहे तथा उर्जा, आर्थिक विकास के निवेश एवं निर्गत सभी सन्तुलन में बने रहें। इसी रूप में पर्यावरण प्रबन्धन में स्वस्थ वातावरण को बनाये रखने का प्रयास भी किया जाता है। पर्यावरण को संतुलित रखने के लिए इसका प्रबन्धन किया जाना आवश्यक है क्योंकि किसी कार्य को तभी सफलतापूर्वक पूर्ण किया जा सकता है। जब उसका उचित रीति से प्रबन्धन किया जाय। पर्यावरण प्रबन्धन के दो मुख्य उद्देश्य होते हैं पहला पर्यावरण की गुणवत्ता सुनिश्चित करना और दूसरा जीवन में सुधार।

प्रबन्धन एक जटिल प्रक्रिया है। इसको परिभाषित करते हुये टेलर ने कहा है कि प्रवधा यह जानने की कला है कि आप क्या करना चाहते हैं और तत्पश्चात यह सुनिश्चित करना कि यह सर्वोत्तम एवं मित्तयातपूर्ण रीति से किया जाय। लुथर गुलिक ने प्रबन्धन के POSDCORB नाम का सूत्र दिया है।

- P-प्लानिंग
- O-आर्गेनाइजेशन
- S-स्टाफिंग
- D-डायरेक्टिंग
- C-कोर्डिनेशन
- O-आर्डरिंग
- R-रिपोर्टिंग
- B-बजटिंग

पर्यावरणीय संरक्षण में भी प्रबन्धन की इसी तकनीक का प्रयोग किया जाता है। पर्यावरण प्रबन्धन के 4 प्रमुख पद हैं-पर्यावरणीय कानून, पर्यावरणीय नियोजन, पर्यावरण के स्तर का मूल्यांकन और

पर्यावरण के प्रभावों की जांच। पर्यावरण प्रबन्धन के इन चार पदों को निम्न रूप में भी व्यक्त किया जा सकता है।



विभिन्न क्षेत्रों के प्रबन्धन की तरह पर्यावरण प्रबन्धन के भी आधार होते हैं। ये आधार निम्न हैं—

1. मानव जीवन की गुणवत्ता बनाना।
2. मानव विकास की गुणवत्ता बनाये रखना।
3. मानवीय जीवन और विकास के मध्य सामंजस्य बनाये रखना।
4. मानव विकास की अनुकूलतम विधि का चयन।
5. मानव व प्रकृति के मध्य सामंजस्य बनाये रखना।
6. जैवमंडल के संतुलन के लिए रणनीति बनाये रखना।
7. जीवन शैली को प्रकृति परक बनाना।

पर्यावरण प्रबन्धन से मानव जीवन के विभिन्न पहलू जुड़े हुये हैं। परिस्थितिकी, पर्यावरण, सामाजिक क्षेत्र, आर्थिक व सांस्कृतिक क्षेत्र आदि पर्यावरण प्रबन्धन से जुड़े हुये। पर्यावरण प्रबन्धन के प्रमुख 4 क्षेत्र निम्न हैं—

1. पर्यावरणीय जनजागरण का प्रबन्धन
2. उत्पादन प्रबन्धन—इसमें निम्न तथ्य आते हैं—
  1. उत्पादन प्रक्रिया में सुधार
  2. संरक्षण तकनीक का विकास
  3. सुरक्षा तकनीक का विकास
  4. परिस्थितिकी आधारित तकनीक का विकास
  5. पर्यावरण तकनीक का विकास
3. संसाधन प्रबन्धन
4. पर्यावरणीय प्रभावों का मूल्यांकन।
5. पर्यावरण शिक्षा का प्रबन्धन।

पर्यावरण सर्वव्यापक है लेकिन फिर भी इसकी एक विशिष्टता है। पर्यावरण की विशिष्टता के आधार पर ही प्रबन्धन के 4 स्तर निर्धारित किये गये हैं—

1. स्थानीय प्रबन्धन
2. क्षेत्रीय प्रबन्धन
3. राष्ट्रीय प्रबन्धन
4. अन्तर्राष्ट्रीय प्रबन्धन।

किसी भी स्तर के पर्यावरणीय प्रबन्धन में निम्नलिखित चरण अपनाये जाते हैं—

1. पर्यावरणीय नीति का निर्माण
2. योजना का निर्माण
3. पर्यावरणीय कारकों की पहचान।
4. कारकों का पर्यावरण पर पड़ने वाले प्रभाव का अध्ययन।
5. लक्ष्य निर्धारण
6. मूल्यांकन।

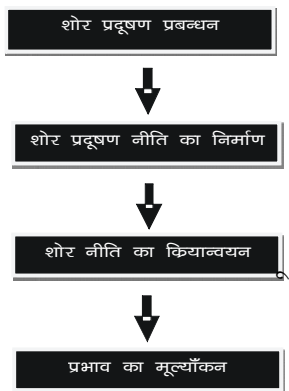
जिस प्रकार विभिन्न कार्यों के लिए उनकी आवश्यकताओं एवं परिस्थितियों के लिए अलग-अलग प्रबन्धन की आवश्यकता पड़ती है उसी प्रकार प्रदूषण के अलग-अलग प्रकारों के लिए प्रबन्धन के रूप भी अलग-अलग अपनाये जाते हैं मुख्य प्रदूषण के प्रबन्धन निम्न प्रकार से हो सकते हैं।

वायु प्रदूषण प्रबन्धन के अंतर्गत ऐसी योजनायें बनायी जाती हैं ताकि वायु प्रदूषण कम से कम फैले और इस पर प्रभावी नियंत्रण स्थापित हो सके। यह प्रबन्धन कोई संस्था भी कर सकती है और स्वयं सरकार भी। सरकार द्वारा वायु प्रदूषण प्रबन्धन का सबसे अच्छा उदाहरण राष्ट्रीय राजधानी क्षेत्र दिल्ली की सरकार द्वारा किया जा रहा है। दिल्ली सरकार द्वारा वायु प्रदूषण प्रबन्धन के लिए पिछले कई वर्षों से प्रयास किये जा रहे हैं और इन प्रयासों के सकारात्मक परिणाम अब दिल्ली की हवा में दिखने भी लगा है। इसी प्रकार लगभग सभी मोटर कम्पनियां आज वायु प्रदूषण प्रबन्धन कर रही हैं। इनमें टाटा मोटर्स और मारुति उद्योग लिमिटेड प्रमुख हैं। वस्तुतः वायु प्रदूषण प्रबन्धन के अन्तर्गत यह धारणा है कि स्रोत पर ही वायु प्रदूषण को नियन्त्रित किया जाना चाहिये।

जल प्रदूषण के सम्बन्ध में प्रबन्धन का कार्य किया जा रहा है। जल प्रबन्धन का अर्थ है जल को संरक्षित रखना और उसे प्रदूषण से मुक्त रखना। जल प्रदूषण प्रबन्धन के अन्तर्गत संस्था में ऐसे नियम कायदे बनाये जाते हैं ताकि जल को प्रदूषित होने से रोका जा सके और यदि जल प्रदूषित हो गया हो तो उसे कम करना। जल प्रबन्धन कई स्तरों पर किया जाता है जल प्रबन्धन की दीर्घकालिक योजनाओं के तहत जल पुनर्भरण जैसी विधियों को प्रयोग में लाया जाता है। इसके अतिरिक्त शुद्ध जल की बचत को भी जल प्रबन्धन के अन्तर्गत ही लाया जाता है। जल प्रदूषण का प्रबन्ध करने के लिए प्रदूषित जल को शुद्ध करना भी आवश्यक है ताकि उसे पेयजल के रूप में प्रयुक्त किया जा सके। सरकार द्वारा भी राष्ट्रीय स्तर पर जल प्रबन्धन किया जा रहा है। इसके लिए सरकार द्वारा राष्ट्रीय पेयजल मिशन योजना समूचे भारत वर्ष में चलायी जा रही है।

ध्वनि प्रदूषण भी एक गम्भीर प्रदूषण के रूप में उभर कर आया है। शोर प्रदूषण प्रबन्धन का आशय उन तरीकों व विधियों से है जिनकी सहायता से वातावरण में शोर के स्तर को कम रखा जाता है। ध्वनि प्रदूषण को रोकने के लिए तीन विधियां अपनायी जाती हैं।

1. स्रोत पर ही शोर का नियंत्रण
  2. शोर के मार्ग में रुकावट पैदा करके
  3. व्यक्ति (संभावित पीड़ितों) को सुरक्षित करके।
- इस रूप में यह प्रबन्धन चार स्तरों पर किया जाता है—



शोर प्रदूषण प्रबन्धन राष्ट्रीय एवं अन्तर्राष्ट्रीय दोनों ही स्तरों पर किये गये हैं और इसके सकारात्मक परिणाम भी उभर कर आये हैं।

मृदा प्रदूषण से भी पर्यावरण को नुकसान पहुंचता है। इसी को रोकने के लिए प्लास्टिक एवं रसायन एवं कीटनाशक पदार्थों के रोकथाम का प्रयास किया जाता है। इसमें प्लास्टिक प्रबन्धन भी एक महत्वपूर्ण तथ्य के रूप में उभर कर आया है। इस तरह के प्रबन्धन का सरकारी स्तर पर भी काफी जोर शोर से प्रयास किया जा रहा है। इसको

रोकने के लिए कई नियम और कानून बनाये जा चुके हैं। आजकल स्वास्थ्यकारी प्लास्टिक के प्रयोग को ही अनुमति दी जा रही है इसी प्रकार प्लास्टिक के पुनः चक्रण को भी सरकारी स्तर पर प्रोत्साहित किया जा रहा है।

रेडियो विकीरण प्रदूषण आज सम्पूर्ण मानवता के लिए खतरा बन कर उभर गये हैं। नाभिकीय विस्फोट एवं नाभिकीय बमों की उपस्थिति विश्व के नष्ट होने का संकेत देते रहते हैं। इसी को रोकने के लिए इस प्रकार के प्रदूषण के भी प्रबन्धन की बात विभिन्न राष्ट्रीय एवं अन्तर्राष्ट्रीय सन्धियों की बात की जाती है संयुक्त राष्ट्र संघ एवं उसके अभिकरणों द्वारा इस सन्दर्भ में गम्भीर प्रयास किये गये हैं।

वस्तुतः पर्यावरण प्रदूषण एवं उससे उपजती समस्या आज किसी एक राष्ट्र की समस्या न होकर वैश्विक स्तर की समस्या बन गयी है। ओजोन, ग्लोबल वार्मिंग, ग्लेशियरों का पिघलना किसी एक राष्ट्र की समस्या नहीं रह गई है। वरन इसने समस्त मानवता के सामने खतरा उत्पन्न कर दिया है इसके लिए पर्यावरण प्रबन्धन भी राष्ट्र की राष्ट्रीय सीमाओं के अन्दर न होकर वैश्विक पर्यावरण प्रबन्धन होना चाहिये तभी पर्यावरण प्रबन्धन वास्तविक उद्देश्यों की पूर्ति हो पायेगी। इसके लिए सभी देशों की सरकारों को मिलकर प्रयास करने होंगे। संयुक्त राष्ट्र संघ इसमें एक महत्वपूर्ण भूमिका अदा कर सकता है। इसके साथ ही प्रत्येक व्यक्ति को भी प्रदूषण रोकने के सम्बन्ध में अपनी भूमिका का निर्वाह करना होगा तभी पर्यावरण प्रबन्धन अपने वास्तविक उद्देश्य को पूरा कर पायेगा और स्वच्छ पर्यावरण प्रत्येक व्यक्ति के लिए उपलब्ध हो पायेगा।

## सन्दर्भ

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## पर्यावरण और साहित्य सृजन

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वेदों में जल, पृथ्वी, वायु, अग्नि, वनस्पति, अन्तरिक्ष, आकाश आदि के प्रति असीम श्रद्धा प्रकट करने पर बल दिया गया है। “वैदिक देवी-देवता प्रकृति की महान शक्तियों के मानव रूप में कल्पित किए गए हैं। उन्होंने अपनी संवेदना से धार्मिक प्रवृत्ति का समन्वय इस तरह किया कि प्रकृति की ये शक्तियाँ उनके जीवन से सीधी जुड़ गईं।” पर्यावरण की रक्षा, संवर्द्धन, उसका पोषण और पुष्टि, उसकी शुद्धता और पवित्रता हमारे लिए उतनी ही आवश्यक है जितनी कि मानव में जीवन की ललक। ऐसे में हमने प्रकृति से बैर ले लिया है। सभ्यता के पट-परिवर्तन के कारण आज सारा पर्यावरण ही बदल गया है। प्रकृति के साथ सामंजस्य के विकृति के विकृत रूप हमारे सामने आ रहे हैं।

“यो देवोद्ग्नौ, योदुप्सु यो विश्व भवनमाविवेश,  
यो ओषधिक्ष यो वपस्पतिसु तस्मै देवाय नमोनमः ॥”

अर्थात् जो अग्नि, जल, आकाश, पृथ्वी एवं वायु से आच्छादित है तथा जो औषधियों एवं वनस्पति में विद्यमान है उस (पर्यावरण) देव को हम नमस्कार करते हैं।

यदि मानव जीवन में पर्यावरण के चिन्तन पर बात करें तो मानव, पर्यावरण पर पूरी तरह आश्रित है। पर्यावरण के प्रभावित होने पर मानव जीवन स्वतः ही प्रभावित होने लगता है। पर्यावरण से मानव के सम्बन्ध की कहानी पृथ्वी के विकास की कहानी के साथ ही जुड़ जाती है। पृथ्वी पर मानव जीवन की उत्पत्ति विभिन्न रासायनिक, भौतिक तथा जैविक क्रियाओं के फलस्वरूप हुई। सर्वप्रथम जीवन ने एक कोशीय जीवों के रूप में आकार ग्रहण किया और फिर छोटी-छोटी वनस्पतियाँ विकसित हुईं उसके बाद बहुकोशीय जन्तुओं का विकास हुआ। विकास के अन्तिम चरण में पृथ्वी पर मानव का प्रादुर्भाव हुआ। यानि सृष्टि में सबसे पहले मानवजीवनोपयोगी कवच अर्थात् पर्यावरण का विकास हुआ।

आज से डेढ़ करोड़ वर्ष पूर्व पृथ्वी पर हरे-भरे जंगल, झर-झर बहने झरने, कल-कल करती नदियाँ, कलरव करते पक्षी तथा विशुद्ध प्राणवायु देने वाले वातावरण के बीच जब मनुष्य ने अपनी आँखें खोली होंगी तो स्वयं को एक स्वस्थ सुन्दर वातावरण के बीच पाया होगा। किन्तु आज देखते ही देखते सब बदल गया है, आज भौतिक आवरण में आबद्ध शिकारी मानव से पर्यावरण की रक्षा का विषय चिन्तायुक्त बन गया है। “हमारे चारों ओर ऊपर-नीचे का भौतिक व सामाजिक परिवेश जिसके अन्तर्गत प्रकृति के पंच महातत्व-पृथ्वी, आकाश, जल, अग्नि और वायु सम्मिलित हैं, पर्यावरण हैं। पृथ्वी पर उगने वाले वनस्पति पेड़-पौधे, फूल-फल तथा इस पर चलने वाले जीव-जन्तु, पशु-पक्षी, अचर पर्वत,

नदियाँ और खनिज पदार्थ आदि पर्यावरण के अंग हैं।<sup>1</sup> कहने का तात्पर्य यही है कि ईश्वर की बनाई इस सृष्टि में जो कुछ भी है सब पर्यावरण है। अपने शाब्दिक अर्थ में पर्यावरण दो शब्दों-‘परि’ और ‘आवरण’ से मिलकर बना है। परि का अर्थ है-चारों ओर और आवरण का अर्थ है-लबादा या घेरने वाला इस प्रकार पर्यावरण एक व्यापक शब्द है क्योंकि प्रत्येक जीव पर्यावरण में पैदा होता है, जीता और अंत में उसी में ही लीन हो जाता है। पाश्चात्य विद्वान् निकोलस के अनुसार-“पर्यावरण उन समस्त बाहरी दशाओं तथा प्रभावों का योग है जो प्रत्येक प्राणी के जीवन विकास पर प्रभाव डालते हैं।”<sup>2</sup> पर्यावरण के दो प्रकार हैं-जैविक और अजैविक। यह जैविक और अजैविक तत्व यौगिक रूप से विशिष्ट कार्य-शैली द्वारा एक तंत्र की रचना करते हैं जिसे परिस्थितिकीय तंत्र या ‘ईको सिस्टम’ कहते हैं। इस शब्द का प्रयोग सर्वप्रथम ए.जी. टांस्ल ने सन् 1935 में किया। इस तंत्र में सजीव प्राणी आपस में तथा अपने भौतिक वातावरण से ऊर्जा, द्रव्य आदि का आदान-प्रदान स्वचालित क्रिया प्रणाली द्वारा करते रहते हैं। इस आदान-प्रदान के अभाव में पृथ्वी पर जीवन असम्भव है। वास्तविकता यही है कि पर्यावरण भौतिक तथा जैविक तत्वों का एक ऐसा योग है जिसमें से एक के भी अस्तित्व पर यदि खतरा हो तो दूसरे के अस्तित्व पर स्वतः ही प्रश्न चिन्ह लग जाएगा। आज संसार जिस परिस्थितिकीय तंत्र व पर्यावरण के बीच पूर्ण सामंजस्य की वैज्ञानिक विचारधारा से प्रभावित है हमारे ऋषि-मुनियों ने तो सामंजस्य के इस महत्व का वर्णन युगों पहले सृष्टि के आदिकाल में ही वेदों में विस्तार से किया है। “कल्याणकारी संकल्पना, शुद्ध आवरण, निर्मल वाणी एवं सुनिश्चित गति-ऋग्वेद, यजुर्वेद, सामवेद और अथर्ववेद की मूल विशेषता मानी जाती है।”<sup>3</sup> और पर्यावरण सन्तुलन भी मुख्यतः इन्हीं गुणों पर आश्रित है। प्रकृति और जीवन के

विषय में तत्वदर्शी ऋषियों ने जो निर्देश दिए हैं उनमें यह कहने की जरूरत ही नहीं कि—‘जो कहेगा सच-सच कहेगा और सच के अलावा कुछ नहीं कहेगा।’ चारों वेदों की रचना के पीछे मुख्यतः सृष्टि के चारों आधारभूत तत्व—अग्नि, जल, वायु और मृदा ही काम करते हैं। हमारे वैदिक ऋचाओं के रचनाकारों ने ‘धर्म वही है जो प्रकृति के अनुकूल हो और पाप वही है जो प्रकृति के विरुद्ध हो’ कहकर मानव को हमेशा के लिए प्रकृति से जोड़ दिया।

वेदों में जल, पृथ्वी, वायु, अग्नि, वनस्पति, अन्तरिक्ष, आकाश आदि के प्रति असीम श्रद्धा प्रकट करने पर बल दिया गया है। “वैदिक देवी-देवता प्रकृति की महान शक्तियों के मानव रूप में कल्पित किए गए हैं। उन्होंने अपनी संवेदना से धार्मिक प्रवृत्ति का समन्वय इस तरह किया कि प्रकृति की ये शक्तियां उनके जीवन से सीधी जुड़ गई।”<sup>4</sup> अथर्ववेद (12.9) के ‘भूमिसूक्त’ में बार-बार भूमि माता से प्रार्थना की गई है कि वह अपने जनों को सुरक्षा दे, दीर्घ आयुष्य दे, धनधान्य, औषधि, जल तथा दूध दे। “ऋग्वेद (4.57), अथर्ववेद (3.17.4), यजुर्वेद (12.69.72) में सीता का उल्लेख कृषि की देवी के रूप में आता है। नैषधीय चरित में सीता को कृषि और वैभव धात्री के रूप में प्रस्तुत कर उसे पृथ्वी की पुत्री कहा है।”<sup>5</sup> ‘जल और जीवन’ के सम्बन्ध को प्राचीन जनों और ऋषियों ने बहुत पहले से जान लिया था क्योंकि वह शरीर को जीवन देता है। “मिट्टी में मिलकर वनस्पतियों को पनपाता है। उसी से अन्न उगता है वही पशुओं में दूध बनकर उतरता है। वही रक्त बनता है और उसी से बल और तेज की सृष्टि होती है।” जल की महत्ता के कारण इसकी पूजा का भाव परम्परा से ही रहा है। वेदों में अपो देवता के कई उल्लेख मिलते हैं। वर्षा के संदर्भ में इन्द्र, वरुण, पर्जन्य आदि की प्राचीन काल से ही मान्यता रही है। सृष्टि के आरम्भकर्ता ब्रह्मा के लिए ‘अपव’ शब्द का प्रयोग होता है जिसका अर्थ है जल क्रीड़ा व पालनकर्ता ‘नारायण’ का नाम ‘नीर’ से बना है। जल की यह महत्ता, रहीम के प्रसिद्ध दोहे—‘रहिमन पानी राखिए’ व कबीर की वाणी—‘जल की काया, जल की माया’ में आज तक सुरक्षित हैं। भूमि और जल के साथ औषधीय जड़ी-बूटियों व वनस्पतियों का भी अपना महत्व है। ‘वराह पुराण’ के अनुसार—“जो व्यक्ति एक पीपल, एक नीम, एक बरगद, दो अनार, दो सन्तरे व पांच आम के वृक्ष लगाता है, वह कभी नरक में नहीं जाता है।”<sup>6</sup> इस प्रकार वृक्षारोपण को धार्मिक भावना से जोड़कर तत्कालिक लोगों को वृक्ष लगाने के लिए प्रेरित किया। रामायण और महाभारत में वनों के महत्व पर प्रकाश डाला गया है। श्रीकृष्ण तो स्वयं वनचारी थे। कुल मिलाकर वेदों के अनुसार जीवन में रस, गन्ध, और रंग तभी भर सकता है जब वृक्ष और वनस्पति फूलें-फले, दिव्य औषधियाँ सुलभ हों, पशुधन सुरक्षित रहे और गहरे तादात्म्य के साथ मानव, पशु और वनस्पति, एक-दूसरे के साथ गुंथे रहें। पर्यावरण संरक्षण व महत्व के इस शंखनाद का व्यापक प्रसार हमारे परवर्ती हिन्दी काव्य व गद्य साहित्य में भी हुआ है। तुलसीदास ने तो

रामचरित मानस में रामराज्य की परिकल्पना पर्यावरण की दृष्टि से ही की है। उनके अनुसार—

*दैहिक दैविक भौतिक तापा, रामराज नहीं काहुहि व्यापा।*

रामचरित मानस के बालकाण्ड में जनक की पुष्प वाटिका की रम्यता का बहुत ही प्रभावोत्पादक वर्णन हुआ है। यहां प्रकृति अपने सभी रंगों और रूपों में मुखरित हुई है। भांति-भांति के वृक्ष, लताएं और पल्लव, फूलों की छरहरी सुगंध, पक्षियों का कलरव, स्वच्छ जल के सरोवर, कमल दलों का विकास और जल-पक्षियों की चहल-कदमी इस कोटि की है कि जो मनुष्यों को तो क्या स्वयं भगवान राम को सुख देने वाली है। एक उदाहरण देखिये—

*“नव पल्लव फल सुमन सुहाये, निज संपति सुर रूख लजाए।  
चातक कोकिल कीट चकोरा, कुंजत विहग नचत कल मोरा।  
विमल सलिल सरसिज बहुरंगा, जल खग कूजत गुंजत भृंगा।  
बागु तड़ागु बिलोक प्रभु, हरषे बंधु समेत  
परम रम्य आराम यहु, जो रामहि सुख देत।”<sup>7</sup>*

मानव और प्रकृति का यह घनिष्ठ सम्बन्ध ही तो है जिसमें मानव जब दुखी होता है तो उसे प्रकृति के वह सारे उपादान जो अत्यन्त सुख कारक हैं बैरी प्रतीत होते हैं। सूरदास ने इसका वर्णन गोपियों की विरहावस्था में किया है—

*“बिनु गोपाल बैरिन भई कुंजें।*

*तब ये लता लगति अति सीतल, अब भई विषम ज्वाल की पुँजें ॥”*

घनानन्द ने प्रकृति के परोपकारी रूप का वर्णन बादलों के माध्यम से किया है। क्योंकि उन्होंने अपना रूप धारण दूसरों के कल्याण के लिए किया है। उन्होंने बादलों से उन पर उपकार करने का आह्वान करते हुए कहा है—

*“परकाजहिं देह को धारि फिरौ,*

*परजन्य जथारथ है दरसौ।*

*निधि नीर सुधा के समान करौ,*

*सबही विधि सज्जनता सरसौ।”*

प्रकृति का सुन्दर रूप जब स्वयं को सजाता है तो किसी वाद्य यंत्र में भी प्राण आ जाते हैं। मीरा के गिरधर गोपाल प्रकृति के इसी रूप को चित्रित करते दिखाई देते हैं—

*“अधर सुधारस मुरली राजति, उर बैजंती माल*

*क्षुद्र घंटिका कटि तट सोभित, नूपु सबद रसाल*

*मीरा प्रभु संतन सुखदायी, भागत-बछल गोपाल।”<sup>8</sup>*

प्रकृति के साथ एकाकार होकर आत्म-साक्षात्कार का उत्कृष्ट उदाहरण ‘अज्ञेय’ की ‘असाध्य वीणा’ है। ‘असाध्य वीणा’ के माध्यम से अज्ञेय ने प्रकृति के जैविक व अजैविक रूप की एकसारता का वर्णन किया है।

आज पर्यावरणीय प्रदूषण, चेतावनी का विषय बना हुआ है। पर्यावरण के आवश्यक तत्वों में ‘जल’ जीवन का प्रतीक है और इस

