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MEDIA AND ENVIRONMENTAL AWARENESS

**Proceedings of the National Seminar on the
Role of the Media in Public Awareness of the Environment
Karachi, 12-14 December, 1988**

Edited by: Shamsul Haq, Waldemar Albertin and Mohammad Nazim

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Mohammad Nazim*

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Media in Public Awareness of the Environment*

Karachi, 12-14 December, 1988

Sponsored by :

*Environment and Urban Affairs Division
Government of Pakistan*

*United Nations Economic and Social Commission
for Asia and the Pacific*

*United States Agency for International Development
Mission to Pakistan*

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Overview

Environment & Urban Affairs Division Government of Pakistan

The Seminar was convened to highlight the role of the media in environmental public-awareness, to identify and discuss the techniques of environmental journalism and to conduct a dialogue between the media-people and the various actors on the environmental scene. Numerous governmental, inter-governmental and non-governmental organizations participated and promoted discussion on the significant roles that may be played by them for spreading environmental values and arousing public consciousness.

At the inaugural session, in the welcoming address, Mr. Shahjahan Karim explained how strong and up-coming are the realizations of putting together the concepts of economic development with environmental protection in Pakistan. He emphasized that it is no more a luxury and it is a misconception that environmental considerations put additional constraints in the development process. Tore's paper set forth an introduction to the roles of various actors and their responsibilities toward conveying the environmental message to the masses. The rise of the environment in the understanding and thinking of the public, politicians and the business community are linked with the rise of the

environment reporter, who, he emphasized, can be effective if factual and objective. Justice Qadeer Uddin Ahmed in his inaugural address was full of thought provoking ideas and observations. He drew attention to the increasing menace by industrial pollution and garbage-disposal and reminded the audience that cleanliness is next to godliness yet we remain ignorant and keep piling mounds of garbage in front of our houses. The media, he said, has a major role to perform, "to seek behavioral changes through environmental issues, for which the Seminar affords an opportunity."

Theme papers presented in the first technical session aimed at placing the environmental issues on a broad world perspective and drew attention to the deleterious effect of the increasing population and consumption-production pattern on the global resource-base. Papers in this session dealt with the impact of industrialization on the lives of millions in the Southern Hemisphere and the overall effect on the quality of life. In spite of the lack of financial, technical, and managerial resources existing in most of the developing countries, there is a strong realization for change. There are movements growing even in the

remotest corners of every state to resist what are infringements of the basic rights over resources which people require to meet their day-to-day needs. Controversies like the Silent Valley hydroelectric project and environmental accidents like the Bhopal gas leakage have made ordinary people discuss issues like ecology, genetic diversity and the value of flora and fauna. Women, too, have risen to the fore by organizing themselves around occupational health issues in traditional rural occupations. The media have begun to report these concerns and have, as well, contributed to the environmental awakening, although much confusion still hangs around the journalists who want to write more about the environment but get bogged down with the scientific, technical and economic aspects of environmental reporting. Translating technical language into the ordinary reader's language and decoding the scientific jargon for explaining what and how much is safe for the people remain the biggest problems for the environment story writer. That is the reason stories on the environment come mostly from local and national government agencies or from the environment-development organizations working at the national or regional level.

Overview papers in the next three sessions dealt with special localized issues like the expanding population and the spread of katchi abadis; air, land and water pollution; industrialization and its impact on the environment; and environmental legislation and institution-building in Pakistan. Most of the 16

papers presented in these technical sessions reflected a striking similarity of thought about the fundamental issues being faced elsewhere. In particular, economic and political aspects of development, issues of technology, people and pollution, formed the basis of an emerging dialogue focussing on deeper understanding of environmental issues and their implications.

The Seminar concluded with the remarks of Mr. Jahangir Badr who stressed the need to reconcile human aspirations and social needs with environmental integrity and the sustainable use of the resource base.

Over one hundred participants took part in the exercise of exchanging experiences and views. They participated in formulating recommendations, proposing ideas for action and suggesting how to increase the role of the media in creating public environmental awareness in Pakistan.

Welcome Address

Mr. Shahjehan S. Karim

Additional Secretary

Environment & Urban Affairs Division

Mr. Justice (R) Qadeer Uddin Ahmed, Governor of Sind,
Mr. I. A. Imtiaz, Secretary of Housing and Works,
Mr. M. B. Abbasi, Secretary of Industries,
Secretary In Charge of Sind Environment Protection Board,
Ladies and Gentlemen,

It is indeed gratifying for us that Mr. Justice (R) Qadeer Uddin Ahmed, Governor of Sind agreed to grace this occasion with his presence and inaugurate this National Seminar. We thank the highest dignitary of the province who in spite of his multifarious commitments could spare time for a seminar like this which speaks equally well of the importance of the subject as well as of his concern for it.

The environment constitutes the quality of life. It plays an important role in determining man's survival and man's development and in this way exerts a powerful influence on the evolution of life. There is an outstanding realization today that "the environment-development" relationship is vital and inseparable. In fact these are two sides of the same coin. But such

development with environmental safeguards cannot be achieved through governmental actions alone. It requires the conscious concern of people from all walks of life. Awaken- ing public awareness is thus a key element of efforts to build and maintain a wholesome environment. In this regard the media are the most effective organs in motivating large-scale participation of the people in the "Environment Movement."

Keeping in view the important role the media can play to muster the support of the people in favour of refraining from activities directly or indirectly affecting the environment, we have organized this seminar. While the learned speakers of this seminar would deal with the subject matter in different perspectives, I would like to avail myself of this opportunity to briefly touch upon the major environmental issues in Pakistan and give a brief account of the activities being pursued by the Environment and Urban Affairs Division for the protection and preservation of the environment in the country.

The subject of the environment has received much attention after the UN conference on the "Human Environment" held in Stockholm in 1972 which resulted in the adoption of the document "Declaration on the Human Environment." One hundred and thirteen nations attending the conference agreed on the Action Plan "to safeguard and enhance the environment for the benefit of present and future generations of man." Pakistan played a significant role in its adoption and highlighted the country's three major problems, i.e. pollution caused by nature, pollution caused by man, and pollution caused by poverty. There has been progress since the Stockholm Conference, mostly in increasing our knowledge of the environment. As a sequel to this Conference a separate Division of Environment and Urban Affairs was established in the Federal Government to deal with the policy, plans and programmes regarding environmental pollution, ecology and human settlements. You may agree that as the environment and human settlements are interlinked, we are fortunate to have these subjects as part of one ministry at the federal level.

