

Environment Concerns Trees

CONTENTS

FOREWORD

S No.	Article	Page No.
1.	Death of a Planet —Satyapal Anand	7
2.	A Worldwide Disaster —Gopal Bhargava	18
3.	Scientist Predicts Eco Disaster —Kulwinder Sandhu	19
4.	Eco Disaster Looming Large In Africa	22
5.	Ecological Crisis In The Offing	25
6.	A Question Of Survival Yogi Ranjeet	27
7.	Humans—Biggest Threat to Environment	29
8.	Humans Endanger Earth's Climate —Bharat Desai	32
9.	Environmental Discovery Of India —H. L. Chitkara	36
10.	Environment The Challenge Ahead —Ketan Tanna	44

11.	Environment : The Gathering Crisis —Bharat H. Desai	50
12.	A War Against Environment —Harish Chandra Sharma	58
13.	Cost Of Tinkering With Environment	61
14.	Environment : Must We Destroy For Development —J. N. Pandey	65
15.	Environmental Warfare Using Nature To Kill —Dilip M. Salwi	68
16.	Environment At Altar Cement Plants in HP Wreak Havoc Cementing Path to Destruction —Swarleen Kaur, Bilaspur	72
17.	Environment Crisis —AD Moddie	78
18.	Criminal Depletion of Natural Resources —D. N. Tiwari	83
19.	Disturbing Developments —R. K. Behl	91

20. Forcing Rapid Climate Change ‘Grim Scenario For Earth’	98
21. Antarctic Ozone Hole Still Growing: Study	102
22. Delayed Response To Climate Change Will Be Costly —Ban Ki-moon	104
23. Environmental Studies Classrooms Poised For A Whilf of Fresh Air —AK Ghosh	109
24. Environment Policy Needed —C.M. Kumbhkarni	115
25. Saving The Environment —Rashmi Mayur	120
26. Pingalwara Diary	130

FOREWORD

Nearly every empire throughout history has ended in deserts. Morocco, Tunisia and Algeria were once the wheat growing areas of the Roman Empire. Persia was once a great empire. Now it is largely a desert. The Sahara had turned into a desert as a result of destruction of forests and indiscriminate grazing. Densely populated areas turned into graveyards.

Where are we heading?

There are symptoms everywhere of the developing crisis.

1. 3.4 million hectares of forest land was deforested during 1951-1973. One half of this was deforested in 17 years and the rest in just five years.

2. Present Forest Cover in India is less than 10% against the minimum required figure of 33% for a balanced environment. Out of the 11 million hectares of tropical forest lost in the world every year, 1.5 million hectares are in India.

3. We are depleting non-renewable natural resources like ores and fossil fuels at a rate which will result in running out of these resources in about 50 years.

4. Per capita availability of land in U.S.A. is 4.14 hectares in erstwhile Russia, 8.43 hectares. In India it is 0.48 hectares and likely to reduce further in the coming years.

5. Limits to world food production would reach in the next 50 years. Where after, world population would

decrease drastically due to malnutrition and famine.

6. At present in India, 37% of the people cannot buy enough food to sustain themselves. Population growth can actually destroy production capacity when it generates a demand for biological resources that exceed the generating capacity of natural system.

7. Due to deforestation and environmental pollution, the global temperature of the lower atmosphere is likely to increase by 1.5 to 3.5 degrees. This will result in melting of the polar ice and thereby raising the sea level. This would bring floods in many of the coastal areas. One third of Bangla Desh is likely to be effected. Where would these people go?

8. Deforestation is also endangering the reservoir dams. Not only is the storage capacity reduced but because of deforestation of catchment areas, rapid erosion and recurring landslides, reservoirs are getting much larger flow of silt laden waters. Sudden and massive discharge becomes inevitable resulting in flash floods.

9. Overflowing dams are a threat not only to their own survival, but also to the surrounding countryside.

10. Top soil that takes 500-1000 years to build is being washed away by the surging waters over the deforested lands. This results in reduced fertility of the lands.

One single major cause of these problems is the ever exploding population. India's population keeps growing at the rate of 2%. This very growth will eat up all the development plans. Every system is overloaded from a demographic point of view. India already seems to be doomed, no matter what sort of government is in

power. Whatever we do, the nature will take over in due time because we cannot fool around with nature.

To delay the inevitable we can take some steps as given below:

1. Stop looking at trees from commercial view point only. They are the backbone of our survival.

2. You cannot consume more than you can produce. Therefore, cut down on your consumption. French philosopher Chateaubriand says **“The forests come before civilization, the deserts after them.”**

3. Sustained agriculture production depends upon maintaining water, soil and air quality.

4. Felling of green trees must stop immediately. 25 billion trees are required to be planted just to stabilise the environment.

5. Programmes for family planning must be taken up in earnest on a war footing.

6. Local, regional and global development plans are required to harmonize relationships among technology, population, environment and resources. At the local level, community forestry involving joint management of forest lands by the village community and the forest department should be encouraged.

Nothing can be achieved unless the masses becoming aware of the impending disaster. But no government would undertake this task and risk its very own survival. A handful of individuals have been raising their voice against the dangers our society is facing but very little concrete action by the government has been seen. We need to learn from history and avoid creating another Muhinjodaro or Harrapa.

—R.P. Singh

Death Of A Planet

Satyapal Anand

The world has got by so far with the pattern of thinkers who think almost wholly about themselves and their personal problems and about those immediately around them—family, friends, pet enemies, work

associates or people of their own town, region or country. Very few indeed have our planet as a whole within their horizons and the men, women and children that people it.

There however, looms ahead the problem of the very survival of mankind which requires a far greater concentration and application of cerebral activity and statesmanlike wisdom than has marked the past or is evident in the world today. This problem, though universal in scope, will directly affect only the younger amongst us, will begin to have an impact on our children and could profoundly affect the lives of our grand-children and following generations.

The obvious reference is to the exponential growth in population, in food consumption, in industrialization, in depletion of national resources, in pollution, all interacting in a closed global system. The system is large and consequently considerable development is possible within it; but because it is finite there are limits to such development. Warning lights are flashing that these limits may be reached during the next century.

There is a tendency to look at individual factors of this interrelated system such as population or pollution in isolation and often only a national or even regional context. Any broader view involves so many

complexities, variables and “unknowns” that the mind boggles and attempts at qualitative extrapolations are shaky at best.

Nevertheless, thinking people have been experiencing increasing concern regarding world developments and have felt intuitively that dangers of quite a different order to those that have faced mankind in the past appear to lie ahead. But because of the involved interrelationships and great complexities, it requires a deep knowledge of interacting systems, dependable statistical data and powerful computing facilities to achieve quantitatively meaningful interpretations.

The Club of Rome: With the advent of systems dynamic as a science and of powerful computers and with the increasing worldwide availability of statistical data it has become possible to study the interrelationships of complex universal problems and make projections even thought tentative, of developments deep into the next century. The Club of Rome, an informal international group of men interested in fostering an understanding of the interaction of economic, political, natural and social components of our global system and specifically concerned about what they have defined as the Dilemma of Mankind, initiated such a study in 1970. The report “*The Limits*

to Growth” by Meadows et al was published in 1972.

We are all familiar with the idea of a model of something that in simplified form and generally on a small scale represents some large of complex concept or project. Architects make two-dimensional drawings and sometimes three-dimensional models of projects as concepts of real things they want to create; physicists make physical or mathematical models of the structure of the atom as a means of getting some conception of highly complex invisible systems. Engineers, Economists and Systems Analysts are some of the professions that apply mathematical models to assist in visualizing and solving practical problems.

At the request of the Club of Rome, a team of system analysts working under Dr. D.L. Meadows, at the Massachusetts Institute of Technology (MIT) where they have access to one of the most powerful computers in the world, have used their wide experience of systems dynamics to model the complex quantitative interrelationships in global developments brought about by man on this planet. This model, like most models, is based on assumptions and on incomplete data; consequently and inevitably it suffers from oversimplifications and resultant uncertainties; but it is nevertheless the most comprehensive model yet developed anywhere and contains the most dependable

data that the modelers could glean from the sources at their disposal in 1970.

From 1970 to 2070: Because the study was based on extrapolations of trends in all those factors forming part of the world socio-economic development pattern, it provides a prognosis of what lies in the foreseeable future and beyond for the next hundred years. It is useful to consider the pattern of the important interacting development factors—population growth, food supply, depletion of non-renewable resources increase, in industrial investment and pollution. They are display exceptional growth, i.e. they all double in particular periods and double again in the next period of equal length. So, for equal time periods we have the exponential progression 1,2,4,8,16,32,64, etc., expanding rapidly with time. Such a progression has a cardinal characteristic that any figure in the series is equal to the sum of all the previous figures (less one).

Take population growth. Up to the 15th century world population probably—we have no dependable statistics-increased on average at some 0.2% p.a. At this rate it would double every 350 years, quite a reasonable rate. Man having in the meantime conferred on himself the benefits of greatly improved health services and more abundant food, world population now doubles every 33 years. At this rate the world will

have a population of 28 thousand million a hundred years from now, eight times the 1970 figure.

No one knows the future. The projections on population growth are based on the most dependable evidence available that of the immediate past growth rates. All that can be said about them is that they therefore have a high probability of being dependable. There are moreover, no known factors affecting human population growth which would bring about a drastic departure from past growth rates. Wars, pestilences famines—factors which in times past have decimated populations have at most caused only ripples on present day populations curves. The pill and all the other contraceptive devices and practices have so far had only very limited global affects and then only in high income communities, minority areas in the population spread.

A denuded planet: The exponential growth of population is only one interacting component of our global system. We are depleting non-renewable natural resources like ores and fossil fuels, also at exponential rates. The MIT team, using the latest world statistics available, have shown that, at current exponential rates of the use of known reserves, we will run out of Aluminum in 31 years, Copper in 21 years, Iron in 93 years, Tin in 15 years, Natural Gas in 22

years, Petroleum in 20 years, Coal in 111 years and so on. (About three years have already elapsed after this doomsday prophecy by the MIT team).

Undoubtedly large new deposits of all these commodities will be found and so extend their periods of use. The earth has tremendous resources, e.g. in unexplored regions, at deeper than yet exploited levels and under the oceans. But its resources are not unlimited. And new discoveries may not extend them for very long because of the exponentially accelerating exploitation. For instance, the MIT team has calculated that if actual reserves were five times known reserves—prodigious quantities indeed—it would extend the depletion period of Aluminum by a mere 24 years, copper by 27 years, Iron by 80 years, natural Gas by 27 years, Petroleum by 30 years and Coal by 39 years.

Going two steps further, still using present exponential rates of exploitation, I have calculated that for aluminium the time of depletion for 20 times known reserves would be 75 years from now; the corresponding figures for petroleum would be 81 and 120 years. These figures provide dramatic evidence of effects of exponential growth in exploitation. The conclusion that can be drawn is that if exponential growth in usage of these commodities continues as

heretofore, most of the non-renewable natural resources on which our way of life today so largely depends, will be dissipated between the years 2000 and 2100.

Whose birthright? Each person of the world's exploding population has a birthright to a share in world resources. Increasingly the less privileged seek, even demand, that what the more privileged have, should also be theirs. The majority of the privileged do not agree but of late the truth is drawing upon them. In years to come they may tend increasingly to agree and to seek ways of sharing the earth's riches and the products of an expanding technology with the under-privileged. This has so far hardly been marked by spectacular success. But if it had, what effects would it have on non-renewable resources?

It is said that one quarter of the world's population has three-quarters of its wealth. If all the world's have nots became haves overnight, the rates of consumption of raw materials would be about three times the present rates. If exploitation at three times the current annual consumption started in 2000 AD, but the percentage growth rate for each commodity remained as at present, taking just two examples; known resources of aluminum, instead of being depleted in 31 years as calculated by the MIT team, would be depleted in 17 years; known resources

of petroleum would last less than nine years instead of 20.

The inevitable byproduct of increasing agricultural urban and industrial development to meet the needs and wants of an expanding world population is pollution through solid, liquid and gaseous waste products. This has shown rapid exponential growth; examples are: mercury in sea fish which has recently increased in some waters to levels dangerous to man and deposits of airborne lead decreasing in successively deeper layers of the Greenland icecap. Already the oceans, previously considered an infinite sink are showing the strain of man-made pollution. Although counter-measures are being applied in many countries, the choice facing an expanding world society will be between increasing average living standard with material increases in pollution, or less pollution with very much lower standards. The MIT prediction is that a very considerable increase in pollution will occur over the next century, counter-measures notwithstanding.

The demand for food is growing exponentially. This can be met as long as increased acreage of land can be found, improved food-producing strains of plants and animals developed and the sea food of the oceans further exploited. The Club of Rome study shows that even with much improved yield, the limit to

world food production will be reached in the first half of the 21st century; where after world population will decrease dramatically due to malnutrition and famine. Thus the much discredited prognosis of Malthus made in 1794 could become reality before the year 2050, or within 50 years from-now.

It is a rather depressing tale. It concerns what more and more thinking people regard as the most important world problem of our era and one, moreover, which individual countries can ignore only at their peril. It, therefore, requires urgent attention from individual governments as well as from those who inspire to world government, from universities, from research establishment, from organized industry and commerce, from the professions from the communication media.

The statistics, the system dynamics approach, the model technique are available. The skeptics should provide their own model for the future, showing the growth they expect and the quality of life of the people in the next century and explore why these depart from the extrapolation of the past. Or if they believe that man will find solutions to these, how this will come about and what authorities or agents will in fact intervene and by what processes they will achieve their ends.

It is possible to avoid a catastrophic fate for man kind. But this will require a revolution, in the

political and economic thinking of today and fundamental changes in man's sense of values. The Government, all governments, will have to introduce effective measures to stem population growth. This factor overshadows all other and profoundly influences each of them. Secondly a new socio-economic ethic based on a value system different from that at present enthroned, one that has quality of life as criterion, will have to be universally adopted. This includes an appreciation of the importance of the natural environment, not only from the aesthetic point of view, but as essential to survival.

(1) Cerebral- adj. of the brain. **(2) Extrapolate v.t.**, to approximate the value of a variable beyond the range for which values have been calculated. To project data or experience, by inferences into an unknown area and thus achieve a conjectural knowledge of the unknown, as: to write credible science fiction an author must extrapolate.

(3) Prognosis n. forecast about the development of a disease.

The Tribune, October 29, 1989

A Worldwide Disaster

Gopal Bhargava

There has been a world-wide increase in environmental pollution and ruthless, massive destruction of forest resources. This has caused wild life to vanish at an alarming rate and the quality of life has rapidly deteriorated.

In our metropolitan cities and large urban centres, both air and noise pollution have become unmanageable. Adding to this, is the fact that industrial waste remains largely untreated before it is discharged into rivers—the rapid pace of industrialization without the appropriate checks has resulted in the proliferation of diseases like tuberculosis, lung cancer, bronchitis and asthma.

The recycling of garbage should be given due importance and electricity can be generated from landfills where garbage has been dumped, using the appropriate technology.

The world is heading for an unprecedented disaster, merely because the environment is being abused.

The Times of India, July 18, 1990

Scientist Predicts Eco Disaster

Kulwinder Sandhu

The ecological balance of the world is deteriorating rapidly. There is a possible threat to human survival. The state of water systems, forests and soil cover is worsening, atmosphere is getting polluted and variety of life forms on land and oceans decreasing. Eight million hectares of the world's tropical forests are lost each year due to indiscriminate felling of trees. With the destruction of natural habitats 10 per cent of the organisms have become extinct or await bleak prospects in the near future.