प्रतीक को सार्थकता प्रदान करने वाली हमारी नदियाँ मुख्यतः गंगा-यमुना आज अपनी दुर्दशा पर रो रही हैं। मानव ने इनके जीवनदायी रूप को खतरे में डाल दिया है। आज यही प्रयास किया जा रहा है कि गंगा-यमुना पहले की तरह कंचनवर्णी बन जाएं, उसकी धाराएं स्वच्छ जल कल-कल का नाद करें और उज्ज्वलता का संदेश दें। भारतेन्दु हरिश्चन्द्र ने 'गंगा मेरे मन की' में गंगा के इसी विमल रूप का चित्रण किया है—

“नव उज्ज्वल जल-धार, हार हीरक-सी सोहति,  
बिच-बिच छहरति बूंद, मध्य मुक्ता मन पोहति।”<sup>9</sup>

भारत का सहज प्रहरी हिमालय अपने प्राकृतिक लोक कल्याणकारी रूप के लिए जाना जाता है। उस पर प्राकृतिक औषधियां, कुसुमों और वृक्षों की भरमार है। अमृत प्रदान करने वाले झरने, शीतल हवा, बादलों को बुलाने वाले घने जंगल, सब जीवनदान देने वाले हैं। हिमालय की इस महत्ता का वर्णन प्राकृतिक आराधना के रूप में श्रीधर पाठक ने इस प्रकार किया है—

“झरना जहँ-तहँ झरत, करत कल छर-छर जल रव।  
पियत जीव सो अम्बु अमृत-उपमा हम संभव।  
पवन शीत अति सुखद, बुझावत बहु विधि तापा  
बादर दरसत, परसत, बरसत आपहि आपा  
प्रकृति-परम-चातुर्य अनुपम अचरज-आलय  
‘श्रीधर’ दृज छकि रहत अटल छवि निरखि हिमालय।”<sup>10</sup>

प्रकृति ने सृष्टि के विकास के लिए मानव को 'अक्षय भण्डार' दिए हैं। जिसमें जल की निर्मला, वायु की शीतलता, भूमि की हरियाली, खनिज तत्वों का भण्डार, अमृत बरसाने वाली चांदनी, तम का नाश करने वाली व ऊर्जा प्रदान करने वाली सूर्य की किरणें वरदान नहीं तो और क्या हैं? 'मैथिलीशरण गुप्त' ने अपनी मातृभूमि कविता में प्रकृति के इस रूप का चित्रण बड़े ही हृदयस्पर्शी रूप में किया है। एक उदाहरण दृष्टव्य है—

“निर्मल तेरा नीर अमृत के सम उत्तम है।  
शीतल मंद, सुगंध पवन हर लेता श्रम है।  
षट्ऋतुओं का विविध दृश्य युत अद्भुत क्रम है।  
शुचि सुधा खींचता रात में, तुझ पर चंद्र प्रकाश है।  
हे मातृभूमि दिन में तरणि करता तम का नाश है।”<sup>11</sup>

हमारा जन्म प्रकृति के जिन पंचतत्वों से मिलकर बना है उनमें मिट्टी मुख्य है जिसका योगदान मानव शरीर के निर्माण से लेकर उसके जीवन विकास तक में है।

मिट्टी में वह हमारे भंडार हैं जिनसे मानव जीवन का सुचारु विकास होता है। इनमें कृषि द्वारा खाद्य पदार्थों का उत्पादन मुख्य है। खाद्य पदार्थों के सेवन से ही जीवन को ऊर्जा मिलती है। 'साकेत' में 'मैथिलीशरण गुप्त' ने सीताजी के माध्यम से कृषि कार्य द्वारा मिट्टी के महत्व पर प्रकाश डाला है।

“अंचल-पट कटि में खोंस, कछोटा मारे,  
सीता माता थीं आज नई धज धारे।  
टंकुर हितकर ये कलश-पयोधर पावन,  
जन-मातृ गर्वमय कुशल वदन भव-भावन।”<sup>12</sup>

प्रकृति के सुकुमार कवि सुमित्रानन्दन पंत ने प्रकृति के सहचरी मानवतावादी रूप का चित्रण अनेक रूपों में किया है। उनकी 'बादल' कविता में उक्त उदाहरण प्रकृति के सबको आनन्द प्रदान करने वाले रूप का वर्णन है—

“मुग्ध शिखी के नृत्य मनोहर,  
सुभग स्वाति के मुक्ताहार;  
विहंग वर्ग के गर्भ विधायक,  
कृषक बालिका के जलधर।”<sup>13</sup>

प्रकृति की महान चितेरी महादेवी वर्मा का तो सारा साहित्य पर्यावरण पर आधारित है। उन्होंने 'मैं नीर भरी दुख की बदली' कहकर अपनी तुलना उस बदली से की है जो स्वयं बरसकर संसार को खुशी देती है। कभी वह वसन्त ऋतु के माध्यम से सुख-दुख की पूरकता का वर्णन करती हुई कहती हैं—

“अश्रु मधुमय लुटाता आ यहाँ मधुमास,  
अश्रु ही की हार बन आती करुण बरसात।”<sup>14</sup>

गद्य की दृष्टि से यदि हम पर्यावरणीय चिन्तन की बात करें तो हमारे हिन्दी साहित्य में गद्य की समस्त विधाओं-उपन्यास, निबन्ध, कहानी, संस्मरण, आलोचना, जीवनी, यात्रा-वृत्तान्त, नाटक, एकांकी, रेखाचित्र इत्यादि में पर्यावरणीय चिन्तन व कुदरत का वास भरा पड़ा है।

'महादेवी वर्मा' का पशु प्रेम उनकी कृति गौरा में स्पष्ट दिखाई देता है। इस उदाहरण से इस बात की पुष्टि हो जायेगी—“गाय जब मेरे बँगले पर पहुँची, तब मेरे परिचितों और परिचारकों में श्रद्धा का ज्वार उमड़ आया। उसे लाल-सफेद गुलाब की माला पहनाई गई, केसर-रोली का बड़ा-सा टीका लगाया गया, घी का चौमुख दीया जलाकर आरती उतारी गई और उसे दही का पेड़ा खिलाया गया। उसका नामकरण हुआ गौरागिनी या गौरा।”<sup>15</sup>

गौरा में जहाँ पशु प्रेम का भाव है वहीं 'भगवतशरण उपाध्याय' का 'टूँठा आम' में वृक्षों के प्रति कठोर होती मानवीय संवेदना को उजागर किया गया है। देखिए—“वह टूँठा आम, जो चौराहे पर खड़ा है, सदा से टूँठा नहीं है पर मैंने उसे टूँठा ही देखा है। पत्रहीन, शाखाहीन, जैसे पृथ्वी रूपी आकाश से सहसा निकलकर अधर में टँग गया हो। पर जैसे जानकारों ने बताया, कभी यह हरा पेड़ा था, उसकी जड़ें धरती की नरम-नरम मिट्टी से दबी थीं और उसकी छतनार डालें आकाश में ऐसी फैली थीं जैसे विशाल पक्षी के डैने और उन डालियों के कोटरों में अनगिनत घोंसले थे। पनाह के नीड़ बसेरे।”<sup>16</sup>

इन पंक्तियों में वृक्षों और पक्षियों का साहचर्य है, धरती और उसकी उपज के बीच स्नेहिल रिश्ते हैं लेकिन साथ ही वृक्ष के ठूँठपन के प्रति एक व्यथा की है जो मानव ने दी है।

डॉ. रामगोपाल शर्मा 'दिनेश' के एकांकी नाटक 'रघु के राज में' निम्नलिखित संवाद से इस बात की पुष्टि होती है कि प्रकृति की छाया सर्वोत्तम है। एक वही है जो मनुष्य, पशु व पक्षियों को सच्चा आनन्द प्रदान कर सकती है—“यह संसार एक रंगशाला है हम सभी इसके पात्र हैं हम ही क्यों पशु-पक्षी, जीव-जन्तु और वनस्पति आदि सभी किसी न किसी भूमिका का निर्वाह करते हैं। आधुनिक भौतिकवादी व्यवस्था ने हमारे और प्रकृति के बीच एक पर्दा डाल दिया है—रंगमंच की यवनिा की तरह। इसे हटा दिया जाए तो सीधा संवाद हो सकता है कुदरत के साथ।” कुदरत के साथ सीधे संवाद में बाधक मनुष्य की तृष्णाओं, ऐषणाओं, वासनाओं एवं लोभवृत्ति ने आज पर्यावरण सम्बन्धी समस्याओं को जन्म दिया है। हम इस तथ्य को भूलते जा रहे हैं कि प्रकृति और उसके साथ सामंजस्य को बनाये रखने की मनोवृत्ति शताब्दियों पुरानी है। पर्यावरण की रक्षा, संवर्द्धन, उसका पोषण और पुष्टि, उसकी शुद्धता और पवित्रता हमारे लिए उतनी ही आवश्यक है जितनी कि मानव में जीवन की ललक। ऐसे में हमने प्रकृति से बैर ले लिया है। सभ्यता के पट-परिवर्तन के कारण आज सारा पर्यावरण ही बदल गया है। प्रकृति के साथ सामंजस्य के विकृति के विकृत रूप हमारे सामने आ रहे हैं। यदि अब भी हमने इसे गम्भीरता से नहीं लिया तो प्रकृति भी हमारे कुकृत्यों का बदला लेने में पीछे नहीं रहेगी तब शायद उक्त पंक्तियाँ सार्थक सिद्ध होंगी—

“पंचभूत का भैरव मिश्रण, शंपाओं के शकल-निपात,  
उल्का लेकर अमर शक्तियाँ खोज रहीं जो खोया प्रात।”<sup>17</sup>

वास्तविकता यही है कि हमारा पर्यावरण जीवों का आंगन व रंगमंच है। पर्यावरण जीवों के लिए जीव पर्यावरण के लिए है। पर्यावरण की महफिल तभी सुंदर लगेगी जब उसके किस्म-किस्म के जीव अपनी भूमिका निभाते रहेंगे। कहने का आशय यही है कि—

अनन्त का वरदान  
इसे यूँ ही नष्ट मत कर  
उपभोग कर,  
सृष्टि के उपहारों का  
अच्छी संतान की तरह  
रक्षा कर इस थाती की  
अपनी और विश्व परिवार की  
पूर्वजों की धरोहर को सहेज  
धरती माँ की रक्षा कर।<sup>18</sup>

यह तभी हो सकता है जब पर्यावरण के प्रत्येक घटक के लिए हमारे जीवन में आत्मनियंत्रण व सामंजस्य का अनुशासन हो। इसी से लयबद्धता होगी और जीवन का संगीत अपनी उत्कृष्टता प्राप्त कर “समरस थे जड़ या चेतन” की उक्ति को चरितार्थ कर मानवता का संदेश देता हुआ कहेगा—

“शक्ति के विद्युत्कण जो व्यस्त विकल बिखरे हैं, हो निरूपाय,  
समन्वय उसका करे समस्त विजयिनी मानवता हो जाय।”<sup>19</sup>

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## ब्रह्माण्ड और पर्यावरण का सम्बन्ध

डॉ. रश्मि गोयल

अध्यक्षा, भूगोल विभाग

शम्भुदयाल पोस्ट ग्रेजुएट कॉलेज, गाजियाबाद

भगवान ने समस्त ब्रह्माण्ड की रचना पांच मूलभूत मौलिक तत्वों (पृथ्वी, जल, अग्नि, आकाश एव वायु) से की है। यही मूलभूत पंचतत्व पर्यावरण के मौलिक, भौतिक, जैविक एवं अन्योन्याश्रित अवयव है। गोस्वामी तुलसीदास जी ने इसकी पुष्टि की है—

क्षिति, जल, पावक, गगन, समीरा।

पंच रचित यह अधम शरीरा!!

(रामचरितमानस)

इनकी रक्षा के लिए, उसे स्वस्थ रखने के लिए, हमें पर्यावरण को स्वस्थ एवं प्रदूषण मुक्त रखना होगा, उसका विधिवत एवं विशद अध्ययन, पर्यावरण को विज्ञान मानकर, वैज्ञानिक आधार पर करना होगा। पर्यावरण को प्रदूषण मुक्त कर जन-जन के स्वास्थ्य को रोग मुक्त करने के लिए पर्यावरण के अवयवों को भी यत्र तत्र सर्वत्र, येन केन प्रकारेण भी विषाक्त मुख करना होगा, उन्हें स्वच्छ एवं स्वस्थ रखना होगा तभी विश्व का कल्याण होगा।

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क्षिति, जल, पावक, गगन, समीरा।

पंच रचित यह अधम शरीरा!!

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इनकी रक्षा के लिए, उसे स्वस्थ रखने के लिए, हमें पर्यावरण को स्वस्थ एवं प्रदूषण मुक्त रखना होगा, उसका विधिवत एवं विशद अध्ययन, पर्यावरण को विज्ञान मानकर, वैज्ञानिक आधार पर करना होगा। पर्यावरण को प्रदूषण मुक्त कर जन-जन के स्वास्थ्य को रोग मुक्त करने के लिए पर्यावरण के अवयवों को भी यत्र तत्र सर्वत्र, येन केन प्रकारेण भी विषाक्त मुख करना होगा, उन्हें स्वच्छ एवं स्वस्थ रखना होगा तभी विश्व का कल्याण होगा।

ब्रह्माण्ड तथा पर्यावरण का अन्तरसम्बन्ध अत्यंत प्रभावशाली है। ब्रह्माण्ड के तत्व पर्यावरण को प्रभावित करते हैं तो पर्यावरणीय क्रियाएं ब्रह्माण्ड को प्रभावित करती हैं। यह क्रिया अनवरत रूप से चलती रही हैं और चलती रहेंगी। ऊर्जा ब्रह्माण्ड के अंगों को गतिशील एवं गत्यात्मक बनाती है, तो ब्रह्माण्ड के अंग ऊर्जा के स्रोत हैं।

### ब्रह्माण्ड

असीम आकाशीय रचना में असंख्य सूर्य एवं ग्रह-उपग्रह हैं। असंख्य तारों से निर्मित आकाशीय रचना ब्रह्माण्ड कहलाती है।

अमरीकी खगोलविद एडविन हब्ल (1889-1953) ने प्रमाणित किया कि हमारी आकाशगंगा के परे दूसरी अनेक मंदाकिनियों का अस्तित्व है। उन्होंने 1923 ई. में अकाशगंगा के परे नजदीक की देवयानी मंदाकिनी (एंड्रोमी डा गैलक्सी) में पृथक तारों को पहचाना। पता चला कि देवयानी मंदाकिनी हमसे लगभग 20 लाख प्रकाश-वर्ष दूर है। फिर यह भी पता चला कि विश्व के अथाह विस्तार में विविध आकार-प्रकार की अरबों मंदाकिनियां हैं। सन् 1929 में एडविन हब्ल ने खोज की कि दूर की मंदाकिनियां हमसे अधिक दूर भाग रही हैं। उन्होंने यह भी पता लगाया कि जो मंदाकिनी हमसे अधिक दूर है, वह अधिक वेग से पलायन कर रही है। इस प्रकार, विशाल विश्व के बारे में प्रमुख तथ्य यह है कि इसमें मंदाकिनियों का विस्तार समरूप है, समदिश है, और मंदाकिनियां एक-दूसरे से दूर भागती जा रही हैं। इससे एक स्पष्ट निष्कर्ष यह निकलता है कि सुदूर अतीत में एक समय ऐसा भी रहा है जब सभी मंदाकिनियां एक-दूसरे के बहुत नजदीक रही होंगी। फूले हुए एक गुब्बारे की कल्पना कीजिए। मान लीजिए कि इस गोलाकार गुब्बारे की सतह पर धब्बों का एकरूप फैलाव है, और यह गुब्बारा निरंतर फूलता जा रहा है। तब गुब्बारे के इस विस्तार को पीछे ले जाकर हम कल्पना कर सकते हैं कि इसकी शुरुआत किसी समय इसके 'शून्य अर्धव्यास' से हुई होगी, और उस आरंभकाल में इसकी सतह के सभी धब्बे एकसाथ एक-दूसरे के ऊपर, या एक-दूसरे के भीतर, विद्यमान रहे होंगे।

मंदाकिनियों-सहित विश्व के समस्त द्रव्य (एवं ऊर्जा) के बारे में भी खगोलविद इसी प्रकार के निष्कर्ष पर पहुंचे हैं। मान लिया गया है



कि सुदूर अतीत के एक आरंभिक क्षण में आज के विश्व का समस्त द्रव्य (और ऊर्जा भी) एक स्थान पर पुंजीभूत रहा है। 15 से 20 अरब साल पूर्व के उस आरंभिक क्षण में एक महाविस्फोट हुआ और उसके साथ ही समस्त द्रव्य तथा ऊर्जा का छितराव शुरू हुआ। संतुलन-विचलन या महाविस्फोट की उस 'विलक्षण' घटना को खगोलविदों ने बिग बैंग (big bang) का नाम दिया है।

ब्रह्माण्ड जीव-जगत से सराबोर है। पराजीव-विज्ञानी इस मामले में इसलिए भी आशावादी हैं, क्योंकि जैव वस्तुओं का सृजन प्रमुखतः हाइड्रोजन, नाइट्रोजन, कार्बन और आक्सीजन से हुआ है, और विश्व में यही चार तत्व रासायनिक दृष्टि से सबसे ज्यादा सक्रिय हैं। विशेष बात यह है कि जीवन और निर्जीव के बीच कोई स्पष्ट विभाजन-रेखा नहीं है। इधर के वर्षों में पता चला है कि कुछ सूक्ष्म जीव कठोरतम परिस्थितियों में, सूर्य-प्रकाश और प्रकाश-संश्लेषण के बिना भी, जीवित रहते हैं।

कुछ वैज्ञानिकों ने यह संभावना भी व्यक्त की है कि धरती पर जीवन का आगमन वाह्य अंतरिक्ष से हुआ है। तारों की बीच के अंतरिक्ष में धूल व गैस के रूप में जो बहुत सारा द्रव्य मौजूद है, उसमें जैव रसायन टूट निकाले गए हैं। ब्रह्माण्ड के दूसरे बहुत-से-पिंडों की भिन्न भौतिक परिस्थितियों के अनुसार वहां नितांत भिन्न प्रकार के जीवन का विकास हुआ हो, यह भी संभव है। आकाश में विभिन्न आकार-प्रकार के पिंड हैं, जैसे नीहारिकाएं, नक्षत्र-समूह, तारागण, कृष्णविवर, धूमकेतु, ग्रह तथा उपग्रह आदि।

## पर्यावरण

पर्यावरण (Environment) शब्द फ्रांसीसी भाषा के (Environer) से बना है। पर्यावरण परि (जिसका अर्थ है चारों ओर) + आवरण (घेरा)। इस शाब्दिक अर्थ से तीन प्रश्न उठते हैं—1. कौन घिरा है, 2. किससे घिरा है, तथा 3. कहां घिरा हुआ। प्रथम का उत्तर है जीव, द्वितीय-परिस्थितियों, तृतीय का उत्तर है स्थान (आवास स्थल)। इस प्रकार पर्यावरण किसी जीव को घेरने वाली वे विभिन्न परिस्थितियां हैं जिनके अन्तर्गत वायु, प्रकाश, ताप, मिट्टियां, जल, वनस्पति, खाद्य संसाधन आदि आते हैं या कोई बाह्य शक्ति अथवा दशा जो किसी भी प्रकार से जीव जन्तुओं को प्रभावित करती है उसे पर्यावरण के कारक कहते हैं।

चूंकि वातावरण में समस्त भौतिक तथा जैविक परिस्थितियां सम्मिलित होती हैं। अतः वातावरणीय जीवों की क्रियाओं एवं प्रतिक्रियाओं को प्रभावित करने वाली समस्त भौतिक तथा जैविक परिस्थितियों का योग होता है। भौतिक वातावरणीय शक्तियों और प्रक्रियाओं के फलस्वरूप धरातल पर विभिन्नतायें उत्पन्न होती हैं जिसका अस्तित्व

मनुष्य के कार्यों से स्वतंत्र है क्योंकि इनका मनुष्य ने सृजन नहीं किया है वरन् ये प्रकृति की देन है। मानव अपने क्रिया-कलापों के लिए वातावरण पर निर्भर है। मानव एक कलाकार के रूप में वातावरण द्वारा प्रदत्त रंगमंच पर कार्य करता है। कहीं वातावरण उसे प्रभावित करता है तो कहीं वह उसके साथ अनुकूल तथा परिवर्तन करता है। इसे पर्यावरण समायोजन भी कहते हैं। पर्यावरण के सभी तथ्यों में जलवायु का प्रभाव सबसे अधिक महत्वपूर्ण है जो मानव को सीधा प्रभावित करता है। जलवायु का प्रभाव प्राकृतिक वनस्पति, ऊष्मीय ताप, वायु और मिट्टियों द्वारा मनुष्य पर पड़ता है। जलवायु का प्रभाव मनुष्य के रंग, कद, शरीर की बनावट, शारीरिक शक्ति को भी अप्रत्यक्ष रूप से प्रभावित करता है। वातावरण के साथ मानव का सामन्जस्य अत्यन्त प्राचीन काल से चला आ रहा है। मानव ने विज्ञान, तकनीकी ज्ञान और आर्थिक क्रियाओं में बड़े महत्वपूर्ण परिवर्तन करके अपने भौतिक वातावरण के साथ सामन्जस्य करने की रीतियों में अत्यधिक प्रसार किया है। यह तथ्य विशेष रूप से उल्लेखनीय है कि प्राकृतिक और सांस्कृतिक परिस्थितियों या पर्यावरण प्रगतिशील है, जीवित है, स्थायी है अर्थात् उनमें सर्वदा परिवर्तन होता रहता है। नदी के किनारे आज जो हम कण देखते हैं कल वहां नहीं रहेंगे। पेड़ की जिस पत्ती को आज हम हरी देखते हैं, कल उसमें परिवर्तन हो जायेगा। इसी भांति जहां मरुस्थल दिखाई देते हैं, वहां पर सौ या दो सौ वर्ष उपरान्त बड़े-बड़ें हवाई अड्डे बन सकते हैं। जिनके चारों ओर पाताल तोड़ कुओं से जल से हरे-भरे पेड़ शीतल सुन्दरता का आनन्द दें रहे हों एक शताब्दी पूर्व कौन यह कह सकता था कि बीकानेर की मरुभूमि में नहर की सिंचाई से लहराते खेत बन जायेंगे। प्राकृतिक और सांस्कृतिक वातावरण दोनों में ही परिवर्तन आता रहता है। यह प्रकृति का नियम है। कुछ परिवर्तन अचानक और कुछ धीरे-धीरे आते हैं। अचानक होने वाले परिवर्तन प्राकृतिक परिवर्तन कहलाते हैं तथा धीरे-धीरे हुए परिवर्तनों में मुख्य योगदान मानव का होता है।

ब्रह्माण्ड के अन्य ग्रह, तारे एवं उपग्रह भी मानवीय जीवन को प्रत्यक्ष एवं परोक्ष रूप से प्रभावित करते हैं। इस प्रकार पर्यावरण का तात्पर्य मानव के आसपास के स्थित वस्तुओं से लेकर ब्रह्माण्ड के अंगों तक है जो असीम और विस्तृत है। अतः इसे संकुचित दायरे में नहीं देखा जा सकता। मानवीय जीवन पर ब्रह्माण्ड का प्रभाव पर्यावरणीय प्रक्रिया का ही एक अंग है।

ब्रह्माण्ड का प्रत्येक अवयव एक-दूसरे से किसी निश्चित परिधि एवं सापेक्षिक बल के कारण आकर्षित है। यदि इस बल में जरा-सा भी सन्तुलन बिगड़ जाता है तो उनमें से किसी एक का अस्तित्व डगमगा जाता है। ठीक इसी प्रकार प्राकृतिक तत्वों (भौतिक एवं जैविक) में भी परस्पर सम्बन्ध है। इनमें से किसी एक का दूसरे पर हावी होने का मानस बनते ही सन्तुलन के बिगड़ने से समस्याओं की बाढ़

आ जाती है, जो कालान्तर में दोनों के अस्तित्व के लिए हानिकारक स्थिति होती है।

मानव का जन्म परिवार में होता है। माना जाता है कि बच्चे पर परिवार का ही प्रभाव पड़ता है। परिवार के साथ-साथ उस पर ब्रह्माण्ड के प्रत्येक तत्व का प्रभाव पड़े बिना नहीं रह सकता। बालक के जन्म के समय उस पर ग्रह-नक्षत्रों आदि का प्रभाव भारतीय संस्कृति में महत्वपूर्ण माना गया है। ठीक इसी प्रकार बालक पर समाज, पास-पड़ोस, वायुमंडल, जीव-जन्तुओं आदि का भी प्रभाव देखा गया है। इन सबसे यही सिद्ध होता है कि ब्रह्माण्ड और पर्यावरण तथा पर्यावरणीय सन्तुलन के कारण जैविक एवं भौतिक तत्व एक-दूसरे पर परस्पर निर्भर हैं।

पर्यावरण के दोनों अंग, भौतिक एवं जैविक, पृथ्वी पर पाई जाने वाली इन विशेषताओं के कारण ही इतनी विविधताएं लिए हैं। इन दोनों में प्रकृति ने जो सन्तुलन बना रखा है, अगर वह जरा-सा भी डगमगाया तो दोनों तत्वों का अस्तित्व खतरे में पड़ सकता है। भौतिक पर्यावरण बदलने में जैविक पर्यावरण भी बदल जाता है। भौतिक पर्यावरण में कभी-कभी बड़े परिवर्तन भी हुए हैं, जिनसे पेड़-पौधों और जीव-जन्तुओं की कुछ जातियां नष्ट हो गईं और पुनः नए भौतिक पर्यावरण के अनुरूप नई जातियों का विकास हुआ। ऊर्जा और पदार्थ के संरक्षण के नियम के आधार पर कुछ वैज्ञानिकों के अनुसार ब्रह्माण्ड अमिट रहेगा। ऊर्जा और पदार्थ की मात्रा का केवल रूप-परिवर्तन होगा, न कि वह कम होगा।