Awareness of the environment in Pakistan is a recent occurrence and this subject had not been given the attention it deserved in the past. It was, in fact, thought to be a luxury due to the misconception that it puts additional restraints on the development process. Identical thinking is also believed to have prevailed in regard to the integration of environmental dimensions in other sectors of the

economy. It is, however, encouraging to note that with the passage of time, environmental considerations in development plans have already commenced. The creation of institutional frameworks at the federal and provincial level in the form of environmental protection agencies, promulgation of environmental legislation, awareness of environmental dimensions in developing planning, formulation of environmental quality control standards, introduction of environmental impact assessment at the planning stage of individual projects, environmental management training for administrators, development of a National Conservation Strategy, coordinated environmental education programme and the establishment of a separate Department of Environmental Planning and Management at the University of Peshawar are some of our efforts in this direction. We are also planning to establish a National Institute of Environmental Studies and a National Institute of Urban Development and Management Studies, which would function under the aegis of the Environment and Urban Affairs Division. These institutes, when established, besides providing a centralized management information system in their respective areas, would also provide training facilities in the related fields, which presently are almost non-existent in Pakistan.

In spite of our humble efforts, Pakistan continues to face severe problems of water logging and salinity, desertification, deforestation, soil-erosion, side effects of agricultural chemicals, unclean water and inadequate sanitary

services. The present state of the environment in the country is very dismal. It is a forest-poor country with only 5% of its total land area under forest, whereas the recommended forest area coverage should be 25%. As the population grows, more deforestation and overgrazing takes place which results in soil erosion and floods. Over fifty thousand acres of fertile land succumb to salinization and water logging every year. Grain production growth is falling behind the rate of population growth. Less than 22% of the rural population gets safe drinking water. Toxic industrial wastes further pollute air, water and land. The marine environment is faced with land-based sources of pollution such as industrial effluents mixed with raw sewage, silts and sediments and also with oil spills and oil wastes. The population of the country has increased at an average rate of 3% per annum from 32 million in 1947 to almost 100 million today. The same trend is forecasted till the end of the century unless drastic steps are taken to bring down the growth rate. There is a backlog of over one million housing units and the shortage of houses is worsening because of the imbalance between supply and demand created by incremental population growth. This has led to overcrowding and congestion in the existing units as the number of persons per housing unit has increased from 5 in 1960 to 7 in 1988, thus creating a great deal of environmental problems.

The media in Pakistan have always played a leading role in motivating and guiding our people towards their

socio-economic development and we look forward to their active support, which would tremendously contribute towards creating environmental awareness in the country.

Before concluding, I would like to thank the United Nations Economic and Social Commission for Asia and the Pacific, the United States Agency for International Development, the United Nations Environment Programme, the Council of Pakistan News-paper Editors and the All Pakistan Newspaper Society for their assistance to the Environment and Urban Affairs Division in organizing this national seminar. Our special thanks go to Jam Mashooq Ali, Minister for Industries and Environment, Government of Sind, Mr. Arif Nizami, President of the Council of Pakistan Newspaper Editors and Editor of the Lahore English daily *The Nation*, Mir Khalil-ur-Rehman, President of the All Pakistan Newspaper Society and Chief Editor of the Urdu daily *Jang*, Mr. I.A. Imtiaz, Secretary of the Ministry of Housing and Works and for their very kindly agreeing to chair the various sessions of the seminar. We are also thankful to all the resource persons, some of whom have travelled far, who are contributing a lot to make this seminar a success. In the end while again being grateful to Mr. Justice (Retd) Qadeer Uddin Ahmad, Governor of Sind for sparing his valuable time to grace this occasion, I welcome you again and hope that this seminar will help us in our efforts for the protection and preservation of the environment in the country.

Inaugural Address

Mr. Justice (Retd) Qadeer Uddin Ahmed
Governor of Sind

Officers and organizers of this National Seminar,
Ladies and Gentlemen,
Assalam-o-Alaikum

I am grateful to the management of this Seminar for affording me the opportunity to be with you on this occasion. The organization of the Seminar demonstrates the organizers' eagerness to impress upon all of us the need to protect the environment, as well as the importance of the role which the media can play in the fulfillment of this need. The media are the most effective organs for mass-communication and can be instrumental in creating public awareness of the environment and also developing an important insight into environmental problems. This can help us to re-orient our life for enabling us to survive the formidable challenges of modern pollution.

I am sure you will all agree that human activities continue to produce a variety of changes in the earth's environment. However, the scale and pace of these changes have been so rapid and threatening in recent years that the plea to "Save the Environment" has become a universal slogan and the crisis of exhaustion of natural resources and

the pollution of the environment has become a global concern. It is necessary for the happiness of man in the future to find means to protect the environment and enhance the quality of life through the elimination of undesirable consequences arising from man's intervention with nature.

One can hardly over-emphasize the fact that the major deterrent in the way of success of any programme of environmental protection is the lack of awareness of the threats to our environment and the dangers to which we are exposed. The awareness of environmental issues has increased in wealthy and well-educated people during the last decade. Their interest in these issues was stimulated by books and films as well as by newspapers, magazines and the electronic media. Non-governmental organizations and activist groups have also played an important role in the development of a better understanding of environmental issues. Surveys conducted in some of the countries show a marked change in people's attitudes towards environmental problems. While the developing world has remained engrossed with its concern for population growth and poverty, the developed nations have become more alert to the scarcity of

important natural resources, the necessity for conservation, and the relation between the environment and development. Since these issues affect us also and are likely to have more effect on us in the future, we need to make a concerted effort in this direction.