Talking to The Tribune here yesterday, Mr. Douglas C Malcolm, former convener of the School of Forestry in University of Edinburg (UK) said that there was a threat of global warming in the world due to the changes in climatic conditions around the globe. This is due to the illegal felling of trees, expansion of sea water, melting of ice on the glaciers and above all burning of fuels in the automobiles and power plants. There is a general scientific opinion that the average temperature in the United Kingdom is expected to increase by 2.5 degree in the coming 40-50 years under the present conditions.

He said there was a dire need to preserve our bio-diversity to face the challenges of the future.

Research is going on in the Institute of Ecology and Resource Management, University of Edinburgh on how to manage the ever-growing release of carbon dioxide in the atmosphere. Two Indian scientists are engaged in this research.

To a question Mr. Malcolm said the United Kingdom was also making efforts to re-establish forests in the country which were lost during the past two centuries. At present, the UK has only 12 per cent of forest cover most of which is in Scotland and Wales. It is worth mentioning that the UK is the second largest importer of timber in the world next to Japan. Eighty per cent its need is met from the imported timber. But during the past two decades, with afforestation project in the UK the situation has come to normal and there is no reduction in the forest cover area. Efforts are on to preserve the native trees of the country.

He said the University of Edinburgh had carried out many research projects in assistance with the forest officers and scientists of India in the forest sector to preserve the bio-diversity. School of Forestry, University of Edinburgh has close proximity with Forest Research Institute of India as both these premier institutes are among the oldest forest research institutes in the world set up by the British.

Imperial Forest School (now known as Forest

Research Institute) was established in 1984 at Dehra Dun. On similar pattern, British established School of Forestry, University of Edinburgh in their country in 1888.

Mr. Malcolm is presently engaged in research work of genetic variations in silviculture and forest soil science. This mainly deals with the study of adaptive variations in selecting superior trees with DNA tests. He is of the opinion that in the coming years with this research, there will be improvement in the productivity, quality of timber. But he is giving more stress on developing the native species of good quality.

He was in the city to know about the research projects going in the Forest Research Institute of India and have better interaction with the scientists on his subject of research.

The Tribune November 27, 2001

Eco Disaster Looming Large In Africa

No one knows where the Sahara desert begins. Does it start in the sandy maize fields in northern Burkina Faso or in the once flourishing oasis of Timbuktu in Mali?

Rather than being clearly defined the desert's edge is a broad belt of increasing desolation signaling the Sahara's unstoppable expansion.

Every year the Sahara encroaches another five to 10 km on the arable land between Mauritania and Ethiopia along its entire southern edge.

The countries of the Sahel region lose up to 70,000 square kilometres of farmland to the desert every year. More than a third of Africa's fertile land is threatened by this creeping, manmade, environmental disaster.

Nomads no longer move their animals on before pastures are destroyed by overgrazing and farmers do not restore the fertility of their fields by letting them lie fallow for a while anymore.

The population explosion has placed too many demands on the earth and led to the thin layer of top soil being blown away by the wind.

The last trees and bushes on the desert's edge

have been felled. Wood is the most important fuel for most Africans.

Deforestation in the tropics and on the savannahs is increasing so rapidly that only nine trees are planted for every hundred chopped down. The Ivory Coast has lost two-thirds of its forests in 25 years.

The area of arable land used for food production is shrinking, while at same time population figures are rocketing.

Africa, the continent which can least afford it, holds the world record for population growth with a three per cent annual rate of increase.

By the year 2000 Africa's population, currently at 650 million people, will have increased to 900 million.

The United Nations Population Fund (UNPFA) considers the 1990s to be the "crucial decade". If things go wrong now, they cannot be put right and will have catastrophic effects on the next generation, experts say.

Despite all these warnings Africans families seem to want many children. In countries like Zimbabwe or Botswana where contraception is freely available, the average women gives birth to six children.

In about 30 countries the population is growing faster than the economy, meaning that people are

constantly getting poorer.

Africa, which still exported food at the time of decolonization, is a continent which can no longer feed itself. Increasingly it has become the "Disaster continent". Starvation threatens 30 million Africans and food aid, formerly temporary, has long been a permanent fixture.

Rapid population growth means easy solutions to the problems of hunger, deprivation and poverty are becoming increasingly unlikely. On the contrary, a catastrophe seems almost inescapable.

Most African states will suffer acute water shortage in the next 20 years and pressure on existing pastures and farmland will increase, A U.N. report says.

"Land is to Kenyans what security is to Israel and efficiency is to the Germans. Land is an obsession," The Kenyan daily Nation wrote recently. Land in the large national parks with their elephants and lions is protected, because tourism is Kenyan's largest source of hard currency.

—DPA.,

The Hindu, May 22, 1992

Ecological Crisis in the Offing

Leading scientists and economists have expressed concern over the growing ecological and socio-economic crisis following mass deforestation in the country, reports PTI.

Delivering the Keynote address at a workshop on fodder production as an alternative to marginal and wasteland development, which concluded here yesterday, Dr. Kamala Chaudhary, Chairperson of the National Wasteland Development Board, painted a gloomy picture of a barren India ten years hence.

If things continue as they were and no steps taken to counter deforestation, famine, drought and hunger would “become inevitable,” she warned.

“The food situation which was marginally secured at present would be jeopardized, she said.

As it was the frequency of drought and famine had increased to once every two years from the earlier once in four years. Dr. Chaudhary pointed out, adding that “our drought conditions are similar to those in Africa”

Warning that there would be no forest cover left by the turn of the century, she observed that “women are now walking up to six hours every day in search of fuel and fodder as compared to half an hour earlier

and costs of scarce wood have gone up so high that the poor cannot afford to cremate their deed anymore.”

The cost of fire wood had gone up by 1000 per cent over the past two decades, the highest for any commodity Dr. Chaudhary said.

Summing up the situation by saying that we were now on the brink of a volcano, she said full participation on the part of the people and their fruitful interaction with the National Dairy Development Board and the NDDB alone could solve this crisis.

Earlier, addressing the participants, Dr. V. Kurien Chairman and NDDB said the present drought in Gujarat was a “portent of the situation to come.”

The workshop had been held in connection with a pilot project taken up by the NDDB on behalf of the NWDB to set up cooperative societies of tree growers throughout the country.

The project envisages coverage of 256 villages in eight districts spread over four States through 64 such societies

Staterman, May 20, 1986.

A Question of Survival

Yogi Ranjeet

Ms. Maneka Gandhi is very right in lamenting that politicians do not understand the environmental problems of the country. Nor is there an effort by party leaders to educate them. Most do not even possess the requisite understanding to grasp even the rudiments of the problem.

Vested interests continue to permit the use of pesticides banned in the West because it brings them personal benefits. They do not realize that into these pesticides are getting the food chain poisoning their own children. It was the Janata Government's Health Minister, Raj Narain who started the reimport and use of DDT when it had been already banned in the U. S.

The export of frog legs resulted in a disastrous fall in the production of paddy along the Malabar Coast for two successive years. It had led to an increase in insect pests that were kept under control by their predator, the frog. Frog legs export was banned once through the efforts of Sanjay Gandhi, but was resumed during the Janta regime. Ms. Maneka Gandhi has not yet been able to ban it.

One cannot save humanity if one cannot save the forests. One cannot save the forests if one cannot

save the animals and vice-versa. There are plants whose seeds can be germinated only by animals or birds. The Calvaria Major of Mauritius was the prime timber of the island. Its seed could germinate only when it was swallowed by the Dodo bird. Some 300 years ago the last Dodo was shot by the Portuguese settlers and the Calvaria forests disappeared by the middle of this century leaving only a few sample trees. It was only in 1997 that the link was discovered when the Dodo was already extinct. Forcing the seed down the gullets of turkeys it was germinated again and saved from extinction similarly the peepal, banyan and sandalwood seeds would not germinate unless they passed through the gizzards of birds and the teak seed would germinate only if a deer family animal swallowed and cast it off. The tiger prevents erosion of soil, the very basis of plant life, by keeping the herds of grazing animals continuously on the move thus preventing overgrazing in one spot and in this way saving the top cover which holds the soil. All this is a life time study.

The Hindu, March 26, 1990

Humans—Biggest Threat To Environment

The earth's most distinctive resource may soon prove to be the cause of its destruction. There are just too many people for it to survive, scientists fear, reports PTI.

“No problem may be more threatening to the earth's environment than the proliferation of the human species”, a group of well-known scientists and administrators from five continents said at a conference on environment organized by the Time magazine.

Today the planet holds more than five billion people. During the next century, the world population would double, with 90% of that growth occurring in poorer, developing countries and the participants warned.

“In India, 37% of the people cannot buy enough food to sustain themselves”, Time said quoting Government reports. “We may well be on the way to producing a sub-human kind of race where people do not have enough energy to deal with their problems,” Mr. B.B. Vohra, Vice-Chairman of the Himachal Pradesh State Land-use Board, told the conference.

The magazine, instead of naming a “man of the year” has designated endangered earth as the “planet of the year” for 1988. The three day environment conference was attended among others by Mr. Fyodor Morgun, chairman, State Committee

for Environmental Protection USSR, Mr. Thomas Lovejoy of the Smithsonian Institute and Mr Timothy Wirtha, U.S. Senator.

Prospects have been found to be so dire that environmentalists have urged the world to adopt the goal of cutting in half the earth's population growth rate during the next decade.

“That means a call a two-child family for the world as a whole. In some countries there may be need to set a goal of one child per family”, Mr. Lester Brown, President of the World Watch Institute observed.

Scientists emphasized the need for Governments to raise public awareness and rally support of population control with a cohesive message about the dangers of rampant growth.

“India one of the first countries to adopt a family planning programme, some 30 years ago, failed to forge, a national will for the task and the population is now growing at 2% a year”, Time said.

Referring to China's “one family one child” policy, the magazine said the country's efforts had distressing consequences. “Women have been coerced into having abortions and there have been reports of female infanticide by parents determined that their one child should be a boy.”

The aim of the Chinese family planning policy launched in 1979, was to contain population at 1.2 billion by 2000.

According to surveys by the United Nations and

others agencies, half the 463 million married women in developing countries (excluding China) do not want more children. Yet many had little or on access to effective methods of birth control.

The World Bank says that to make birth control readily available on a global basis would require the 3 billion dollars spent currently every year on family planning services to be increased to 8 billion dollars by the years 2000.

Time quoted Mr. Bruce Wilcox, President of the institute for sustainable development, an environmental research body, as saying that solutions to the population challenge would demand “fundamental changes in society.”

Mr. Wilcox noted that ingrained culture attitudes that promote high birth rates would have to be challenged, “Many families in poor agrarian societies, for example, see children as a source of labour and a hedge against poverty in old age. People need to be taught that with lower infant mortality, fewer offspring can provide the same measure of security.”

Scientists and environmentalists noted that of all entrenched value, religion presented perhaps the greatest obstacle to population control. “Religious objections need not entirely thwart population planning. Where such resistance is encountered, vigorous campaigns should be mounted to promote natural birth control techniques”, they said.

The Statesman, December 27, 1988

Humans Endanger Earth's Climate

Bharat Desai

The second meeting of the Conference of Parties (COP2) of the United Nations Framework Convention on Climate Change (FCCC) is taking place between July 8 to 19 in Geneva amidst dire scientific predictions. The second assessment report of the Intergovernmental Panel on Climate Change (IPCC) has now reinforced the basis on which the climate convention was originally drafted at Rio in June 1992 with regard to precautionary measures to address abnormal changes in the earth's climate. With 155 ratifications received till February climate change seems to have now become a significant concern.

The IPCC's report has distinguished human-induced climate change from natural climate variability. In spite of uncertainties regarding some of the key factors, the IPCC has concluded that the “balance of evidence now suggests that there is a discernible human influence on climate”.

RISE IN TEMPERATURE

The IPCC holds that atmospheric concentrations of greenhouse gases (GHGs) are still rising and thus increasing the perturbations to the energy balance of the earth's atmospheric system. Recent years have been among the warmest since 1860 and the global mean

surface air temperature has increased by between 0.3 and 0.6 degree Celsius since the late 19th century. Even global sea level has by between 10 and 25 cm over the past hundred years. Much of this sea level rise is related to the increase in global mean temperatures leading to thermal expansion of the oceans. The scientific panel predicts that the temperature would continue to increase beyond 2100, even if concentrations of GHGs were “stabilized”. Accordingly, projected sea level rise is estimated to range from 15 cm. to 95 cm. and the “best estimate” of increase in global mean surface air temperature would be 2 degree Celsius by 2100.

The change in the earth’s climate are expected to intensify floods and droughts. Deserts are likely to increase and the rising sea levels would inundate huge waths of densely populated land and swallow several small Island Nations. One third of the global forests might be swept away. Climate change is also likely to have adverse impact on human health due to enhanced intensity and duration of heat waves.

Ironically, the developing countries will suffer the brunt of these changes. As suggested by the IPCC the international community has to effectively gear up to combat this challenge through actions aimed at limiting emissions. As politics direct negotiations in the COP meetings, both science and law take a back seat. In trying to grapple with the threat of climate change, unfortunately “no dramatic action will be taken in the

political world before there is an unpleasant surprise” according to Nobel Laureate Paul Gutzen.

The Berlin Mandate (1995), could not arrive at any specified time fame except calling upon the developed countries to contribute to reducing emissions and protecting reservoirs of GHGs. They were required merely to “identify environmental and economic impacts and the results that could be achieved with regard to time horizons such as 2005, 2010 and 2020”.

Prior to the Berlin Meet, the alliance of small Island States (AOSIS) had tried unsuccessfully to push for a protocol requiring developed countries to reduce emissions of carbon dioxide by 20 per cent from 1990 levels, by the year 2005. The Berlin mandate did reiterate that the developed countries “should take the lead in combating climate change and the adverse effects thereof.” However, instead of addressing the issue head-on, it endorsed a subterfuge of joint implementation, wherein one country helps another to implement a project or change a policy so that overall result is lower GHG emissions.

This according to many NGOs, in effect would be seen as an effort by the developed countries to buy (At cheaper cost) their way out of substantive commitments. In the absence of joint implementation these countries would be forced to abate GHGs first at home. All forecasts predict that future emissions from

developing countries especially China and India will exceed those from the developed countries.

SEPARATE TREATY

The aosis protocol likely to be revived at Geneva now has the backing of the European union, which has since 1991 pledged to stabilize carbon dioxide at 1990 levels by the year 2000. If the move for a protocol succeeds, it will become a separate treaty. This might cause some delay in abating GHGs, yet it will go beyond soft obligation under the FCCC and put the climate regime on a sounder footing.

There is a precedent of following similar options with subsequent protocols as in the case of the ozone regime. The us is not opposed to a new protocol per se, but favours amending the FCCC. On the other hand Russia agrees on the need for a protocol along with the need for emission reduction targets reflecting a country's economic health. Generally an amendment will be adopted by consensus, failing which it will require three fourths majority vote. In that event it will not be legally binding on parties opposed to it. This can create a piquant situation in the FCCC. Therefore negotiating a separate protocol with fixed ceilings and a prudent time-frame would be a better option.

The author teaches international law at JNU, New Delhi.

The Times of India, July 10, 1996

Environmental Discovery of India

H. L. Chitkara

The 1982 report of the State of India's Environment was like facing the truth for the first time. It was mind-boggling. The Second Citizens' Report on the State of India's Environment (1984-85) published by the Centre for Science and Environment and released recently doesn't shock so much. But it continues to expose the truth about what we are doing to ourselves and our surroundings.

The report in itself is an achievement. Its chief virtue it it's co-operative and participative nature. Its writing closely involved the people. The contributors are either those living in the affected regions or journalists who have gone and lived with the people or voluntary groups who are active in the area. Government help and government grants are scrupulously avoided. That is why the enormous credibility of the effort.