## सन्दर्भ

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## शिक्षा में पर्यावरण की अवधारणा

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प्रवक्ता, हिन्दी विभाग

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पर्यावरण शिक्षा की आवश्यकता और इसका महत्व आज सभी देशों के लिए समान रूप से है, क्योंकि विश्व के सभी देश आज किसी न किसी प्रकार के पर्यावरण संकट से ग्रस्त हैं। पर्यावरण शिक्षा प्रकृति की सच्ची और सार्थक परिक्रमा है। एक प्रकार से ब्रह्माण्ड की धड़कन को सुनने का यह अनूठा प्रयास है। पर्यावरण सम्बन्धी शिक्षा जन-साधारण को पर्यावरण की समस्याओं और उसके संरक्षण और सुधार के लिए अपेक्षित मानवीय व्यवहार का ज्ञान कराती है। यह जन-साधारण को अहसास कराती है कि वह प्रकृति के प्रति अपनी निकटता को महसूस करें कि प्रकृति उसकी मां है, धात्री है, यदि हमने प्रकृति में सन्तुलन नहीं बनाये रखा तो इक्कीसवीं सदी बर्बादी की सदी बनकर आयेगी इस प्रकार 'पर्यावरण शिक्षा' एक सामान्य शिक्षा नहीं बल्कि पर्यावरण की समस्याओं उनके निदान, हल और सम्भावित बचाव संबंधी जानकारी प्राप्त करने की शिक्षा है या यों कहें कि 'पर्यावरण शिक्षा' प्राणी मात्र को वर्तमान में बचाये रखने तथा सुरक्षित भविष्य प्रदान करने की शिक्षा है।

वायु, जल, भूमि वनस्पति, पेड़-पौधे, पशु, मानव सब मिलाकर पर्यावरण बनते हैं। प्रकृति में इन सबकी मात्रा और इनकी रचना कुछ इस प्रकार से व्यवस्थित है कि पृथ्वी पर एक संतुलनमय जीवन चलता रहे। विगत लाखों, करोड़ों वर्षों से जब से पृथ्वी पर मनुष्य, पशु-पक्षी और अन्य जीव और जीवाणु उपभोक्ता बनकर आये तब से, प्रकृति का यह चक्र निरन्तर और अबाध गति से चलता आ रहा है, जिसको जितनी आवश्यकता है वह उन्हें मिलता रहता है और प्रकृति आगे के लिए अपने में और उत्पन्न करके और संरक्षित कर लेती है। मनुष्य ने प्रकृति पर विजय प्राप्त करने के लिए अनेक वैज्ञानिक उपलब्धियाँ अर्जित कीं, सुख-सुविधा के साधन जुटाये, बढ़ती आबादी की आवश्यकताओं की पूर्ति हेतु औद्योगिक क्रान्ति का सहारा लिया, तभी से प्रकृति का सामान्य रूप विखंडित होने लगा। वन कटने लगे, उपजाऊ भूमि पर आवास बनने लगे, बड़े-बड़े जंगल साफ कर बाँधों की योजना बनी और न जाने कितने ऐसे प्रयोग शुरू हो गये जो मानव प्रकृति के अनुकूल नहीं थे। अतः सामान्य मानव जीवन में परिवर्तन आने लगा। पहले तो प्राकृतिक संसाधनों की उपलब्धता में कमी और फिर शनैः-शनैः वायु, जल, भूमि आदि सभी, जो जीवन के लिए आवश्यक हैं, प्रदूषित होने लगे, जो चिन्ता का कारण बन गये।

पर्यावरण का वातावरण शब्द का निर्माण दो शब्दों से मिलकर हुआ है-परि+आवरण। परि का अर्थ है चारों तरफ से और आवरण का अर्थ होता है ढँके हुए। इस प्रकार पर्यावरण या वातावरण शब्द का अर्थ हुआ व्यक्ति के इर्द-गिर्द और चारों ओर जो कुछ भी है, वही उसका

वातावरण या पर्यावरण कहा जाता है। मानव के चारों तरफ फैले हुए वातावरण को पर्यावरण की परिधि में माना जाता है। मानव जन्म से मृत्युपर्यन्त पर्यावरण में ही रहता है। इसके द्वारा वह वैयक्तिक एवं सामाजिक क्षेत्रों में विकास करता है। यदि उसे अच्छा वातावरण नहीं दिया जाए तो वह आदर्श मानव के रूप में, स्वस्थ नागरिक नहीं बन सकता। व्यक्ति को चारों ओर से ढँकने वाला आवरण ही 'पर्यावरण' कहलाता है। इसके अभाव में सुखद जीवन ही असम्भव है।

डी.एच. डेविस के मतानुसार-“मनुष्य के सम्बन्ध में पर्यावरण से अभिप्राय भूमि या मानव के चारों ओर फैले उन समस्त भौतिक तत्त्वों से है, जिसमें वह रहता है तथा जिनका उसकी आदतों और क्रियाओं पर प्रभाव डालता है। इस प्रकार के तत्त्वों में भूमि का धरातल, उसके भौतिक एवं प्राकृतिक संसाधन, मिट्टी की प्रकृति, उसका उर्वर या अनुर्वर होना उसका पूर्ण शुष्क या सिंचित होना, उसकी स्थिति, दूसरे स्थानों के सम्बन्ध में इसकी जलवायु, वनस्पति, खनिज सम्पदा, जल और थल का वितरण, पर्वत, मैदान, पौधे एवं सभी प्रकार की सृष्टि सम्बन्धी शक्तियाँ, गुरुत्वाकर्षण, विद्युत चमक तथा विकिरण सम्बन्धी घटनाएँ जो पृथ्वी पर घटित होती हैं और जो मानव जीवन को प्रभावित करती हैं, सम्मिलित हैं।”

पर्यावरण शिक्षा के क्षेत्र में एक नवीन संदर्भ के रूप में विकसित हुआ है। पर्यावरण के महत्व ने विश्व की सम्पूर्ण मानवता को सन्देश देना आरम्भ कर दिया है कि स्वस्थ पर्यावरण ही मानव का जीवन है तथा पर्यावरण की अनुपस्थिति में जीवन की कल्पना करना ही असम्भव

है। मनुष्य अपनी सुख-सुविधा की खोज में अपने आस-पास की भौतिक एवं सामाजिक वस्तुओं को विकृत करने में लग गया है। साथ ही अपने वातावरण के प्राकृतिक संसाधनों को विकृत करता जा रहा है। यह अकाट्य है कि इस विकास में मानव विनाश का मंजर व्यापक एवं विस्तृत होता जा रहा है। यह विश्व मानवता के लिए एक बड़ा खतरा बन गया है जिसको भारत में सभी विश्वविद्यालयों के पाठ्यक्रम में एक अनिवार्य विषय के रूप में मान्यता दे दी गई है।

पी.के. गुप्त के अनुसार-“पर्यावरण शिक्षा के अन्तर्गत जीवन पर्यन्त चलने वाली व्यापक शिक्षा को सम्मिलित करते हैं जो परिवर्तनशील संसार के प्रति अनुक्रिया करता है। इसके द्वारा व्यक्तियों को प्रशिक्षित करके तैयार किया जाता है जिससे पर्यावरण सम्बन्धी, भौतिक, सामाजिक, आर्थिक, राजनैतिक तथा सांस्कृतिक समस्याओं को समझ सके। व्यक्तियों में कौशल, अभिवृत्तियों तथा मूल्यों का विकास किया जाता है जिससे रचनात्मक योगदान कर सके। इसके फलस्वरूप उत्तम स्वास्थ्य तथा जीवन में गुणवत्ता ला सकें।”

पर्यावरण दो अवयवों से मिलकर बना है। जैविक तथा अजैविक। प्रकृति के प्रत्येक जीवन किसी न किसी रूप में एक-दूसरे को प्रभावित करते हैं। कोई भी पूर्णतः आत्मनिर्भर नहीं होता परिस्थितिकी तंत्र के सभी जैविक घटक परस्पर एक वर्ग के सदस्य के रूप में व्यवहार करते हैं। इन्हें ही जैविक घटक के रूप से जाना जाता है। जैसे-पेड़-पौधे, जन्तु तथा मानव आदि। सभी अजैविक तत्व जैसे-पानी, भूमि, हवा आदि पर्यावरण के अजैविक अवयव में सम्मिलित किये जाते हैं। अजैविक घटक भी दो भागों में वर्गीकृत हैं भौतिक तथा रासायनिक घटक। भौतिक घटक मुख्य रूप से जैसे ताप, प्रकाश जल आर्द्रता मिट्टी, प्रवाह तथा दाब। ये सभी अवयव जीवधारियों को जीवन भर प्रभावित करते हैं तथा उनकी वृद्धि, विकास, स्वास्थ्य आदि क्रियाओं को नियंत्रित करते हैं। आर्द्रता पर्यावरण का एक महत्वपूर्ण घटक है। आर्द्रता का तात्पर्य वायु में उपस्थित जल वाष्प की मात्रा से है। सामान्य रूप से पृथ्वी की ऊपरी सतह को मृदा कहते हैं इसका निर्माण मिट्टी से ठीक नीचे वाली चट्टानों के विघटन और उन पर कार्बनिक पदार्थों और सूक्ष्म जीवधारियों की निरन्तर अनुक्रिया के फलस्वरूप होता है। इसमें अधिकांश वनस्पतियों और जन्तु स्थायी रूप से निवास करते हैं। ताप वातावरण की गर्मी मापने का यह एक पैमाना है। वातावरण के अलग-अलग क्षेत्रों में ताप में अन्तर होता है। सूर्य प्रकाश का मुख्य स्रोत है। प्रकाश द्वारा निकली ऊर्जा ही सभी जीवधारियों के जीवन का मूलभूत आधार है। इसके अतिरिक्त जन्तुओं और वनस्पतियों की अनेक जैविक-क्रियाएं सीधे प्रकाश से प्रभावित हैं। पृथ्वी का लगभग दो-तिहाई भाग जल से ढंका हुआ है। जीवन की कल्पना इसके बिना कठिन है। पर्यावरण के मुख्य रासायनिक घटक हैं। पोषक तत्व ये

जीवधारियों के विकास और वृद्धि पर प्रभाव डालते हैं।

मनुष्य एक विवेकशील, बुद्धिजीवी व सामाजिक प्राणी है। फलतः इसका समाज से लगाव होता है। उसका परिवार एवं समाज से घनिष्ठ सम्बन्ध है। पर्यावरण का अर्थ है वातावरण जिसमें सम्पूर्ण प्रकृति-नदियाँ, जलाशय, वन वाटिका, झरने, पर्वत, शृंखलाएँ, चट्टान, खनिज, पेड़-पौधे, वायु एवं जल का संयोग है। मनुष्य पर्यावरण में ही साँसें लेता है। अतः शुद्ध पर्यावरण की अत्यन्त आवश्यकता है। अवलोकन, प्रयोजन पर्यटन विज्ञान शिक्षण की ऐसी विधियाँ हैं, जो उसे अपने चारों ओर की प्रकृति के रहस्य के बारे में अवगत कराती हैं। प्रकृति का क्षेत्र अत्यन्त विस्तृत तथा रहस्यपूर्ण है जोकि पर्यावरण के साथ जुड़ा है। प्राकृतिक वन-सम्पदा मनोहर रूप प्रस्तुत करती है। खेत, बगीचे, झरने, नदी, वाटिकाएँ एवं जीव-जन्तु आदि सभी इस पर्यावरण को सुन्दर एवं स्वच्छ बनाते हैं।

आज के इस जनसंख्या विस्फोट तथा औद्योगिक विकास के युग में पर्यावरण का बिगड़ता हुआ सन्तुलन विश्व स्तर पर चिन्ता का विषय बना हुआ है। पृथ्वी पर प्राणियों के अस्तित्व को बनाये रखने के लिए यह अति आवश्यक है कि पर्यावरण शिक्षा का व्यापक स्तर पर प्रचार और प्रसार हो भारत में सन् 1972 से ही पर्यावरण के क्षेत्र में योजनाबद्ध तरीके से कार्य प्रारम्भ हुआ देश के पर्यावरण के बारे में सोचने हेतु 'नेशनल कमेटी फॉर एनवायरमेन्टल प्लानिंग एण्ड को-ऑर्डिनेशन (NCEPC) का निर्माण हुआ और साथ ही औद्योगिक प्रदूषण से बचाव के लिए केन्द्रीय तथा राज्य स्तरीय प्रदूषण नियंत्रण मण्डलों का गठन किया गया। उपर्युक्त कमेटी की अभिशांसा के आधार पर ही सन् 1980 में 'तिवारी कमेटी' बनाई गई। जिसने पर्यावरण प्रबन्ध की अनिवार्यता को औचित्यपूर्ण बताते हुए कुछ स्पष्ट सुझाव दिये। केन्द्र में स्वतंत्र रूप से पर्यावरण विभाग की स्थापना (सन् 1980) में इसी कमेटी के सुझावों के अन्तर्गत की गई। बाद में राज्य स्तर पर भी पर्यावरण विभाग कार्यरत हुए। NCEPC को बाद में NCEP (नेशनल कमेटी ऑफ एनवायरमेन्टल प्लानिंग) के रूप में परिवर्तित कर दिया गया। जिसने पर्यावरण क्षेत्र की प्राथमिकताओं को प्रस्तुत किया और देशहित में इनकी रोकथाम और बचाव की अनिवार्यता बतायी। आज के बदले हुए पर्यावरण के संदर्भ में पर्यावरण शिक्षा आवश्यक है विश्व की जनसंख्या में तेजी के साथ वृद्धि हो रही है। बढ़ती हुई जनसंख्या की त्वरित आवश्यकता पूर्ति हेतु औद्योगिक विकास करना पड़ा। खाद्यान्नों का उत्पादन बढ़ाने के लिए रासायनिक खादों का उत्पादन तथा कृषि में प्रयोग बढ़ा जिससे वायु, जल तथा मृदा के प्रदूषण बढ़े। जनसंख्या वृद्धि, गरीबी और प्रदूषण में सीधा सम्बन्ध है। अतः पर्यावरण सन्तुलन के लिए जनसंख्या नियंत्रण आवश्यक है। जनसंख्या नियंत्रण के साथ-साथ औद्योगिक विकास व पर्यावरण के मध्य सन्तुलन स्थापित

करना भी आवश्यक है। विकास के नाम पर विश्व विनाश की ओर बढ़ रहा है। इसके लिए पर्यावरण शिक्षा के माध्यम से विश्व चेतना जाग्रत करने की आवश्यकता है। विभिन्न स्तरों पर आयोजित होने वाले पर्यावरणीय सम्मेलन अति आवश्यक हैं। सम्मेलनों के आयोजनों से पर्यावरण का सामूहिक शिक्षण होता है तथा जनसाधारण का ध्यान पर्यावरण असन्तुलन की ओर आकृष्ट होता है।

वायु, जल, ध्वनि एवं मृदा प्रदूषण आज इतने बढ़ गये हैं कि प्रकृति के ये जीवनोपयोगी सभी तत्व मानव व अन्य प्राणियों के लिए अनुपयुक्त हो गये हैं। जनसामान्य तक प्रदूषण की भयावता की जानकारी पहुँचाने तथा उन पर नियन्त्रण करने के उपाय बताने के लिए पर्यावरण शिक्षा आवश्यक ही नहीं अनिवार्य बन गयी है। प्रदूषण के बढ़ते हुए प्रभाव से प्रकृति में विद्यमान तमाम प्राणियों व वनस्पतियों के अस्तित्व लुप्त हो रहे हैं। पर्यावरण के बिगड़ते हुए सन्तुलन को बचाने के लिए अति आवश्यक है कि जनसामान्य में पर्यावरण के अवयवों जल, वायु, वृक्ष, मृदा आदि के प्रति सकारात्मक दृष्टिकोण का विकास भी शिक्षा के द्वारा ही होता है औद्योगिकीकरण के फलस्वरूप मानव ने प्रकृति का बड़ी निष्ठुरता से शोषण किया, पर्यावरण शिक्षा के माध्यम से आज जन-सामान्य के पर्यावरण के प्रति दृष्टिकोण बदलने की आवश्यकता है। सन्तुलित पर्यावरण के लिए आवश्यक है कि मानव वनस्पतियों, पशु-पक्षियों, जल व वायु के साथ मित्रता व बन्धुता के भाव विकसित करे। उनका पोषण व संरक्षण करना अपना धर्म समझे। औपचारिक शिक्षा के सभी स्तरों पर पर्यावरणीय शिक्षा का अनिवार्य विषय के रूप में अध्ययन एवं अध्यापन की व्यवस्था विश्व के सभी देशों में की जाए। इसके लिए पाठ्यचर्चा व शिक्षण विधियों का निर्धारण हो जिससे शिक्षण संस्थाओं में पर्यावरण सन्तुलन के प्रति सचेष्ट युवा-पीढ़ी तैयार की जा सके। विद्यालय न जाने वाले बालक-बालिकाओं तथा प्रौढ़ों के लिये अनौपचारिक रूप में शिक्षा की व्यवस्था की जाये तथा उसका भली प्रकार प्रचार व प्रसार हो। इससे बालकों एवं प्रौढ़ों को पर्यावरण के प्रति जागरूक बनाया जा सकता है।

आदमी केवल उपभोक्ता ही नहीं अपितु पोषक व पालक भी है। त्यागमय एवं प्राकृतिक जीवनयापन के लिए जनसामान्य को प्रोत्साहित करने के लिए पर्यावरण शिक्षा आवश्यक है। आज आवश्यकता है कि हम रूसो के “प्रकृति की ओर वापस चलें।” के नारे का जीवन में अनुकरण करें। प्राकृतिक जीवन हमें प्रकृति के तत्वों के करीब रखता है जिससे हमारे अन्दर उनके प्रति प्रेम, भ्रातृत्व एवं सहचर के भावों का विकास होता है तभी हम प्रकृति के तत्वों के संरक्षण व पोषण की प्रेरणा प्राप्त कर सकते हैं। पर्यावरण को सन्तुलित बनाने का उत्तरदायित्व समाज के प्रत्येक व्यक्ति का है। अतः प्रदूषण नियंत्रण व निवारक के

कार्यक्रमों जैसे-वृक्षारोपण, सफाई, जनसंख्या नियंत्रण व जनसामान्य में पर्यावरणीय चेतना का विकास आदि में समाज के सभी वर्गों के लोगों की भागीदारी आवश्यक है। पर्यावरण शिक्षा प्रकृति की सच्ची और सार्थक परिक्रमा है। एक प्रकार से ब्राह्मण्ड की धड़कन को सुनने का यह एक अनूठा प्रयास है। उन्नीसवीं शताब्दी के पहले तक तो सब कुछ ठीक-ठाक था क्योंकि तब तक मनुष्य की तीसरी आँख-लालच की आँख खुली नहीं थी। आज विनाश की जो पटकथा लिखी जा रही है, उसके पीछे लालच की लूट-खसोट की ओर लिप्ता की यही दृष्टि उत्तरदायी है। अपने लाभ के लिए गुमराह इंसान प्रकृति के तत्वों से छेड़खानी कर रहा है। इसी असफल चेष्टा में अपनी विनाश लीला को न्यौता दे रहा है। ऐसे में पर्यावरण शिक्षा की सार्थकता सामने आयी है, क्योंकि यही एक ऐसी शिक्षा है जो इंसान को प्रकृति के साथ जीने का सलीका सिखाती है। प्रकृति एक ऐसी किताब है, जिसकी रचना ईश्वर ने की है। पर्यावरण शिक्षा वर्तमान समय की मांग है। बिगड़ते पर्यावरण की नजाकत को समझना और उसके अनुरूप अपने कार्य व्यवहार को परिमार्जित करते रहना अपनी मूलभूत आवश्यकता है।

प्रसन्नता की बात है कि पर्यावरण प्रदूषण के क्षेत्र में हमारे वैज्ञानिकों ने पहल शुरू कर दी है। वैकल्पिक ऊर्जा के साधन ढूँढे जा रहे हैं। उद्योगों द्वारा निकाले गये कचरे, रेडियोधर्मी अपशिष्ट आदि के प्रदूषण से बचने के लिए वैज्ञानिकों ने प्रयास शुरू कर दिये हैं। इसी प्रकार घरेलू गंदगी गोबर आदि को ऊर्जा में बदलने और उसे साफ करने की बातें हो रही हैं। कल कारखानों में ऐसी विधि का विकास हो रहा है कि उसमें कम से कम कचरा उत्पन्न हो। पर इसके लिए नये तकनीकों की जरूरत होगी जो भविष्य में विकसित होंगे। आज वैज्ञानिकों में यह विचार भी जोर पकड़ रहा है कि औद्योगिक कचरे को किसी दूसरी वस्तु के लिए उपयोग में लाया जा सके। कोयला, गैस तेल आदि ऊर्जा के साधन बहुत दिन तक आदमी का साथ नहीं देंगे। लेकिन वैज्ञानिक ऊर्जा के वैकल्पिक साधनों की खोज में लगे हैं। भूमि को उर्वर बनाने का प्रयत्न सिंचाई व्यवस्था और नई भूमि को कृषि के अन्तर्गत लाने का प्रयास उत्पादकता को बढ़ाने में सहायक होता है। ऐसी आशा की जा सकती है कि वैज्ञानिक दृष्टि और टैक्नोलॉजी भविष्य में मानव का मार्ग प्रशस्त करेगी। किन्तु यह भी विचारणीय है कि विज्ञान और टैक्नोलॉजी मानव को सुख-सुविधा दे सकते हैं। पर जीवन की ऊष्मा नहीं। उसे इस पृथ्वी पर अच्छी जिन्दगी भी चाहिए और अच्छी जिन्दगी धन और वैभव पर निर्भर नहीं करती आवश्यकता इस बात की है कि हम प्रकृति से अपना नाता जोड़ें।

“आज के विकृत हो रहे पर्यावरण को सुधारने तथा उसे और विकृत न होने देने के लिए पर्यावरण शिक्षा ही एकमात्र ऐसा विकल्प है जिसे अत्यन्त विश्वास से उपयोग में लाया जा सकता है।

आवश्यकता इस बात की है कि इसकी योजना अत्यन्त व्यावहारिक हो तथा इसे पूर्ण निष्ठा और भावना से लागू किया जाए। मूल्यांकन के आधार पर हर स्तर पर इसमें परिवर्तन कर दिया जाए, जिससे निर्धारित समय में हमें पूर्व निश्चित उपलब्धियों की प्राप्ति हो सके। निःसन्देह पर्यावरण शिक्षा आज जीवन की शिक्षा है तथा इस पर वर्तमान और भविष्य दोनों अवलम्बित हैं। पर्यावरण को शुद्ध रखने की चुनौती आज हम सबके सामने है। यदि हमने अपना दायित्व नहीं निभाया तो इक्कीसवीं सदी को हम कैसा भारत सौंपेंगे। हममें से कोई नहीं चाहेगा कि हम अगली पीढ़ी को एक जीवन्त विश्व के बजाय धरती ही लाश उत्तराधिकार में दें। इसी के साथ नई सदी की यह चुनौती भी न भूलें कि यदि नष्ट किया है तो क्या नया कुछ नहीं

बनाओगे? नहीं बनाओगे तो अरबी के सुप्रसिद्ध कवि अदोनिस के शब्दों में एक प्रश्न और एक चेतावनी—

इस तरह से तुम पृथ्वी के चेहरे को  
नष्ट कर छोड़ोगे। लेकिन—

कुछ दूसरा भी बनाओगे क्या?

तब, तुम्हारे पास कौन-सा रास्ता होगा?

चिंगारी, आग के शोले, मौत का पैगाम

और तुम्हारे नकार का जहन्नुम

इस तरह यह पृथ्वी

हो जायेगी एक अंधी कब्रगाह

और बच जाएगा तुम्हारा तनहा खुदा!