The interest of the public in environmental issues was spurred in the advanced countries by the efforts of the media. Those efforts affected the decision-making process in a number of countries, particularly in connection with nuclear power development. Referendums were held in Austria, Sweden, Switzerland and the United States of America to decide issues relating to nuclear power stations as a result of the intensity of public feeling. The Swedish Parliament approved for a year the cessation of spraying of chemicals in forests pending a solution to the problems which were caused by the spray. Pressure from environmental groups also contributed to the reduction or elimination of lead from gasoline in the European Economic Community, Australia and elsewhere. Our own awareness of the illegal disposal of hazardous waste into developing countries by some advanced countries is primarily the result of the media's concern over this practice.

On the whole, progress was apparent in both environmental education and public awareness of environmental issues during the past decade. Consensus emerged on environmental awareness and educational methods, and the challenge for the developed countries now is to translate these into action.

As this is done, public understanding of environmental issues can be expected to become still better in the industrialized countries. But in most of the developing countries, including Pakistan, public awareness of environmental issues is totally absent. There is of course an understanding of the problems at the government level but the public at large is almost totally ignorant of the environment and its significance.

I would urge the participants to focus more closely on the environmental problems of the developing countries of the Third World. There appears to be a strong need to develop, on the analogy of what is termed "appropriate technology," an "appropriate environmental strategy," best suited to the requirements of the countries of our region. Whereas disposal of nuclear waste is not a prime concern in our region, disposal of solid waste is certainly a problem that needs to be addressed squarely by our municipal agencies, the media as well as by the citizenry. They ought to find a workable solution. A single smoke-emitting bus or the smoke-emitting chimney of a factory produces more pollution in our environment than scores of their counterparts in developed countries because the means to counter them exist there.

How could this menace be contained? What legislation would be needed in backward countries to deal with this problem, which agencies would enforce the present and prospective laws on the subject? Most important of all, how could enforcement be ensured?

These are some of the issues that call for the attention of the politicians, the planners, the public agencies concerned, as well as the mass-communication media.

Similarly, noise pollution in our cities is a menace of great magnitude. We do not have 'Concords' taking off from our airports but the noise from the so-called "silencers" of our rickshaws and mini-buses at rush hours, in its cumulative effect, is more deafening than the noise any 'Concord' could produce. There is obviously a need to lay down standards for automobile exhausts and silencers and their strict implementation in the interest of national health.

We have a religion which places "cleanliness next to godliness" and yet a look at our backyards would convince even a casual spectator that we do not practice what we preach.

There seems to be a complete lack of civic consciousness in most segments of our society, including the affluent ones, for how else would you explain tiny mounds of garbage in front of the houses of millionaires? This is an area in which the motivational role of the media can be of immense importance in bringing about the desired behavioral change. At this juncture I recall with pleasure a massive cleanliness drive that was launched in Karachi very recently and the physical as well as psychological good it did to the city and the citizens. It was a bold initiative and well worth repeating in respect of cleanliness and some of our other social problems.

Yet another area needing the attention of all concerned is the discharge of industrial waste in the nallahs, rivers and the sea. With the pace of industrialization quickening, the threat to the environment in the countries of this region on account of industrial wastes will continue to grow.

There is a need to prescribe minimal standards for the treatment of industrial waste and to insist on the inclusion of equipment and devices for this purpose at project formulation and approval stages.

The job of the media, therefore, is not only difficult but massive and multi-dimensional in nature. Both the print media and the electronic media have to endeavour to seek behavioral changes through the transformation of basic attitudes of the people towards environmental issues. Bringing about changes in attitude is not an easy task even through awareness and education. I, therefore, strongly feel that any effort short of total commitment and involvement shall not be of any consequence. We have, therefore, to proceed very thoughtfully so that our people become aware of the fact that man cannot continuously progress if he allows his environment to be polluted and degraded.

I hope that this Seminar will afford an opportunity to exchange experiences of the working of the government, non-governmental organizations and the mass media, and promote understanding for the resolution of our problems relating to the environment. I am confident that you will remain

conscious of your responsibility towards the developing countries during your deliberations and will be able to develop a strategy for creating public awareness of environmental issues among the people through a more effective involvement of the mass media.

It is my pleasure to inaugurate this National Seminar.

Environmental Issues

Responses to Environmental Degradation : A Plea for Urgent Action

Dr. Parvez Hassan

Hassan & Hassan (Advocates)

Lahore

The Global Perspective

Unfortunately, today, the global ecosystem is under stress and strains unique in human history. Its resources, already burdened in supporting a world population of about 5 billion, will have to sustain life for more than the 8 billion human beings that are projected by the United Nations to inhabit the Earth by the first quarter of the 21st century. It is said that it took homo sapiens a million years to reach a population of one billion in 1830; it is now taking only 13 years to add one billion.

The most rapid growth is occurring in the already populous Third World in Asia, Africa and Latin America. Here, in the Third World, live some 800 million human beings in conditions that the World Bank has described as "absolute poverty — a condition of life degraded by disease, illiteracy, malnutrition, and squalor —."

Today, almost half of the world's people live in rural areas of developing countries. Caught in a daily struggle for enough food and fuel to stay alive,

they strip the land of trees and bushes for firewood. They clear steep hillsides for farming, only to have the soil washed away by rains. Their goats and cattle overgraze grassy drylands, which then become deserts. They overfish and overhunt local wildlife.

Because the land cannot support additional family members, many rural people are forced to migrate to crowded cities where they find shelter in slums and shanty towns. The population of many Third World cities is now doubling every 10 years or less. In many countries, population growth is outstripping economic growth, causing a decline in per capita income.

By the end of the 1990s, the urban population of the developing countries will be twice that of the urban population of the developed world. In fact, every second human being will then be living in urban areas. This would involve the disposal of domestic and industrial wastes in quantities and on a scale that even the developed world would find difficult to cope with. The other pressures of rapid urbanization manifested in the growth of slums, in-

adequate housing, schools and transport add to the nightmarish prospects.

Until world population reached three billion in 1960, the yields of the basic biological systems expanded more rapidly than population. At that point, however, the margin began to narrow. Population growth outstripped forest production after 1964. Since 1970, the fish catch per person has fallen by 13 per cent. As the world population passed four billion, grasslands production of beef, mutton, and wool began to fall behind population growth. Overfishing, overgrazing, and overcutting have become widespread. As demand exceeds the sustainable yield of biological systems, the human species is beginning to consume the productive resource base itself.