The sincerity of the project is touching. The income from the last Hindi report was invested on environmental work. With the help of voluntary groups development camps were organized to consolidate or to initiate action in problem areas.

"The environment", as the report points out at one place, "is not just pretty trees and tigers, threatened plants and eco-system, it is literally the entity on which

we all subsist and on which the entire agricultural and industrial development depends”.

The large number of areas tackled in the report are: Land (grazing lands, soil erosion, mining). Water (ground water tanks, inland, fisheries), Forests, Dams, Atmosphere (domestic pollution, power station pollution), Habitat, People (population, caste, shifting cultivators, women, head loaders). Health (hazardous products, Bhopal disaster, mosquito-borne diseases). Energy (fire-wood, animal, nuclear), Living resources (genetic, people vs sanctuaries), Agents of change (Government, voluntary organisations, legislation.)

A sampling of the facts unearthed are: “White the mineral production (in rupees) has increased nearly 50 fold in the last 30 years, several million hectares of wood crops and forest lands have been destroyed by mining operations and hundreds of villages depopulated.

“Today India uses only a 10th of the rainfall it receives and after 40 years from now will be using only a quarter.

“The latest satellite data confirm that India is losing 1.3 million hectares of forests a year, nearly eight times, the annual rate put out by the forest departments.

“Of the 48 thermal power stations officially

surveyed in 1984, 31 have taken no pollution control measures.

“Giant super-thermal power station will expose a million odd people to 10 times the pollution level set by the Government.

“The current car and two-wheeler boom in Indian cities could choke thousands to death. Delhi’s half a million motor vehicles spew 400 tonnes of pollutants daily.

“By current trends, 70 per cent of Bombay’s population will be living in slums at the turn of the century.

“While the Uttar Pradesh Government provides cheap bhabhar grass to paper mills, 40 thousand Baan making families face starvation.

“An average family in an average Karnataka village walks 1,400 km a year fetching fuel wood.

“For the past 40 years, out of 10,000 chemicals synthesized every year, we know nothing about the toxicity of 80 per cent of these chemicals.

“High yielding milk animals are being regularly brought to the cities from villages for slaughter.”

These figures take on a grim reality when seen in action in our daily life.

“As fodder becomes scarce, people and their animals turn to forests; violent clashes between

graziers and foresters follow.

“In India, ironically when the country faces acute fodder, crisis, social forestry programmes intended to meet this and the fuel-wood crisis plant mainly, non-brow sable species like eucalyptus.

“The worst affected are tribals. More than half the national mineral output comes from 40 contiguous districts, the tribals” heartland.

“Increasing polluted rivers and lakes and large dams are seriously affecting riverine fisheries.

“So great is the wood shortage and so high are wood prices that Tamil Nadu fisher folk find it difficult to make boats, Karnataka villagers to buy new bullock carts and Andhra Pradesh crafts people to make wood toys.

“Exposure to wood smoke is particularly harmful for malnourished, anaemic women as carbon monoxide from wood smoke increases the effect of anaemia.

It is quite clear, says the report, that it is the poor that are affected the most by environment destruction, the two major identifiable groups being the fisher folk and women from almost all landless and marginally small farm households, adding up to not less than half to three quarters of the country’s entire rural population.

“The programmes of development are ad-hoc, without clear priorities and there is too much of policemen’s attitude.”

Some of the solutions which logically emerge out of the environmental studies are:

(1) Large dams are a controversial issue. Small earthen dams are both ecologically sound and economically profitable. There is no soil erosion, no deforestation, no desertification and no one is displaced.

(2) Similarly the ancient practice of strong rainfall in tanks and ponds seems to be quite sound. Experts have calculated that tanks built over 3 per cent of India’s land area could store a quarter of its rainfall.

(3) Efficient stoves and easy access to fuel and water could save a 5th of the energy spent daily by women in an average village.

(4) The importance of traditional building materials to meet the needs of world’s population is ignored by the housing authorities everywhere and their use is never taught to architects or civil engineers.

(5) In the same way medical professionals adopt an extremely hypocritical attitude towards herbal medicine, although the majority of drugs available on the US market today (and imported into India and the

Third Words) are derived from herbs or their chemical analogues.

“The answer to India’s immediate problem of poverty lies in increasing the biomass available in nature and ensuring its access on an equitable basis”.

“Development can take place at the cost of the environment only up to a point: beyond that is increased poverty and oppression.”

In a very perceptive review in the form of two essays, the report takes a much wider and in-depth look at the whole problem.

“There are factors other than poverty and population which are responsible for the pollution of the earth. One of the major ones is political. In spite of or perhaps because of increasing centralization of power and authority, the environment is being further degraded at a faster rate.

“The debt burden and repressive terms of trade have forced many developing countries to put enormous pressure on their natural resources, sometimes to the point of over-exploitation. The plantation of coffee and other export crops at the cost of deforestation in India is an example in point. So also the current over-fishing because of the heavy demand from abroad. The advance in scientific and technological development has resulted in giving a few people more and more

power to exploit resources from further and further away.

“We have now got a few rich consumers in the world whose gargantuan appetite can only be appeased at the cost of wide scale destruction of the environment in distant lands.” The slaughter of milk yielding cattle and over fishing in India for the benefit of consumers abroad are some examples.

Can all this be stopped or reversed?

It is ironical that the editor is compelled to come to a conclusion which just about transgresses the rigid domain of science. He says, there must be much more *holistic* thinking regarding the management of our land and water resources and also mentions *sotto voce* the approach of Mahatma Gandhi in this respect. Is not that taking matters from the head to the heart?

How did the report come to be written?

Anil Agarwal, a Youngman in his mid-thirties, an IIT trained engineer turned journalist-cum-social researcher got deeply concerned over the environmental depredation in India and chucking his successful journalistic career founded the Centre for Science and Environment. With his dynamic and transparent enthusiasm, he was able to enlist the active cooperation of many like-minded journalist-researchers and together, they threw out a massive

dragnet to collect all the available published data on Indian environmental topics, throughout the country.

This data was processed, edited and published as the *State of India's Environment 1982*, sub-titled the *First Citizens' Report*. The subtitle signified and declared that the report was not subsidized by funds from any Government or private funding agency and it was therefore absolutely independent and objective. The present report is the second in the series but is not a substitute for the first.

This is an era of science and the editor said you will have science in full measure, with all the facts, figures, statistics and documentation, with all the frills of charts, diagrams, tables, sketches and matching photographs, with boxes a plenty (these sometime overweigh the text) and catchy, alliterative headlines. The argument builds up inexorably and one is carried away by the tidal wave through a panoramic voyage of discovery of this variegated land, seeing all the grimness and reality of misery in bold relief.

The Hindustan Times, October 16, 1985.

ENVIRONMENT

The Challenge Ahead

Ketan Tanna

In the last two decades, environmental problems have attracted the attention of a wide cross section of people all over the world. Decision makers, Scientists and even laymen are becoming increasingly aware of a variety of issues—global warming ozone layer depletion, acid rain, fodder, pollution of air and water, problems arising from hazardous chemicals and radiation.

India is no exception to the global phenomenon of environmental degradation. It shares with the poorer 70 per cent of the world painful results of the depletion of its resources. India has often been described as a rich land with poor people. Its average precipitation, the second highest in the world, its perpetual sunshine and its other resources place it among the potentially rich nations.

History, however, had other plans for the country. India found itself at the time of independence among the poorest nations with a majority of its people suffering from hunger, ignorance and disease with little infrastructure available for irrigation, power, transport, communication or industry. Only 25 per cent of its men and seven per cent of its women knew how to read

and write. The founding fathers realized that political independence would have no meaning for its citizens until they could get out of the morass of poverty. Thus development based on the utilization of the available natural resources coupled with the aid of science and technology was the need of the hour. Today, India has mustered nearly 3,000 billion rupees for investment purposes which is being used for improving various infrastructures as well as for education and welfare programmes for the disadvantaged sections of society.

In early seventies, along with the rest of the world, India realized another disquieting trend—the impact of development on environment. The same efforts which had helped bring people above the poverty line now put greater pressure on the natural resources. Irrigation facilities provided the much needed water to the parched fields but at the same time they produced salinity in the land. Industrial technology based on the old models of the developed countries provided products but they also polluted water and air. Roads provided better communication but they also provided easy access to forests which were cut down to meet the needs of the people.

Today it has been realized that poverty and environment are closely linked. At times ill designed

schemes of development have an adverse impact on the environment. The cause is more or less remediable with the adoption of appropriate technology and devolution of adequate resources. Poverty and the needs arising due to it are the greatest polluters of nature. Development is the cure, not the cause.

Industrialization has posed a threat to water through effluents discharged from industries. The technology used in most of the old industries is essentially borrowed from outdated polluting models of the developed world. Human wastes from towns and cities reaches untreated to various water sources. These affect the quality of surface water, ground water and even of coastal areas. Almost all the rivers go dry during the summer months with no water available for the dilution of waste waters discharged in them. Dams have made the rivers even drier. Restoring the water quality of these rivers and other water bodies is one of the biggest environmental challenges facing India.

Problems of air pollution are also beginning to be felt at a great pace in India due to an accelerated industrial tempo. A survey conducted in various cities has revealed problems of excessive sulphur dioxide in some locations. Automobile pollution is also becoming a problem in metropolitan cities, particularly in Delhi and Bombay.

Modern industrialization has also brought the dangers of hazardous chemicals and harmful microorganisms, particularly those evolved through genetic engineering and nuclear radiation through the nuclear power industry. No doubt such industrial programmes are needed to improve the quality of life but care needs to be taken in handling these substances in view of their potential harms to the environment. The disastrous accident at Bhopal in 1984 demonstrated the need for a carefully designed system for the prevention, control and management of such industries and their products.

It is essential not only to protect the existing environment but also to regenerate the already degraded environment to ensure sustainable development. Many hectares of land have to be brought back to productive use. Polluted rivers and water bodies have to be cleared. Hectares of cut forests have to be afforested. The resources needed for these can be found only gradually.

It is heartening to note that since the early seventies when the impact of environmental degradation was first felt—India has taken an active part in global efforts to tackle environmental problems. India participated in the UN conference on human environment in Stockholm in 1972 and has subscribed

to its declaration. Time and again India has contributed to the activities of the various UN agencies. India is also a signatory to several global conventions for the protection of environment. India has joined all important conventions based on equity and equitable treatment of the developing countries. Since many years India has been taking an active part in international efforts to study the causes and impact of various global problems like ozone depletion, climate change desertification and the loss of biological diversity and to arrive at some solutions to these problems. India is also a member of the intergovernmental panel on climatic change established by UNEP and WHO. It is an advocate of a cooperative international action on those issues which are consistent with the aspirations of the developing countries for sustainable development.

Solutions to global environmental problems can come about quickly if some basic problems are realized. Certain global problems have arisen through industrial activities while others have arisen due to poverty. What cannot be ignored, however, is the global nature of environmental problems. A loss of species anywhere on the globe will have a worldwide effect on agriculture, industry and science.

Aspects of international relations, trade and technology and cultural transfers, communication

and information effect the environment of all the countries.

Protection of global environment is possible only if all the countries take collective action. Sustainable development at the top of the agenda and consolidating requisite political, social and economic structures are a must if desired goals are to be achieved. The environmentally stronger nations will have to use their resources with a vision that transcends political barriers. Only this will signify their resolves to serve the interests of humanity as a whole including themselves.

Sunday Patriot, August 12, 1990

ENVIRONMENT

The Gathering Crisis

Bharat H. Desai

Chernobyl has not been and will not be the last of environmental accidents. The spinechilling account of the accident, with at least 31 deaths and displacement of more than one lakh people at the Chernobyl nuclear power plant near Kiev in the USSR, following substantial melting of the reactor core itself, given by the soviet delegation at the meeting of the international Atomic Energy Agency (IAEA) in early September only corroborated the fears that keeping the beast in its cage for weapons or wattage remains an uncertain and hazardous task. It tragically exposed the vulnerability of the man, notwithstanding the claims that “the odds of a meltdown are one in ten thousand years,” before one of his own majestic scientific technological creations.

The candid Russian briefing before the IAEA, not only unfolded the extraordinary sequence of human errors, which brought havoc with long-term environmental consequences, but also confounded the prevailing skepticism about the safety systems in nuclear power generation. The very fact that high radiation clouds reached well over a thousand kilometres away in Sweden, revealed the sweep of

such Tran's boundary environmental pollution and its dangers to the mankind. A similar accident, which is still being bitterly remembered in the US, occurred in 1979 when one of the Three Mile Island reactors, near Harrisburg, lost its coolant, causing the reactor fuel to overheat. Although the escape of radioactivity was small and no one died, much of the US ardor for nuclear power cooled in the heat of the mishap.

ECO ACCIDENT

Such environmental accidents are only one of the causes of environmental degradation we are witnessing today. In fact, the human quest for development has seriously threatened the fragile eco-system. Most of our present day environmental difficulties can, however, be said to originate from man's "ecological misbehavior". Consequently, the level as well as the pace of the environmental degradation has now assumed indeed alarming proportions.

In a way, much of the development in the world today is not sustainable. It is based upon the squandering of our "biological capital"—soil, forests, animals plant species, water and air. Even many of our economic, monetary and trade policies in sectors such as energy, agriculture, forestry and human settlements tend to induce and reinforce non-sustainable development patterns and practices. As some patterns of development have improved environmental conditions, other have

only tended to degrade them sometimes irreversibly. It is rather revealing that in the past fifteen years, most of the developing countries have witnessed a steady increase in environmental degradation and many newly industrializing countries have experienced massive environmental deterioration, in the wake of sudden industrialization and explosive urbanization. The capacity of a number of developing countries to manage their environment so as to secure the well-being of their people is also coming under severe stress, following the rapid population growth, its uneven distribution and inadequate socio-economic development.

NATURAL DISASTERS

The gathering environmental crisis in the world has contributed in accentuating the economic, social and political unrest too. It is reflected, for example, in the growing migrations of "environmental refugees", the increasing frequency and intensity of natural disasters and social collapse of exploding settlements. Environmental deterioration and its spin offs erosion of quality of life, lack of development and increasing poverty generates environmental refugees. These hapless people are forced to migrate from their traditional habitat, which can no longer sustain them, in search of a better quality of life or just survival, elsewhere. The millions of people fleeing the droughts

in northern Africa, the victims of environmental accidents (Three Mile Island, Bhopal, Chernobyl etc.) and natural disasters fall in this category. The eruption of toxic gas fumes from a volcanic lake Nios, in North-West region of the Cameroon in last August, is the latest example of it: The disaster, in its wake, took a heavy toll of at least 2,000 people, made thousands of people to flee from the area in panic, apart from contaminating about one thousand kilometers area north of the capital city of Yaounde. Such disasters, in terms of both their accident character and catastrophic consequences, expose human vulnerability before the nature's fury.

DROUGHTS

With the rapidly deteriorating environmental conditions, it appears that, we are now steadily heading towards a world with far more people and far less capacity to feed them only to turn more and more hapless people into environmental refugees. The traumatic droughts in the African continent and many other parts of the world are sending signals loud and clear. With even many prosperous areas in the Indian subcontinent, including the fertile Indo-Gangetic plains, facing frequent droughts and acute water scarcity, only underlines the gravity of the emerging scenario. This tragic phenomenon, in all probability, will first take in its sweep the poorer

developing countries, further aggravating their pathetic plight. It will be no surprise, if the next century brings for the mankind the biggest challenge of environment. "With the deepening environmental crisis in many parts of the world, environmental degradation could become a serious threat to peace in future, with even military means employed to deal with the non-military (environmental) challenges to security", Mrs. Gro Harlem Brundtland, chairperson of the World Commission on Environment and Development and present Prime Minister of Norway, said.