## संदर्भ

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## वेदों में पृथिवी विषयक पर्यावरण संरक्षण

डॉ० वन्दना वशिष्ठ

प्रवक्ता, संस्कृत विभाग  
एस.एस.वी.पी.जी. कॉलेज, हापुड़

पृथ्वी शब्द “पृथु विस्तारे” से बना है अर्थात् जो समुद्र, नदी, नाले व झरने आदि नाना प्रकार के जलाशयों को धारण किए हुए है। जिस पर नाना प्रकार के कृषि कार्य किए जाते हैं। सारे संसार का भरण पोषण करने वाली यह पृथ्वी ही सब बहुमूल्य धन-सम्पत्तियों का अपार भण्डार है। स्वर्ण आदि धातुओं को अपने गर्भ में धारण करने वाली और सम्पूर्ण संसार को अपने ऊपर बरसाने वाली है। पृथ्वी माता के समान पुत्रों का पालन करने वाली है। यह पृथ्वी हमारे शरीर की भांति है जिस प्रकार शरीर का स्वस्थ होना आवश्यक है उसी प्रकार पृथ्वी का स्वस्थ एवं निर्मल होना परम आवश्यक है। पृथ्वी के प्रदूषित होने से इस पर पैदा होने वाले अनाज भी प्रदूषित हो जाते हैं।

प्रकृति और पर्यावरण से हमारा जन्म-जन्मान्तर का साथ है। अच्छे प्राकृतिक एवं सामाजिक पर्यावरण का अनुकूल प्रभाव मनुष्य के स्वरूप, उसकी शारीरिक क्षमताओं, बुद्धि बल और चिन्तन के विकास आदि पर परिलक्षित होती है। हमारे वैदिक वाङ्मय का विकास शुद्ध प्राकृतिक पर्यावरण के बीच हुआ है। प्राचीन काल में “पर्यावरण” नाम कोई विशेष शब्द प्रचलित नहीं था फिर भी लोग अपने आस-पास के प्राकृतिक तत्व की पूजा करते थे। प्रकृति से उन्हें श्रद्धा थी और इस श्रद्धा का कारण था कि वे जानते थे कि भोजन, वस्त्र, आवास, जल, वायु आदि अपनी नैसर्गिक आवश्यकताओं के लिए मनुष्य तथा जीव-जन्तु सभी को प्रकृति पर निर्भर रहना पड़ता है। प्रकृति में ही पृथ्वी अन्तर्निहित है। अतः इसका संरक्षण आज अत्यन्त आवश्यक हो गया है।

पृथ्वी शब्द “पृथु विस्तारे” से बना है अर्थात् जो समुद्र, नदी, नाले व झरने आदि नाना प्रकार के जलाशयों को धारण किए हुए है। जिस पर नाना प्रकार के कृषि कार्य किए जाते हैं। सारे संसार का भरण पोषण करने वाली यह पृथ्वी ही सब बहुमूल्य धन-सम्पत्तियों का अपार भण्डार है। स्वर्ण आदि धातुओं को अपने गर्भ में धारण करने वाली और सम्पूर्ण संसार को अपने ऊपर बरसाने वाली है। पृथ्वी माता के समान पुत्रों का पालन करने वाली है। यह पृथ्वी हमारे शरीर की भांति है जिस प्रकार शरीर का स्वस्थ होना आवश्यक है उसी प्रकार पृथ्वी का स्वस्थ एवं निर्मल होना परम आवश्यक है। पृथ्वी के प्रदूषित होने से इस पर पैदा होने वाले अनाज भी प्रदूषित हो जाते हैं।

आज मनुष्य ने अपने स्वार्थों के वषीभूत होकर आधुनिक वैज्ञानिकता से प्रभावित होकर, जैसे ही कारखानों आदि का प्रदूषित जल जोकि

हमारी इस भूमि की उर्वरा शक्ति को कमजोर करता जा रहा है, उसका आधिकाधिक प्रयोग करना शुरू कर दिया है जोकि अनाज, पेड़ पौधों व वनस्पति के लिए अत्यन्त विनाशकारी है और शेष रासायनिक पदार्थों का प्रयोग करके मनुष्य ने इस पृथ्वी को अत्यन्त प्रदूषित कर दिया है जिससे पृथ्वी के साथ-साथ यह पर्यावरण भी प्रदूषित हो गया है।

ईश्वर की इस सृष्टि का चक्र और उसके द्वारा बनायी गई व्यवस्था ऐसी है कि पृथ्वी पर रहने वाले सभी प्राणी एवं जीव-जन्तु एक दूसरे के लिए लाभकारी हैं, उनके ऐसा सम्बन्ध स्थापित है जो पर्यावरण को सन्तुलित बनाये रखता है तथा एक दूसरे के पूरक पदार्थों का निर्माण करता है लेकिन मनुष्य ने अपनी उच्च आंकाक्षाओं, जीवन में अधिक आरामदायक सुविधाओं को जुटाने के

प्रयास में पर्यावरण के सन्तुलन को अस्थिर कर दिया है। जिस प्रकार किसी क्रिया की प्रतिक्रिया अवश्य होती है उसी प्रकार नये-नये वैज्ञानिक उपकरणों के परिणाम भी हानिकारक ही सिद्ध होते हैं जिसके लक्षण आज दिखाई पड़ने लगे हैं। हर व्यक्ति पर्यावरण प्रदूषण को लेकर चिन्तित है। आज कृषक बिना किसी कीटनाशक के प्रयोग से कृषि करना नहीं चाहता है। जितने ज्यादा कीटनाशक कृषि में प्रयोग हो रहे हैं उतना ही उसका स्वास्थ्य पर बुरा प्रभाव पड़ता दिखाई दे रहा है। कृषक क्या जो कृषि वैज्ञानिक है वे यह चिन्तन नहीं करते कि इतने सारे कीटनाशकों के प्रयोग का परिणाम क्या होगा? बिना कीटनाशकों के प्रयोग के वो कृषकों को कृषि कार्य करने का परामर्श नहीं देते क्योंकि उसमें उनका स्वयं का हित छुपा रहता है। क्या वे इस बात से अनभिज्ञ हैं? कि भोजन के माध्यम से यह विष उनको ही प्राप्त होने वाला है जोकि स्वास्थ्य के लिए अत्यन्त ही हानिकारक है। तभी तो भिन्न-भिन्न

प्रकार की बीमारियाँ पनपने लगी है, जैसे टी0बी0, कैंसर, मधुमेह व रक्तचाप जैसे रोगों से तो औसतन 40-45 वर्ष के लोग ग्रसित होने लगे है।

मनुष्य के जीवन में तीन कामनाएँ होनी चाहिए 1. दीर्घ जीवन की कामना 2. धन की कामना 3. परलोक में सुख तथा मोक्ष की कामना इनमें सबसे ज्यादा महत्व व्यक्ति को दीर्घ जीवन की कामना को देना चाहिए। वह जीवन जिसे वह सुखी और स्वस्थता के साथ, निरोगता के साथ व्यतीत कर सकें, कामना के साथ उसे प्रयास भी करना चाहिए और वह तभी सम्भव है जब उसका खान-पान, आचार-विचार, आहार-विहार व पर्यावरण शुद्ध होगा क्योंकि इस शरीर की स्थिति भी वैसी ही है जैसा कि इस ब्रह्माण्ड की “यथा पिण्डे तथा ब्रह्माण्डे” जिस प्रकार का वातावरण होगा उसी प्रकार का उसमें रहने वाला हमारा शरीर होगा। स्वास्थ्य सुरक्षा का ही दूसरा रूप है।

इस भौतिक शरीर की रचना करने वाले पांच तत्त्व (पृथ्वी, जल, अग्नि, वायु व आकाश) माने गये हैं। जिनका तालमेल असन्तुलित हो जाने से त्रिदोष उत्पन्न हो जाते हैं। त्रिदोष (वात, पित्त, व कफ) है। इन दोषों का ब्रह्माण्डीय तत्त्वों में सम्बन्ध इस प्रकार है - वात की उत्पत्ति आकाश और वायु से, पित्त की अग्नि से और कफ की उत्पत्ति जल व पृथ्वी से हुई है। इसके अतिरिक्त शरीर में मन व बुद्धि है जिनका त्रिरूप सत्व, रज और तम में सन्तुलन बनाये रखना है।

वेदों में पर्यावरण संरक्षण आदि वायु, जल, पृथ्वी और आकाश आदि की शुद्धि के लिए विशेष निर्देश दिए गये हैं जिनसे कि जीवन की रक्षा हो सकें। मनुष्य सुखी और स्वस्थ रहकर अधिक से अधिक आयु की अभिलाषा को पूरा कर सकें।

*जीवेम् शरदः शतम् ॥ 1*

ऋग्वेद में वायु के महत्व को बताते हुए कहा गया है कि वायु जो हमें प्राण प्रदाता है वह अमृत कोश है। जीवनी शक्ति देता है। वह पिता, भाई व मित्र है। वह सब रोगों की औषधि है। पर्यावरण की रक्षा

हेतु अथर्वेद में भी कहा गया है कि वायु की शुद्धि अनिवार्य है। वायु व सूर्य के महत्व का वर्णन करते हुए कहा गया है कि यह दोनों संसार के रक्षक हैं यह अन्तरिक्ष में व्याप्त है। ये ही सर्व प्रकार के रोगों को नष्ट करने वाले हैं। वेदों में पर्यावरण की शुद्धि के लिए यज्ञ का बहुत उल्लेख मिलता है। ऋषि कहते हैं -

वायु के छेदन आर्कषण और वृष्टि कराने वाले सूर्य के गुणों से नदी चलती है तथा हवन किया गया द्रव्य दुर्गन्ध आदि दोषों का निवारण कर सब दुखों से रहित सुखों को सिद्ध करता है। दिन-रात सुख बढ़ाता है इसके बिना कोई प्राणी जीवन जीने में समर्थ नहीं हो सकता इसलिए मनुष्य को चाहिए कि इन सभी की शुद्धि के लिए यज्ञ रूपी कर्म नित्य करें।<sup>1</sup>

अग्नि का गुण है - दाहकता वह जहां भी अशुद्धि है, प्रदूषण है या घातक कीटाणु है उनको सदा नष्ट करता है। चाहे यज्ञ की अग्नि हो या अन्य कोई भी, प्रदूषण कारी तत्वों को राक्षस व असुर आदि कहा गया है।

अग्नि को विष्वेषुच अर्थात् संसार को पवित्र बनाने वाला कहा गया है। यज्ञ के द्वारा भू प्रदूषण, जल प्रदूषण व ध्वनि प्रदूषण आदि सभी प्रदूषणों को दूर किया जा सकता है। ऋग्वेद में और अथर्वेद में नदी, तालाबों आदि को जल को शुद्ध करने के लिए यज्ञ को आवश्यक बताया है क्योंकि यज्ञ की वायु शोधक प्रक्रिया से जल भी शुद्ध होता है।<sup>2</sup>

यजुर्वेद में उत्तम कृषि के लिए यज्ञ को आवश्यक बताया है। यज्ञ से बादल, बादल से वर्षा और वर्षा से उत्तम कृषि होती है। यज्ञ से पृथ्वी, अन्तरिक्ष और। लोक के सभी दोष या प्रदूषण दूर हो जाते हैं।<sup>3</sup>

इस प्रकार यज्ञ शारीरिक, मानसिक और आत्मिक उन्नति का साधन है। जिसके द्वारा सभी प्रकार की कृषि, वर्षा, ऊर्जा, दीर्घायु, वृक्ष वनस्पतियों की समृद्धि, अन्नसमृद्धि बौद्धिक व आत्मिक उन्नति, सुख व शान्ति की प्राप्ति होती है।<sup>4</sup>

## सन्दर्भ

1. माहिर्भूमा पृदाकुर्नमस्त आतानानर्वा प्रेहि।  
घृतस्य कुल्या उप ऋतस्य पथ्या अनु॥ यजु0/116/12॥
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4. ऊर्कं च में सूनता च में पयष्य में रसष्व में घृतं च में मधु च में सग्धिष्व म सपीतिष्व में कृषिष्व में वृष्टिष्व में जैत्रं च में औद्भिर्घं च में यज्ञेन कल्पन्ताम्॥  
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## पौराणिक साहित्य में पर्यावरण की वैश्विक अवधारणा

डॉ. अंजना शर्मा

एसो. प्रोफेसर

संस्कृत, दर्शन एवं वैदिक अध्ययन विभाग,  
वनस्थली विद्यापीठ

सम्पूर्ण ब्रह्माण्ड, पृथ्वी, वन-वनस्पति, जीव-जन्तु के साथ मानव-समुदाय और वंशानुक्रम का विस्तृत वर्णन करते हुए प्रकृति के सभी तत्त्वों में आध्यात्मिक, भौतिक तथा आनुवांशिक एकता का अद्भुत प्रतिपादन पौराणिक साहित्य करता है। इससे वैश्विक पर्यावरण की भौतिक, जैविक और सांस्कृतिक विशेषताओं के साथ-साथ, पर्यावरण चिन्तन की उपादेयता के महत्त्वपूर्ण पक्ष एवं वैश्विक पर्यावरण के संरक्षण संवर्द्धन के दुर्लभ सूत्रों का उद्घाटन होता है। पौराणिक साहित्य की प्रस्तुत विस्तृत वैश्विक पर्यावरणीय अवधारणा का प्रकाशन प्रस्तुत शोध-पत्र का विवेच्य है।

पौराणिक साहित्य प्राचीन तथा अर्वाचीन का संगम स्वरूप होने से विशिष्ट है। आख्यानों एवं उपाख्यानों के माध्यम से वैदिक अर्थ के प्रस्तुतीकरण में उसका अभूतपूर्व कौशल है। उसे धर्म, दर्शन, अध्यात्म, कला, इतिहास और संस्कृति के सिद्धान्तों का विश्वकोष कहा जाये, तो अत्युक्ति नहीं होगी। मुख्य प्रतिपाद्य विषय सर्ग वर्णन के क्रम में उस साहित्य का पर्यावरणीय चिन्तन एवं पर्यावरण चेतना की पारिस्थितिकी भारत के भौगोलिक परिवेश की पृष्ठभूमि पर ही नहीं, अपितु वैश्विक परिदृश्य में महत्त्वपूर्ण है।

वैश्विक पर्यावरण अवधारणा को स्पष्ट करने के लिए सर्वप्रथम प्राकृतिक तत्त्वों में निहित आध्यात्मिक, भौतिक तथा आनुवांशिक एकता ज्ञेय है। आध्यात्मिक दृष्टि से एक ही परम शक्ति सम्पूर्ण संसार का मूल कारण है। विभिन्न पुराणों में समस्त सृष्टि की उत्पत्ति एक ही मूल तत्त्व से मानी गई है। यद्यपि उसे विविध नामों से अभिहित किया है। जैसे - ब्रह्माण्ड पुराण में उस परम शक्ति को 'ब्रह्म'<sup>1</sup> कहा गया है, विष्णुपुराण 'विष्णु'<sup>2</sup>, शिवपुराण 'शिव'<sup>3</sup>, और श्रीमद्भागवतपुराण 'भगवान'<sup>4</sup> कहता है। तीनों कालों में होने वाले देव-दानव, यक्ष-राक्षस आदि जलचर-नभचर-थलचर प्राणी भगवान का ही स्वरूप हैं।<sup>5</sup> इसी प्रकार विष्णु पुराण वासुदेव को परमसत्ता बतलाता है।<sup>6</sup> सृष्टि के परम कारण भगवान् और जीव-जगत् की तात्त्विक एकता का यह सिद्धान्त सृष्टि के कण-कण में देवत्व और पवित्रता की प्रतिष्ठा करता है। इससे न केवल चेतन अपितु अचेतन तत्त्व के प्रति भी मानव का अनुचित व्यवहार नियन्त्रित होता है।

भौतिक दृष्टि से तत्त्वों में एकता पुराणों के सृष्टि सम्बन्धी विवेचनों से स्पष्ट है। उनमें एक परमतत्त्व से पंचभूतों की क्रमिक

उत्पत्ति, पंचभूतों से समस्त भौतिक जगत् का विकास, स्थावर-जंगम सभी प्राणियों की पंचभूतात्मकता का विन्यास कर भौतिक आधार पर जगत् की मूलभूत समानता स्थापित है।

आधुनिक वैज्ञानिकों की अणु-परमाणु द्वारा सम्पूर्ण सृष्टि के निर्माण की परिकल्पना का सार भी सृष्टि का तात्त्विक ऐक्य है। परन्तु उसके द्वारा विश्व में व्याप्त एकसूत्रता का इसप्रकार का व्यवस्थित और हृदयग्राही वर्णन नहीं हो सका है, जैसा कि पुराणों के सृष्टि विवेचन प्रक्रिया द्वारा किया गया है।

आनुवांशिक दृष्टि से सभी देव-दिव्य जातियाँ, प्राणी मूलतः ब्रह्मा की सन्तान हैं। ब्रह्मा से 10 प्रकार की सृष्टि हुई है।<sup>7</sup> अतः सम्पूर्ण सृष्टि का मूल उद्भव स्थान एक ही है।

जैव विकास (Evolution of live) पर्यावरण-विज्ञान का अंग है। 'दशावतार' पृथ्वी पर जैविक एवं मानव विकास का पौराणिक रूपक है। दशावतार के क्रमबन्ध में डार्विन का विकासवाद का सिद्धान्त सूत्ररूपेण प्रतिपादित है। दश अवतार हैं - 1. मत्स्य, 2. कूर्म, 3. वराह, 4. नृसिंह, 5. वामन, 6. परशुराम, 7. राम, 8. कृष्ण, 9. बुद्ध, 10. कल्कि।

मत्स्यः कूर्मो वराहश्च नरसिंहोऽथ वामनः।

रामो रामश्च कृष्णश्च बुद्धः कल्किश्च ते दश ॥<sup>8</sup>

इनमें मत्स्यावतार सर्वप्रथम प्रादुर्भूत जलचर का प्रतीक है। तदुपरान्त धरातल पर वनस्पति का विकास होने पर जलचर जीवों में से धरातल पर भी विचरण करने योग्य उभयचर जीव-जातियाँ पनपीं, जिनका प्रतिनिधि कूर्मावतार है। तत्पश्चात् वनस्पति-प्राचुर्य के कारण विभिन्न प्रकार के थलचर जीवों का द्रुत विकास हुआ। इस

क्रम में विकसित जरायुज और स्तनपोषी जीव का प्रतिनिधित्व वराहावतार द्वारा किया गया। शूकर/वराह का जलप्राय भूमि में लोटना, भूमि खोद कर आहार प्राप्त करना - दाढ़ों से खोद कर धरती को समुद्र से बाहर निकालने का रूपक बन गया। स्तनपोषी जीवों से मानव के विकास की श्रृंखला में नृसिंहावतार के रूप में ऐसे प्राणी को परिकल्पित किया है, जो पशुत्व तथा मनुष्यत्व की मध्यवर्ती कड़ी है। यह मानव-शरीर के विकास का परिचायक है, जब मानव-मस्तिष्क अल्पविकसित अवस्था में ही था। सिंह जैसे हिंसक एवं बलशाली पशु को मानव के विकासशील मस्तिष्क का प्रतीक बनाकर पौराणिकों ने आदिमानव की मृगयाभोजी हिंस्र प्रवृत्ति के साथ ही उसके संभावित मानसिक बल की ओर भी संकेत किया है। पृथ्वी पर मानव का अवतरण लघुकाय, बौने रूप में हुआ, जिसे 'वामनावतार' माना गया है। अर्द्धमानुष...जीव वानर को मानव-जाति का पूर्वज मानने वाले डार्विन के मतानुसार भी पेड़ों से उतर कर धरातल पर रहने वाले वनमानुष के मस्तिष्क का क्रमशः विकास होता गया और शनैः शनैः मानव का वह रूप ग्रहण करता गया। अपने बुद्धि-बल से उसने पत्थर, लकड़ी आदि के औजार-हथियार बनाए, आग जलाना सीखा, आखेट के साथ कृषि की ओर भी उन्मुख हुआ। वामन-रूप मानव द्वारा कृषि के लिए तीन चरण भूमि माँगने की पौराणिक कथा में उसकी ब्रह्माण्ड नाप लेने की विराट संभावनाओं का संकेत अत्यन्त सार्थक है। परशुराम अवतार उस युग का परिचायक है, जब मानव-समूह परशु-प्रतीक शस्त्रास्त्र के बल पर परस्पर युद्धरत रहते हों, उनका सामाजिक संगठन सुविकसित न हुआ हो, क्रोध और दुर्दान्त रक्त-पिपासा का मानव-प्रवृत्ति पर प्राबल्य रहा हो। मर्यादा पुरुषोत्तम राम मानव-समाज में आदर्श 'राज्य' के प्रणेता के रूप में सम्मान्य हैं। वानर-ऋक्षाधिवासित वनों तक सभ्यता के प्रसार, सामाजिक सम्बन्धों की गरिमा के संरक्षण, प्रजारंजन, लोकरक्षण के कार्यों में प्रवृत्त, राजधर्म की प्रतिष्ठा का प्रतीकभूत 'रामावतार' मानव के सांस्कृतिक विकास का प्रतीक है। रामावतार युग में जिस मानव-सभ्यता, समाज-मर्यादा, राज्य-शक्ति का शुभारंभ हुआ, उसका पूर्ण विकास पौराणिक द्वापरयुगीन 'कृष्णावतार' के रूप में हुआ। कृष्ण के व्यक्तित्व में मानव-विकास के सभी आयाम चरितार्थ होते हैं, गोपालन से गीता-दर्शन तक, बाल-लीला से विराट-स्वरूप-दर्शन तक, वृन्दावन-विहारी से कर्मयोगी द्वारकाधीश तक मानव-जीवन, हृदय और मस्तिष्क की सभी अवस्थाएँ पूर्णावतार कृष्ण में समाहित हैं। सब प्रकार पूर्णावतार कृष्ण में समाहित हैं। सब प्रकार के प्राकृतिक सामाजिक-राजनैतिक अन्तर्विरोधों का समाधान बल या बुद्धि से करने के मानवोचित प्रयासों का प्रतीक बना है - कृष्णावतार। मानव विकास की पराकाष्ठा पर पहुँच कर 'बुद्धावतार'

का आविर्भाव हुआ। वेद-विरोधी, ईश्वर तथा आत्मा को नकारने वाले बुद्ध की दशावतारों में गणना अत्यन्त अर्थपूर्ण है। मानव हृदय तथा मस्तिष्क की शक्तियों का विकास हो जाने के बाद भाव तत्त्व की गौणता और तर्कतत्त्व की प्रधानता स्वाभाविक परिणति है। इस दृष्टि से बुद्ध प्रबुद्ध मस्तिष्क एवं वैज्ञानिक तत्त्वबोध वाले विज्ञान-युग के प्रतीक पुरुष के रूप में परिकल्पित है। वैज्ञानिक तर्क के भक्तिभाव और संजीवनी आस्था पर हावी हो जाने से अवश्यभावी नैतिक मूल्य-विघटन के परिणाम स्वरूप सृष्टि-विनाश की पूर्वापेक्षा करके पौराणिक विद्वानों ने कल्कि अवतार भी भावी मानव-विकास के लिए सुरक्षित कर दिया है। पृथ्वी पर व्याप्त अधर्म तथा घोर अराजकता की उद्धारक शक्ति के रूप में आविर्भूत होने वाले इस अवतार से सृष्टि की अनन्तता का ज्ञान होता है।<sup>9</sup>

प्रस्तुत पौराणिक अवतारवाद जहाँ जैविक एवं मानव विकास का तार्किक रूप है, वहीं एक ही शक्ति तत्त्व का प्रत्यायक है। वही एक तत्त्व विविध रूपों में अभिव्यक्त है। जैसा कि आधुनिक विज्ञान के अनुसार यह सम्पूर्ण सृष्टि ऊर्जा के ही विभिन्न रूप हैं।<sup>10</sup>

विविध तत्त्वों में निहित एकता वैश्विक पर्यावरण के संरक्षण और संवर्द्धन के सूत्रों को उद्घाटित करती है। जैसे -

1. सृष्टि में निहित आदान-प्रदान क्रम के सुचारू संचालन में यज्ञविधान महत्त्वपूर्ण है। पदार्थों का परस्पर संयोग अथवा संगतिकरण विश्व की स्थिति का कारण है और इस संगतिकरण का नाम यज्ञ है। पंच-यज्ञादि का विधान कर<sup>11</sup> पर्यावरण का सन्तुलन बहुत सहजता से किया जा सकता है।
2. वर्णाक्षक धर्म, पुरुषार्थ-चतुष्टय आदि के पालन द्वारा भोग त्याग के<sup>12</sup> द्वारा सन्तुलन का प्रयास सम्पूर्ण विश्व के लिए महत्त्वपूर्ण है।
3. सम्पूर्ण सृष्टि में पवित्रता-पूज्यता में विश्वास प्रकृति को हानि पहुँचाने की भावना ही नहीं आने देता है। पुराण सभी प्रकार के पशु-पक्षी, कीट-सरीसृप आदि के प्रति पुत्रवत् व्यवहार की प्रेरणा प्रदान करते हैं।<sup>13</sup> पुत्र आत्मा का स्वरूप है। अतः आत्मवत् भाव से सम्पूर्ण प्राणियों के साथ व्यवहार पर्यावरण सन्तुलन का महत्त्वपूर्ण बिन्दु है।
4. निष्काम भावना से कर्म श्रेयस् का मार्ग है। ईश्वरार्पित निष्काम कर्म करते हुए निर्मल-चित्त मनुष्य महान् लक्ष्यों को भी प्राप्त कर सकता है।<sup>14</sup> इसके लिए सत्य, दया, तप, शौच, इन्द्रिय-संयम, मनोनिग्रह, अहिंसा, त्याग, सन्तोष, अपरिग्रह आदि उच्च आदर्शों का अनुकरण कर मानवीय मनोवृत्ति का परिष्कार आवश्यक है, जो कि न केवल स्वयं मानव, अपितु उसके द्वारा अन्य को भी

हानि पहुँचाती हैं। अतः पुराण उच्च आदर्शों का पालन कर आत्मचिन्तन, यथोचित विभाजन, सभी में देवताभाव की अनुभूति को सामान्य कर्तव्य घोषित करते हैं।<sup>15</sup>

उपर्युक्त विवेचन से स्पष्ट है कि पुराणों में पर्यावरण की वैश्विक अवधारणा का सूक्ष्म निरूपण है। पर्यावरण-चिन्तन के सूक्ष्म-गहन-पर्यवेक्षण का सर्वाधिक प्रामाण्य एवं परिपूर्णता पुराणों में है।

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## पर्यावरण संरक्षण हेतु आध्यात्मिक मूल्यों का शिक्षण : समय की माँग