Growing populations have contributed to habitat losses of all types. This is increasingly threatening species diversity, the loss of which endangers the richly interdependent ecosystems of the Earth.

Beyond ever-increasing populations, deforestation on a world-wide scale is one of the worst environmental crises facing the human race. The statistics are frightening:

1. In 1950, roughly 25 per cent of the earth's land surface was covered by trees; by 1980, less than 20 per cent had tree cover. Along with firewood collecting, the leading cause of deforestation is the expansion of crop and livestock production.

2. Around the world, 11 million hectares of tropical forests and other woodlands are lost annually.

3. A forest area in China, the size of Italy, has been cut down and become virtually a desert in the last 30 years.

4. Six hundred thousand hectares of closed forests are lost each year in Indonesia.

5. The World Watch Institute has reported that in less than a decade forest cover within 100 kilometers of India's major cities dropped by more than 15% and the area around Delhi has lost a staggering 60%.

6. At least two-thirds of all species of plants and animals on Earth have their habitat in the tropics. Through the loss of tropical forests, species are becoming extinct at a rate of hundreds, perhaps even thousands, each year, and the extinction rate is likely to accelerate as human population grows. Yet the human species depends increasingly on these life forms for agriculture, medicine, energy, and pest control.

7. About half of the world population relies on non-commercial firewood as its sole energy source. The rapidly increasing population coupled with the projected increase in the world trade of wood and wood products, the global forest cover will continue to remain under further unprecedented stress. These factors, if unchecked, will undoubtedly lead to the desertification of much of the Earth in the next 50 years.

Given the above backdrop, an internationally eminent columnist has recently commented that these threats to life on this battered globe are more ominous than the danger of a nuclear holocaust. This is the scale of the human tragedy.

The Regional Perspective

Nearer home, the Asian and the Pacific Region, of which Pakistan is a part, is one of the worst affected regions in the world from an environmental standpoint. According to Dr. Qazi F. Jalal, the able Chief of the Environmental Coordination Unit of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the three dominant factors influencing the environmental conditions in the region are :

1. The population increased by 0.8 billion from 1960 to 1980. This is likely to increase by 1.3 billion during the 1980s to 2000.
2. Projected annual growth rates of economic activity at about 5% would double the demand on natural resources every 15 years or so.
3. The natural resources will be further under pressure as the process of production will inevitably become more capital and technology intensive.

"While these factors raise the demand for natural resources," he emphasizes "the supply of natural resources (even the renewable ones) may not increase appreciably and may even decrease in absolute terms."

1. Deforestation

Deforestation, particularly, is contributing to environmental degradation in the region. Several reasons account for this. The burden of the growing population and its poverty has taken a pitiful toll on the region's forests. Bangladesh, for example, has 90 million persons on a territory of 134,000 square kilometers. The same territory carried 40 million persons in 1960. Today, there are more than 700 persons per square kilometer in Bangladesh. The growing demands for food, fodder and livelihood inevitably continue to erode its forest wealth. Government policies to raise more revenues, pressures to convert forest land to agricultural use and the lobby of the commercial exploiters of forests - the concessionaires - have had adverse effects on the long-term sustainable use of forests.

Let us look at some facts in the region:

1. Forests provide the only source of fuel, construction, and industrial wood in Afghanistan.
2. While the Departments of Forests and Wildlife spread all over India indicate the figure of 22.73 per cent as the area of forest cover in India, the National Remote Sensing Agency of the Department of Space concluded that the actual area, after taking into account annual losses, is 14.10 per cent.
3. In Nepal, the forest area was estimated at 6.4 million hectares in 1964. By 1975, it had dropped to 4.1 million

hectars, a decline of one third in a decade.

4. The commercial exploitation of forests plays an important role in the economies of Indonesia, Malaysia, the Philippines and Papua New Guinea. In relation to land area, Indonesia has 1.6 hectares per capita, Malaysia 3.0 hectares, the Philippines 0.8 hectares and Papua New Guinea 19.7 hectares per capita. But these figures are dropping with over-exploitation. Thus, for example, forest cover in Malaysia has dropped from 73 per cent in 1970 to 62 per cent in 1986. The trend in the Philippines is equally disturbing. In the years 1952-63, when log output was mainly for local consumption, the rate of forest decline was only 172,000 hectares per year. However, in the period 1969-76, due to an increase in international prices of timber in Japan and the United States, the forest loss soared to 440,000 hectares per year.

5. Timber demand in the Republic of Korea was 938,000 cubic meters in 1962. Because of ambitious economic plans, the demand increased to about 12 times by 1979 resulting in 10,910,000 cubic meters. Annual increase in timber demand during this period was 16.5% and this trend is continuing.

6. Thailand's forest cover has dropped from 53% in 1961 to 39% in 1974.

7. Burma provides 75% of the world's teak. Teak exports account for substantial foreign exchange earnings for the national economy. Commercial

pressures threaten its 57% forest cover.

8. Forest cover has been constantly decreasing in Vietnam: from 44% in 1943, it went down to 29% in 1975-76, and fell to only 24% in 1983.

9. The forests of Pakistan are under similar pressure. The present forest cover is estimated to be lower than 5%.

Deforestation has led to marked changes in the ecosystems affecting both terrestrial and aquatic wildlife habitats. As a result, the region has seen the alarming depletion and even extinction of several species. Soil erosion, floods and climatic changes are also linked to over-exploitation of forests.

Poverty, population pressures, need for fuelwood, fodder and food, are familiar factors which have denuded forests and, as a result, threaten certain ecosystems and even the basic quest for survival.

2. Industrialization

Industrialization and the quest for more food and goods for the increasing millions has put pressure on the regional natural resources. The water quality has deteriorated to almost unbearable levels in certain countries. Rivers and oceans, once lasting monuments to the splendors of Nature, have become ugly repositories of domestic and untreated industrial wastes on a scale far beyond their assimilative capacity. Plants, animals, fish, birds

and human beings look to water as a source of life. That the human food chain is resultantly contaminated with tragic consequences is repeatedly reflected in stories in the media.