Many developing countries, including India, earlier viewed protection of environment, some-how as a goal at odds with their quest for development. They even considered the recommendation of the industrialized nations that the developing nations should adopt environmental policies, with skepticism rather aimed at desisting them from the path of economic development. While airing this sentiment, in her address at UN conference on Human Environment (Stockholm, 1972), the late Prime Minister Mrs. Indira Gandhi asked: "How can we speak to those who live in villages and in slums about keeping the oceans, rivers and the air clean when their own lives are contaminated at the source?" "The rich countries", she added, "many look upon the development as the cause of environmental destruction, but to us it is one

of the primary means of improving the environment of living, of providing food, water, sanitation and shelter, of making the deserts green and maintains habitable”.

DEVELOPMENT

There was, however, a general recognition at the Stockholm Conference that environmental concerns should not be a barrier to development but should be a part of the process. Only an environmentally sound development is likely to be enduring and will also avoid unforeseen and unwelcome side effects. “Eco-Development”—a word coined to describe this process of ecologically-sound development and a process of positive management of the environment for human benefit emerged as a central theme during the deliberations at the Stockholm Conference. In spite of their pressing need for development, the developing countries are no longer apathetic to maintain environmental quality. The motto of “development without destruction” is now gradually influencing the policy-making on all fronts in the developing countries. It is manifested in the new environmental ethos guiding a series of anti-pollution and conservation measures, including legislations, in the Third World countries.

Another remarkable facet of this growing environment movement is the fillip given to it by the judicial activism in some of the countries. In the past one decade, a remarkable body of “public interest”

jurisprudence has come into being in India which has, in many a cases, played a pivotal role in adjudging upon the need for industrial development and environment conservation. The significant **Doon Valley Order** as well as the historic **Delhi Gas Leak Case** Judgment rendered by the Supreme Court recently, were one of the finest hours of the Indian judiciary. The Supreme Court emphatically recognized “the right of the people to live in a healthy environment” as a part of the Right to Life itself.

The relationship between environment and development has also been examined in the past decade, in the studies carried out by different expert groups and institutions. It has unfolded the complex relationship between people, resources, environment and development. The developing countries are today enmeshed in the cauldron of twin problems of environmental crisis and developmental crisis.

Their dilemma is cruel but real, as the snow-balling effects of widening environmental disequilibrium has, in its wake, only brought untold miseries for the poorest section of their populations.

The global environmental crisis has been contributed by both the grinding and pervasive poverty in the developing nations (called “pollution of poverty”) as well as the widespread disregard of the environment and the erosion of social values in

the developed nations (called pollution of affluence”). Ironically, with two-thirds of the humanity growing under sub-human conditions, poverty itself has now become the “biggest polluted”. The anatomy of the gathering environmental crisis is engulfed by this stark reality.

It is therefore, the need of the hour, to cry halt to the process of senseless environmental destruction, least the environmental crisis itself will overwhelm us. Being a multi-dimensional phenomenon, the environmental crisis must be dealt with as such. Only effective remedy for halting the growing hordes of environmental refugees is “sustainable” development, accompanied by environmental conservation. It also urgently calls for greater international co-operation and co-ordination, both at regional as well as global level, to meet this unprecedented environmental challenge sweeping across the globe. New environmental ethos must pervade at all levels of our decision-making as well as allocation of funds for developmental goals. Administrative, legal and institutional responses have also to be effectively geared up to face this smouldering crisis. Every nation, be it small or big, has vital stakes in preserving the endangered “common ecological heritage” on this small planet—the Earth.

The Hindustan Times October 20, 1986

A War Against Environment

Harish Chandra Sharma

On the first day of its attack on Iraq, the USA and its allies used over 18,000 tons of ammunition. This equals the bomb thrown on Nagasaki in Japan during the Second World War. That bomb on Nagasaki thrown after years of fighting effectively ended the big war but this one was on the first day only. Even after two weeks, both sides are talking tough-about winning the war. There is no talk of compromise or ceasefire at all.

Aerial attacks of the allied forces are probably not inflicting real serious damage on Iraq because it continues to talk tough. This is in spite of the fact that thousands of aerial attacks on such a small country could have totally destroyed it. Is it because a large number of people are not getting killed in these attacks? Or is it that leaders of both sides do not care what happens except that the other side accepts defeat? But then who is really getting hurt by these bombings day after day? Is anyone seeing or looking? Over one crore barrel of oil has now been spilled into the ocean probably killing millions of fish and birds. The concern seen from the world has been very little. For them they see it as a part of the war and after all that is just a few million dollars’ worth of oil which can be earned in a few days if they win the war. But then what about the

environment?

If this war continues for a few months and if the number of air raids and bombings continue at the same rate by all the countries and if they are all totaled, then it would probably surpass the amount of fuel used during the Second World War. And if the war continues longer, then the total amount of ammunition used would also exceed the big war. The only difference between this war and the Second World War is that the WW II was for a few years and almost the whole world was bearing the attack while the attack on this one is concentrated on a very small region of the world where all the activities are going on. Also in the 1940s, the environment was still able to bear all of the mankind's pollution and still had the capacity to clean it up while today, it is unable to take any of our additional pollution dumping.

The warmest year in the history of our planet was 1990 and before that was in 1998. The real temperature of the world is rising all the time. Instead of controlling the trend towards disaster, man is adding further towards its own ultimate grave. With great fanfare the 20th Earth day was celebrated only in 1990 all over the world. Promises were made by even the most conservative leaders of the world. The universal call was to save this world from further disaster. But the same leaders are now either actively participating in this war or are happily watching from the sidelines.

Human loss in this war may be small in number and will be confined to that region alone for now. But the gases and other pollutants dumped in the air, water and on land will be there forever. Air and water pollution in that region will move eventually from that region and will equalize itself throughout the world for pollution knows no man-made boundaries or fences. Have we forgotten the hole up in the sky in the south and the North Pole area? Do we not know the dangers if that ozone layer disappears?

The time has now come when the talk of peace to save the life of man has gone. It has been replaced by the desire of every country, every person to save our dear mother earth. Damage in war can no longer be counted by the number of people died or injured but by the death, destruction of the nature birds, fish and mammals etc. let us not forget that it is man who will be extinct first before birds, fish and other wildlife become extinct. One species of bird or animal becoming extinct in the wild jungles of Africa carries more significance today to the survival of the human race than just winning another war.

This is the first war which has to be stopped by man to save the environment and also to save his own extinction from this planet earth. We are the first living human generation where we have to work to save the environment and the earth.

The Hindustan Times, February 25, 1991

Cost of Tinkering With Environment

Indeed, far from bringing broad-based development, unthinking exploitation of the environment and unchecked population growth are today impoverishing millions, says a US environmental expert.

World Resources Institute President Gus Speth says in a report that the developing countries natural resources base—their soils, fisheries, forests and minerals are eroding rapidly.

“Almost every environmental problem that one can identify is at its worst in the developing world,” he says.

The Africans are dying of famine because overgrazing, overcutting and over farming have left the land vulnerable to drought.

Each year six million hectares of dry land are added to the 1.3 billion hectares that have already become desert, says Mr. Speth.

In the developing world, 10 trees are cut down for every one that is replaced. Fuel shortage now affects 1.5 billion people in 63 countries.

“Even where development has taken place, many expensive projects—settlement of fragile tropical forests, for example, or dams that silt up within a decade

or two, or irrigation schemes that lead to salinization or waterlogging are simply not sustainable in the long run,” he says.

Quoting Indian environmental experts Mr. Speth says India’s poverty is closely connected with its increasing land degradation.

Of the 329 million hectares of land mass, as much as 175 million hectares in Indian are considered degraded in one form or the other.

“Satellite imagery has indicated that India is losing forests cover at the rate of 1.5 million hectares a year”.

Further, with bad agriculture and irrigation practices, bad road building in fragile hills, bad mining practices, wind and water erosion and waterlogging, possibly another one million hectares a year is going out of productive use.

“India is losing 30 to 50 million tonnes of food grains on account of loss of top soil and with half the forest cover gone, there are acute shortages of fuel wood and fodder,” Mr. Speth says.

Mr. Speth says it is high time the US policy-makers realize the problems faced by the developing countries and link the US assistance to them to “sustainable development”.

“Overhauling US foreign assistance act to focus

on sustainability will imply far-reaching changes”, Mr. Speth says.

The President of the Washington-based institute says this will mean that the USA explores several “creative proposal” floated by developing country leaders and environmental groups to swap debt for other development and environmental ends.

“It would also mean reducing debt and other pressures on the Third World Countries to earn foreign exchange by exploiting their natural resources more heavily”.

The USA should concentrate assistance on the places where mass poverty and environmental degradation intersect most clearly in the rural hinterland and in urban slums, he says.

But much of our forests have disappeared and recent satellite photographs show that no more than about 10 per cent is actually under forest cover, that is to say India, which probably had 35 to 40 per cent of its land under forest at the beginning of this century, has lost three-quarters of its forests in three-quarters of a century. If we do not act fast, there will soon be no forests left and the resulting droughts and famines would be catastrophic.

Our tropical sunlight can produce ten times as much tree growth as in temperate countries. Planting

and tending forest plantations would increase the country’s wealth in many ways providing employment to many millions of rural poor, it would increase their purchasing power, thus expanding the domestic market for many other goods. The wages paid to the workers would be from the profit made from the commodities produced. They would not have to be subsidized from taxes raised from other sources. Reforesting denuded, unproductive areas would provide many essential commodities like fuel wood, animal feed, construction material and a variety of other produce required by rural and urban markets. The value of all these would increase the GNP considerably. Agricultural production could be raised several fold because of much greater availability of water in addition, the environment would improve enormously.

The Tribune, June 28, 1988

ENVIRONMENT:
**Must We Destroy for
Development?**

J.N. Pandey

Environment is a broad concept encompassing the whole range of diverse surroundings in which we perceive experience and react to events and changes. It includes the land, water, vegetation, air and the whole gamut of the social order. It also includes the physical and ecological environment. It concerns man's ability to adapt both physically and mentally to the continuing changes in environment.

Environment is not static. It is dynamic and changes occur even if there is no human interference. In its natural un-interfered conditions, the environment of any region is in a state of dynamic equilibrium. This is what is called the balance of nature. It is only when humans, in their greed or say ego to conquer nature for higher and still higher standard of life for the ever-increasing population try to over exploit and interferes with nature that this equilibrium is disturbed and in most cases to the detriment of all forms of life. Ultimately, it is the condition of our land and water resources and the quality of the air which we breathe that determines the wealth of a nation.

Land is one of the most important components of our environment. Top soil, the upper layer of soil, about one to two feet, supports our agriculture and produces the food that sustains us. It is this soil which supports all vegetation and meets the major requirements of energy for us and feed for our cattle. Soil is vital for life.

Water is vital for all forms of life on this earth. In our country, the main source of water is in the form of precipitation which is roughly of the order of 400 million hectare meter per year. Nearly 50 per cent of it percolates into the soil, about 30 per cent of it runs as surface runoff and another 20 per cent evaporates into the atmosphere. In a well-managed agricultural land and in a good forest stand with good humus cover, the surface percolation is high.

Apart from the shortage of water reflected by severe droughts in various parts of the country, in spite of high rainfall, whatever water bodies we have in India about 70 per cent of them are polluted. Pollution of water may be by different sources. Soil erosion in the catchment of the rivers, streams and ponds leads to excessive sediment load—thus polluting the water system. Streams and other water systems are also polluted by municipal waste and industrial effluent.

Besides their productive uses, viz. supply

of energy in the form of fuel wood and timber for construction purposes, forests play a vital role in influencing local and regional climates. They make the climate milder and help ensure a continuous flow of clean water. They reduce soil erosion and thus reduce chances of floods and droughts.

Extraction of minerals for industrial development and better living standards is inevitable. Mining has a serious disturbing effect on the ecology and environment. Generation of various pollutants, directly and indirectly, are in-built features of mining activity. Mining ruins the land, water, forests and air. The loss or pollution of natural resources degrades the quality of human life in these areas. Air pollution in mining areas causes respiratory diseases and eye ailments.

Air is life itself. Industrial activity, motor transport, heat generation systems like use of fuel wood and fossil fuels as a source of energy have been adding large quantity of pollutants into the atmosphere.

An expert committee of who warns: “Earth’s atmosphere is finite and its capacity to cleanse itself... seems to be limited.”

Indian Express February 28, 1987

Environmental Warfare Using Nature to Kill

Devices which modify the environment can cause more death and destruction than conventional armaments. **Dilip M. Salwi** warns against the dangers posed by these lethal new weapons of war.

Under the cover of darkness, three to four camouflaged fishing boats chug along the seashore or through rivers or lakes. They spray the water with hexadecanol, a fatty alcohol, producing a thin film over the surface to stop evaporation. The desired result: a drought in a neighbouring country, which draws moisture from these natural reservoirs for cloud formation.

A pack of armoured tractors enters a dense forest and bulldozes everything that comes in their way. A massive land clearing operation is thus carried out and every inanimate structure razed. Land deforested in such a way—the technique is called “Rome plough”—would thereafter be of no use for cultivation of any crop or fruit bearing trees.

A fleet comprising hundreds of aircraft approaches a lush green field and bombards it till everything is burnt and wiped off. The land becomes pockmarked with moon-like craters and is rendered virtually inhabitable.

The aim of any war is to obliterate the enemy’s

armed forces and terrorize the civilians so that they capitulate. Can any such aim be observed in the above tactics employed nowadays in military warfare? The ultimate purpose to defeat the enemy is certainly achieved, but at what price?

Archaeology tells us what devastation the abuse of the environment can cause. In the past large civilizations and powerful empires have suffered through misuse albeit inadvertent of the environment. Where today reside deserts, once there were flourishing cities and the towns of Mesopotamia and Harappa. Owing to ignorance and lack of vision on the part of these civilizations, irreversible soil salination and erosion caused by contamination of natural substances with soil, gave rise to deserts and changed the climate drastically.

But the destruction a civilization can bring on itself over hundreds of years, can be duplicated within a few hours by environmental warfare. The recent wars in Viet Nam and the Middle-East provide us a glimpse of the dangers of environmental warfare to mankind using even simple and unsophisticated techniques like a napalm bombing.

Mr. Arthur Westing, a botanist at Windham College in Putney, U. S., who has studied the after-effects of the techniques U. S. forces employed to deny cover to troops and terrorize civilians, claims that a permanent ecological collapse has occurred in

Viet Nam. For instance, 10 per cent, of the nation's trees have been sprayed one or more times with anti-plant chemicals, called herbicides. About 3,000 million cubic metres of soil volume, has been displaced due to bombs, producing craters. Indeed, the land has become so ecologically debilitated that where once grew lush green forest and crops now only bamboo can be grown. About 30 per cent of mangroves, the cluttered-up trees that grow about the seashore in tropical areas, have been reduced to muddy wastelands, allowing soil to erode. Using the "Rome Plough", in all, about 803, 100 acres of forest has been cleared, which includes rubber plantations and fruit orchards.

In 1975, the first step to prevent any further exploitation of the environment for military ends was taken. The US and the USSR presented the 28th U. N. assembly an identical draft convention. The assembly passed on the issue to the conference of the committee on disarmaments. According to the draft convention environment modification is "any technique for changing through the deliberate manipulation of natural processes—the dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space, so as to cause such effects as earthquakes and tsunamis, an upset in the ecological balance of a region, or changes in weather patterns (could precipitation, cyclones of various types and tornadic storms), in the state of the

ozone layer or ionosphere in climatic patterns, or in ocean currents.”