डॉ. ममता उपाध्याय

असि. प्रोफेसर

कु0 मायावती राजकीय महिला स्नातकोत्तर महाविद्यालय,  
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ईसा से 500 वर्षों पूर्व बौद्ध धर्म में जिस मान्यता को प्रथम बार प्रतिपादित किया गया और जिस पर 1992 के “पृथ्वी सम्मलेन” सहित विभिन्न राष्ट्रीय-अंतर्राष्ट्रीय सम्मेलनों में समय-समय पर जोर दिया गया, वह यह है कि मनुष्य का पर्यावरण के प्रति नकारात्मक आचरण किसी पाप भावना या दुर्भावना का प्रतीक नहीं है, बल्कि पर्यावरण से संबद्ध अधिकांश समस्याएं मनुष्य की अज्ञानता का परिणाम हैं। इस अज्ञानता को दूर करने हेतु समय-समय पर राष्ट्रीय-अंतर्राष्ट्रीय जगत में विभिन्न वैधानिक, संस्थागत एवं क्रियात्मक प्रयत्नों के साथ जन-जागरूकता अभियान भी चलाये गये। प्राथमिक शिक्षा से लेकर विश्वविद्यालयीय शिक्षा तक के पाठ्यक्रमों में पर्यावरण शिक्षा को अनिवार्य बनाया गया, किन्तु पिछले दिनों उत्तराखण्ड की प्रलयकारी घटनाओं, उत्तरी अमरीका की 118 वर्षों का रिकॉर्ड तोड़ती सर्दी जैसी विविध प्राकृतिक असंतुलन की तसदीक करती घटनाओं ने इस तथ्य की पुष्टि की है कि पर्यावरण संरक्षण की दिशा में किए गए प्रयासों का प्रभाव सीमित ही है।

इन स्थितियों में एक प्रभावी विकल्प दिखाई देता है—आध्यात्मिक मूल्यों के शिक्षण का मनुष्य के कार्यों का आधार उसकी सोच होती है और इस वैचारिक धरातल के निर्माण में उसके मूल्य एवं विश्वास अहम् भूमिका निभाते हैं जो उसे संस्कारों के रूप में प्राप्त होते हैं। हमारे मूल्यों एवं विश्वासों का आधार वह धर्म होता है, जिसे हम मानते हैं, अपनाते हैं। प्रस्तुत शोध-पत्र में दुनिया के महत्वपूर्ण धर्मों में निहित पर्यावरण सम्बन्धी आध्यात्मिक मूल्यों को व्याख्यायित करते हुए यह प्रस्थापित करने का प्रयास किया गया है कि इन मूल्यों का सार्वभौमिक शिक्षण हमें पर्यावरणीय संकट से उबारने में बड़ी सीमा तक सहायक हो सकता है। इस दिशा में उच्च शिक्षा मूल्यों की समझ बढ़ाने, उसे कार्यरूप देने में मील का पत्थर सिद्ध हो सकती है। शोध-पत्र की महत्वपूर्ण प्रस्थापना यह भी है कि धर्म निरपेक्ष शिक्षण-व्यवस्था के स्थान पर विभिन्न धर्मों में निहित आध्यात्मिक मूल्यों के सार तत्वों से सभी विद्यार्थियों को अनिवार्य रूप से परिचित कराया जाना चाहिए, जिससे न केवल भौतिक पर्यावरण का प्रदूषण दूर होगा, बल्कि मानसिक प्रदूषण से जनित सार्वजनिक जीवन की व्याधियों से भी मुक्ति मिलेगी।

बौद्ध सूत्रों में वर्णित “अमिताभ” एक ऐसी सौंदर्य भूमि है, जो मिट्टी की शुद्धता, वातावरण की पवित्रता, स्वच्छ, शांत, मधुर जल से युक्त, विषैली गैसों एवं रसायनों के प्रदूषण से मुक्त, हिंसा एवं अणुजनित भय से मुक्त होने के कारण स्वर्गिक आनन्द की अनुभूति कराती है। आर्सेनिक जैसे जहरीले रसायन, मीथेन, ओजोन, क्लोरो कार्बन जैसी ग्रीन हाउस गैसों एवं अणु तथा रसायन बमों के साये में जीने को विवश अपने अस्तित्व की लड़ाई लड़ रहे 21 वीं सदी के मनुष्य के लिए ऐसी भूमि निःसंदेह किसी स्वर्गिक कल्पना से कम नहीं है। ऐसा नहीं है कि मनुष्य ने ऐसी भूमि की प्राप्ति के लिए कोई प्रयत्न नहीं किया। वैज्ञानिक, प्रबंधक, विधिशास्त्री, समाजशास्त्री आदि के रूप में मनुष्य ने पर्यावरण को प्रदूषण मुक्त बनाने में बहुविध उपाय किए, किन्तु दिनोंदिन बढ़ रही प्राकृतिक असंतुलन की घटनाएँ जो कभी बढ़ते तापमान एवं हाल ही में उत्तरी अमरीका में रिकार्ड तोड़ बर्फबारी के रूप में दिखाई दे रही हैं, इन प्रयत्नों की प्रभावदायकता पर प्रश्न चिह्न लगा रही हैं, इस बात का प्रमाण दे रही हैं कि प्रयत्न पूरे मन

से नहीं किए गए। प्रस्तुत शोधपत्र में पर्यावरण के संरक्षण के प्रभावी उपाय के रूप में आध्यात्मिक मूल्यों के शिक्षण की आवश्यकता को रेखांकित किया गया है।

कहते हैं कि विज्ञान की सीमा वहाँ प्रारम्भ होती है, जहाँ धर्म की सीमा समाप्त होती है। धर्म वहाँ प्रभावी होता है, जहाँ विज्ञान निरुत्तर हो जाता है। ऐतिहासिक दृष्टि से धर्म से मनुष्य का संबंध पुराना है और विज्ञान तथा तकनीक से अपेक्षाकृत नया। धर्म की उत्पत्ति का आधार मनुष्य के मन में व्याप्त वह भय रहा है, जो अनोखी प्राकृतिक घटनाओं के कारण उत्पन्न हुआ। जैसे-जैसे मनुष्य की बुद्धि विकसित हुई, उसने वैज्ञानिक एवं तकनीकी अविष्कारों के माध्यम से उस भय पर विजय प्राप्त की, सभ्यता के विकास को विलक्षण स्तर तक पहुँचाया। किन्तु वैज्ञानिक विकास के परिणामस्वरूप जिस उपभोक्तावादी संस्कृति को प्रश्रय मिला, प्राकृतिक संसाधनों का दोहन प्रारम्भ हुआ, उसने 21 वीं शताब्दी में मनुष्य को पुनः भयाक्रांत कर दिया है। भय पृथ्वी के विनाश के परिणामस्वरूप मनुष्य एवं

जीव-जन्तुओं के विनाश का, भय अब तक अर्जित सभ्यता एवं संस्कृति के विनाश का। चाँद एवं मंगल पर जीवन की तलाश का एक प्रमुख कारण यह भय ही है। निस्संदेह इतिहास की धारा को विपरीत दिशा में नहीं मोड़ा जा सकता, विज्ञान और तकनीक के विकास को रोकना न तो उचित होगा, न संभव। समय आ गया है जैसा कि 1990 को मास्को सम्मलेन में कहा गया कि विज्ञान एवं धर्म एक दूसरे के सहयोगी, सहचर बनते हुए अपने-अपने निर्धारित मूल्यों से मानवमात्र को इस भय से मुक्त कर पर्यावरण के एक अभिन्न अंग के रूप में मनुष्य को निर्द्वन्द्व, निर्भय एवं आजाद बनायें, सभ्यता एवं संस्कृति के संरक्षण का सुखद अहसास करायें एवं भविष्य की पीढ़ियों को एक बेहतर दुनिया उपलब्ध करायें, ताकि यह वसुधा अजर, अमर एवं शाश्वत बन सके।

पर्यावरण जिसका निर्माण जीव-जंतुओं, पृथ्वी, जल, वायु, आकाश, नदियों, समुद्रों, पहाड़ों, वनस्पतियों से मिलकर होता है, का एक महत्वपूर्ण अंग है मनुष्य। पृथ्वी के सभी जीवों में अपनी बुद्धि एवं कौशल के बल पर उसे सर्वोत्तम होने का गौरव प्राप्त है। मनुष्य के आचरण का आधार उसकी वह सोच होती है जिसका निर्माण उन मूल्यों से होता है, जिनका विकास क्रमिक रूप में होता है। धर्म इन मूल्यों के निर्माण एवं प्रसार का सहज, सुगम एवं लोकप्रिय माध्यम है। अतः सभी धर्मों के आधारभूत मूल्यों का शिक्षण देकर वर्तमान पर्यावरण संकट पर काबू पाया जा सकता है, पर्यावरणीय अपराध को नियंत्रित किया जा सकता है।

### धर्मनिरपेक्ष शिक्षा व्यवस्था के स्थान पर धार्मिक शिक्षा की आवश्यकता

दुनिया के अधिकांश लोकतांत्रिक देशों में धर्मनिरपेक्ष शिक्षा व्यवस्था अपनाने पर जोर दिया जाता है, किन्तु पर्यावरणीय संकट से उबरने का एक महत्वपूर्ण माध्यम मुझे आज के संदर्भ में धार्मिक शिक्षा दिखायी देती है। धार्मिक शिक्षा का तात्पर्य विभिन्न पंथों में प्रचलित अनुष्ठानों एवं बाह्य प्रतीकों के अध्ययन-अध्यापन से नहीं है, बल्कि उन आधारभूत मूल्यों की शिक्षा से है जो संपूर्ण मानवता एवं पर्यावरण के अन्य अंगों के कल्याण से संबंधित है एवं वे सभी पंथों में विभिन्न रूपों में विद्यमान हैं। दुर्भाग्यवश वर्तमान युग में धर्म की सतही शिक्षा देकर पर्यावरणीय संतुलन को नष्ट करने के प्रयास किए जा रहे हैं। अतः शिक्षा व्यवस्था को धार्मिक मूल्यों की गहराइयों तक पहुँचकर उसे विद्यार्थियों के आचरण में उतारने के लिए प्रयासरत होना होगा। कभी दयानंद सरस्वती ने भारतीयों को “वेदों की ओर लौटो” का संदेश दिया था, वर्तमान युग के संदेश को हमें “पर्यावरण संरक्षण हेतु धार्मिक मूल्यों की ओर लौटने के संदेश के रूप में शिरोधार्य करना होगा।

### विभिन्न धर्मों में निहित पर्यावरण संरक्षण के मूल्य

सुप्रसिद्ध ईरानी अमरीकी दार्शनिक सैय्यद हुसैन नासिर के अनुसार “पर्यावरण का संकट मूलतः मूल्यों का संकट है” और धर्म किसी भी सभ्यता में मूल्यों का प्राथमिक स्रोत है। धार्मिक विश्वासों एवं मूल्यों का अध्ययन यों तो 19 वीं सदी में जर्मनी में प्रारम्भ हुआ किन्तु धर्म के अस्तित्व के प्रमाण ईसा से 300,000 वर्षों पूर्व प्राप्त होते हैं। पुरातात्विक अभिलेखों (अफ्रीका में होमो सीपियंस की भाँति संस्कार के प्रमाण) से इनकी पुष्टि होती है। धर्म का उदय क्यों और कैसे हुआ, इस संबंध में तो निश्चित रूप से नहीं कहा जा सकता, किन्तु धर्म ने सामाजिक-आर्थिक व्यवस्था में स्थिरता लाने एवं कानूनी संरचना के निर्माण में महत्वपूर्ण भूमिका निभायी है। विल्हम मेनहार्द के अनुसार धर्म, प्रकृतिवाद से प्रारम्भ हुआ। पूर्व के देश धार्मिक मूल्यों की दृष्टि से ज्यादा प्राचीन एवं समृद्ध माने जाते हैं। समय के साथ विश्व में अनेकों धर्मों का विकास हुआ, जिनमें से अधिकांश के आधारभूत मूल्यों में एक बड़ी सीमा तक समानता देखने को मिलती है। विश्व जनांकिकी विवरण, 2013 के अनुसार दुनिया के लगभग 88: लोग धार्मिक हैं जिनमें 33.39: ईसाई, 22.74: इस्लाम, 13.8: हिन्दू, 6.77: बौद्ध, 0.35: सिख, 0.22: यहूदी एवं 0.11: वहाबी धर्मानुयायी हैं। धार्मिक विविधताओं से युक्त इस विश्व के व्यक्तियों को पर्यावरण संकट का सामना करने के लिए एक बार पुनः धार्मिक अस्त्र का सहारा लेने का समय आ गया है। विश्व के प्रमुख धर्मों में पर्यावरणीय मूल्यों का इन रूपों में देखा जा सकता है।

### इस्लाम धर्म में पर्यावरण संरक्षण के मूल्य

यह एक सर्वमान्य तथ्य है कि पर्यावरण में एक सीमा तक स्वयं को संतुलित करने की क्षमता है। इस्लाम धर्म में वर्णित जीवन शैली एवं उससे संबद्ध मूल्य इस संतुलन को बनाये रखने में योगकारक हैं। अकबर के अनुसार-इस्लाम धर्म एकता, न्यास व जवाबदेही के सिद्धांत प्रस्तुत करना है। ताहिद अर्थात् एकता इस्लाम धर्म का एक महत्वपूर्ण मूल्य है, जिसके अनुसार सम्पूर्ण विश्व एक ही सत्ता द्वारा निर्मित एवं रक्षित है। वही सर्वोच्च सत्ता मनुष्य और पर्यावरण दोनों की नियामक है। मनुष्य एवं मनुष्य, मनुष्य एवं विश्व और मनुष्य तथा सर्वोच्च सत्ता के मध्य संबंधों का निदेशक भी वही है। चूँकि पर्यावरण व मनुष्य एक ही सत्ता के सृजन हैं, इसलिए पर्यावरण की रक्षा करना प्रत्येक मनुष्य का धार्मिक कर्तव्य है।

“खिलाफत” का सिद्धांत मनुष्य को पृथ्वी पर ईश्वर के प्रतिनिधि के रूप में प्रस्तुत करता है, जिसे ईश्वर ने भौतिक एवं नैतिक संसाधनों के साथ-साथ, बुद्धि, कौशल एवं चरित्र के अनुपम उपहार दिये हैं, अतः व्यक्ति का कर्तव्य है कि वह इन संसाधनों का न्यासी बनकर इनके

समुचित उपभोग के माध्यम से एक समतयुक्त सामाजिक संरचना के निर्माण में योगदान करे और इस प्रकार सार्वभौमिक भ्रातृत्व के भाव को प्रसारित करे।

”अल अखीरा” अर्थात् जवाबदेही का सिद्धांत मनुष्य के अच्छे और बुरे कार्यों के लिए उसे जवाबदेह बनाता है। यह विश्वास मनुष्य की दृष्टि को व्यापक बनाता है और उसे पर्यावरण संरक्षण जैसे पुनीत कार्य के लिए प्रेरित करता है। नासिर की दृष्टि में इस्लाम में मनुष्य और विश्व में एकता, सद्भाव एवं पूरकता का भाव है, इसलिए पर्यावरण की रक्षा करना उतना ही अच्छा कार्य है जितना किसी गरीब को खाना खिलाना या किसी बीमार की तीमारदारी करना।

इन आधारभूत मूल्यों की रक्षा हेतु इस्लाम धर्म में “कुरान” साधारण जीवन शैली को अपनाने एवं फिजूलखर्ची से बचने की सीख देता है, क्योंकि सादा जीवन जीने से जहाँ एक ओर प्राकृतिक संसाधनों का दोहन कम होता है तो दूसरी ओर मनुष्य द्वारा एक वस्तु का त्यागकर तत्काल दूसरी का उपयोग करने से जो कचरा उत्पन्न होता है, उसके समुचित प्रबंधन पर होने वाले खर्च से भी बचा जा सकता है। अपनी जीवन शैली को समृद्ध एवं विशिष्ट बनाने की चाह में शायद हम इस तथ्य के प्रति अबतक संवेदनशील नहीं बन सके हैं कि हमारे शरीर की खूबसूरती बढ़ाने में योग देने वाली फर की एक जैकेट के पीछे कितने खरगोशों का जीवन हरण किया गया है या हमारे ड्राइंग रूम की शोभा बढ़ाने वाली बघछाल बाघों की कई प्रजातियों को विलुप्तप्राय बना दिया है। प्रत्येक जीवधारी में सर्वोच्च सत्ता का वास है, वह पर्यावरण का अभिन्न अंग है, इस आध्यात्मिक सत्य की अनुभूति के स्थान पर हम इस वैज्ञानिक तथ्य को भी नजरंदाज कर रहे हैं कि जीवधारियों की भोज्य श्रृंखला को संतुलित बनाये रखने में प्रत्येक जन्तु का योगदान है। ऐसे में सादा जीवन जीने का मूल्य पर्यावरण संरक्षण की दिशा में प्रभावी कदम सिद्ध हो सकता है।

यही नहीं, इस्लाम में पर्यावरण का निर्माण करने वाले प्रमुख भौतिक तत्वों यथा- पानी, हवा, पशु, फसलों एवं जंगल को मात्रा तथा गुण दोनों दृष्टियों से संरक्षित करने वाले कुछ अन्य मूल्यों की चर्चा भी की गई है। जैसे स्वार्थ के स्थान पर समाज की प्रगति के लिए इस्लाम आत्म-त्याग की भावना पर बल देता है, लालच के स्थान पर संतोष को अपनाने पर जोर देता है क्योंकि लालच असंतोष को जन्म देता है और असंतोष कार्य के प्रति उत्साह को भंग कर देता है। लालच के वशीभूत होकर मनुष्य आत्म सम्मान खो देता है एवं उन लोगों के प्रति उसे नतमस्तक बनाता है जो उसके स्वार्थ की पूर्ति में सहायक होते हैं। प्रो0 अहमद ने इस्लाम में मानवता के लिए निर्देशित जिन पाँच मूल्यों का उल्लेख किया है, वे भी प्रत्यक्ष या परोक्ष रूप से पर्यावरण संरक्षण में सहायक हो सकते हैं- (1) जीवन- अर्थात् जीवात्मा के महत्व को स्वीकार करते हुए किसी के जीवन का हरण न करना। (2) धर्म- अर्थात्

प्रत्येक को अपनी इच्छानुसार धर्म को अपनाने का अधिकार है क्योंकि धर्म जीवन में शांति, न्याय और सत्य की प्राप्ति के लिए है। (3) ज्ञान- आधारभूत ज्ञान का प्रसार होना चाहिए और इसे प्राप्त करने का अधिकार प्रत्येक को है। (4) परिवार- अर्थात् सभी को अपना परिवार बनाने का अधिकार है। (5) धन- अर्थात् आवश्यकताओं की पूर्ति हेतु धन का संतुलित वितरण। उल्लेख है कि उदारीकरण और वैश्वीकरण के इस दौर में आय का असंतुलन पर्यावरण संकट का एक प्रमुख कारण है। अमरीका जो विश्व जनसंख्या का 4.6: भाग का प्रतिनिधित्व करता है, किन्तु विश्व के समग्र संसाधनों का 25.7: उपभोग करता है।

कुरान एवं पैगम्बरों की परम्परा में पर्यावरण सत्य का प्रतिबिम्ब है, ज्ञान का भण्डार है, इसलिए इसकी रक्षा करना मनुष्य का कर्तव्य है। कुरान के कई अध्याय प्रकृति की सुंदरता का वर्णन करते हैं जैसे- The 'dawn, morning hours" का निर्देश दिया गया है। पैगम्बरों की परम्परा में जल को जीवन का आधार मानते हुए उसके संरक्षण को ध्यान में रखते हुए जल के कम प्रयोग का निर्देश दिया गया है और यह तथ्य भी उद्घाटित किया गया है कि हवा वातावरण को शुद्ध बनाने एवं मिट्टी की उर्वरा शक्ति को बनाये रखने में योग देती है। याजिद इब्न अबी सूफियान के शब्दों में, “पेड़ों को मत काटो, नदी को गंदा मत करो, फसलों एवं जानवरों को नुकसान मत पहुँचाओ, अल्लाह ही हर सृष्टि के प्रति दयालु बनो, यहाँ तक कि अपने शत्रुओं के प्रति भी।”

इस्लाम में निहित शांति एवं क्षमा जैसे मूल्य भी पर्यावरणीय अपराधों में कमी लाने में सहायक हो सकते हैं।

### ईसाई धर्म में पर्यावरणीय मूल्य

1967 में इतिहासकार लिन ह्वाइट जूनियर ने “साइंस” मैगजीन में पर्यावरणीय संकट के ऐतिहासिक कारणों पर एक लेख लिखा जिसमें यह प्रतिपादित किया कि लोगों का पर्यावरण के प्रति व्यवहार उनकी सोच से प्रेरित होता है। प्रकृति के दोहन के दृष्टिकोण ने यूरोप में विशेष रूप से पर्यावरणीय संकट को जन्म दिया। यह परिणाम था उस धार्मिक शिक्षण का जो मध्ययुग के अंत में ईसाई धर्म के अंतर्गत लोगों को दिया गया जिसमें मनुष्य को ईश्वर की सभी कृतियों में सर्वोपरि बताया गया और सभी कुछ को मनुष्य के आनंद का निमित्त बताया गया। डार्विन के “उद्द्विकास सिद्धांत” के अनंतर मानवीय प्रगति का मानक अधिकाधिक प्रतिस्पर्द्धा की भावना हो गई, जिसने परस्पर सहयोग के मूल्य को कम कर दिया। किन्तु पाश्चात्य जगत के इतिहास की व्याख्या ईसाई धर्म के इस रूप के आधार पर करना इस धर्म के मूल्यों की सीमित व्याख्या करना होगा। वस्तुतः यह धर्म सीमित प्रतिस्पर्द्धा के भाव के साथ सम्पूर्ण मानवीय समुदाय के सहयोग पर बल देता है। इसकी मान्यता है कि प्रत्येक व्यक्ति प्रकृति से प्रत्येक वस्तु प्राप्त करने का समान रूप से अधिकारी है। ईसाईयत में सभ्यता की

उत्पत्ति जिस “आदम” से हुई मानी गई है, उसकी व्युत्पत्ति हिब्रू के 'Admah' शब्द से हुई है, जिसका अर्थ है- पृथ्वी। पृथ्वी शब्द से प्रारम्भ होने वाले ईसाई धर्म में पृथ्वी के जीवों के सहअस्तित्व के भाव को सहज में ही अनुभव किया जा सकता है। यहीं नहीं, इस धर्म में मनुष्य को प्रकृति के प्रबंधक-सेवक (Stewardship) के रूप में वर्णित किया गया है, जिसका उल्लेख “बाइबिल” में मिलता है। वस्तुतः ईसाई धर्म से सम्बन्धित पर्यावरणीय नैतिकता तीन सिद्धांतों पर आधारित है-

- चूँकि इस संसार की रचना गॉड ने की है, इसलिए सृष्टि की सभी वस्तुओं का महत्व है।
- गॉड ने निश्चित उद्देश्यों की पूर्ति, हेतु सृष्टि के सभी तत्वों को एक निश्चित व्यवस्था के अंतर्गत रखा है।
- इस संसार में जो कुछ भी है, वह पाप या भ्रष्टाचार के दायरे में है अर्थात् मनुष्य सांसारिक वस्तुओं के आकर्षण में फँसकर भ्रष्टाचारी हो सकता है। इसका प्रायश्चित्त ईसा के प्रति स्वयं के समर्पण द्वारा किया जा सकता है।

बाइबिल के अनुसार गॉड ने यह कृति स्वयं के आनंद के निमित्त बनायी। उसकी कृति में मनुष्य एवं प्रकृति के मध्य एक सोपानात्मक संबंध है। अर्थात् मनुष्य का स्थान प्रकृति से ऊपर है, किन्तु इसका अंतर्निहित उद्देश्य मनुष्य की प्रकृति पर सत्ता स्थापित करना नहीं, बल्कि अपनी आवश्यकताओं की पूर्ति तथा ईश्वर की खुशी के लिए उसका अपने कार्यों, नीतियों एवं विचारों द्वारा समुचित प्रबंधन करना है। अर्थात् प्रकृति पर मनुष्य का वर्चस्व ईश्वर प्रदत्त है। आदम एवं ईव की कथा का संदेश यही है, जिसके अनुसार ईश्वर ने उन्हें “ईडन गार्डन” का आनंद लेने एवं उसकी देखभाल का दायित्व सौंपा। किन्तु मनुष्य ने लोभ के वशीभूत होकर उसका संरक्षण नहीं किया। इस पाप से मुक्ति का रास्ता ईसा की शरण में प्रायश्चित्त करना है। Genesis-1:28 में उल्लेख है कि 'God tells people to subdue nature; subdue शब्द हिब्रू के 'Kabash' का रूपांतरण है, जिसका तात्पर्य है-सेवा के लिए बनाया गया। अर्थात् प्रकृति सेवनीय है, शोषणीय नहीं। स्पष्ट है कि ईसाई धर्म में यद्यपि प्रकृति पूजनीय नहीं है, पूजनीय ईश्वर है, फिर भी ईश्वर की सृष्टि में प्रकृति संरक्षणीय है।

### हिन्दू धर्म में निहित पर्यावरणीय मूल्य

हिन्दू धर्म-ग्रंथों में मनुष्य एवं पर्यावरण के मध्य तादात्म्य पर जोर देते हुए पृथ्वी की संकल्पना एक माता के रूप में की गई है, जो सभी जीव-जन्तुओं एवं वनस्पतियों को संरक्षण देती है, उनका पालन-पोषण करती है। इसमें ईश्वर की महत्ता एवं सर्वोपरिता का प्रतिपादन किया गया है, न कि मनुष्य की। अथर्ववेद के अनुसार, यह धरती सिर्फ मनुष्यों के लिए ही नहीं, बल्कि अन्य जीवों के लिए भी है।