I have personally witnessed the degradation of the Hung Pu River in China. As much as 200,000 tons of industrial effluents and domestic wastes are emptied daily into this river by the chemical, paper/pulp, and textile factories that proliferate around Shanghai with a population of over 13 million. The impact is lethal: there has been no fish life in the river for the last 25 years and the river — almost black and emitting a fouled stench — is a pathetic sight. And, this is the state of a river that provides solely the 4.3 million tons of water for industrial (80%) and domestic (20%) requirements for the environs of Shanghai.

Industrial activity has also affected the air quality. Countries that have been slow to regulate emissions from factories find that the air in and around the industrial centers is not fit to breathe. The growing number of automobiles also contributes to air pollution. There are chronic complaints of respiratory and other disorders as a result of the polluted air.

Technology has developed in recent decades to an awesome sophistication but the consequences of its failure were brought out in the grim tragedies of Ojhri, Bhopal and Chernobyl.

Responses

Elsewhere, I have observed that experience in countries, both developed

and developing, has shown that effective environmental management of their resources depends on the following principal factors.

- political will
- institutional arrangements
- appropriate legislation
- public awareness, and
- availability of the requisite financial/technological/manpower resources.

The starting point of all environmental effort is mostly the realization at the level of the state that unless its resource utilization is managed on an environmentally sound basis, irreparable harm will result in the quality of life of its future citizenry. This realization is, generally, followed by the government innovating or upgrading its environmental concerns by the creation of departments, ministries, bureaus or agencies specifically oriented to environmental protection. First, a general environmental statute against pollution follows prescribing, in each case, a nationally binding environmental list of do's and don'ts. The success of the implementation of this environmental code depends to a considerable extent on the effective education the citizenry — at all levels — has received towards understanding and protecting its vital environmental rights. And, finally, the financial and managerial resources available or allocated by the state determine whether environmental concerns can be trans-

lated into remedial measures, which can sometimes be very expensive treatment plants and waste disposal technology.

Recommendations

I perceive it to be the objective of this paper at this introductory session of this important National Seminar to present, in a general manner, some of the important problems being faced in the world and in our region in respect to the environment. Each field touched in this paper is deserving of a far more detailed examination. Some of the concerns in the region will, undoubtedly, be related to the experiences of Pakistan in tomorrow's session. It is for this reason that I have abstained from discussing the problems and prospects in Pakistan.

At the global and regional levels, the responses are varied. The U.S. has, for example, reacted to environmental problems in a most concerted manner. Its resources and facilities have fully backed the important work of its Environmental Protection Agency. In fact, the regulations prescribed by the E.P.A. are generally considered as being too stringent and it is contended that the additional cost they involve places U.S. manufacturers at a distinct disadvantage with foreign competitors. Canada, Australia, New Zealand, Japan, and other developed countries are also giving due consideration to environmental factors in their planning.

But it is the developing countries with their poverty, overpopulation, lack of

financial, technical and managerial resources that are being overwhelmed by the negative impacts of rapid industrialization and resource exploitation. Cynics in these countries even look at the Stockholm spirit as a luxury for the developing world. But environmental concerns are acquiring an increasing legitimacy in these countries. The political will is fast developing to integrate environmental factors in national planning. Where the commitment is resolute, the legacy prior to past mistakes is being retrieved. China is a good example.

Many specific recommendations will, undoubtedly, be debated at and emerge from this Seminar. I would like to add the following as a blue-print of action in the region. Time is running out and if we do not act today, tomorrow may be too late.

Deforestation

Community Participation

This paper has highlighted deforestation as the most critical problem both on a global and regional basis. In the region, forestry management in recent decades has generally pointed to one inescapable conclusion: the success of any national effort increasingly depends on the involvement of the people in its implementation. This has proved to be particularly true in the case of developing countries in the region.

The earlier responses to forestry management tended to establish a "legal curtain" between people and

forests with "policing the forest estate an abiding obsession." Governments fixed targets for the commercial production of logs without regard to the overall benefit of the people who lived in and around the forest areas and who were merely used, if at all, as wage labourers. The possible role of these people in the safeguarding of the forest resources was largely ignored. The activities of the government or the timber contractors in the forest areas and the exclusion of the community from participation therein alienated these people and their interest in the forests. Thus, all symbols of economic development in the forest — the bringing in of modern timber-cutting equipment or the fleets of trucks that transported the cut timber — did not affect the quality of life in the neighboring communities. This alienation and lack of involvement of the people was to prove a major hurdle in the implementation of forestry laws and policies.

Community forestry — the involvement of the local community in a forestry activity — is gaining increasing acceptance in the region. This would be an important step towards ensuring effective forest management as this would take the forest out of the traditional mold of sole government control to a regime in which both the government and the people will jointly share the burdens and fruits of managing the forest resources.

This proposal would involve the strengthening of local bodies and institutions to enable them to participate effectively in the planning and im-

plementation of forest management plans. Policies and laws in the evolution of which the local community has played an effective role would stand a far better chance of being meaningfully implemented than a plan or law that has been made by a distant ministry in the country's capital.

The paucity of resources — both of trained manpower and funds — particularly in developing countries makes it imperative that the support of the local community be obtained. Otherwise, a traditional management of the vast and sometimes remote forests by a scanty force of forest officials would not arrest the growing deforestation in the region.

Need for Substitution

Needs for fuelwood, fodder and farm products are considered major constraints handicapping the implementation of forestry management plans in the region. It must be recognized that no institutional or legislative framework will succeed unless these needs are first met. Importance should, therefore, be given to providing alternative sources so that the corresponding strain on the forests is reduced. A grower, for example, who has traditionally turned to the forest areas for the cultivation of his crops must be rehabilitated in some other economic activity to eliminate his compulsion to poach on state forest land for his survival. A law that merely prohibits his use of the forest land, — without consideration of an alternative source of his livelihood, — would not have solved the problem. The grower

in the forest lands must be moved into some other economic activity (e.g., handicrafts, cottage industries) so that he can leave the land for the forests. Similarly, fodder needs can be met through the planting of fast-growing species that would eliminate or reduce pressures on the forest resources. In this context, new and renewable sources of energy need to be promoted to ease the pressure on fuelwood.