The only environmental modification technique presently feasible is that of “punching” holes in the ozone layer, which could be done either by exploding nuclear devices or spraying ozone-attracting chemicals (such as chlorine) in the upper atmosphere. Tampering with this layer, which acts as an umbrella protecting living beings from harmful radiations (ultraviolet, X-ray and so on) would be fatal to mankind.

Partial success has also been claimed in creating floods in nearby valleys by melting glaciers and snowfields in the Chilean Andes. According to a recent report, scientists of the Geological Survey of India who carried out research in Kinnaur, Himachal Pradesh, claim that a coal dust spray of the right thickness could melt glaciers. About the research done in creating artificial lightening to produce forest fires inciting storms and earthquakes, changing ocean tides and currents, making avalanches and landslides, modification of permafrost, making snow, etc., nothing at all is known nor do they appear technologically feasible today.

It is high time that research into such techniques is nipped in the bud. The threat posed by these weapons is in no way less than that of the nuclear bomb, the consequences of which are well known.

The Times of India, January 1, 1997

Environment At Altar

Cement Plants in HP Wreak Havoc Cementing Path To Destruction

Swarleen Kaur, Bilaspur

As anywhere in the world, it's an economy-versus-environment battle in Himachal, only the environmental degradation in this once-pristine hill state stands out more dramatically.

And the most visible damage being done is by its cement industry, attracted by the vast quantities of limestone found in the hills. Ironically, it's the greenery of these very hills on which depends the even bigger industry of the state, tourism.

In the immediate vicinity of the cement plants in Bilaspur and Solan Districts, the concerns revolve around the health of the locals, their livestock, crops and the flora and fauna, all of which are visibly suffering. However, there have not been many mass protests on these issues as the very people who are suffering are also the ones who have gained in terms of employment in the job-starved state.

The ACC cement plant in the Barmana area of Bilaspur District and the Ambuja Cement plant in Darlaghat, Solan, have nearly doubled the districts' revenue figures, even as they made a mess of the terrain. The Jay Pee group, which has started the construction

of a cement plant in Baga Balakh, Bilaspur, however, is facing opposition from the locals, at least for now.

Roshan Lal Thakur of Malothi village, near the camp area of Jay Pee the factory says wastewater from the houses on the premises is already flowing into village areas. “If this is their attitude, I wonder what will happen once production begins,” he says.

All-encompassing pollution

As the cement industry messes up the land, air as well as water, the havoc caused by it is manifold.

The evidence is there to see the moment you get on NH 21 to Bilaspur—endless columns of trucks block your way, belching smoke all the way up. But most locals are tolerant of the regular jams caused by the 1,500-2,000 trucks serving the cement plants, as evident from what Jeet Ram Gautam, vice-president of the Bilaspur Truck Cooperative Society has to say. “The Cement factories have brought employment to the area—our truck society has an annual revenue of Rs 2.5 crore, as we have tied up with ACC. The ‘dhabas’ in the area are also doing good business.”

However, even if as a second thought, he does admit the local population is suffering from ill health because of the cement industry.

A survey conducted by the law Department of Shimla University has recorded many such complaints, confirming the rising pollution level. Prof Amar Singh Sankhyan, chairman of the department, says: “With

the cement plants coming up in Bilaspur and Solan, the health of people living nearby has taken a direct hit. Cough, asthma and skin allergies are common. Plant and animal life are not unaffected either. A decline in milk production has been reported, as well as in crops like sugarcane, wheat and rice”.

Bhagat Singh Verma, an environmentalist based in Barmana, alleges the ACC plant works in an unscientific manner in violation of norms. Besides regular noise pollution from the blasting, even the houses are at times shaken. Soil erosion is another major problem. Debris is dumped just about anywhere and it often ends up in agricultural fields, affecting farm production.

Krishan Das Verma, a former pradhan of Panjgayeen, next to the ACC mining plant, says: “The factory has cut the mountain to nearly half its original size. Blasting can regularly be felt and heard in the villages—it’s like an earthquake. At times, rocks “enter our houses.”

“When the factory acquired the land, several villagers were displaced. Even as the management made many promises, till date not even drinking water has been supplied in the area. Residents of Dhartatoh, Berry, Dhaun Kothi and Baloh Villages under Panjgayeen are the main sufferers. Despite cleaning the houses several times, the cement dust does not go away,” Verma alleges.

Shayam Lal Gandhi of Kaslog village, near the mining area of Ambuja Cements, says the persistent skin irritation and cough are among the problems that have forced many to move out. “Despite the claims of factory officials, we have found no respite from the air and noise pollution,” which affect a radius of 10-15 km.

Dr. Sharda Sharma, Chief Medical Officer, Bilaspur, confirms the medical problems. “The Kind of pollution cement plants cause leads to respiratory diseases and skin allergies. The number of people reporting asthma and tuberculosis is on the rise.”

Dr. Narender Sankhyan, District TB Offices, says it is the suspended dust particles that cause these diseases. He feels there is a need for a medical study to be conducted to find out the extent of damage.

According to senior official of the Punjab Pollution Control Board (PPCB), Cement dust is one of the major polluting elements. Besides affecting the immediate environment, this industry also consumes massive amounts of power, which means heavy carbon dioxide emissions and thus global warming. Cement plants account for 5 per cent of the global carbon dioxide emissions.

No respite in sight

Kulbhushan Upamanyu, a Himalaya Bachao Samiti activist, can only see the problem increasing. “The number of trucks moving in Bilaspur and Solan

areas is already so high that it is a major risk for other vehicles to venture out on the roads, especially the Chandigarh-Manali highway. Imagine what will happen when the proposed Sundernagar and Karsog Plants are commissioned along the same route.”

Fertile lands are also being sacrificed for these proposed plants, he alleges, adding that the fragile ecology just cannot take the increasing pressure on natural resources. “While the glaciers and forests were already receding, we are now even losing soil to uncontrolled erosion.”

If the government goes on promoting the cement industry, it may as well forget about generating revenue from tourism, he warns ominously.

All clean, claims industry

The charges from social and environmental activists notwithstanding, officials in the cement factories swear by their concern for environment.

A senior ACC official at Barmana claims, “We have planted nearly 11 lakh trees till date and observe Van Mahotsav every year. We also grow trees in the abandoned mines to prevent soil erosion and carry out periodic environment reviews. There are also environmental awareness programmes being run to enlighten our employees as well as the community.” For good measure, he cites the employment benefits around 73 per cent of the staff is local, he claims. The annual turnover of the plant is around 1,200 crore.

Rakesh Sharma, senior vice-president, Ambuja Cements, Darlaghat, too recounts similar benefits: “Established in 1993, the plant is spread over 500 hectares. While the total investment is of Rs 472 crore, more than Rs 60 crore has been spent on saving the environment, including technologies to check pollution.

“There is equipment to reduce noise pollution during blasting. Then there are also vibration controllers.” The turnover of the plant is around Rs 900 crore.

The Jay Pee group’s plant coming up in Baga Balakh will be spread over more than 100 hectares. However, Pritpal Singh the general manager of the project, claims: “We are following all pollution norms laid down by the government. The latest pollution-control technologies will be used.” The project is expected to be completed in 2009.

R.K. Nadda, Environmental Engineer, Pollution Control Board, Bilaspur, too is not aware of any environmental issues: “We have not received any complaints of Pollution, even as we carry out regular checks on these factories. Till date, we have not received any complaint of violation of norms. If anything comes up, we will surely look into it.”

The Hindustan Times, January 15, 2007

Environment Crisis

MODERN MINDS NEED TO UNDERSTAND BASICS OF LIFE-SUPPORT SYSTEMS

AD Moddie

Indira Gandhi’s famous pronouncement at the International Environment Conference at Stockholm in 1972 that poverty was the cause of environmental degradation was wrong. Poor eco-systems create poverty, erode soils and cause water depletion, deforestation and salination of soils. BB Vohra’s repeated warnings that half of India’s soils were deteriorating and Dr. MS Swaminathan’s pleas for eco-based agricultural planning do not seem to have changed the basic approach of economists and bureaucrats. The fate of Sub-Saharan Africa was “dur ast”. The same economists and bureaucrats were also mindless in ignoring inflation in the first five plans.

Clearing agency

The Ministry of Environment has reconciled itself to being a mere cleaning agency, without caring to ensure that India’s rural planning at least should be based on health eco-systems in the flow of nutrients, water and energy. Public expenditures cannot and has not cured deteriorating eco-systems and has been a huge waste. Netas and babus plunge into unsustainable debts. This then masquerades as development

planning. The truth lies in the desi expression, “**Batwara ka loot**”. India’s eco-systems have become unsustainable with mounting population pressures.

India’s environmental crisis has been created by two basic factors: first, the pressure of mounting population on deteriorating eco-systems and two, bad outlays, planning and bad governance in the diversion of 85 per cent of the resources from target groups and an 85 per cent failure in public delivery systems, So planning and governance in India can take credit for only 15 per cent effectiveness. It is time for India’s planners, economists and bureaucrats and politicians to treat the eco-system and its carrying capacity as the life-support foundation for all rural planning.

The so-called science of economics has been the product of industrial, urban societies since Adam Smith. Mankind knew the philosophies as well as the practice of ecology from civilized to simple tribal societies. They were Earth-bound and respected Mother Nature, Urban economists and planners have created an Earth-destroying civilization, Even in rural land and water-based societies, they plan as if the Earth’s eco-systems did not exist and departmental outlays replace Earth’s life-support systems,

Impact

For rural planning, a start can be made with three or four districts, The exercise should begin with

an assessment of the past five decades of population growth, its impact on land-holdings and water consumption as also bio-mass for humans and cattle. Then the impact on carrying capacities can be put into computer models.

Researches done in the 1980s show severe ecological deficits of nutrient, water, and energy, the biological equivalent of the economist’s deficit financing, which the economist knows is unsustainable indefinitely. Decades of rural outlays and subsidies have made no difference to basic ecological deficits and diminishing carrying capacities of man, livestock and wildlife. How many planners are aware that India’s per capita consumption of water is 50 per cent that of 1950? And what have they done about it?

The symptoms of declining eco-systems and carrying capacities are deforestation, over-grazing, over-utilization of surface and ground water, soil erosion overfishing and human poverty, malnutrition and sickness. Social stresses appear hunger, high infant mortality, forced migration and reduced life expectancy.

The economist only becomes aware of these after the event. The fundamental objective of rural development planning should either be more people can be sustained at the same living standard or more people

can enjoy a higher living standard with development efforts and expenditures. These should directly aim at family planning and population control; soil nutrients; water quantity, quality and sustainability with water conservation and water harvesting; higher bio-mass production for man and livestock, larger non-bio energy production, e.g., hydel power, gas, solar and wind; more developed agri-business with milk, honey, cash crops, horticulture, fisheries and poultry. In all these higher inputs of cost-effective technologies and sound marketing systems will be necessary.

Better technologies

The end objectives should be rising productivity of nutrients, water and energy; the productivity of better technologies, services and markets and higher carrying capacities to cope with rising population, better health, education, per capita incomes. It may well be found that the poorest districts, regions and states are the ones with deficit carrying capacities, higher migration levels and even higher insurgency; and where per capita availability of land, water and biomass is shrinking.

Past rural development has been like a swimmer swimming against strong adverse ecological currents and State and Central planners have been unmindful of this. Each district's plan should be designed as a

linear programme model with environment-economic objectives to maximize and sustain nutrient, water, energy resources, minimize population pressures and introduce cost-effective technologies, services and markets.

All this is hardly new. Whole developed civilizations have vanished with ecological decline. Mesopotamia is a conspicuous example. In its heyday, two to four millennia ago, its population was reported to be 34 million. Modern Iraq's population is about half of that. Modern, urban minds need to understand the basics of life-support systems.

The Statesman, 21 May, 2005

Criminal Depletion of Natural Resources

D.N. Tewari

Fifty years ago our first Prime Minister called for ending “poverty and ignorance and diseases and inequality of opportunity”. Despite rapid economic growth and planned development India still contain 40 per cent people living below the poverty line, 700 million people having no access to elementary sanitation, 300 million people without safe drinking water and 380 million illiterates out of which two-thirds are females. Though food grain production has increased four fold, 53 per cent of children do not get adequate nutrition. Hunger persists at a time when food production could meet the needs of every person. Freedom from hunger and malnutrition, essential to the enjoyment of the highest attainable standard of health, is among the fundamental right of human beings. Prevalence of iodine, iron and vitamin A deficiencies lead to poor physical and cognitive development as well as to lowered resistance to illness, brain damage, blindness and even death.

Human health continues to be adversely affected by a wide array of environmental factors

ranging from air quality, water pollution, poor housing to climatic change. About 3 million deaths are estimated to be accountable to air pollution globally each year. Concern about the possible carcinogenic risks arising from exposure to chemical contaminants focuses mainly on certain pesticides, halogenated organic compounds and inorganic compounds. The casual association between high arsenic concentrations in drinking water and skin cancer is well established. Housing poverty contributes significantly to ill-health. Climatic change is responsible for natural calamities and health-hazards.

Priority issues which threaten the environment and health include depletion of natural resources such as land, water, forests, minerals, productive fisheries, combined with pollution, disease and increased social and political malaise. The complex interaction of economic, demographic, technical, biological and social factors threatening the environment demand sophisticated understanding scientific skill and political mobilization on an unprecedented scale.

Population continues to grow at unprecedented rates resulting in excessive pressure on land, landlessness, unemployment, malnutrition, hunger and poverty. Continued economic development

demands ever-increasing levels of energy and more rapid exploitation of natural resources. Intensive industrial production and the over-exploitation of natural resources further deplete the resources systems, accelerate environmental degradation and ultimately can exhaust the ability of these systems to support population.

The green revolution strategy for food production was based on the intensification of lowlands through massive investment in irrigation infrastructure and in crop research. Intensive cultivation of land without conservation of soil fertility and soil structure caused desertification. Irrigation without arrangements for drainage resulted in soils becoming alkaline and saline. Indiscriminate use of pesticides, fungicides and herbicides caused adverse biological balances and increased the incidence of cancer and other diseases through the toxic residues remaining on grains or other edible parts of the plants.

In the country 100 million acres of land are seriously affected by salinity, alkalinity, wind erosion but major area still cultivated to eke our marginal living. Most of green revolution regions have reached a plateau in productivity and profitability of farming has started falling. Sustaining agricultural production

depends, on maintaining water, soil and air quality. This interdependence is greatly magnified when land is scarce and pressure on land by people and animals is high and poverty rapidly increasing.

Over time the majority of the poor have increasingly become clustered on low potential land. They have no choice but any overexploit marginal resources available to them through low input, low productivity, overgrazing and deforestation with consequent desertification. The 1997 state of forest report clearly indicates that just in two years (from 1995 to 1997) the country has lost its forests cover spread over 5500 squares kilometers. In spite of Supreme Court order laying down a regulatory framework for the use of forest 320 square kilometers of forests cover has disappeared in north east just in two years. The forest depletion is rooted in poverty, underdevelopment, population growth and unsustainable utilization.

About 60 per cent of the total poor live in and around the forest areas. They have a symbiotic relationship, with forests and should be partners in forest management. No strategy to conserve the forest ecosystems would be successful unless needs of the least advantaged and most vulnerable sections of society are met. A new approach to forest management

should encourage “Joint Forest-Management”, settlement of shifting cultivators, benefit sharing from all returns and generating remunerative employment and productive occupational opportunities.