हिन्दू धर्म में देवत्व की धारणा जटिल एवं बहुआयामी है। सार्वभौमवाद से लेकर बहुवेदवाद तक में हमें प्रकृति के साथ एकाकार दिखाई देता है। दशावतार की संकल्पना में ईश्वर के विभिन्न अवतार-मत्स्य, कच्छप, शूकर एवं नरसिंह जानवरों के रूप में हैं। जैव विविधता के संरक्षण को भाव का इससे बड़ा प्रमाण क्या हो सकता है कि सृष्टि के नियामक ने अपने जन्म के लिए जानवरों की योनि का चयन किया। यहीं नहीं, कर्म एवं पुनर्जन्म के सिद्धांत भी प्रत्येक जीवन को पवित्र मानते हैं। आत्मा किसी भी जीव के रूप में जन्म ले सकती है और सभी जीव पवित्र हैं, इसलिए दया, प्रेम एवं सम्मान की अपेक्षा रखते हैं। हिन्दू धर्म से जुड़ी विभिन्न पौराणिक कथाओं में विभिन्न जानवरों एवं वनस्पतियों की पूजा के प्रसंग मिलते हैं। वामन पुराण में प्रातः काल उठते ही पर्यावरण के पाँच भौतिक तत्वों- पृथ्वी, जल, वायु, आकाश और अग्नि का स्मरण करने की परंपरा पर जोर दिया गया है- “पृथ्वी अपनी सुगंध, जल अपने बहाव, अग्नि अपने तेज, आकाश अपनी शब्द-ध्वनि और वायु अपने स्पर्श गुण के साथ हमारे प्रातः काल को अपना आशीर्वाद दें- यही हमारी कामना है।” गीता में भगवान कृष्ण ने अपनी प्रकृति को अष्टकोणी बताया है और इसमें पृथ्वी, जल, अग्नि, वायु एवं आकाश के साथ-साथ मन, बुद्धि एवं अहंकार की गणना भी की है। इस वर्णन का उद्देश्य यह है कि पाँचों तत्व मिलकर मन एवं बुद्धि को निर्मल रखें एवं अहंकार को संयमित करें। विष्णु पुराण के अनुसार केशव उन व्यक्तियों से प्रसन्न रहते हैं जो मूक प्राणियों को नहीं मारते या उन्हें किसी प्रकार का नुकसान नहीं पहुँचाते हैं। याज्ञवल्क्य स्मृति के अनुसार जानवरों की हत्या करने वाले घोर नरक के भागी होते हैं।

हिन्दू धर्म में जीवन की पवित्रता तथा जीवन के आध्यात्मिक लक्ष्य पर जोर दिया गया है। यह धर्म अपने अनुयायियों से सहज जीवन जीने की अपेक्षा करता है, भौतिक वस्तुओं के पीछे दौड़ने की इजाजत नहीं देता। मनुष्य जीवन की सार्थकता आध्यात्मिक आनन्द की प्राप्ति में है, उसकी पूर्णता संतुष्टि में है। संतोष का यह मूल्य पर्यावरण संरक्षण को प्रोत्साहित करने वाला है। यज्ञ जैसे अनुष्ठान पर्यावरण एवं मन दोनों को पवित्र करते हैं, प्रदूषण से बचाते हैं।

हिन्दूवादी नैतिकता “लोक संग्रह के आदर्श से प्रेरित है, जिसकी सीख गीता में दी गई है। “गीता” के तीसरे अध्याय में कृष्ण कहते हैं कि “कर्म या गतिशीलता ही जीवन है। मानवता के लिए कर्म से बचाव का कोई रास्ता नहीं है। प्रश्न यह है कि किस तरह का कार्य मूल्यवान एवं करने योग्य है? कृष्ण का उत्तर है कि वे ही कार्य करने योग्य हैं, जिनसे समूचे विश्व के सभी जीवों का कल्याण होता है। चूँकि पर्यावरण संरक्षण में विश्व के कल्याण का भाव निहित है, अतः इसके लिए उद्यत होना प्रत्येक व्यक्ति का पवित्र कर्तव्य है।

यज्ञ की धारणा भी इसी विश्व दृष्टि से संबद्ध है। कोई भी ऐसा कार्य जिसमें ज्यादा से ज्यादा लोक कल्याण का भाव छिपा हो, यज्ञ है। प्रकृति में भरपूर प्राकृतिक संसाधन हैं, जो किसी व्यक्ति या व्यक्ति समूह, राष्ट्र या पीढ़ी के स्वार्थों की पूर्ति हेतु नहीं हैं, बल्कि सभी को इसका उपभोग मिल बांटकर करना चाहिए। ये भाव सतत् विकास की धारणा को संपुष्ट करते हैं।

हिन्दू धर्म में प्रकृति के साथ साहचर्य एवं सद्भावना न दिखाई देती है एवं प्रकृति की देखभाल में उसकी अभिव्यक्ति होती है। हिन्दुओं के तीर्थ स्थान प्रकृति की गोद में- पर्वतों पर या नदियों के किनारे स्थित हैं। भगवान कृष्ण जीवन प्रदायिनी यमुना, गोवर्धन पर्वत एवं हमारी जीवन चर्या में सहायक पशुजगत के मध्य वृन्दावन में विचरते दिखाई देते हैं।

ईसा से 200 वर्षों पूर्व चरक ने प्राकृतिक विकृति अर्थात् प्रदूषण से जनित मानवीय व्याधियों का उल्लेख किया। आयुर्वेद में इन व्याधियों की प्राकृतिक संसाधनों से चिकित्सा विधि का विकास किया गया। स्पष्ट है कि हिन्दू धर्म में वर्णित मूल्य एवं पर्यावरणीय महत्व से जुड़े विवरण अत्यंत व्यापक रूप में दिखाई देते हैं।

### जैन धर्म में पर्यावरण संबंधी मूल्य

जैन धर्म भारत में उदित एक अत्यंत प्राचीन धर्म है, जिसका उदय हिन्दू धर्म से भी पूर्व हुआ माना जाता है। तीर्थंकरों की परम्परा से जुड़े इस धर्म में ईश्वर को सृष्टि का सृजक नहीं माना जाता, बल्कि जिन व्यक्तियों ने मन, वाणी एवं काया पर विजय प्राप्त कर ली है, जिन्हें “जिन” कहते हैं, उन्हीं की अर्चना की जाती है। जैन धर्म में वर्णित पंच अणुव्रत- सत्य, अहिंसा, अस्तेय, ब्रह्मचर्य एवं अपरिग्रह ऐसे मूल्य हैं जिन्हें अपनाने से पर्यावरण का संरक्षण सहज रूप में ही हो जाता है। आवश्यकता से अधिक वस्तुओं का संग्रह न करना अर्थात् अपरिग्रह हमें पर्यावरण का संतुलित रूप में उपभोग करने के लिए प्रेरित करता है। यदि हम अपरिग्रह का पालन करते हैं तो चोरी करने की प्रवृत्ति से बचे रहते हैं। अहिंसा जैनियों का परम मूल्य है। तत्त्व सूत्र के अनुसार प्रत्येक जीव का जीवन दूसरे जीवों एवं प्रकृति के अन्य कर्णों के सहयोग पर निर्भर है (परस्पररोपग्रहो जीवनम्)। इसलिए अहिंसा का पालन करना चाहिए एवं किसी जीव को नुकसान नहीं पहुंचाना चाहिए क्योंकि यह सभी जीवों के जीवन का सम्मान है। “अनेकांतवादी दर्शन” सभी के दृष्टिकोण एवं अस्तित्व का सम्मान करता है। “आचारंग सूत्र के अनुसार जो पृथ्वी, वायु, अग्नि, जल एवं वनस्पतियों की उपेक्षा करता है, वह अपने ही अस्तित्व का असम्मान करता है। यद्यपि जीवित रहने के लिए पूर्ण अहिंसा का पालन संभव नहीं है, इसलिए जैन धर्म का आग्रह है कि जहाँ तक संभव हो, इसका पालन करना चाहिए। जैन धर्म का तर्क

है कि यद्यपि वनस्पतियों में भी जीवन होता है, फिर भी हम अपनी भोजन की आवश्यकता पूर्ण करने हेतु उनका उपभोग करते हैं। यह उपभोग इसलिए वर्ज्य नहीं है क्योंकि वनस्पतियों में पाँचों ज्ञानेन्द्रियों नहीं होतीं, इसलिए उनके भक्षण से उन्हें ज्यादा तकलीफ नहीं होती, बनिस्वत उस जीव के जो पाँचों ज्ञानेन्द्रियों से युक्त है।

### बौद्ध धर्म में पर्यावरण संरक्षण के मूल्य

बौद्ध धर्म भारत-भूमि से उदित वह धर्म है, जिसका उदय ईसा से 5वीं शताब्दी पूर्व गौतम बुद्ध की शिक्षाओं के साथ हुआ। आज यह दुनिया में लगभग 400 करोड़ अनुयायियों का धर्म है। “बुद्ध” का तात्पर्य है- “ज्ञानी” अर्थात् जिसे जीवन का गूढ़ ज्ञान प्राप्त हो गया हो, वह बुद्ध है और उसके अनुयायी बौद्ध हैं।

पश्चिमी जगत में 19वीं शताब्दी के आदर्शवादी विचारकों-शापेनहावर, थोरू, वेगनर, वान गोहा आदि ने पर्यावरणवाद एवं बौद्ध धर्म के परस्पर संबंधों को दर्शाते हुए बौद्ध धर्म के प्रभाव को स्वीकार किया। यद्यपि बौद्ध दर्शन में निहित दुःख एवं संसार की क्षणभंगुरता तथा खोखलेपन का सिद्धांत पर्यावरण संचेतना के विपरीत दिखाई देता है, किन्तु सभी प्राणियों के प्रति प्रेम एवं दया का भाव उसे प्रकृति के निकट ला देता है। बौद्ध धर्म के चार आर्य सत्यों के अनुसार इस संसार में जो दुःख है, उसका कारण मनुष्य की तृष्णा है। यदि हम इसे वर्तमान संदर्भ में देखें तो आधुनिक मानव के दुःख का एक बड़ा कारण तृष्णा के वशीभूत होकर प्रकृति का अनवरत दोहन है, जिसके कारण वह पर्यावरण संकट के दुष्प्रभावों को झेल रहा है। महात्मा बुद्ध का संपूर्ण जीवन प्रकृति के साथ उनकी निकटता को प्रतिबिम्बित करता है। उनका जन्म, ज्ञान की प्राप्ति एवं प्रथम उपदेश सब कुछ वृक्ष की छाया में ही संपन्न हुआ।

गौतम बुद्ध द्वारा उपदेशित प्रज्ञा (Wisdom), शील (Virtue, Morality) एवं समाधि (Concentration) से युक्त अष्टांग मार्गों का अनुसरण आज पर्यावरण के संरक्षण में बड़ी सीमा तक सहायक बन सकता है। इन अष्टांग मार्गों में सम्यक दृष्टि (Right understanding), सम्यक संकल्प (Right conduct) सम्यक प्रयत्न, सम्यक मन, सम्यक एकाग्रता एवं सम्यक आजीव (Right livelihood) पर जोर दिया गया है। वस्तुतः पर्यावरण संरक्षण संबंधी समस्याओं के मूल में विषय की सही समझ न होना ही है। बौद्ध दर्शन में यह स्पष्ट है कि मनुष्य का प्रकृति के साथ दुर्व्यवहार उसकी अज्ञानता का परिणाम है। सम्यक आजीव ऐसे कार्यों को आजीविका के रूप में अपनाने पर प्रतिबंध लगाता है, जिनसे समूची मानवता को हानि पहुँचती हो। पर्यावरण के संदर्भ में इसे ग्रहण कर हमें जहरीले रासायनिक पदार्थों का उत्सर्जन करने वाले उद्योगों में अपनी आजीविका ढूँढने या अण्वस्त्रों का निर्माण करने वाले कारखानों में कार्य करने से परहेज करना चाहिए।



बौद्ध त्रिपिटक- विनयपिटक, सुत्त पिटक एवं अभिधम्म पिटक भी अनुशासन, परस्पर वार्ता एवं उच्चतर सिद्धांतों के विकास जैसे मूल्यों को व्याख्यायित करते हैं। “कुंतदंत सुत” में जिस दशराजधर्म का वर्णन किया गया है उसके अनुसार सरकार का यह दायित्व है कि वह वृक्षों एवं जीव-जन्तुओं की रक्षा करे। जैसे मधुमक्खी पुष्पों के रंग, सुगंध एवं अस्तित्व को नुकसान पहुँचाये बिना उनके पराग से शहद बनाती है, वैसे ही गुणों एवं प्रवृत्ति से युक्त सज्जन शासक के राज्य में रहते हैं। बौद्ध ग्रंथों में एक ऐसे बोधिसत्व की कथा मिलती है जो प्रकृति से इस सीमा तक प्रेम करता था कि कागज के टुकड़े करने में उसे भूमि प्रदूषण, एक शब्द बोलने में धरती के कम्पन तथा एक कदम चलने में धरती के घायल होने का भय सताता रहता था। इस चरित्र को आदर्श मानकर उसका अनुकरण करने पर ही हम पर्यावरणीय समस्याओं से उबर सकते हैं।

### मूल्य आधारित पर्यावरणीय आन्दोलन

विश्व के महत्वपूर्ण धर्मों के मूल्यों की गहराई से विवेचना करने पर ज्ञात होता है कि सभी धर्मों के आध्यात्मिक मूल्य कमोबेश एक जैसे ही हैं एवं सभी नाना रूपों में पर्यावरण संरक्षण के मूल्य स्वयं में समाहित किए हुए हैं। इन मूल्यों को आधार बनाकर दुनिया के विविध देशों में विविध स्तरों पर गठित संगठन पर्यावरण संरक्षण के लिए प्रयत्नशील भी हैं। जैसे- यहूदी धर्म के मूल्यों पर आधारित “फ्रेड्स ऑफ द अर्थ मूवमेंट”, “अर्थ सेव मूवमेंट”, जिनकी मान्यता है कि मनुष्य की तरह पर्यावरण के भी कुछ अनुल्लंघनीय अधिकार हैं, जो ईश्वर द्वारा प्रदत्त है। अमरीका में चलाये जा रहे “कैथोलिक ग्रीन मूवमेंट” एवं “इवैंगेलिकल किश्चियन क्रिएशन केयर मूवमेंट” का आधार भी आध्यात्मिक मूल्य ही है। भारत में फ्रेड्स ऑफ वृंदावन” हिन्दू धर्म के मूल्यों के अनुसार पर्यावरण की देखभाल एवं उसके पुनः सृजन के उद्देश्य के लिए क्रियाशील है। 1970 के दशक में प्रारम्भ हुआ “चिपको आंदोलन” एक महिलावादी आंदोलन है जो इस अर्थ में मूल्यात्मक है कि वह पर्यावरण संरक्षण की बागडोर महिलाओं के हाथों में इसलिए सौंपना चाहता है, क्योंकि वह प्रकृति के साथ महिलाओं की सहज निकटता एवं संवेदनशीलता को अनुभव करता है। हिमालय क्षेत्र में परिवार स्त्री-सत्ता प्रधान हैं, जहाँ घर के प्रबंध का सम्पूर्ण दायित्व महिलाओं का है, वे लकड़ियाँ व चारा जुटाने के लिए वन में मीलों पैदल चलती हैं। चूँकि यह सब उन्हें वनों से प्राप्त होता है, इसलिए वे वन को देवी मानकर उसकी पूजा करती हैं, जबकि पुरुष पैसों की लालच में पेड़ों को काटने से परहेज नहीं करते। चिपको आंदोलन की तर्ज पर ही 1983 में कर्नाटक में “ईपको आंदोलन” प्रारम्भ हुआ, जिसका आधार भी पर्यावरणीय मूल्य ही हैं।

विश्वोई समुदाय राजस्थान का एक छोटा सा जनसमुदाय है, जो सैकड़ों वर्षों से पर्यावरण रक्षा के धर्म का पालन करता चला आ रहा है।

उनका धर्म हिन्दू-धर्म के मूल्यों पर आधारित है एवं गुरु महाराज जम्बा की देन है। कहते हैं कि भयानक सूखे की अवधि में राजस्थान के लोगों ने फसलों के अभाव में अपने जानवरों को जीवित रखने के लिए पेड़ों की पत्तियों एवं टहनियों को काटकर खिलाना शुरू किया, किन्तु कालान्तर में यह अनुभव किया कि पेड़ों को काटने के बजाय उनका संरक्षण करना जानवरों के जीवन के लिए अधिक आवश्यक है। सैकड़ों वर्षों बाद जब जोधपुर के महाराज ने महल बनवाने हेतु विश्वोई क्षेत्र, जहाँ प्रचुर संख्या में थे, में अपने सैनिकों को भेजा तो उस क्षेत्र के लोगों ने जंगलों में लेटकर अपना विरोध जताया और अंत में महाराज को अपना आदेश वापस लेना पड़ा। यह विरोध ही आगे चलकर चिपको आंदोलन का आधार बना।

### धार्मिक मूल्यों के शिक्षण की आवश्यकता

विभिन्न धर्मों में निहित आध्यात्मिक मूल्यों एवं उन मूल्यों के आधार पर चलाये जा रहे आंदोलनों के विश्लेषण के उपरांत इस निष्कर्ष पर पहुंचना सहज हो जाता है कि पर्यावरण संरक्षण हेतु किए जा रहे वैधानिक, प्रशासकीय एवं वैज्ञानिक प्रयत्नों को सफलता तभी मिल सकती है, जब उनके साथ आध्यात्मिक मूल्यों के शिक्षण को प्रोत्साहित किया जाय। यद्यपि आध्यात्मिक मूल्यों के शिक्षण विभिन्न धार्मिक संगठनों द्वारा अपने-अपने तरीके से दिया जाता है, किन्तु अनुभव से यह ज्ञात होता है कि ये संगठन भी धर्म विशेष के तौर-तरीकों एवं अनुष्ठानों पर ज्यादा जोर देते हैं एवं घुमा-फिराकर इनकी रूचि अपने धर्म के प्रचार-प्रसार में ज्यादा होती हैं। धार्मिक संगठनों की धनलिप्सा एवं धर्म की ओट में किए जा रहे दुराचार भी किसी से छिपे नहीं रह गए हैं। साथ ही इन संगठनों के माध्यम से धार्मिक मूल्यों की शिक्षा प्राप्त करना व्यक्ति विशेष की धर्म-विशेष में रूचि पर भी निर्भर करता है। ऐसे में शिक्षा व्यवस्था एवं शिक्षण संस्थाएं ही एकमात्र प्रभावी विकल्प के रूप में दिखाई देती हैं।

आज के वैज्ञानिक युग में बहुत से व्यक्ति धर्मनिरपेक्ष शिक्षा-व्यवस्था का पक्षापोषण करते हैं एवं किसी विद्यार्थी को धर्म-विशेष की शिक्षा दिए जाने को बाध्यकारी बनाने का विरोध करते हैं, किन्तु मेरा मन्तव्य यह है कि किसी धर्म को जानना और उसे मानना दो पृथक-पृथक विषय हैं। निःसंदेह हम किसी को धर्म विशेष को मानने के लिए बाध्य नहीं कर सकते, किन्तु आध्यात्मिक मूल्यों, जो धर्म से निःसृत हैं, की जानकारी आज अपरिहार्य प्रतीत होती है। यह भी उल्लेख है कि प्रत्येक विद्यार्थी को, चाहे वह विज्ञान का विद्यार्थी हो, कला का हो, समाज विज्ञान का हो या वाणिज्य का, प्रत्येक महत्वपूर्ण धर्म के आध्यात्मिक मूल्यों की शिक्षा दी जानी आवश्यक है। इससे न केवल धर्म के बाह्य रूप पर जोर देने वाली धर्म की विकृत व्याख्याओं पर रोक लगाने में मदद मिलेगी और धर्म के नाम पर बढ़

रहे संघर्ष पर लगाम लगेगी, बल्कि इन धार्मिक मूल्यों के अनुसार व्यक्ति के आचरण को ढालकर आसन्न पर्यावरणीय संकट से भी सफलतापूर्वक उबरा जा सकेगा। धर्म ने अतीत में मानव सभ्यता एवं संस्कृति के निर्माण में महती योगदान दिया है। भावी पीढ़ी के सुनहरे भविष्य के निर्माण में भी उसकी भूमिका महत्वपूर्ण होगी। आवश्यकता

है “मूल्यों की ओर लौटो” के आदर्श को शिक्षा जगत का मूलमंत्र बनाये जाने की। इस दिशा में उच्च शिक्षा को ध्वजवाहक की भूमिका निभानी होगी, क्योंकि मूल्यों के प्रति समझ का विकास युवावस्था के उस दौर में होता है, जब व्यक्ति विश्वविद्यालय या महाविद्यालय का छात्र होता है।

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- डॉ के. एल. शेषगिरि राव, “रिलिजन एण्ड कंजर्वेशन: ए हिन्दू पर्सपेक्टिव” इन्टरफेथ सेन्टर डॉट ओ आर जी
- रिलिजन एण्ड कंजर्वेशन बायोलॉजी, सोसायटी फोर कंजर्वेशन बायोलॉजी, डब्ल्यू डब्ल्यू डब्ल्यू कॉनबायो डॉट ओआरजी
- जैन वे ऑफ लाइफ एण्ड एथिकल लिविंग एण्ड एनवायरनमेंट, एचटीटीपी/ डब्ल्यू डब्ल्यू डब्ल्यू जैन लाइब्रेरी डॉट ओआरजी
- क्रिस्टोफर की चैपल, “जैनिज्म एण्ड इकोलॉजी: नॉन वायलेंस इन द वेब ऑफ लाइफ, एचटीटीपी, बुक्स डॉट गूगल डॉट को डॉट इन
- डेनियल हेनिंग, ए मैनुअल फॉर बुद्धिज्म एण्ड दीप इकोलॉजी, एचटीटीपी/ डब्ल्यू डब्ल्यू डब्ल्यू डॉट बुद्धनेट डॉट इन
- साइमन पी. जेम्स, “बुद्धिज्म एण्ड द एथिक्स ऑफ सोसिज कंजर्वेशन, एचटीटीपी, डब्ल्यू डब्ल्यू डब्ल्यू डॉट एरिका डॉट डेमन डॉट को डॉट यू.के.
- प्रो. डॉ. अहमत अकजुन्दुज, नॉर्म्स एण्ड वैल्यूज इन इस्लाम, एचटीटीपी/इस्लाम डॉट यू जी ए डॉट ईडीयू
- मुस्लिम एनवायरनमेंटलिस्ट्स, एचटीटीपी/इस्लाम अबाउट डॉट कॉम
- इस्लामिक इकोनॉमिक स्टडीज, वोल्यूम-3, न0-2, जून 1996, एचटीटीपी/ डब्ल्यू डब्ल्यू डब्ल्यू डॉट इरटी डॉट ओआरजी
- एनवायरनमेंट एण्ड इकोलॉजी इन इस्लाम, शीला मुसाजी द्वारा संकलित, एचटीटीपी/ द अमेरिकन मुस्लिम डॉट ओआरजी
- इब्राहिम बतनी, प्रिजर्वेशन ऑफ एनवायरनमेंट इन इस्लामिक टीचिंग, हिकमत मैगज़ीन, एचटीटीपी डब्ल्यू डब्ल्यू डब्ल्यू हिकमत डॉट एसी
- प्रिस्टन हण्टर, “द मॉडर्न एनवायरनमेंटल मोन्चूमेंट: जीविश पर्सपेक्टिव्स, डब्ल्यू डब्ल्यू डब्ल्यू एडहरेन्ट्स डॉट कॉम
- मेडलिव प्रिएस्ट, “द रिलिजियस एनवायरनमेण्टस मूवमेंट: इट्स करेंट स्टेट एण्ड यूचर”, डब्ल्यू डब्ल्यू डब्ल्यू/ अमेरिकन डॉट ईडीयू
- लिली डी सिल्वा, “बुद्धिस्ट एटीट्यूड टुवार्डस नेचर, डब्ल्यू डब्ल्यू डब्ल्यू एक्सेसटी इनसाइट डॉट ओआरजी
- इयान गॉफमैन, गॉड, ह्यूमनिटी एण्ड नेचर: कम्परेटिव रिलिजियस व्यूज ऑफ द एनवायरनमेंट, एचटीटीपी/ डब्ल्यू डब्ल्यू डब्ल्यू डॉट सी एस ए डॉट कॉम

## ई-कचरा : एक गंभीर पर्यावरणीय संकट

श्रीमती सीमा चौधरी

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विश्व में प्रतिदिन निकलने वाले कचरे में ई-कचरे का अनुपात तेजी से बढ़ रहा है। ई-कचरा एक मानव निर्मित समस्या है, जो दिन-प्रतिदिन अपना प्रभाव विभिन्न क्षेत्रों में फैला रही है। विकसित एवं विकासशील देश अपनी अविवेकपूर्ण नीतियों एवं अंधाधुंध भौतिकवादी प्रतियोगिता के कारण वर्ज्य पदार्थों को अनियमित ढंग से निरंतर तीव्रगति से जीवनमंडल में डालते जा रहे हैं, जिससे स्वयं मानव जीवन के लिए खतरा उत्पन्न होता जा रहा है।