National Forestry Agency

The implementation of forestry policies and laws has also suffered because of weakness in the implementation machinery. Traditionally, forest management is left to a ministry or department of forests. In many countries, the Ministry of Agriculture handles forestry matters although in an unusual move, the Republic of Korea transferred forestry responsibilities from its Ministry of Agriculture to the Ministry of Home Affairs. Overlapping of functions on forestry matters among various government agencies is common. There are persistent contentions of lack of coordination among them. The establishment of a separate statutory body, a national forestry agency, with overall responsibilities in the management of all national forestry matters should be considered. Such an agency could further be given rule-making powers which could assist in on-going management under a specific statutory mandate. The agency should be staffed by personnel fully trained in forestry management and be provided the requisite technical support to undertake its important functions.

The traditional approach by the administering agencies has been to provide more and more revenues from forests and forest products. In fact, the evaluation of these agencies depended on commercial results. This needs to be reoriented towards conservation, which would better serve long term interests.

Budgetary and other resource constraints in providing staff and support may inhibit the creation of such agencies. An intermediate solution could, perhaps, be in the said agency utilizing the existing staff and resources of the present forest departments. With a clear-cut statutory mandate, this staff and these resources could be utilized to manage forestry affairs better.

National Afforestation Campaigns

The denuding of the forests in the region has, in some cases, taken place at such an alarming rate that extraordinary responses are required to relieve the situation.

To meet this grave situation, attention needs to be given to planning and implementing national afforestation campaigns on a war footing. Governments need to utilize every resource available to them to educate and involve the people in tree-planting campaigns. The help of the media, the press and television, and educational institutions needs to be obtained in generating a mass movement towards afforestation. The experience of China in this regard is instructive. The Philippines and the Republic of Korea have introduced

legislation involving citizens in tree-growing.

Economic Incentives

Afforestation and the development of forest-related industries require extended gestation periods. Timber, for example, needs a long period for production and profitability. The development of its industry would be facilitated if special measures for its financing and taxation were to be adopted.

It is recommended that special loan arrangements should be made for reforestation and related activities at low interest rates. In fact, annual targets should be fixed for such loans and government-owned banks and financial institutions and other banks should be directed to include such loans in their loan portfolios. For example, industrial development banks or agricultural development banks set up in the public sector in several member countries should be mandated to provide a specific target annually for loans for forestry or forestry-related purposes. A forestry-related purpose could be defined to include an effort at rehabilitating a former traditional or illegal user of forest products. The "substitution" effort referred to earlier could also conceivably be covered by such loans.

Environmental Impact Assessment

Only a few countries in the region appear to have assimilated the requirement, in forest legislation, of an environmental impact assessment before undertaking forestry develop-

ment projects. Some indicate that although there may be no statutory compulsion for it, such an assessment is, in fact, undertaken as a built-in requirement in administrative decisions involving their forest wealth.

There is a need to incorporate in forest legislation the requirement of an environmental impact statement in at least major projects. Provision should also be made for public participation in the decision-making process. A public debate would also enhance awareness about the environmental importance of forests and thus bring about the much needed education of the masses in this field.

Project Financing

Emphasis is increasing against environmental degradation in the lending policies of international and regional financial institutions such as the World Bank, International Finance Corporation, Asian Development Bank and Eximbank of Japan. A condition in the lending arrangements is that the project being financed shall be designed and constructed so as to avoid adverse effects on the environment. This trend needs to be encouraged to internationalize concern on this important matter.

National Conservation Strategies

The development of national conservation strategies, as has been done in Pakistan with the help of the International Union for Conservation of Nature and Natural Resources

(I.U.C.N.), is a welcome initiative in highlighting national priorities. These have provided a sense of direction to national efforts.

Regional Cooperation

Whether it is the leadership being provided in the matter by UNEP or ESCAP or SAARC, environmental efforts are being immensely helped by cooperation at the international and regional levels. Countries, particularly those with transboundary problems, need to share their common concerns against resource degradation or species depletion and develop joint and concerted actions against them.

Strengthening Institutional and Legislative Framework

The trend to develop institutions for environmental management should be supported. It augurs well for the future that specialized national environmental protection agencies are being set up to replace the earlier handling of environmental matters by a general ministry or department of the government. Similarly, efforts to evolve and implement legislation on environmental matters need to be encouraged.

Public Awareness

It is undoubtedly the experience in all countries that any environmental order requires the support of the people for its implementation. Without the citizens playing this important role of watchdogs, governments are known to ignore or overlook their basic obligation to provide a clean en-

vironment to their citizens. A comprehensive national environmental program would, therefore, include a commitment to introducing the subject in the educational syllabi and taking other measures to create public awareness. The media, undoubtedly, has to play the most important role in this respect. It is for this reason that the establishment of the national fora of environmental journalists should be actively encouraged. The media, we all know too well, is the most effective ombudsman for the protection of the public interest. In supporting the environmental media today, we shall be protecting the future of our children and grandchildren.

Environmental Problems of Pakistan

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The environmental problems of Pakistan rank among the most serious in this part of the world. They include a wide range of natural—, ecological—, living resource—, hydrological—, and related aspects of the man-made hazards and public health and sanitation. Generally, the environmental problems and aspects in Pakistan may be classified into the following categories: 1) Water Related Environmental Problems, 2) Natural Hazards and Disasters, 3) Urban Area Environmental Problems, 4) Rural Area Environmental Problems, 5) Coastal and Marine Pollution and 6) The Living Resources.

1. Water Related Environmental Problems.

Man's tempering with the natural courses of surface waters has resulted in serious water-related problems, namely a) waterlogging and salinity of land and b) river pollution, erosion, siltation and sedimentation.

a) Waterlogging and Salinity of Land: Waterlogging and salinity, the twin menace, affects productivity of

about 9.5 million hectares (Mha) of irrigated land in the Indus Basin. Losses of about Rs. 36 billion are estimated because of a decline in crop productivity due to salinity and waterlogging annually in the Indus Plains (Wapda, 1988). The water table is within 0-3 meters of the surface in 60 per cent of the irrigated lands in Sind, in 15 per cent of the land in Punjab and in 10 per cent of the land in NWFP.