On per capita basis annual internal renewable water availability is 2170 m as against Asian average of 3370 m. about 70% of all available water is polluted. Increasing polluted rivers and lakes and large dams are seriously affecting fisheries production, thereby affecting the livelihood of millions of people. Over-exploitation has led to reductions in groundwater tables causing many environmental problems. In many areas safe drinking water, sanitation and primary health care are lacking. Sustainable pattern of production and consumption are popular concepts that are universally accepted as an ideal towards which we should move. Sustainability is a key issue and one of the major challenges that governments have to face as we move into the 21st century. Unless we adopt sustainable development in a holistic fashion with greater integration among environmental, economic and social objectives it will not be possible to alleviate poverty.

Free market system is the principal force that is affecting the pace of environmental destabilization.

High rates of population growth coupled with the exponential increase in mobility, energy and technology led to expanded cultivation, control and extraction. Collectively, it may be triumph of the development paradigm—a model predicated on sustained growth and increased consumption that exerts the most powerful debilitating influence on the environment as the trend towards urbanization further accelerates, resource dependent industries will make even greater demands upon finite resource systems to their detriment. Recent efforts to reduce the negative environmental consequences of industrialization, urbanization, population growth, market demand and development provide little basis for optimism or complacency. Despite much rhetoric, the pace of environmental deterioration continues to accelerate. Increased environmental concern started with awareness and education and moved through admonition to policy articulation, regulation and in limited instances, legal sanction. Now we are to harness the power of the market the profit motive to modify human behaviours to assure that future incursions upon the environment are more benign. All this must be accomplished while ensuring the sustainability of development, or markets and of human enterprise.

Environmental problems have attracted the attention of people all over the world. People have become increasingly conscious of a variety of problems like global warming, ozone layer depletion, acid rains, famines, drought, floods, pollution and erosion of bio-diversity. Health is dependent on a healthy environment, including the provision of safe water supply, proper sanitation and nutritious food. Air, water and food chains are deluged with chemicals and biological pollutants. Pollution control and health protection measures have often not kept pace with economic development.

Although it is now realized that health measures and environmental protection are crucial for economic development yet these are not translated into adequate political commitments in the country. In spite of increase in international trade in herbal medicines worldwide its potential has not been fully utilized. Medicinal plants are among the best candidates for greening the country, providing primary health care and generating employment and income to the people. Agronomic practices, safety and efficacy data, their extract and active ingredients are known only for few species. The establishment and use of regulation procedures and quality control and marketing and

trade have become major concerns in the world.

The news and information media have been a major influence in creating awareness and in converting awareness into influence and economic sanctions. The non-governmental role is growing rapidly and globally, thus democratically exerting pressure to modify the rules, to enact laws and to make environmental depletion more costly. Concerted efforts have to be made for designing and implementing environmental protection and resource management measures placing the creation of employment at the Centre of national strategy and policy and enhancing access to technology and technical assistance as well as technical know how to the people living in poverty.

(The Tribune, April 23, 1998)

The Author is former Director General of Forest Research Institute, Dehradun.

“The future of India hangs not in the political but in the physical balance.....the shape of things to come a couple of hundred years hence will depend on how we conserve our soil..... How, is short, we protect OUR FORESTS”

—Shankar Ranganathan

Disturbing Developments

R.K. Behl

Population growth is seriously threatening the balance between humans and their environment. Deforestation, desertification and water scarcity are already having devastating effects. Much of the environment degradation is the result of the desperate search of the poor and the landless for such basic needs as fuel, food and water. Economic problems and widespread poverty are the major consequences of rapid population growth.

In 1990 less than two billion people lived on the earth, but by the end of this century, there will be over eight billion. There were over 200 million people living in urban areas in 1990; by the year 2000 the figure will be three billion.

Our stakes in this game of human numbers are very high. Today India accounts for 15 per cent of the world's population while the land area constitutes only 2.4 per cent. The per capita availability of land in the country is 0.48 hectares as against 4.14 hectares in the USA and 8.43 hectares in the former USSR. The Man land ratio in relation to arable land is only 0.27 hectares and it is likely to reduce further in the coming years. Already, India is twice as densely populated as China, putting heavy pressure on the environment,

infrastructure and basis services.

The size of the earth is fixed and its resources are used rapidly while their per capita availability decreases proportionately. The rapid population growth is leading to the shrinking of resources and degradation of environment.

Apart from the shrinking of the resource base, population pressure affects the quality of air, water and soil. Pollution of air, soil and water is growing throughout the length and breadth of the country. All our major rivers are highly polluted and are being freely used as sewers. Air in almost all urban industrial complexes is unfit for breathing. Dust loads in Indian cities are the maximum in the world. Pesticide residues, specifically DDT, in the body tissue of Indians are the highest in the world. In our anxiety to accelerate the pace of economic development against resource scarcity and mounting debt crises, environmental aspects are not adequately stressed. Environmental legislation and the various guidelines issued by the government are poorly implemented.

Rapid urbanization presents the environment problem in its most dramatic form. More and more of the world's people want to live in cities. At the beginning of the industrial revolution only three people out of every 100 lived in urban areas. Today the figure has gone up to 40. By the year 2000, about half of the

world's population will live in urban areas.

Urban population is growing about twice as fast as rural population. The rate of population increase in industrialized countries has declined rapidly, while the least developed countries continue to have a high growth rate. Between 1920 and 1985, the proportion of the world's inhabitants living in urban areas increased from 14 to 41 per cent. The projected ratio of urban to rural population is apt to increase so that the urban population will be 47 per cent of the world population in 2000 and 57 percent in 2020.

By the year 2000, the world's cities will be much larger and more in number. There are now about 230 cities in the world with a population of one million or more; by the turn of the century there will be 440, 284 of them in the developing countries. By the year 2000, according to the Food and Agriculture Organization, 22 of the world's cities will have a population of 10 million or more. Half of them will be in Asia.

Based on "global average", it has been roughly calculated that a city of one million inhabitants consumes every day about 5,25,000 metric tonnes of water, 2000 metric tonnes of food and 9,600 metric tonnes of fuel, while at the same time generating 5,20,000 metric tonnes of waste water, 2000 metric tonnes of solid wastes and 950 metric tonnes of air pollutants.

The impact of population increase on the biosphere: A recent study based on per capita energy consumption in various countries of the world shows that 42 countries with 24 per cent of the world population consume 78 per cent of commercial energy and 128 countries having 76 per cent of the world's population manage with 22 per cent of commercial energy. As a result, the impact of the people in high energy countries is far greater than the people in low energy countries. Global warming, ozone depletion and acid rain are symptomatic of the collective impact of the activities of human beings on the life support system of our biosphere.

Carbon dioxide is a natural constituent in the atmosphere. It has a concentration of over 0.32 per cent by volume having a ratio of 1:450 with oxygen. In spite of its relatively small proportion carbon dioxide plays a very important role in the biosphere. On account of industrialization, fossil fuel consumption is growing and as a result carbon dioxide concentration in the atmosphere is steadily increasing.

Carbon dioxide absorbs heat radiation. It lets the sunrays pass to the earth but traps the heat which would otherwise be radiated back into space. The global warming phenomenon is the cause of the global greenhouse effect. The green-house effect is, in fact, normal to the earth and essential to life; without it, the

earth will be over 30 degrees celsius cooler and life will not exist.

The best model studies indicate that due to the global increase in carbon dioxide the temperature of lower atmosphere is likely to increase by 1.5 to 4.5°C by the year 2030. This will lead to the melting of polar ice caps which may ultimately result in the rise of the sea level from 20 to 165 cm. such an increase will bring about floods in many coastal areas, induce salt water intrusion into aquifers and submerge coastal wetlands. At least 10-15 per cent of the arable land and economic productivity of such area can be lost. With the likelihood of the rising ocean level, the proposed location or expansion of ports, cities, agricultural activities, coastal development, etc. should be reconsidered.

One metre rise in ocean level by 2035 may cause the seas to move inland along shores, thus reshaping the coastline. Millions of people will get relocated and human stress, anxiety and discomfort will be severe. It has been estimated that a sea level rise of one metre before the end of the next century will affect up to 300 million people. Global warming due to the greenhouse effect has a great potential of creating environmental refugees over wide areas.

Acid rain, which has emerged as the biggest scourge of industrialized countries is an increasing

threat to India, where the emission of acidic gases is increasing sharply.

A vast expansion of thermal power generation and other industrial activities contribute highly to environmental acidification. The release of sulphur dioxide and oxides of nitrogen are rapidly increasing in the Indian environment and this trend is going to intensify in the future on account of two main reasons: the growing demand of energy and the extensive use of coal as the primary source of energy. Systematic and sufficient data on the acidity of rainwater in India are sadly lacking but occasionally acid rain has been reported from Bombay, Delhi, Nagpur, Pune and a few other areas.

Ozone depletion: Ozone, a deep blue gas made up of chemically bonded oxygen atoms is a minor constituents of the earth's atmosphere. It is found everywhere in varying concentration between sea level and a height of 60 km. In the air we breathe ozone which is a health hazard, a constituent of air pollution that has a caustic effect on human beings. However, in the stratosphere ozone forms a delicate veil and it filters out harmful radiation from the sunrays entering the earth's atmosphere.

Human activities have influenced the environment since the first settlements were built and land was cultivated. At that time the changes were

relatively small and were absorbed by the resilience of the environment. Today, however, it is clear that the effects of the unlimited growth of human population and the recent unrestricted technological advances have had much greater impact on environment and may well exceed its capacity to absorb them. The environmental problems get further complicated through the urban/industrial expansion coupled with the increasing demand for energy which will cause further harm to the physical environment. For most people however the problem become more cruelly apparent in the social environment. The problem of poverty, malnutrition, disease, illiteracy, inadequate housing and clothing are common to all developing societies. In the affluent societies, a breakdown of tradition values, drug abuse, etc. are the responses to the unpredictable environment.

The major emphasis is on meeting the basic needs of all and making possible a life of dignity. This requires such development strategies as anticipate environmental problems. Eco-development by respecting natural laws and processes needs to be encouraged. In order to resolve the population-environment conflicts, a major shift in our attitudes and development priorities is a must.

The author is Director, State Institute of Education, Chandigarh.

Forcing Rapid Climate Change

‘GRIM SCENARIO FOR EARTH’

The world is now faced with some very serious environmental problems due to the rapid increase in the consumption of fossil fuels and halocarbons, which have drastically altered the atmospheric concentrations of trace gases, warns a leading British scientist.

“One regional scales, rain is being acidified, indicated by the rising concentrations of oxides of nitrogen and sulphur, of hydrocarbons such as chlorofluorocarbons (CFCs). And in spring and summer ozone, is being severely degraded”, observed DR. J.C. Farman of the British Antarctic Survey and the discoverer of the “ozone hole” over Antarctica.

He was participating in a three day Indo-British symposium on climate change which was inaugurated by the British high commissioner, Sir Nicholas Fenn, here today.

GROWING CONCERN: “On a global scale the stratospheric ozone layer is being depleted and there is growing concern over the speed at which climate change is being forced”, Dr. Farman said.

The scientific assessment of climate change, prepared for the UN’s Inter-governmental Panel on Climate Change (IPCC) and presented at the symposium by Dr. Goeff Jenkins, of British meteorological office,

also predicts a grim scenario for the earth.

The report said the natural greenhouse effect (GHE) already keeps the earth warm enough for habitation but emissions from human activities have substantially increased concentrations of carbon dioxide, nitrous oxide and CFCs. The longer emissions continue to increase at present rates, the greater reductions would have to be made to stabilize at a given level.

The report was prepared in 1990 by some 200 scientists from 26 countries, through 15 international meetings and workshops and was pre-reviewed by a further 150 or so it is the most comprehensive, authoritative and internationally accepted assessment of the current understanding of climate and climate change. It is being updated for the "Earth Summit" to be held in Rio de Janeiro next June.

REDUCTION NEEDED: According to the report, stabilizing atmospheric concentrations of carbon-dioxide at present day levels would require emission reduction of over 60 per cent and methane reductions would have to be 15 to 20 per cent.

In a greenhouse, glass allows sunlight in but keeps some infrared radiation from escaping. The presence of greenhouse gases in the atmosphere creates a similar condition and keeps the earth warm. But for

this effect, the earth's average temperature would be at least 30 degrees Celsius less than at present, making it uninhabitable.

Although carbon dioxide is the least potent greenhouse gas on an equal mass basis, its high emission rate ensures that it is singly the most important. Since the industrial revolution, its total contribution to the man-made GHE has been about 60 per cent.

Carbon dioxide is exchanged naturally between huge reservoirs of carbon in the atmosphere, oceans and the living world. Biological processes on land contribute 110,000 million tones of carbon as carbon dioxide to the atmosphere each year. This is largely balanced by an annual uptake of carbon during photosynthesis (plants absorbing sunlight to get energy for growth).

MAN'S CONTRIBUTION: The oceans are reckoned to send out and absorb similar amounts. Man's activities emit 5,700 million tons to the atmosphere through burning fossil fuels (coal and oil) and possibly more than 2,000 million tons through land use changes, mainly through loss of tropical forests.

Man's actions mean that, allowing for losses in the oceans, an excess of 3,800 million tons of carbon remains in the atmosphere as carbon dioxide each year. Its level began to increase in the 19th century with the

industrial revolution and increasing deforestation.

Currently, about 45 per cent of total man made emission of the gas come equally from electricity generation and transport deforestation accounts for up to 25 per cent. For carbon in trees and other vegetation, removed from the atmosphere during photosynthesis, represents a bank of carbon but this carbon return to the atmosphere during forest clearance.

Based on current mathematical models, the report predicts that under a “business as usual” emission scenario, global mean temperature would increase by about one-third of a degree C⁰ per decade.

MOST DRAMATIC: The other most dramatic effect is the severe depletion of the ozone layer over Antarctica each spring. Dr. Farman said the total ozone column is reduced by more than 50 per cent and in a layer about 12 kilometer thick, centered at about 17 km altitude, the destruction exceeds 95 per cent. In the northern hemisphere, the decrease in ozone is less dramatic but is more widespread. It is about 12 per cent in spring and early summer, in mid-latitudes.

Earlier, in a keynote address, Prof. M.G.K. Menon, President of the International Council of Scientific Unions (ICSU), stressed the need for more research in this area.

The Times of India, January 16, 1992

UV RAYS THREAT

Antarctic Ozone Hole Still Growing: Study

Geneva: The winter hole in the ozone layer above Antarctica appears to have grown from last year but is still smaller than in 2003, when it was at its largest the World Meteorological Organization (WMO) said on Tuesday.

The UN agency’s top ozone expert added that seasonal depletion of the protective gas layer, which filters harmful ultraviolet rays that can causes skin cancer, may become more pronounced in the near future before the problem diminishes.

Large reductions in the ozone layer, which sits about 15-30 km (9-19 miles) above the earth, take place each winter over the polar regions especially the Antarctic, as low temperatures allow the formation of stratospheric clouds that assist chemical reactions breaking down ozone.

The WMO said meteorological data showed last winter was warmer than in 2003 but colder than in 2004. “At this stage it looks like this year’s ozone hole will be quite average or may be a little above average.” Geir Braathen, WMO’s ozone expert, told a news briefing.

Scientists sat the hole spanned a record 29 million sq km (11 million sq miles) in September 2003, exposing the southern tip of South America.

The WMO said on Tuesday the area where temperatures are low enough for clouds to have formed—an indication of the potential hole size now covered about 25 million square km.

“This area is near the 1995-2004 mean and higher than observed in 2004 but somewhat lower than in 2003,” it said.

Industrial chemicals containing chlorine and bromine have been blamed for thinning the layer because they attack the ozone molecules, causing them to break apart.

Many of the offending chemicals have now been banned. Concentrations of such ozone depleting substances have “leveled off” and are set to decline, Braathen said.