वर्तमान युग तकनीकी एवं प्रौद्योगिकी का युग है। बिना तकनीकी विकास के मानव जीवन का समुचित विकास अधूरा है। मानव जाति को आदिम अवस्था से आधुनिकतम युग तक पहुंचाने का श्रेय तकनीकी स्रांति को ही है। वर्तमान में जीवन के प्रत्येक क्षेत्र में प्रौद्योगिकी का समुचित उपयोग हो रहा है। मानव जीवन को सुख-सुविधामय बनाने में विद्युत उपकरणों एवं इलैक्ट्रॉनिक गैजेट्स की भूमिका दिन-प्रतिदिन बढ़ती जा रही है। परंतु दूसरी ओर ये ई-कचरे के अभिशाप के रूप में पृथ्वी पर संकट भी उत्पन्न कर रहे हैं। ई-कचरे से आशय उन बेकार विद्युत एवं इलैक्ट्रॉनिक उपकरणों से हैं, जो उपयोग के बाद फेंक दिए जाते हैं। इसमें मुख्य रूप से कम्प्यूटर, लैपटॉप, मोबाइल फोन, टी.वी., सी.डी., डीवीडी प्लेयर एवं अन्य इलैक्ट्रॉनिक उपकरणों के साथ मोटे तौर पर लौह-अलौह धातुएं शामिल हैं। ई-कचरे में कैडमियम, शीशा, पारा, पोलिक्लोरिनेटेड बाई फिनाइल, ब्रोमिनेटर फ्लोन रिटार्डेंट जैसे जहरीले एवं विषाक्त पदार्थ होते हैं, जोकि अनेक गंभीर रोगों के जनक हैं। एक अध्ययन के अनुसार, एक कम्प्यूटर में विषाक्त पदार्थों की मात्रा निम्नवत् है-

धातु/ विषाक्त पदार्थ	मात्रा
1. लैड	0.7
2. ब्रोमिनेटर फ्लोन रिटार्डेंट	6.21
3. पारा	0.05
4. कैडमिनियम	0.25
5. एरसेनी	0.04

वर्तमान में विश्व के कुल कचरे में ई-कचरे का हिस्सा करीब पांच प्रतिशत है, जो प्लास्टिक कचरे के बराबर है। ई-कचरे में लगभग एक हजार जहरीले पदार्थों का निस्तारण यदि सही तरीके से न किया जाए तो वे पर्यावरण एवं मानव स्वास्थ्य के लिए अत्यंत हानिकारक सिद्ध

होते हैं। ई-कचरे से निकलने वाले रसायन एवं धातु दोबारा मिट्टी एवं वायुमंडल में मिलकर उसे संस्रमित करते हैं। भारत जैसे विकासशील देशों में ई-कचरे के पुर्नशोधन की सुविधाएं भी नगण्य हैं, जिस कारण ई-कचरे को एक अत्यंत गंभीर पर्यावरणीय संकट के रूप में देखा जा रहा है।

विश्व में प्रतिदिन निकलने वाले कचरे में ई-कचरे का अनुपात तेजी से बढ़ रहा है। ई-कचरा एक मानव निर्मित समस्या है, जो दिन-प्रतिदिन अपना प्रभाव विभिन्न क्षेत्रों में फैला रही है। विकसित एवं विकासशील देश अपनी अविवेकपूर्ण नीतियों एवं अंधाधुंध भौतिकवादी प्रतियोगिता के कारण वर्ज्य पदार्थों को अनियमित ढंग से निरंतर तीव्रगति से जीवनमंडल में डालते जा रहे हैं, जिससे स्वयं मानव जीवन के लिए खतरा उत्पन्न होता जा रहा है।

पर्यावरण एवं मानवीय स्वास्थ्य में प्रत्यक्ष संबंध होता है। इसलिए पर्यावरण का संतुलित रहना अति आवश्यक है। ई-कचरे से उत्पन्न गैस एवं धात्विक कण विभिन्न बीमारियों के जनक हैं, जिनसे त्वचा, स्नायु, श्वसन एवं हृदय रोगों इत्यादि में निरंतर वृद्धि हो रही है एवं अनेक नवीन एवं भयावह रोग प्रकट हो रहे हैं। विकसित देशों द्वारा बड़ी मात्रा में ई-कचरा, अपशिष्ट पदार्थ एवं कबाड़ विकासशील एवं अत्यंत निर्धन देशों में भेजा जाता है। इन पदार्थों के निस्तारण एवं नष्ट करने वाले क्षेत्रों में जो श्रमिक कार्य कर रहे हैं, उनके स्वास्थ्य एवं जीवन पर इनका अत्यंत घातक प्रभाव पड़ रहा है। उक्त क्षेत्रों में सुरक्षा एवं जीवन रक्षक प्रणाली एवं साधनों का पूर्णतया अभाव पाया जाता है एवं ई-कचरे को नष्ट करने हेतु अकुशल एवं अप्रशिक्षित तरीकों को अपनाया जाता है, जो कि अनेक बार जानलेवा भी सिद्ध होते हैं। अकेले दिल्ली में ही 25000 से भी अधिक श्रमिक इस जानलेवा क्षेत्र से जुड़े हुए हैं, जहां प्रतिवर्ष 10000 से 20000 टन तक ई-कचरा उत्पन्न होता है, जिसमें

25 प्रतिशत भाग केवल कम्प्यूटर्स का है। दिल्ली के अतिरिक्त चैन्ड, बंगलूरु, मुंबई, मेरठ एवं फिरोजाबाद इत्यादि ई-कचरे के स्त्रैप-यार्ड के रूप में प्रमुख हैं। भारत के लिए एक गंभीर चेतावनी है कि भारत में प्रतिवर्ष लगभग 1.5 लाख टन ई-कचरा उत्पन्न हो रहा है। भारत के प्रमुख मैट्रो शहर दिल्ली, मुंबई एवं बंगलूरु को ई-कचरे से उत्पन्न होने वाले प्रदूषण से सर्वाधिक प्रभावित होने वाले शहरों की श्रेणी में रखा गया है। भारत में डेस्कटॉप एवं लैपटॉप की सबसे अधिक बिस्री पश्चिमी भारत (37 प्रतिशत) में होती है। इसके उपरांत दक्षिण (23 प्रतिशत), पूर्व (22 प्रतिशत) एवं उत्तर भारत (18 प्रतिशत) का स्थान आता है। वर्ष 2009-2010 में भारत में 75 लाख से अधिक डेस्कटॉप एवं लैपटॉप की बिस्री हुई। भारत में सबसे अधिक ई-कचरा पैदा करने वाले राज्य हैं—महाराष्ट्र, तमिलनाडु, आंध्रप्रदेश, उत्तर प्रदेश, पश्चिम बंगाल, दिल्ली, कर्नाटक, गुजरात एवं मध्य प्रदेश हैं। दिल्ली, मुंबई एवं बंगलूरु के अतिरिक्त कोलकाता, अहमदाबाद, हैदराबाद, पुणे, सूरत एवं नागपुर ई-कचरा उत्पन्न करने वाले शहर हैं।

### भारत में सर्वाधिक ई-कचरा उत्पन्न करने वाले राज्य

महाराष्ट्र	19.8 प्रतिशत
तमिलनाडु	13.1 प्रतिशत
आंध्र प्रदेश	12.5 प्रतिशत
उत्तर प्रदेश	10.1 प्रतिशत
पश्चिम बंगाल	9.8 प्रतिशत
दिल्ली	9.5 प्रतिशत
कर्नाटक	8.9 प्रतिशत
गुजरात	8.8 प्रतिशत
मध्य प्रदेश	7.6 प्रतिशत

**स्रोत :** डिपार्टमेंट ऑफ इनफॉर्मेशन टेक्नोलॉजी

सरकार की ई-कचरे से संबंधित रिपोर्ट में कहा गया है कि वर्ष 2005 में देश में 1,46,180 टन ई-कचरा उत्पन्न हुआ, जो कि 2012 में अनुमानतः आठ लाख टन तक पहुंच गया है। भारत में बढ़ती उपभोक्तावादी प्रवृत्ति, दिखावा एवं नित्य नए एवं आधुनिक ब्रांड को

अपनाने के रुझान ने भी ई-कचरे को बढ़ाने में प्रमुख भूमिका निभाई है। इस समस्या के निरंतर बढ़ने का एक प्रमुख कारण ई-कचरे से उत्पन्न होने वाले खतरों के प्रति अज्ञानता एवं उदासीनता भी है। बेकार एवं अनुपयोगी उपकरणों के पुनर्शोधन, पुनर्प्रयोग एवं रि-साइकिलिंग के अभाव के कारण भी भारत में यह समस्या गंभीर होती जा रही है। वर्तमान में विश्व के सभी देशों को इस समस्या के समाधान के लिए एकजुट होकर निर्णय लेना चाहिए। ई-कचरे से संबंधित किसी भी प्रकार का कोई भी मुद्दा या संगठन हो, उसमें सभी देशों को अपनी भागीदारी सुनिश्चित करनी चाहिए। विश्व के अधिकांश देशों में ई-कचरे पर चर्चा अभी तक केवल बौद्धिक एवं उच्च वर्ग तक ही सीमित है। विभिन्न देशों के प्रत्येक आम नागरिकों की भागीदारी के बिना इसकी सफलता संदिग्ध ही रहेगी।

अभी तक भारत में ई-कचरा अधिकतर असंगठित क्षेत्र में रि-साइकिल किया जा रहा है, जहां सुरक्षित तरीकों की उपेक्षा होती है तथा विषाक्त पदार्थ रिसकर मिट्टी एवं भू-जल में मिलने का खतरा बना रहता है। इसके लिए ऐसी तकनीक विकसित होनी चाहिए, जो इसका बेहतर ढंग से उपाय कर सके। सबसे सरल तरीका यही हो सकता है कि हम विभिन्न उपकरणों का रख-रखाव ठीक ढंग से करें एवं मामूली खराबी होने पर उन्हें फेंकने की बजाय सुधार कर उपयोग करते रहें ताकि अनावश्यक कचरा न बढ़े। हालांकि भारत ने 2009 में खतरनाक कचरे के सुरक्षित निस्तारण एवं सीमा के बाहर दुलाई के नियम बनाए हैं। ऐसी व्यवस्था भी की गई है कि खराब हो गए विद्युत चालिक उपकरणों की रि-साइकिलिंग या रि-प्रोसेसिंग के लिए केंद्रीय प्रदूषण नियंत्रण बोर्ड में पंजीकरण कराना होगा। इसके लिए पर्यावरण मंत्रालय ने टास्क फोर्स का भी गठन किया है, जिसने इस संबंध में रिपोर्ट दी है। मंत्रालय एवं केंद्रीय प्रदूषण बोर्ड की वेबसाइट पर संबंधित दिशा-निर्देश भी उपलब्ध हैं। इनमें इलैक्ट्रॉनिक एवं इलैक्ट्रॉनिक ई-कचरे के अलग-अलग स्रोत की पहचान के लिए निर्देश दिए गए हैं। अंततः सभी संसाधनों के पुनर्चक्रण पर ध्यान दिया जाना चाहिए ताकि प्राकृतिक संसाधनों का दोहन कम-से-कम हो एवं पर्यावरण शुद्ध रहे।

### संदर्भ

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## पर्यावरण जागरूकता में हिन्दी साहित्य एवं हिन्दी साहित्यकारों का योगदान

डॉ. स्वर्ण लता कदम

वरिष्ठ प्रवक्ता-हिन्दी विभाग  
शहीद मंगल पाण्डे राजकीय महिला  
स्नातकोत्तर महाविद्यालय, मेरठ

मानवीय संवेदनाएं शाश्वत होती हैं, वे प्रत्येक भाषा के साहित्य में प्रत्येक युग में प्रतिफलित होती हैं। वस्तुतः रचनाकार अपनी रचनाओं में अपने समाज को किसी-न-किसी तरह प्रतिबिम्बित करता है, चाहे अभिधा हो या लक्षणा या व्यंजना। आज हमारा भारतीय समाज अपनी आध्यात्मिक अवधारणा को त्यागता जा रहा है और तेजी से भौतिकता की ओर बढ़ रहा है। भौतिकता की होड़ में हमने अपने पर्यावरण को बहुत नुकसान पहुंचाया है। ऐसे वातावरण में साहित्यकार का उत्तरदायित्व बहुत बढ़ जाता है कि वह अपनी रचनाओं के माध्यम से लोगों में पर्यावरण की सुरक्षा के प्रति जागरूकता पैदा करे। कवि का धर्म यह है कि वह अपनी कलम की नोक पर ऐसे शब्दों का अम्बार जुटा ले, जो समाज में व्याप्त विद्रूपताओं के चेहरे से नकाब उठाने के लिए संकल्पबद्ध हो, साथ ही समस्या का समाधान भी प्रस्तुत करे। पर्यावरण सुरक्षा के प्रति एक साहित्यकार अपने साहित्य के माध्यम से लोगों में कैसे जागरूकता पैदा करता है, इसी बात को लोगों के सामने लाना, इस शोध पत्र का प्रमुख उद्देश्य है।

21 वीं शती की प्रमुख चिन्ताओं में से एक है पर्यावरण संरक्षण की चिन्ता। पर्यावरण अर्थात् हमारे आस-पास का वातावरण वातु (हवा) का आवरण।

“हैलो मनुष्य  
मैं आकाश हूँ।  
कल सृजन था, निर्माण था,  
आज प्रलय हूँ विनाश हूँ  
मेरी छाती में  
जो छेद हो गए हैं, काले-काले  
ये तुम्हारे भालों के घाव हैं,  
ये कभी नहीं भरने वाले।”

(मैं आकाश बोल रहा हूँ, ऋषभदेव शर्मा)

ऐतिहासिक दृष्टि से पर्यावरण शब्द नवगठित है। हम धरतीवासी इन्सानों ने अपने चारों ओर के आवरण रूप नैसर्गिक सम्पदा - कोश को पर्यावरण कहा है, जो हमें जन्मजात - अनायास उपलब्ध है तथा जो हमारे जीवन की उत्पत्ति-स्थिति व संहार का मूल आधार है। इस कोश में मिट्टी-जल-वायु आकाश ताप आदि अजैव घटक तथा वनस्पति और स्तनधारियों से लेकर सूक्ष्म से सूक्ष्म जीवाणुओं तक के जैव घटक आते हैं इन सबकी मात्रा/ संख्या के आपसी सन्तुलन का बना रहना प्राणी-जगत् के आस्तित्व की अनिवार्य शर्त है। इस सन्तुलित स्थिति का भंग होना पर्यावरण-प्रदूषण कहलाता है तथा सन्तुलन को बनाए रखने के प्रयास पर्यावरण - संरक्षण कहलाते हैं।

चौदहवीं शताब्दी में मुहम्मद तुगलक के जीवनकाल में इस्लामी दुनिया का प्रसिद्ध यात्री इब्ने-बतूता भारत आया था। अपने संस्मरणों में उसने गंगा की पवित्रता और निर्मलता का उल्लेख करते हुये लिखा है कि “मुहम्मद तुगलक ने जब दिल्ली छोड़कर दौलताबाद को अपनी राजधानी बनाया तो उसकी अन्य प्राथमिकताओं में अपने लिये गंगा के जल का प्रबन्ध भी सम्मिलित था, गंगाजल को ऊँटों, घोड़ों और हाथियों पर लादकर दौलताबाद पहुँचाने में डेढ़ दो महीने लगते थे। कहा जाता था कि गंगाजल तब भी साफ और मीठा बना रहता था।” तात्पर्य यह है कि गंगाजल हमारी आस्थाओं और विश्वासों का प्रतीक इसी कारण बना था, क्योंकि वह सभी प्रकार के प्रदूषण से मुक्त था। किन्तु अनियंत्रित औद्योगिकरण तथा हमारे अज्ञान एवं लालच ने देश की अन्य नदियों के साथ गंगा को भी प्रदूषण का शिकार बना दिया है। कवि लोगों से प्रश्न करता है कि-

“शस्य श्यामला धरा सुगन्धित, पत्थर से क्यों ढक डाली,  
कहाँ जा छुपी नये नगर में, वन उपवन की हरियाली।”

वैज्ञानिकों को विचार है कि तन मन की सभी बीमारियों को धो डालने की उसकी औषधिय शक्तियाँ अब समाप्त हो गई हैं यदि प्रदूषण इस प्रकार बढ़ता रहा तो उसके शेष गुण भी शीघ्र विलीन हो जायेंगे और तब ‘गंगा तेरा पानी अमृत’ वाला मुहावरा निरर्थक हो जायेगा। गंगाजल की महत्ता के विषय में डॉ० मित्रेश गुप्त लिखते हैं-

“कौन-सा जल है किसी सरिता सरोवर का  
जो कभी विगलित प्रदूषित नहीं होता,

एक केवल जल तुम्हारा विश्व में अनुपम,  
जो अनंत काल तक दूषित नहीं होता  
हे विलक्षण धार शीतल धार शीतला निर्मला गंगे ।”

कवि सत्यपाल सत्यम् अत्यंत आक्रोश भरे स्वर में उसी पवित्र गंगाजल की दूषित होने से बचाने के लिये कहते हैं-  
“गंगाजल इस देश के प्रभु ने दिया वरदान है,  
गंदगी उसमें विसर्जन कर रहे क्या ध्यान है  
आसुरी इस वृत्ति से भयभीत है अब सुरसरि ।”

बसन्त सिंह भृंग ने अपनी बात इस प्रकार कहीं है-  
“गंगा जल का परिगृह सलिल भी  
सागर में मिल हुआ अपेय ।”

चेतन जीवन भूल, हुआ जड़ आसन पर जड़ ।  
सरिता ही गति हीन, गई ज्यों पोरवर में सड़ ।  
कवि हरिओम पंवार ने अपनी चिन्ता इस प्रकार व्यक्त की है-  
“राम तुम्हारी गंगा मैली गंगा जल भी खारा है ।  
फिर भी सारे जहाँ से अच्छा हिन्दुस्तान हमारा है ।”

प्रदूषण वायु जल एवं स्थल की भौतिक रसायनिक और जैविक विशेषताओं का वह अवांछनीय परिवर्तन है, जो मनुष्य के लिये लाभदायक दूसरे जंतुओं, पौधों औद्योगिक संस्थानों तथा दूसरे कच्चे माल इत्यादि को किसी भी रूप में हानि पहुँचाता है। अतः हमें गंगाजल की महत्ता समझनी होगी। पर्यावरण की समस्या का जन्म जनसंख्या की वृद्धि के साथ-साथ हुआ है। विकासशील देशों में औद्योगिक एवं रासायनिक कचरे ने जल, वायु तथा पृथ्वी को भी प्रदूषित किया है। भारत में तो घरेलू कचरे और गन्दे जल को बहाने का प्रश्न ही एक विकराल समस्या बन गया है। आज प्रगति की दौड़ में हम अनेकों तरह के बम बना रहे हैं। जगह-जगह इन बम के विस्फोटों के कारण - धरती बंजर हो जाती है और सारा वातावरण प्रदूषित हो जाता है, सिर्फ नुकसान के अलावा कुछ हाथ नहीं आता। अतः कवियों ने अपनी रचनाओं के माध्यम से युद्ध और बम की विभीषिका से जनता को परिचित कराना अपना धर्म समझा और जनता को सचेत किया -

“तब से अब तक हिरोशिमा की धरती बोझ बनी है,  
उगे कोई फल-फूल तो क्या न उगती नागफनी है ।  
पर्यावरण विषैला जिसकी हुई नहीं भरपायी,  
विकृत अंग बच्चे पैदा होते अब भी दुःखदायी ।”

प्रदूषण तीन प्रकार का होता है:- वायु प्रदूषण, जल प्रदूषण ध्वनि प्रदूषण/ मनुष्य अपनी आवश्यकतानुसार वन काटता रहता है। फलतः वातावरण में आक्सीजन की मात्रा कम होती जा रही है। मिलों से

निकालने वाले धुएँ के कारण वातावरण में विभिन्न प्रकार की हानिकारक गैसें बढ़ती जा रही है।

यह हमारे स्वास्थ्य पर बहुत बुरा प्रभाव डाल रही है। मानव के शरीर पर वायु-प्रदूषण का बुरा प्रभाव पड़ता है इससे अनेक सांस सम्बन्धी रोग हो जाते हैं। इससे बचने के लिये साहित्यकार ने वृक्ष लगाने की बात कही है, हमारे समाज में तुलसी के पौधे को बहुत ही सम्मान और श्रद्धा के साथ पूजा जाता है। अतः कवि विधिचन्द्र पटवारी ने अपनी रचना समाज का तुलसी दल हूँ के माध्यम से हर घर में तुलसी का पौधा लगाने पर जोर दिया है। निम्नांकित पंक्तियाँ द्रष्टव्य हैं:-

जितना सींचोगे तुलसी को, उतना वह मुस्कायेगी ।  
इस बस्ती को बिमारी को, तुलसी दूर भगायेगी ।।  
तुलसीदल को काट दिया तो, कब सुगन्ध रह जायेगी ।  
तेरे घर आँगन की शोभा, फर-फर उड़ जायेगी ।

तुलसी एक औषधि के रूप में भी काम आती है अतः हमें तुलसी का पौधा अवश्य लगाना चाहिए। मानव के शरीर हमें वायु-प्रदूषण का बुरा प्रभाव पड़ता है। सभी जीवधारियों के लिए जल अत्यन्त महत्वपूर्ण है। हमने उस जल को ही अत्यन्त ही गन्दा बना दिया है। आज की स्थिति में अधिकांश नदियों का जल प्रदूषित होता जा रहा है। ध्वनि की लहरें जीवधारियों की क्रियाओं को प्रभावित करती है। अधिक तेज ध्वनि से मनुष्य की सुनने की शक्ति भी कम हो जाती है तथा उसे ठीक प्रकार से नींद नहीं आती। यहाँ तक कि कभी कभी पागलपन का रोग भी उत्पन्न हो जाता है।

जो धरती हमें अपना सब कुछ सौंप देती है हम मानव उसे ही गंदा प्रदूषित करने में नहीं चूकते हैं। परमाणु- शक्ति उत्पादन केन्द्रों तथा परमाणविक परीक्षण से भी जल, वायु तथा पृथ्वी का प्रदूषण होता है जो देश की वर्तमान पीढ़ी के साथ-साथ भावी पीढ़ी के लिए भी खतरनाक है। द्वितीय महायुद्ध में नागासाकी तथा हिरोशिमा में हुए परमाणु-बम के विस्फोटों से बहुत से मनुष्य अपंग हो गये थे। इतना ही नहीं यहाँ की भावी सन्तति भी अनेक प्रकार के रोगों से ग्रस्त हो गए हैं।

“सृष्टि विटप का मूल, झूलने लगा गगन में ।  
आग बरसने लगी, यहाँ भादों सावन में ।”

“दूषित वातावरण हुआ है, हवा जहाँ पर ठहर गई है ।  
वहाँ जनमने वाला बालक, कैसे देखे किरण नयी है ।”

पर्यावरण विषैला, जिसकी हुई नहीं भरपायी,  
विकृत अंग बच्चे पैदा होते अब भी दुःखदायी ।  
दुनिया में सबसे ज्यादा अन्धे कोढ़ी लाचार,  
इसी देश में मिलते हैं, सब लाइलाज बीमार ।।”

शहरों में शत प्रतिशत निवासियों के लिये स्वास्थ्य कर पेय-जल का प्रबंध नहीं है। दिल्ली जैसे शहर में दूषित जल से महामारी के रूप में पीलिया रोग का प्रकोप कई बार हो चुका है। कई-बार नदियों में शहर का मलमूत्र और कचरा तथा कारखानों से निकलने वाले बेकार द्रव्य प्रभावित कर दिये जाते हैं। परिणाम स्वरूप हमारे देश की अधिकांश नदियों का जल प्रदूषित होता जा रहा है। कवि को आखिर चिन्ता क्यों न हो? जब हमारी श्रद्धा का प्रतीक गंगा के जल से तुलसी का पौधा मुरझा जाये तो हम और किस जल की शुद्धता पर विश्वास करें:-

“गंगातट पर उगकर यदि तुलसी का बिरवा मुरझा जाये,  
तो मैं उसको गंगाजल की कैसे धार मान लूँ?”

वह अत्यंत ओजपूर्ण शब्दों में कहते हैं:-

“धरती का रूप बदलने को, निर्माण नया करना होगा।  
भारत को स्वर्ग बनाना तो, बलिदान तुम्हें करना होगा।

(सृजन के दीप वर्ष)

पर्यावरण में होने वाले प्रदूषण को रोकने के लिये तथा उसकी रक्षा के लिए गत वर्षों में सारे विश्व में एक चेतना पैदा हुई है। इसी के अन्तर्गत एक ‘केन्द्रिय बोर्ड’ तथा सभी प्रदेशों में ‘प्रदूषण नियन्त्रण’ बोर्ड गठित किये गये हैं। सरकार प्रदूषण की रोकथाम हेतु निरन्तर प्रयास कर रही है। दूसरी तरफ साहित्यकार अपनी रचनाओं के माध्यम से युग को जाग्रत कर रहा है कि हम अपनी हरी भरी धरती को ओर अधिक हरा-भरा बनाएँ वहाँ प्रदूषण का नामोनिशान न हो। पर्यावरण

## सन्दर्भ

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के प्रति जागरूकता से ही हम भविष्य में और अधिक अच्छा स्वास्थ्य जीवन जी सकेंगे तथा भविष्य में आने वाली पीढ़ी को प्रदूषण के अभिशाप से मुक्ति दिला सकेंगे।

## निष्कर्ष

आज का साहित्य समाज में विद्यमान तमाम समस्याओं को अभिव्यक्ति देने को आतुर है। अपने लेखन से रचनाकार समाज में विद्यमान तमाम समस्याओं का समाधान खोज रहा है। ताकि मानवता को सही दिशा दिखायी जा सके। साहित्य से इसी उत्तरदायित्व की अपेक्षा है। जब दुनिया के मजदूर और किसान एक होकर क्रांति कर सकते हैं तो साहित्यकार क्यों नहीं? विज्ञान मीडिया और तकनीक का प्रयोग जनसामान्य की बुझती आशाओं को दिशा देने की आवश्यकता है। साहित्य को पर्यावरण प्रदूषण, बुराई, आतंकवाद भ्रष्टाचार, साम्प्रदायिकता आदि पर सीधी चोट करनी होगी। तभी नये संसार और नये आदमी की रचना होगी। यदि प्रदूषण को नहीं रोका गया तो प्राकृतिक सम्पदा के साथ-साथ मनुष्य का अस्तित्व भी इस पृथ्वी से मिट सकता है-

“बचाना है तो बचाए जाने चाहिए

गांव में खेत, जंगल में पेड़, शहर में हवा

पेड़ों में घोंसले, अखबारों में सच्चाई, राजनीति में नैतिकता

प्रशासन में मनुष्यता, दाल में हल्दी।”

(बचाओ/ कवि ने कहा : उदय प्रकाश)

## पर्यावरण संरक्षण में शिक्षा की भूमिका

डॉ० हरिन्द्र कुमार

सहा० प्रो०, समाजशास्त्र

कु० मायावती राजकीय महिला स्नातकोत्तर महाविद्यालय,

बादलपुर, गौतमबुद्ध नगर (उ.प्र.)