Rann of Kutch is characterised by increasing salinity and waterlogging, restriction of the downstream flow of the Indus River due to upstream impounding in the mega reservoirs, degradation of the quality of river waters, and marine water intrusion in the Indus Delta (Gazdar, 1988).

Waterlogging and salinity of land in the Indus Basin is a consequence of irrigation developments in an otherwise arid and semi-arid land without provision for adequate drainage of land and flushing of saline effluents from the soil (Gazdar, 1987b). Since the intensification of irrigation there has been a gradual rise

in the water table since the early 1920s. The seasonal rise of the water table leaves salts behind affecting crop productivity and yields (Economic Survey, 1987-88).

b) River Pollution, Erosion, Siltation and Sedimentation: Failure in water development schemes and in salinity and waterlogging control, declining land productivity, and ecological destruction of the resource base have reached alarming proportions in the Indus Plains. Dumping of farm effluents, toxic industrial wastes, sewage and garbage into streams and rivers is polluting surface and ground water. The contamination of surface and ground water is increasing and about 40 per cent of reported sickness cases are attributed to the bad quality of drinking water in the country.

The Pakistan Council of Research in Water Resources has stated in its 1986 study that if the saline conditions of the Indus River reflect a new trend, then the water reaching downstream users will soon be unfit for most purposes. This should be an eye opener for all of those who want to regulate and impound more of the already regulated flow of the river. Thus, the environment and the threat to the water supply for the people in the Indus Basin is quite serious. Water quality at Sehwan on the Indus River has deteriorated by 24 per cent during 1968-1980, and by 1985 it reached a level of 50 per cent deterioration. The pollution and contamination of water resources are severe problems as only about 10 per cent of the total population has access to piped water. These

facilities are lacking in the rural areas and their source of supply is only from the rivers and well waters.

2. Natural Hazards and Disasters.

Natural disasters, such as floods, droughts, earthquakes, land and mudslides, have brought devastation since recorded history. The Indus Valley Civilization, the Harappa Culture, and other settlements disappeared as per ramifications of both natural and man-made disasters.

a) Seismicity and earthquakes: Recent seismic activity related to the mountain building and plate tectonics is a major cause of concern in the densely populated areas in the Indus Plains, with its superdams and vast network of canal irrigation. Historically all of Pakistan is in an active seismotectonic zone. Many locations of dams and canals criss-cross these zones and are prone to hazards (Wapda, 1988). Structural damages brought about to the infrastructure could be very disruptive for the socio-economic fabric of the country in the event of large seismic events. Induced seismicity in and adjacent to the Mangla and Tarbela dams due to the impounding of huge amounts of water in the reservoirs attest to hazardous conditions.

b) Landslides, mudslides, and siltation: Though these are naturally occurring events, most of these are caused by deforestation, clearing of land for dams, reservoirs, highways, agriculture, and withdrawal of ground water. The northern areas have been profoundly affected in recent years by

the loss of lives and settlements. Moreover, the increased silt and mud raises the stream channels and induces flooding across the plains. The Tarbela Dam on the Indus River is under threat from sinkholes and sedimentation in the reservoir which require year-round mitigation measures.

c) *Floods, droughts and severe weather phenomena:* Without the natural resources of the Himalaya-Karakorum-Hindu Kush mountains, the Indus River system and its plains, the landscape of Pakistan would be a barren desert instead of the productive plains of the Indus Basin. The fragile balance of nature, the erratic behavior of monsoons and the aggregation of climatic change have unavoidable consequences for the development process. The droughts of 1984-87 in the Thar and Coastal Makran-Las Bela afflicted thousands of people and almost all of their livestock was lost.

Flooding of the Indus Plains is a severe recurring problem accentuated by the deforestation and mismanagement of the vast irrigation system of canals and link canals. Two major floods in the 1988 monsoon season affecting 4 Mha of land caused loss of human lives, and livestock. Damages are estimated at over Rs. 5 billion in Punjab alone. Increasing fluvial aggregation and severe weather phenomena in the Indus Basin have caused 7 of the 10 largest floods of the century in the last 25 years.

3. Urban Area Environmental Problems

The environmental problems that threaten the quality of life in the urban

areas are: a) industrial pollution; b) air and noise pollution; c) water pollution; d) sanitation, sewage and solid waste disposal, and e) public health and vector proliferation.

a) *Industrial pollution:* Industrial pollution is a major problem because of air pollution and the hazardous nature of many industrial sites, wastes and by-products. About 700,000 tons of pollutants are released into the air each year and this is increasing annually by 10 per cent. The disposal of industrial effluents and the discharge of organic and inorganic chemicals, toxic metals, solid waste, radioactive and hazardous wastes both in the private and public industrial sectors, is in violation of Factories Act 1934. The industrial units and factories dump their solid and liquid wastes in spaces adjacent to their sites, sewers, nullahs or in municipal sewage. There is hardly any control on the gaseous and particulate matter emission into the atmosphere. The urban areas, because of their proximity to the industrial sites or the location of factories within the urban areas, are thus exposed to pollution and hazards. Surface and groundwater supplies are also polluted by the industrial wastes.

b) *Air and Noise Pollution:* In the urban areas, pollution of air by vehicles and industries is a recurring and persistent environmental health hazard. Toxic gases such as carbon monoxide, sulphur dioxide and nitrogen oxides, and particulates produce smoggy and hazardous conditions in most of the urban centers. The degrading pollution and quality of life is manifested from Lyari at the Arabian Sea across the Indus Plains to

Nowshera in the NWFP. Most of the urban dwellers in Karachi, Pipri, Gharo, Hyderabad, Multan, Faisalabad, Lahore, Sargodha, Gujranwala, Sialkot, Rawalpindi, Peshawar, Mardan, and Daudkhel are exposed to polluted air and fumes, high levels of lead from the burning of gasoline, and soot and smog from diesel. Noise pollution is a chronic problem that is prevalent due to factories, motorized vehicles, pressure horns, auto rickshaws, and boilers. As the cities expand and the number of motor vehicles rises, the cool, green and scenic areas turn into hot, dusty and noisy places.