“We still expect the ozone hole to appear annually and it actually might be a little bit worse in the next five to 10 years, then the situation will start to improve,” he said

“We will still take several decades before these substances have disappeared from the atmosphere. We expect the annual recurring ozone hole to take place until may be mid-century.”

The Geneva-based WMO, which has 181 member states, bases its analysis on data collected from satellites, ground based observations and balloons launched into the atmosphere.

The Times Of India, 25 August, 2005

Delayed Response To Climate Change Will Be Costly

Ban Ki-moon

So the lines are drawn. As the industrialized nations of the Group of Eight gather in Heiligendamm, the forces mustered to fight global warming have divided into competing camps. Germany and Britain seek urgent talks on a new climate change treaty, to go into effect when the Nyoto Protocol expires in 2012.

They talk of stiff measures to curb carbon emissions and limit the rise in global temperatures to two degrees Celsius over the coming four decades. The United States, offering an initiative of its own, opposes what it considers to be arbitrary targets and time-tables.

We shall see how all this unfolds. But while the U.S. and Europe debate, some basic facts are beyond dispute. First, the science is clear. The earth’s warming is unequivocal; we humans are its principle cause. Every day brings new evidence, whether it’s the latest Greenpeace report on Mr. Everest’s retreating glaciers or last week’s discovery that the Antarctic Ocean can no longer absorb CO₂. Think of that: the world’s largest carbon trap, filled to capacity.

Second, the time for action is now. The cost

of not acting, most economists agree, will exceed the costs of acting early, probably by several orders of magnitude. The damage Hurricane Katrina inflicted on New Orleans may or may not have anything to do with global warming, but it's a useful caution nonetheless on the financial and social perils of delay.

It's equally evident that we can no longer afford to endlessly parse our options. Today's solution du-jour—the rage for carbon-trading is but one weapon in our arsenal. New technologies, energy conservation, forestry projects and renewable fuels, as well as private markets, must all be part of a long-term strategy. So must adaptation. After all, mitigation can only go so far.

There's a third fact—as I see it, the most important of all. That's a basic issue of equity—a question of values, ranking among the great moral imperatives of our era. Global warming affects us all, yet it affects us all differently. Wealthy nations possess the resources and knowhow to adapt. An African farmer, losing crops or herds to drought and dust storms, or a Tuvalu Islander worried his village might soon be under water, is infinitely more vulnerable.

It is a familiar divide: rich-poor, north-south. Put bluntly, solutions to global warming proposed by

developed nations cannot come at the expense of less fortunate neighbors on the planet. How else would we achieve our Millennium Development Goals of halving world poverty so solemnly laid down at previous G8 meetings, if the developing world's aspirations for a greater stake in global prosperity are not honored?

A sense of human dimension should govern any issue which we peoples of the world together must face, climate change included. I consider it a duty, an extension of the sacred obligation to protect that is the foundation of the United Nations. Each day, I walk through the lobby of UN headquarters in New York, where some of the world's most famous photojournalists are currently displaying their work. They capture the faces and voices of people too often unseen and unheard, from all parts of the globe, many of whom live daily in severe hardship made worse by climate change.

Our debates in the Security Council, often dull affairs conducted in opaque diplomats, occasionally burst astonishingly to life—and for moments become anything but diplomatic. I recall in one discussion in April, when the representative of Namibia spoke out on his perception of the dangers of climate change. “This is no academic exercise,” he all but shouted. “It

is a matter of life or death for my country.”

He told of how the Namib and Kalahari deserts are expanding, destroying farmland and rendering whole region uninhabitable. This made me think of my own country, Korea, more and more often choked by dust storms swirling across the Yellow Sea from the expanding Gobi Desert.

Malaria has spread to areas where it was once unknown, the Namibian representative went on. Species of plants and animals are dying out, in a land famed for its biodiversity. Developing countries like his own are increasingly subject to what he likened to “low-intensity biological or chemical warfare.”

These are strong emotions, drawn from life and not imagined. For those in the developed world, it is important to hear and to act accordingly. This is the message I will deliver over the coming days in Heiligendamm.

It is why I will soon announce a special high-level meeting on climate change, to be held in New York in September before the annual meeting of the UN General Assembly, as called for by Bangladesh, Netherlands, Norway and Brazil, as well as Singapore, Barbados and Costa Rica.

It is why I recently appointed three special

envoys, whose brief is to speak out for the interests and concerns of nations most vulnerable to climate change, home to the vast majority of the world’s people.

I welcome President George Bush’s recent declaration that he, too, will launch an American climate initiative. I urge that this take place within the NU’s global framework for discussion, so that our work may be complementary and mutually reinforcing. In December, the world’s leaders will gather again in Bali to build on what is decided in Germany this week and in these subsequent meetings.

But let us remember. A G8 agreement that is not global in scope can not hope of offer solutions to a global problem. It is time for new thinking and a new inclusiveness. We can no longer go about our business as usual.

*Courtesy, UN Information Centre, New Delhi.
The Tribune, June 9, 2007*

Environmental Studies

Classrooms Poised For A Whiff of Fresh Air

AK Ghosh

Come the new academic session and classrooms are poised for a whiff of fresh air, or better still, lessons on how to keep them that way. It augurs well for the state of West Bengal that, prodded by the Supreme Court, all students from primary school to undergraduate college will be taught environmental science as a compulsory subject. But could anyone dispute the fact that though environment studies are a necessity, they are still in their infancy in our country and do not offer to many job opportunities?

It goes without saying that if the present trend of environmental imbalance continues, it will lead to annihilation of all living beings from the planet. Environmental education is a way of creating knowledge, understanding, values, attitudes, skills, abilities and awareness among individuals and social groups towards environment and its protection.

Awareness

According to a report of the conference of African Educators at Nairobi (1968): "Environment education is to create an awareness and understanding of the evolving social and physical environment as

a whole, its natural, man-made, cultural, spiritual resources together with the rational use and conservation of those resources for development".

The charter of International Environmental Education Workshop, Belgrade, 1975, also recognized the urgent need for environmental education. The inter-governmental conference on Environmental Education held in Tbilisi, Georgia, in October 1977 recommended that environmental education will succeed in making the individual and the community understand the complex nature of the natural and man-made environment resulting from the interaction of their biological, physical, social, economic and cultural aspects. The International Conference on EE and Training in Moscow in 1987 developed the strategy for development of environmental education at the international level for 1990 and the following decades.

These programmes were organized as a follow-up of the International Environmental Education Programme (IEEP) which was started in 1995 with the basic aim of including governments as well as national, state and international organizations in formal and non-formal education system and programmes. In fact, the IIEP also emerged in the wake of the 96th recommendation of the United Nations Conference

on Human Environment held at Stockholm in 1972 which stated that the Secretary-General of the UN with the advice and consent of its member-states and organizations should take steps for the foundation of an international programme of environmental education.

However, despite the pressing need, the studies of environmental sciences in our country remains largely neglected. It was in this context that the Supreme Court, in 1991, asked the authorities to take immediate steps to ensure compulsory education on environment in a graded manner from 1992-93.

Mandatory

The apex court made it mandatory for states to include the subject in school and college courses from the 1992-93 academic sessions. Since this order was not complied with even after 12 years, petitioner MC Mehta filed an application in 2002 to ensure its implementation. The SC then directed all states and educational agencies to introduce environment studies as a compulsory subject in classes up to the higher secondary level from 2004-05.

The court ruled that all states must implement the 1991 orders providing for inclusion of environmental studies as a subject in school and college syllabi. It also directed NCERT to frame a model syllabus for schools which should be uniform across

the country. For the college level, it asked UGC and the All-India Council for Technical Education to coordinate in framing a uniform environment syllabus. In turn, the UGC issued notices to all universities in India for compulsory implementation of a six-month module for environment studies for undergraduate courses with effect from the academic year 2003-04. However, it is feared that in view of the present state of teaching, research and extension activities in academic institutions, the introduction of the core module syllabus for environment studies comprising eight different units as proposed by the UGC will lead to overloading of the existing syllabus.

As for the present, there are more than 25 universities in India that offer MSc courses in the subject. Calcutta University also teaches the subject at the post-graduate level.

Also, it has been quite some time that the university has introduced a paper on environment studies at the undergraduate level. But all that the students are expected to do is study a prescribed text and take a test of 50 marks. What they score is not important here because these marks do not affect their general results. Hence, there is a half-hearted effort on the part of teachers and almost no effort on the part of students.

Now that it has become compulsory, it must be realized that introduction of a new curriculum poses some problems. Environment studies are a technical subject and many educational institutions do not have the basic expertise and laboratories to run such a programme. The new curriculum should be broad-based and include topics like air, water and soil, its pollution, man, society and environment, stability of the eco-system, global warming and bio-diversity and so on in a well-planned manner from the primary level onwards.

At the primary and secondary levels, general and easy concepts of environment, related problems, theoretical and practical aspects which generate interest in the environment and its conservation should be given preference.

Medias' role

At higher levels, national and global problems and prospects should be studied. Environmental management techniques should also be emphasized. Environmental education should also be included in the curriculum of teacher training institutions, industrial training institutions, polytechnics, engineering colleges, extension training centres and administrative training institutes.

Voluntary organizations can organize study

campus and seminars on different problems of regional and national environment. They could also be active in producing educational material on environment such as publications, slides, posters and their demonstration. In remote areas, environmental education, appreciation, interest and skill can be developed among people through programmes on TV and radio. This purpose can also be fulfilled through advertisements on the disasters of deforestation, conservation of forest trees, plantation, significance of social forestry, ways of wasteland development, types of pollution, better use of energy resources, effect of population explosion on environment, role of women and youth in developing a pollution-free environment and so on.

Moreover, despite the fact that environment studies are necessary to foster better knowledge, understanding and skills on environment, job prospects should also be improved. Also, involvement of social scientists engaged in movements like Chipko and Narmada may be necessary to make Gandhi's environmental ethics and Tagore's concepts relevant even today.

The Statesman, April 16, 2003

Environment Policy Needed

C.M Kumbhkarni

The Centre for Research in Rural and Industrial Development has expressed the view that the State Environment Policy in Punjab needs to be finalized and notified.

The Chandigarh-based Centre has in a study done by it on “Problems of Environment Pollution in Punjab and the People” has recommended that to promote sustainable agriculture and ensure soil health, the present agricultural practices need to be optimized through ecological farming, especially sustainable cropping pattern, reduction of dependence on chemical fertilizers and other farm chemicals and adoption of bio-technological approaches like bio-fertilizers and bio-control of pests.

In the study of environment scenario in Punjab, particularly large towns of Ludhiana, Jalandhar and Amritsar, the Centre has attempted to assess the impact of fertilisers, pesticides and weedicides, which are used the most in Punjab, on human and animal life. The Centre has observed that in the post-independence era all efforts were made to improve the income of the man in the name of development, but very little efforts have been made to improve his living conditions. If the existing pattern of growth continues, urban crises

of catastrophic dimensions well prevail in urban settlements.

A new concept of Development which ensures mutually supportive and sustainable relationship between human beings and nature is needed.

The changed agricultural practices over the years have considerably affected the State's environment. The forest area in Punjab has been declining. From 1.20 lakh hectares in 1972-75 it had come down to 49,900 hectares in 1980-82. About 84 per cent of the total geographical area of the State is under cultivation with a cropping intensity of 176 per cent, whereas the forest area is only 5.7 per cent. The farmers are bringing the marginal lands under the plough, which endangers the ecosystem and sustainability.

Due to the reduction in the cultivation of pulses and leguminous crops, which are an important natural source for improving soil fertility by nitrogen fixation, the soil nutrients are generally not restored. Continuous wheat-rice crop rotation has also depleted the macro and micro nutrients. The use of chemical fertilisers to replenish the soil not only increases the cost of production but also adversely affects soil health due to losses as a result of leaching and run off. Signs of micro nutrient deficiency are becoming apparent to a great extent.

The Centre has recommended the need for original research work on a continuous basis on the development of new varieties of rice and what in particular and judicious use of fertilizers. It has observed that the varieties developed by Punjab Agricultural University from the exotic breeding material have been developing some problems after some time.

The development of irrigation facilities with environmental perspective also needs to be promoted. The lining of canals should be avoided to allow lateral seepage, proper recharge and development of healthy aquatic ecosystems.

The monitoring of air, water and soil quality, which is being done in certain areas, need be strengthened and enlarged to other areas in a sustained manner by operating additional monitoring stations. The industry also needs to be involved in this exercise. The Centre has suggested that the help of the Punjab Remote Sensing Centre should be taken to obtain a holistic picture for containing air and water pollution from industries.

Low waste and no waste technologies, optimization of use of raw material, efficient housekeeping and reuse, recycling and recovery of wastes should also be promoted. No new industry should be allowed unless it adopts the latest technology

in pollution control along with the latest process technology. The shifting of industries from residential and commercial area should be taken up on a priority basis.

Environment impact assessment of large-scale units needs to be made mandatory and consultancy for pollution control be provided especially to small-scale industries. Uncontrolled dumping of garbage at municipal corporation level is prohibited. A proper collection system for municipal solid waste should be designed and segregation of wastes and subsequent utilization may also be taken up. Efforts also need to be made to promote the composing of garbage through vermi-culture at individual household level.

The Centre has further recommended that at least primary and secondary treatment plants should be installed in major towns to treat municipal effluents and sullage. Low-cost treatment facilities are promoted in small cities. Efforts to install tertiary treatment plants are made in corporation towns and those situated at the banks of rivers. There is also an urgent need for river action plan for the Sutlej and Beas.

A time-targeted policy should be evolved to ensure that no sewage, sludge or hazardous waste is indiscriminately disposed.

It should be made mandatory for the

development department to promote tree cover and restore natural habitat in an equivalent area whenever natural ecosystem is distributed due to any development activity.

The Centre has in its report strongly recommended the urgency of increasing the forest cover, improving forest density and promoting natural forests through mixed plantation of native species. Native grasses be promoted for soil conservation process. Environmental education needs to be strengthened especially at the professional colleges and university level, offering specific degrees and diplomas. Trained staff should also be inducted for such course. In-service training on environmental issues to staff of development departments should be provided. Non-formal environmental education also needs to be promoted. Environmental legislation needs to be implemented more seriously and adequate funds provided for it. Centre has also suggested that various provisions under law should be published in simple language to make the people aware of their rights and duties in respect of environment.

The Tribune, May 2, 1996

Saving the Environment

Rashmi Mayur

Asaying goes in Africa “Children are our future.”

The theme of the Environment day this year was, “The Child and the Environment”. For the 1.7 billion children below the age of 15, the most fundamental question is what kind of earth have we inherited and what sort of a world are we going to leave when we go? This may be the last generation of children to inherit the earth. The UNEP declares “The degradation of the environment is killing children.” Eighty two per cent of the children in the world live in the developing nations, 200 millions of them (excluding China) are environmental victims. Fourteen million children under age five die annually of preventable diseases and malnutrition, both of which are environmental causes. A school in Bombay reports that 15 per cent of the children suffer from asthma or emphysema. Most of the children in slum in Manila suffer from gastric diseases. Almost 70 per cent of the children in Central Cairo are victims of several types of parasites. All these children are prey to the environmental pollution.

The 1990s will see the largest number of children ever to be born in a single decade, 1.5 million. Their survival will depend on making the earth healthy and nurturing by no means an easy task.

In India, we are the victims not only of the global problems of environment and distorted development but also of our past. For two-thirds of our people, the main concern is survival—procuring meal, medicines, minimum shelter, basic education and a livable environment.

The situation is grim in all third World countries. Of the 11 million hectares of tropical forest lost every year, 1.5 million are in India. Hardly 50 per cent of the land in these countries is productive and available for farming. About 900 million people 300 million in India alone live below the hunger line eating less than half the amount of food they need in order to survive. Each day 42,000 children die of malnutrition and preventable diseases. Almost 35 per cent of the urban population in these countries lives in environmentally wretched conditions. Between 40 per cent and 80 per cent of the people in these countries illiterate.