श्रीमती रंजीता रानी

प्रवक्ता, बी.एड. विभाग

एस.एस.वी.पी.जी. कॉलेज, हापुड़

पर्यावरण शिक्षा पर्यावरण की गुणवत्ता एवं जीवन की गुणवत्ता के बारे में चिन्तन करती है। यह मानवीयता का बोध कराने वाली शिक्षा है। जो संरक्षण के लक्ष्यों को लागू करने का एक ढंग है। जिसका उद्देश्य विश्व जनसंख्या का विकास करना, पर्यावरण से जुड़ी समस्याओं के निदान एवं उपचार हेतु व्यक्तिगत एवं सामूहिक रूप में कार्य का ज्ञान, कौशल, दृष्टिकोण, प्रेरणा, मूल्य, व्यवहारिक कुशलता, निर्णय लेने की क्षमता तथा विश्व के समस्त प्राणियों में अपने पर्यावरण के प्रति प्रेम, दया, सहिष्णुता, सहयोग एवं सहानुभूति के भाव जागृत कर सद्नागरिकता का विकास करना है। आज सम्पूर्ण विश्व पर्यावरण प्रदूषण की विभीषिका से ग्रस्त है, वह इससे मुक्ति पाने का मार्ग खोज रहा है। जो ज्ञान प्राप्ति से सम्भव है और यह कार्य पर्यावरण शिक्षा ही कर सकती है।

पर्यावरण पृथ्वी का वह पक्ष है जिसके कारण हमें जीवित ग्रह का दर्जा प्राप्त है। पर्यावरण से तात्पर्य उस वातावरण से है जिसमें समस्त जगत् आवरित रहता है, अर्थात् इसमें किसी जीव के चारों ओर उपस्थित समस्त जैविक तथा अजैविक पदार्थों को सम्मिलित किया जाता है। इस प्रकार पर्यावरण का निर्माण जल, वायु, भूमि, उनके पारस्परिक सम्बन्ध अन्य वस्तुओं जैसे जीवों, सम्पत्ति तथा मनुष्य के आपसी सम्बन्धों को मिलाकर हुआ है। जब तक यह तत्व प्रकृति में सन्तुलित रहते हैं, तब तक प्राकृतिक सन्तुलन बना रहता है। लेकिन मनुष्य ने अपने विकास क्रम में निर्जीव पदार्थों का अन्धाधुन्ध प्रयोग कर इस सन्तुलन को छिन्न भिन्न कर दिया है।

डॉ० विद्यानिवास मिश्र का कथन है - “प्रकृति की संवेदनशीलता मानव को प्रभावित करती है। किन्तु जहां औद्योगिक विकास से अन्धे मानव ने प्रकृति को चुनौति माना और उस पर विजयप्राप्त करने की इच्छा करने लगा यहीं से मानव और प्रकृति का संघर्ष हुआ जिसका परिणाम सामने है”। विकास करना सभी राष्ट्रों की अनिवार्य एवं मूलभूत आवश्यकता है, लेकिन इन गतिविधियों से पर्यावरण पर पढ़ने वाले प्रभावों को ध्यान में नहीं रखा गया। अतः यह आवश्यक हो गया है कि मिटटी, खनिज, जल, वायु, वन्य एवं मत्स्य जगत् का उचित संरक्षण किया जाये, वरन् वह दिन दूर नहीं जब मानव अस्तित्व खतरे में पड़ जाएगा।

आज पर्यावरण के सभी पहलुओं को जानने व समझने की आवश्यकता है क्योंकि पर्यावरण सभी की सौझा पूंजी है और समाज के प्रत्येक नागरिक के लिये पर्यावरण का ज्ञान आवश्यक है। पर्यावरण की सुरक्षा व परितन्त्र का सन्तुलन बनाना आज केवल रसायन एवं जीव

वैज्ञानिकों का ही नहीं वरन समाजशास्त्रियों, राजनीतिज्ञों, अर्थशास्त्रियों, भूगोलवेत्ताओं, शिक्षाविदों के साथ आम आदमी का भी उत्तरदायित्व है। वर्तमान में पर्यावरण संरक्षण की दिशा में वर्ल्डवाच, ग्रीन पीस, वर्ल्ड लाइफ फोरम जैसी संस्थायें बहुत कुछ कर रही हैं, जागरूकता बढ़ा रही हैं। जिनका उद्देश्य पर्यावरण संरक्षण की दृष्टि से प्राकृतिक स्रोतों का सही उपयोग, मानव उपयोगी सामग्री, स्थान, समय और स्रोतों को चिन्हित करना, पेड़-पौधों, जीवजन्तु तथा मनुष्य की पारस्परिक निर्भरता को पहचानना आदि है। इसी क्रम में पर्यावरण शिक्षा एव अन्तः अनुशासन उपागम के रूप में सशक्त भूमिका निभा रही है।

डॉ० विद्यानिवास मिश्र के शब्दों में “प्रकृति का संरक्षण हम सब का पावन कर्तव्य है। हमें प्रकृति का उतना ही विदोहन करना चाहिये जिससे उसका सन्तुलन न बिगड़े। यदि मानव अब भी नहीं चेता तो हमारा विनाश निश्चित है”। ऐसे में पर्यावरण शिक्षा, पर्यावरण संरक्षण में जन सहभागिता बढ़ाने हेतु लोगों में सकारात्मक अभिवृत्ति का विकास करती है। जिसपर विचार किया जाना नितान्त आवश्यक है। जन सामान्य में पर्यावरण संरक्षण के प्रति जागरूकता, पर्यावरण उन्नयन जैसी सकारात्मक विधियां अपनाकर ही पर्यावरण संरक्षण सम्भव है, ताकि मानवीय समस्याओं के समाधान हेतु सकारात्मक एवं स्वीकारात्मक विधियों की खोज कर पर्यावरण के प्रति सकारात्मक अभिवृत्तियों का निर्माण किया जा सके।

अतः पर्यावरण शिक्षा पर्यावरण की गुणवत्ता एवं जीवन की गुणवत्ता के बारे में चिन्तन करती है। यह मानवीयता का बोध कराने वाली शिक्षा है। जो संरक्षण के लक्ष्यों को लागू करने का एक ढंग है। जिसका उद्देश्य विश्व जनसंख्या का विकास करना, पर्यावरण से जुड़ी



समस्याओं के निदान एवं उपचार हेतु व्यक्तिगत एवं सामूहिक रूप में कार्य का ज्ञान, कौशल, दृष्टिकोण, प्रेरणा, मूल्य, व्यवहारिक कुशलता, निर्णय लेने की क्षमता तथा विश्व के समस्त प्राणियों में अपने पर्यावरण के प्रति प्रेम, दया, सहिष्णुता, सहयोग एवं सहानुभूति के भाव जागृत कर सद्नागरिकता का विकास करना है। आज सम्पूर्ण विश्व पर्यावरण प्रदूषण की विभीषिका से ग्रस्त है, वह इससे मुक्ति पाने का मार्ग खोज रहा है। जो ज्ञान प्राप्ति से सम्भव है और यह कार्य पर्यावरण शिक्षा ही कर सकती है। आज पर्यावरण शिक्षा का अध्ययन मानव जिज्ञासा व उसके समाधान, अधिगम एवं शिक्षा के लिये, जीवन का अस्तित्व बचाने के लिए, जनसंख्या नियन्त्रण के लिये, पर्यावरण प्रबन्धन के लिए, मानव प्रगति एवं विकास के लिये और प्राकृतिक सन्तुलन बनाये रखने के लिये आवश्यक है। क्योंकि कभी कभी लोगों को पर्यावरण प्रदूषण के दुष्प्रभावों का तब तक पता नहीं चलता जब तक वे किसी भयंकर समस्या से प्रभावित नहीं हो जाते और अचेतना के कारण विपत्तियों का शिकार बन जाते हैं।

एक चीनी युक्ति के अनुसार “यदि आप एक वर्ष के लिये सोचते हैं तो धान की फसल लगाओ, यदि 10 वर्ष के लिये सोचते हैं तो वृक्ष लगाओ और यदि आप 100 वर्ष के लिये सोचते हैं तो लोगों को शिक्षित करो”। यदि हम अपने ग्रह पृथ्वी को बचाये रखना चाहते हैं तो लोगों को पर्यावरण के बारे में शिक्षित करना आवश्यक है। पर्यावरण में पर्यावरण की गुणवत्ता तथा शिक्षा में व्यक्ति की गुणवत्ता को प्राथमिकता दी जाती है। शिक्षा के द्वारा ही विश्व समुदाय को पर्यावरण की समस्याओं के सम्बन्ध में सचेत किया जा सकता है, उनका समाधान खोजा जा सकता है तथा भावी समस्याओं को भी रोका जा सकता है ताकि अपेक्षित अभिवृत्तियों को विकसित कर प्राकृतिक तथा मानवकृत परिस्थिति में सम्बन्ध स्थापित कर स्वस्थ जीवन का आधार बनाया जा सके।

अतः पर्यावरण के प्रति जागरूकता बढ़ाने हेतु शिक्षा सशक्त माध्यम के रूप में महत्ती भूमिका निभा रही है और यह प्रयास शिक्षा के प्राथमिक स्तर से लेकर उच्च स्तर तक किये जाने आवश्यक हैं।

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ताकि पृथ्वी पर जीवन की निरन्तरता एवं गुणवत्ता को बनाया जा सके, क्योंकि इसी पर्यावरण पर हमारा जीवन और समृद्धि निर्भर है। इस हेतु शिक्षा के प्रत्येक स्तर पर विद्यार्थियों के लिये विभिन्न पर्यावरणीय कार्यक्रम आयोजित किये जा सकते हैं जैसे -

1. पर्यावरण से सम्बन्धित पोस्टर, कविता, स्लोगन गीत, निबन्ध, वाद विवाद आदि विभिन्न प्रतियोगिता का आयोजन।
2. पर्यावरणीय जनजागृति कार्यक्रम से सम्बन्धित स्वच्छता अभियान, पर्यावरण मैग्जीन, प्रदर्शनी, नुक्कड़ नाटक आदि का आयोजन।
3. सामूहिक क्रिया-क्लापों से सम्बन्धित प्रोजेक्ट कार्य, अनुसंधान कार्य, पर्यावरण मेला, रैली, संग्रहालय निर्माण, सर्वे, दत्त कार्य एवं भ्रमण कार्यक्रम का आयोजन।
4. पर्यावरण विचार विनिमय से सम्बन्धित सेमिनार, कार्यशाला, संगोष्ठी एवं अतिथि व्याख्यान आदि कार्यक्रमों का आयोजन।
5. पर्यावरण से सम्बन्धित फिल्म, डाक्यूमेन्ट्री, वीडिओ रिकार्डिंग, चित्र एवं एनिमेशन फिल्म आदि का प्रदर्शन।
6. पौधारोपण कार्यक्रम चलाकर।
7. पर्यावरण से सम्बन्धित विभिन्न दिवसों को मनाकर।
8. पर्यावरण सप्ताह के अन्तर्गत विभिन्न कार्यक्रमों का आयोजन।
9. राष्ट्रीय सेवा योजना, एन.सी.सी., स्काउट एंड गाइड / रोबर्स एण्ड रेंजर्स आदि के अन्तर्गत विभिन्न पर्यावरणीय कार्यक्रमों का आयोजन।

उपरोक्त सभी कार्यक्रम विद्यार्थियों में भावनाएं, विचार तथा अपेक्षायें लाने में सक्षम है। इससे उनमें अपने पर्यावरण के प्रति प्रेम तथा निष्ठा के भाव जागृत होते हैं। इस प्रकार पर्यावरण संरक्षण में शिक्षा समाज में सकारात्मक दृष्टिकोण बनाने में सहायक है। इसके द्वारा पर्यावरण से सम्बन्धित विभिन्न जानकारियां मिलती हैं, कर्तव्यों एवं दायित्वों का बोध होता है, विषयगत कठिनाईयों का समाधान होता है। इससे रूचि, सृजनात्मकता एवं कलात्मक क्षमता का पता चलता है, सीखने की क्षमता एवं व्यक्तित्व का विकास होता है।

## पर्यावरण संरक्षण और हम : एक अनुशीलन

डॉ. जीत सिंह आनन्द

असि. प्रोफेसर, हिन्दी विभाग

कु० मायावती राजकीय महिला स्नातकोत्तर महाविद्यालय,  
बादलपुर, गौतमबुद्ध नगर (उ.प्र.)

आधुनिकीकरण की दौड़ में आज मानव अपनी धरा को छोड़ कर चाँद और मंगल ग्रह पर अपने जीवन को स्थाई रूप से प्रवास करना चाहता है। विकास की प्रक्रिया के साथ-साथ पलायन का दूसरा कारण पर्यावरण का दूषित होना है। हम जिस मूलभूत सम्पदा को भूल कर अस्थिर एवं असंतुलन की ओर अग्रसर है हम भूल जाते हैं कि वही मूलभूत प्रकृति हमें चारों ओर से बचाये हुए है। जैसे शहर का जीवन भव्य भवन, आधुनिकीकरण अपनी ओर आकर्षित करता है लेकिन भूल जाते हैं कि गांवों में वह शक्ति है जो शहरों का निर्माण करते हैं लेकिन शहरों में वह शक्ति कभी नहीं हो सकती जो गांवों का निर्माण कर सके।

मानव और प्रकृति का अतीत का संबंध है। पर्यावरण मानव ही नहीं पृथ्वी पर रहने वाले सभी जीव जन्तुओं के लिए एक अनोखा उपहार है। पर्यावरण का अर्थ प्राकृतिक वातावरण से लिया जाता है। पर्यावरण के मुख्य तीन रूप दृष्टिगोचर होते हैं—भूमि, जल और हवा। ये तीनों मानव जाति के लिए अमूल्य सम्पदा है इनके बिना अपने आप को जीवित रखना कठिन ही नहीं असम्भव है।

‘शक्ति जल पावक गगन समीरा,  
पंच तत्व मिल बना शरीरा’।

पृथ्वी, जल, अग्नि, आकाश, हवा से मिलकर जीव के शरीर की रचना हुई है। इसी को आधार मानकर मानव जाति सभी देवी-देवताओं को पूजा करती है। हाँ, अति कठोरवाद होने पर पतन दिखाई देने लगता है, चाहे वह मनुष्य, प्रकृति, देश, धर्म, संस्कृति, भाषा ही क्यों न हो। जैसे हिन्दू धर्म में धर्म के ठेकेदार 33 करोड़ देवता मानते रहे हैं। वैज्ञानिकता से परे इन सब पर सम्पूर्ण देश विश्वास करता आ रहा है जबकि हिन्दू धर्म में केवल 33 प्रकार के देवता हैं, 33 करोड़ नहीं।

सी.ई.ई.के. अनुसार, “प्रदूषण अनिश्चित वस्तुओं के मिलने से होता है जिससे प्राकृतिक अथवा मानव कृत पर्यावरण पर विपरीत प्रभाव पड़ता है।” के०सी० अग्रवाल के अनुसार, “वायु, जल और भूमि में किसी भौतिक, रासायनिक या जैविक अवांछित परिवर्तन से है जिससे प्राणी मात्र के स्वास्थ्य सुरक्षा एवं हित को प्रभावी तौर पर हानि पहुँचती हो, प्रदूषण कहलाता है।” जे०एस० संस, “वातावरण वह बाह्य शक्ति है जो हमें प्रभावित करती है।” जीवन को हरा भरा तथा समृद्धशाली

रखना है तो पर्यावरण को सुरक्षित रखना होगा, पर्यावरण के असंतुलन में मानव की अहम् भूमिका रही है।

“डगर डगर पर फूल खिले हो, हम सबे उपवन में,  
सर्वे भवन्तु सुखिन की भावना हो, हर मन और हर दिल में  
छा जाएँ सुख और वैभव, दुनिया के हर कोने में।  
पूनम चंदा की खिले चाँदनी, जीवन के हर कोने में ॥ 1

जहाँ एक ओर प्रकृति का सौन्दर्यपूर्ण मृदुल और कोमल रूप मानव को विकास की ओर प्रेरित करता है वहाँ दूसरी ओर उसका कठोर रूप संघर्ष करने की प्रेरणा व शक्ति भी देता है। 21वीं शताब्दी की आहट पर खड़ा मानव आज अपने आप को एक अन्तर्द्वंद्व में फँसा हुआ पा रहा है। उसे कहीं से निकलने तथा बचने का रास्ता नहीं दिख पा रहा है। एक ओर तो सम्पूर्ण देश प्रगति की प्रक्रिया से जुड़ा है, वह विज्ञान तथा प्रौद्योगिकी का युग कहलाने में गौरवान्वित हो रहा है, दूसरी ओर महाविनाश को साक्षात् बुलावा दिया जा रहा है। मानव सब कुछ अपनी आँखों से देख रहा है लेकिन चेतना एवं जागरूकता से परे हैं लेकिन हम भूल जाते हैं कि पर्यावरण संबंधी अग्रिम घटना को भी आमंत्रित कर रहे हैं। इसी असंतुलन से मौसम के आगमन में असंतुलन दिखाई दे रहा है।

“आधुनिक वैज्ञानिक तथा प्रौद्योगिकी विकास प्रक्रिया ने वायु, जल, मिट्टी यहाँ तक कि ध्वनि को भी प्रदूषित कर दिया है। हमें यह भी खबर नहीं है कि जिस वायु में हम सांस लेते हैं, जिस जल को हम पीते हैं, जिस ध्वनि को हम सुनते हैं या फिर जिस मिट्टी में हम अपनी फसल बो रहे हैं, वह आज कितनी कलुषित हो चुकी

है और वह कलुष हमारे व्यक्तित्व तथा सामाजिक जीवन के लिए बहुत घातक है।”<sup>2</sup>

पर्यावरण के असंतुलन से ही कैंसर, अस्थमा, मोतिया बिन्द, मधुमेह जैसे असाध्य रोगों का जन्म हो रहा है। मौसम के असंतुलन से ही चर्मरोग एवं गंजापन जैसे रोग उत्पन्न हो रहे हैं। अंतर्राष्ट्रीय वैज्ञानिकों के अध्ययन के अनुसार डीजल एक्जास्ट कैंसर जनक असर रखता है एवं हवा में एक माइक्रोग्राम प्रतिघन मीटर डीजल एक्जास्ट से लगातार सम्पर्क होने पर प्रति इस लाख आबादी में कैंसर के 300 रोगी प्राप्त हुए हैं। किसी कवि ने कहा है-

*दायरे में सिमटने लगे हैं आजकल ।  
सारे रिश्ते बदलने लगे हैं आजकल ॥  
बागबाँ खून के आँसुओं से है तर ।  
फूल भी जख्म देने लगे हैं आजकल ॥*

अरस्तू ने अपनी पुस्तक ‘पालिटिक्स’ में लिखा था कि “यूरोप” के ठण्डे देशों के निवासी बहादुर होते हैं किन्तु विचारों एवं तकनीकी कौशल की उनमें कभी पायी जाती है। इसके विपरीत एशिया के लोग विचारशील और कुशल होते हैं किन्तु उत्साही नहीं होते।”<sup>3</sup>

नासा की नयी रिपोर्ट कहती है कि वर्ष 2060 तक धरती का औसत तापमान चार डिग्री बढ़ जाएगा जिससे एक तरफ प्राकृतिक जलस्रोत गमनि लगेंगे, कहीं लोगों का विस्थापन भी बढ़ जायेगा। पर्यावरण में आ रहे बदलावों से जूझने के लिए हर तरफ प्रयास हो रहे हैं। नासा की रिपोर्ट विश्व स्तर पर झीलों की गर्माहट स्पष्ट करती है, भारत की झीलों पर खतरा है। हल्द्वानी से लेकर नैनिताल की ऊँची चोटी तक प्रदूषण का कहर नजर आता है जो पर्यटकों द्वारा फैका गया कचरा है। विशेष तौर पर पालीथिन का अम्बार, पानी में साफ नजर आता है जो पानी में बड़ी विषमता को बताता है।<sup>4</sup>

उत्तराखण्ड की तबाही किसी से छिपी नहीं हुई है। देश इस क्षति को आगामी 100 वर्षों में भी पूरा नहीं कर सकता है। हमें नहीं भूलना खहिए हम ही अपने सबसे बड़े दुश्मन हैं। इन सबके जिम्मेदार हम सब हैं। बस आधुनिकीकरण की चका-चौद ने हमारी आँखों पर ऐसा पर्दा डाल रखा है जो हम कभी भी इस पर्दे को नहीं हटा पाते।

कोलाहल तथा अणु विस्फोटों से उत्पन्न विकरण भी आकाश में घातक तत्त्वों की वृद्धि करते हैं। इस अभिवृद्धि का मानव के शारीरिक व मानसिक स्वास्थ्य पर बहुत बुरा प्रभाव पड़ता है। घुटन से धीमी आत्महत्या जैसी स्थिति बनती है। अणुविकरण से पीढ़ियों के अपंग होते जाने का खतरा है। जलीय संतुलन बिगड़ जाने से धरती डगमगाती है और जल स्थानों में थल उभरता है तथा थल

स्थानों में अगाधजल भर जाने जैसा खतरा रहता है। प्रकृति संतुलन बिगड़ जाने से मौसम में भारी उलट-पुलट हुई है, लम्बे हिमयुग आये हैं और अधिकांश प्राणी उसी से मर गये हैं। अग्नि वर्षा के युग भी आये हैं जिसको जल और वनस्पतियों का ही नहीं बल्कि प्राणियों का भी सफाया हुआ है।

पर्यावरण संरक्षण हेतु कुछ अधिनियम भी बने, इस पुनीत कार्य में कुछ अंतर्राष्ट्रीय संस्थाएँ कार्यरत हैं :-

1. संयुक्त राष्ट्र संघ का पर्यावरण कार्यक्रम 1972 में स्टाकहोम में।
2. आधुनिक समाज की चुनौतियों से संबंधित कमिटी 1969 में नाटो देशों द्वारा।
3. यूनेस्को का जैव मण्डल कार्यक्रम।
4. संयुक्त राष्ट्र संघ का आर्थिक आयोग 1971।
5. जैव समस्याओं के निदान के लिए अंतर्राष्ट्रीय जैव कार्यक्रम 1963 की स्थापना।
6. जीवों के संरक्षण के लिए विश्व वन जीव कोश की स्थापना 1961।
7. दक्षिणी अफ्रीका के जोहन्सबर्ग पृथ्वी सम्मेलन 2002।
8. भारतीय अवितीय पंजीकृत संस्थाओं द्वारा विचार गोष्ठी।
9. राज्य सरकार द्वारा उच्च शिक्षा विभाग द्वारा राष्ट्रीय सेमिनार द्वारा जागरूकता कार्यक्रम।
10. मीडिया द्वारा पेड़ बचाओं देश बचाओ अभियान। महाकवि जयशंकर प्रसाद ने कामयनी में कहा है-  
*औरों को हँसते देखें मनु, हँसो और सुख पाओ ।  
अपने सुख को विस्मृत कर लो, सब को सुखी बनाओ ॥*<sup>5</sup>  
एक कविता के माध्यम से एक चेतावनी पूर्ण पेड़ कविता की कुछ पंक्तियों दृष्टि गोचर हैं :-

*हर सावन में एक पेड़ लगाकर तो देख,  
लाडले बच्चे की तरह पाल कर तो देख ।  
मिले खुशियाँ जीवन को सदाबहार बना कर तो देख,  
मेरी तरह ईर्ष्या, पक्षपात स्वार्थ छोड़ कर तो देख ।  
धूप, बारिश, सर्दी के थपेड़े झेल कर तो देख  
मेरे बने सोफे कुर्सी पर बैठकर तो देख  
रात्रि को थक कर मेरे बैड पर सो कर तो देख ।  
हे मानव!*

*मेरे कटान पर तू मेरे आँसू तो देख  
यदि रुकी नहीं यह आदत तो देश में प्रलय होते देख,  
अभी नहीं हुई शांति, तो कुछ और करके तो देख,  
फिर अंत समय में मेरे कंधों पर चलकर तो देख ।*<sup>6</sup>

## निष्कर्ष

जब तक मानव जाति स्वयं नहीं जागेगी तब तक पर्यावरण को बचाना असम्भव है। प्रत्येक मनुष्य का संकल्प होना चाहिए कि हमें प्रति वर्ष एक वृक्ष लगाना है तथा उसकी स्वयं देखभाल करनी है, इसी

के साथ यह भी चिंतन करना है कि हमें पालीथिन, प्लास्टिक, अप्राकृतिक फूलों से परहेज भी करना है अन्यथा की स्थिति में हमें पर्यावरण ही नहीं स्वास्थ्य से भी हाथ धोना पड़ेगा।

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