The whole world seems to be heading inexorably toward disorder.

Many luxurious rain forests have already gone. Some of the rare species of animals, birds and other biota have become extinct. All over the world, 25 billion tones of rich top soil is washed off every year. Desertification advances at the rate of six million hectares every year. The cities are becoming unlivable. Air pollution has reached dangerous levels in cities

like Bombay, Bangkok, Manila, Sao Paulo, Moscow and Calcutta.

A matter of serious concern is the greenhouse effect and resulting climate change. The cause is the accumulation of greenhouse gases in the atmosphere. The result has been an increase in the earth's temperature by 1°C during the last 100 years and it is projected that the temperature will rise 1°C to 3°C within the next 40 to 50 years. This may be the most unprecedented change within such a short time. The consequences of this, in turn, will be serious. The climate may become more erratic. Some areas of the world like the granaries of the US Mid-West will dry up. Many Island Countries will be submerged coastlines will be flooded if the sea-level rises by two to three metres.

Since 1974, another drastic environmental crisis has been identified, namely, that of the ozone depletion. We have been observing a hole in the ozone layer over the last six years and it is evident that the earth's protective layer, which filters the harmful ultraviolet rays, has depleted by the last 3 per cent on an average. Everywhere there are massive holes in it above the poles.

Environmental phenomena like the greenhouse effect, climate change, ozone depletion and acid rain are intricately interconnected. One basic premise of the modern civilization has been development

of monolithic technologies which date back to the industrial revolution of the last 300 years, which originating in Europe spread to the rest of the world. Its ruthless march has reached every culture. Most technologies developed in the name of progress are at the root of destruction of environment.

It is widely recognized that the destruction of ozone is due to the chemical, chlorofluoro-carbons (CFC's), widely used for refrigeration, air-conditioning, cleansing electronics and myriad of other purposes. Besides, CFCs are also responsible for the 20 per cent of the greenhouse effect. Fifty per cent of the greenhouse gases include carbon dioxide released due to the burning of fossil fuels and 25 per cent consists of the methane gas.

We live on a highly integrated planet with continuous and dynamic feedback systems in which everything is interrelated. Development in technology and communication have led to homogenization of cultures and lifestyles: the result has been universal uniformity and standardized living in every corner of the world. The ultimate, insidious result of these developments have been high energy and resource consumption resulting in decline of non-renewable resources and generation of enormous waste, which overburdens the ecosystem and fouls the environment.

This takes us to the second, probably the most important development. The planet has become totally anthropocentric. Everything that happens on earth is by and for humans. First of all, the human biomass continues to replace all the other biomass on earth. We are already 5.3 billion and we shall be 6.1 billion at the turn of the century. India's population has already reached 850 million at the rate of 2.1 per cent growth; its population may reach 975 million. According to the present projections, the world may stabilize at 10.5 billion people after almost 100 years from now. Implication of the human-dominated world by replacing all the varieties of species is probably the most disastrous conclusion of our existence.

The last factor responsible for the present predicament is the present universal philosophy of exploitation, which promulgated that any destruction of Nature is justified for the sake of development. Progress demands, as implied, that we develop at any cost. What matters is the quantity of goods produced, not the quality of life.

The exploitation does not stop with nature. A worldwide system of exploitation of humans is well established. Africa, Asia and Latin America where two-thirds of the people of the world live, are exploited by highly industrialized countries. Within each developing country there is an elite group consisting of hardly

20 per cent of the people, who exploit the rest of the masses. In other words most benefits of development have gone to a relatively small number of people who consume inordinate amounts of energy and resources.

The developing countries have often tended to give the short shift to environment and ecological issues. Prior to the industrial revolution, development of great civilizations seldom undermined environmental integrity. Whenever the developmental burdens exceeded the ecological capacity, as it happened during period of the later Mayan Civilization, it collapsed inevitably. At the fundamental level what we need is a local, regional and global development plan which harmonizes relationships among technology, population, environment and resources while distribution benefits to people everywhere in an equitable manner. To do this, developing countries must control the suicidal population growth while the highly industrialized countries must change the insane and wasteful lifestyle. At the same time, most of the environmentally destructive technologies should be replaced by the environmentally conserving technologies.

The essential logic of the finite earth is that it cannot be converted into a global market place, where humans are insatiable consumers of unlimited goods from televisions and cars to microwave ovens,

hairsprays, sleeping pills and thousands of other new products. Most of these commodities have no relation either to the quality of life or to the environmental wholeness. While there is a deluge of these on the developed countries, 50 per cent of the developing world cannot meet their survival needs. The situation continues to get worse as the degraded ecological system drives them to the edge of bankruptcy.

The developing countries have neither resources nor the know-how to deal with increasingly complex and prohibitively expensive consequences of environment crises. If, due to the greenhouse effect and resulting sea-level rise, a country like Bangladesh will have one-third of its land-mass underwater by 2050 A.D., as several models suggest, where would the displaced people be relocated? The countries of Europe and North America can probably spend billions of dollars to relocate their economic activities, but at what cost? At a larger level, we must also calculate the cost to the global environment.

The World now stands at a critical juncture of its history. Apart from abandoning wasteful lifestyles and the prevailing approach to development, certain specific steps have to be taken to restore the Earth's environment. First, there has to be a global plan of action concerning the greenhouse effect and climate change. At the same time developing countries

must now move towards the alternative, renewable sources of energy like bio, solar, wind and other types. Simultaneously, instead of wasting their scarce resources of oil for automobiles, they should use oil for providing kerosene at subsidized prices to the poor so that they would not cut forests for firewood.

For this, an international environment agency should be set up for a specific global plan of action. They should include developing alternatives to the CFCs to protect the ozone layer:

- * Protecting the rain forest while at the same time planning to plant 25 billion trees by the turn of century;
- * Reducing the emissions of sulphur dioxide and nitrogen dioxide to mitigate the insidious problems fo the acid rain;
- * Protecting the rare ecological treasures of the world. It should also have plans for preserving all the other species from 10 to 20 million who share the Earth with human beings;
- * Saving the mountains, oceans, poles and the atmosphere from the human encroachment.

The agency should help set up International Legal Machineries like the Montreal Protocol, which can provide a legal framework for international cooperation in dealing with global environmental problems.

The Agency should also set up a special taxation system such as Carbon and CFC taxes on environmentally harmful chemicals based on the quantity of gases released by each nation. These financial resources can be used for action plans, research and development, technical assistance and worldwide assistance.

In addition to the global plan, each country should prepare its own plan to counter the specific environmental threats. Given the magnitude of the problems involved, however, no government can expect to succeed without the large scale efforts of the non-governmental organizations working at the grassroots level. Ultimately, environment can be protected only by the people at the local level through their education, vigilance and participation.

At another level, scientists, technologists, policymakers and thinkers everywhere must set up programmes of assessing all the major technologies pertaining to cars, refrigerators, airconditioners, industrial plants, aircraft, food production systems, chemicals for cleaning electronics, house construction and so on. The main aim should be to eliminate those technologies which cause environmental degradation and identify and develop those technologies which are environmentally clean, resource conserving and healthy. These should be available to all the nations

for their sustainable development.

Finally, at a time when the world's ecology is ruthlessly plundered and its environment mindlessly destroyed, our search for hope must be rooted in reverence for nature which is an important principle of Indian philosophy. The world of exploitation of nature and men leads to ecological disasters which will mean end of human civilization and extinction of life. Our hope lies in harmonizing ourselves with nature and developing ourselves within its majestic beauty and power with humility. The aborigines of Australia have expressed, it wisely: "You can never take from nature more than what you can give i.t."

Dr. Brundtland while presenting the final report of the World Commission on Environment and Development to the planet's young people in 1987; said: "Securing our common future will require new energy and openness, fresh insights and an ability to look beyond the narrow bounds of national frontiers and separate scientific disciplines. The young are better at such visions than we, who are too often constrained by the traditions of a former, more fragmented world. We must tap their energy, their openness, their ability to see the interdependence of issues.

The Indian Express, July 3, 1990

PINGALWARA DIARY

(UPTO OCTOBER, 2016)

Services rendered by Pingalwara Institution for the service of the suffering humanity are:-

1. Homes for the Homeless

There are 1764 patients in different branches of Pingalwara now a days:—

(a) Head Office, Mata Mehtab Kaur Ward,	
Bhai Piara Singh Ward	374 Patients
(e) Manawala Complex	854 Patients
(b) Pandori Warrach Branch, Amritsar	82 Patients
(c) Jalandhar Branch	39 Patients
(d) Sangrur Branch	228 Patients
(f) Chandigarh (Palsora) Branch	94 Patients
(g) Goindwal Branch	<u>93 Patients</u>
	<u>Total 1764 Patients</u>

2. Treatment facilities

(a) **Dispensary & Laboratory:-** Pingalwara has a dispensary and a laboratory for the treatment of patients. It has an annual expenditure of about Rs.90 lakhs. Medicines are also distributed free of cost to the poor and needy people.

(b) **Medical Care Staff:-** Experienced medical staff like Nurses, Pharmacists and Laboratory

Technicians are available for the care of the Pingalwara residents.

- (c) **Blood-Donation Camps:-** A Blood Donation Camp is organized on Bhagat Ji's Death Anniversary every year. The blood is used for Pingalwara residents and road accident victims.
- (d) **Ambulances:-** Ambulances with basic Medical aid are available for victims of road accidents on G.T. Road, round the clock and provide facilities for taking Pingalwara patients to the hospital.
- (e) **Artificial Limb Centre:-** There is an Artificial Limb Centre at Manawala Complex, dedicated to the memory of Bhagat Ji which provides free of cost Artificial Limbs to Polio-affected and amputee cases. 8137 needy people have benefitted till October 2016.
- (f) **Physiotherapy Centre:-** A Physiotherapy Centre equipped with State-of-the-art equipment is functioning in the Manawala Complex since June 2005. On an average 80 patients are treated everyday.
- (g) **Operation Theatres:-** There is a well equipped Operation Theatre in Bhai Piara Singh Ward Amritsar for general surgery and A Micro Surgery Operation Theatre in Manawala Complex where Cochlear Implants and major operations are carried out.

(h) **Dental, Eye, Ear & Ultrasound Centres:-** These Centres have been set up to provide these services to Pingalwara residents, sewadars and their families.

3. Education

Pingalwara Society is running five Educational Institutions for the poor and needy children.

- (a) **Bhagat Puran Singh Adarsh School, Manawala Complex:-** This school provides free education to 728 students from the poor and deprived sections of the society. They are provided with free books and uniforms. Children being brought up by Pingalwara Society are also studying in this school.
- (b) **Bhagat Puran Singh Adarsh School, Buttar Kalan (Qadian):-** This school is dedicated to the sweet memory of Bhagatji. 452 students are getting free education under the able guidance of well qualified teachers. The school also provides financial help to students who have finished their school studies and are aspiring for higher studies.
- (c) **Bhagat Puran Singh School for Special Education, Manawala Complex:-** This school is providing Special Education to 217 Special children.
- (d) **Bhagat Puran Singh School for the Deaf:-** Bhagat Puran Singh School for Deaf Children is functional at the Manawala Complex since May 2005. The

school is equipped with state-of-the-art training aid and has 152 children on its rolls.

- (e) **Bhagat Puran Singh School for Special Education, Chandigarh (Palsora):-** his school caters to the needs of Special adults of the branch.
- (f) **Vocational Centre:-** This Centre is providing free training in embroidery, stitching, craft work, making washing powder, candle making, ainting, etc. Young girls from the villages of surroundings areas are the main beneficiaries.
- (g) **Computer Training:-** Computers are available in all the schools for academic and vocational training.
- (h) **Hostel facilities:-** There are separate hostels for boys and girls in Manawala Complex. Many girls are pursuing higher studies in different colleges.

4. **Rehabilitation**

- (a) **Marriages:-** After being educated, boys and girls at Pingalwara are married to suitable partners. 40 girls and 4 boys have been married off till date.

5. **Environment Related Activities**

- (a) **Tree Plantation:-** Bhagat Puran Singh Ji was deeply concerned about the degradation of the environment. A vigorous campaign of tree plantation is started every year on Bhagat Ji's Death Anniver-

sary. Each year 15,000 to 22,000 trees are planted in various schools, colleges, hospitals, cremation grounds and other public places. These include Amaltas, Kachnar, Behra, Champa, Arjun, Sukhchain, Chandni, Zetropa, Kari-patta were distributed to different institutions.

- (b) **Nursery:-** Pingalwara has its own Nursery where saplings of various plants and trees are prepared. Every year, the aim of nursery is to grow more than 54 different kinds of saplings every year.

6. **Social Improvement Related Activities**

- (a) **Awareness:-** Pingalwara has played an important role in spreading awareness about the evils in the society. This has been done by printing literature on religious, social and environmental issues at the uran Printing Press Amritsar and is being distributed free of cost. It has an annual expenditure of printing and publicity is about 1 crores 50 lakhs rupees.
- (b) **Puran Printing Press:-** The Printing Press has been updated with an Offset Press.
- (c) **Museum and Documentaries:-** A Museum, and a number of documentaries have been prepared on Pingalwara activities as well as on zero budget natural farming. The C.D.s are freely available from Pingalwara.

A feature film produced by Pingalwara Society Amritsar EH JANAM TUMHARE LEKHE (Punjabi) on Rev. Bhagat Puran Singh Ji, founder Pingalwara and his struggle not only for selfless services of wounded humanity but for Environment Crisis also, will prove a beacon for the generations yet to come after us.

7. **Help to the victims of Natural Calamities:** Pingalwara makes an effort to provide succour to the victims of natural calamities like floods, earthquakes and famines. Aid was sent for the earth-quake victims in Iran, Tsunami disaster victims, Leh landslide and flood affected areas.

8. **Cremation of unclaimed dead-bodies:** Pingalwara cremates unclaimed dead bodies with full honour.

9. **Dairy Farm**

120 cows and buffalos at Manawala Complex provide fresh milk to the Pingalwara residents.

10. **Old Age Homes**

Old age homes at Sangrur and Manawala Complex of Pingalwara caters to the needs of elderly people.

11. **Projects Completed and Under Construction**

Since 1997 ambitious projects of Sangrur, Palsora at Chandigarh and Manawala Complex have been completed. In the year 2009 new buildings—Administrative Block, Puran Printing Press, Deaf School, T.B. Ward at Manawala Complex and at Head Office and

a New Administrative Block have also been completed.

In the year 2013, a new modern Bhagat Puran Singh School for Special Education in Manawala Complex of Pingalwara and a new Block for Pingalwara patients in Pandori Warraich Branch is under construction and is fast coming up.

Other Details:

- a) All India Pingalwara Charitable Society is a Registered Society, registered by Registrar of Companies vide letter No. 130 of 1956-1957 as amended vide No. A-28/4540 dated 07-07-1998.
- b) All donations to Pingalwara are exempted under Section 80 G of Income Tax-II Amritsar letter No. CIT-II/ASR/ITO (Tech.)/2011-12/4730 dated 11/12 January, 2012.
- c) PAN Number of the All India Pingalwara Charitable Society is AAATA 2237R
- d) FCRA (Foreign Contribution Regulation Act) 1976 Registration No. of Pingalwara is 115210002

Wahe Guru Ji Ka Khalsa

Wahe Guru Ji Ki Fateh

Dr. Inderjit Kaur,

President,

All India Pingalwara Charitable Society (Regd.),
Tehsilpura, G.T. Road, Amritsar. (Punjab).