c) Pollution and contamination of water supplies: The pollution of water supplies is a common and recurring problem in the municipal water supply. About 10 per cent of the total population has access to public sanitation of sewage disposal. These facilities are lacking in the rural areas. Sewage and gutter water being reintroduced into the drinking water supply through leakage and seepage is a chronic problem in the cities, particularly in Karachi's municipal water supplies.

d) Sanitation, sewage and solid waste disposal: Inadequate sanitation, sewage and waste disposal systems in most of the towns and cities add to the urban environmental stress. Lack of sanitation adds to public health hazards. Garbage and waste disposal needs to be streamlined on the door-to-dumpster routine and disposed of in sanitary landfills away from the populated areas. Toxic and hazardous wastes enter soils and vegetation and

into the food chain. Milk dairies, poultry farms, animal slaughter houses, food canneries, and bottling plants are situated in the vicinity of sources of pollution increasing the food contamination.

e) Public health and vector proliferation: The quality of public health has been affected by industrialization, urban congregation and pressure on limited public health facilities. Vector proliferation of flies, mosquitos, roaches, and other insects have not been regulated and many vectors have become immune to insecticides used. Public hygiene has suffered as such and better pest management, sanitation and waste disposal to fight vector proliferation is required.

4. Rural Environmental Problems

The rural problems are increasing with the increasing population and limited natural resources. Little cognizance is taken of the rural populace's quality of life. In the rural areas only one percent of the population has access to drinking water, sanitation, sewage and waste disposal. Increasingly, exposure to farm chemicals and pesticides is taking a heavy toll in terms of human lives. Major rural problems include: a) agricultural pollution, pesticides, agro-chemicals, b) misuse of land, and c) deforestation, overgrazing and desertification.

a) Agricultural pollution, pesticides, agro-chemicals: Toxic and environmentally disruptive farm chemicals, such as pesticides and their

degradation products have adverse affects on man and other life forms in the food chain. Indiscriminate use and use of banned pesticides are common practices in Pakistan with absence of any control. Many of these pesticides are reactive under certain environmental conditions hostile to human beings and harmful to beneficial living organisms. Pesticides find their way into the ecosystem through persistence and their nonbiodegradable nature. There are other chemicals used which bring high BOD levels, or come into the food chain, or promote growth of weeds and pests, defoliation of vegetation and bring about environmental problems. More than 300 species of agricultural pests have developed resistance to a wide range of chemical pesticides. Pesticides are also responsible for untold damages to the environment and, increasingly, to man himself.

b) Misuse of land: In the rural areas migration of population to the urban areas is taking place quite rapidly. Due to displacement of hundreds of poor rural communities from their native lands due to land holding and mechanisation, farm laborers are not needed. Large scale agricultural operations, annexation of rural areas for townships, construction of dams, reservoirs, and link canals take their toll on environment and human habitat. Landless and drifting farm laborers flock to cities, joining the ranks of the unemployed and creating slums and katchi abadis. This has been compounded by influx of about 3 million Afghan refugees into Pakistan, whose need for firewood,

timber and pasture for their 7 million livestock have changed the fragile ecosystem in habitat, rangelands, and forests in the western border areas.

c) Desertification: Desertification is an interplay of natural and cultural processes, working singly or in combination, leading to encroachment or acceleration of desert conditions in arid and semi-arid lands, and their margins. Deforestation, overgrazing and misuse of land have contributed to desertified conditions in Thar, Cholistan, Coastal Makran and Las Bela, and Western border areas. Once the resource base is depleted in such fragile lands, it is very difficult to bring it back for productivity. The aggregation of climatic events has been accentuating the prolonged drought in the desert areas in the country. About 40 per cent of the total land area is desert comprising Baluchistan Interior Desert, the Thar Desert, the Thal, and the Coastal Desert of Las Bela and Makran. The lands which are susceptible to desertification constitute about 50 per cent of the total area. However, the risks are high in the areas affected by waterlogging and salinity, particularly in the Sind Plains. High human and livestock populations, intensive overgrazing of rangelands, cutting of trees and forests, over pumping of groundwater and indiscriminate hunting of wildlife are some of the cultural practices that have been causing soil erosion by wind and water.

5. Coastal and Marine Pollution

Pakistan has a shoreline extending from the Rann of Kutch westward

through the Indus Delta towards the coastal Las Bela and Makran. The areas west of Karachi are among the busiest oil shipping lanes in the world. The wastes, oil spills and bunker oil dumped by the oil and cargo ships are widespread and drift to the shore. The coastal territorial extensions are about 80 km off shore. Oil-spill contingency plans are lacking, and the problems of high sea discharge of pollutants have adversely affected the fishing grounds. Coastal water pollution due to dumping of effluents and wastes from the factories and industrial plants in Karachi, Landhi, Pirpri, Gharo, Nagar Thatta and Gadani into the mangrove forest, estuaries, creeks, and deltaic regions has destroyed wildlife and breeding habitats of fish, shrimp, and crustaceans. Alarming disappearances of mangrove forests, marine flora and fauna and decline of wildlife populations of many species have put them on the endangered species list (Indus River blind dolphin, green turtle, etc.). Marine pollution in the Karachi Harbour area is manifold. The Lyari and Malir rivers are seriously polluted as effluents from the tanneries and factories of the Sind Industrial and Trading Estates (SITE) and Korangi have virtually eliminated wildlife. Due to release of alkaline effluents, which have high biological oxygen demand, algae and weeds grow, which in turn breed mosquitoes and other harmful insects and diseases. The beaches and marine-life sanctuaries at Clifton, Paradise Point, Hawkes Bay, Gadani and Sonmiani represent vivid examples of maldevelopment and environmental destruction of one of the finest coastal areas of the Arabian Sea.

6. The Living Resource

The living resource and its natural diversity is under severe environmental stress. This is shown not only in the disappearance and extinction of known species of land, forest, deltaic and marine flora and fauna but also in the decline in genetic reservoirs of living resources. Genetic resources for cereal grains, trees, fruit and livestock are threatened by many kinds of intensified agriculture. A sharp decline in species of rice, wheat, trees, cattle and other livestock has exposed the vulnerability in declining agricultural productivity and pest infestation. The natural heritage of ecosystems and component agrosystems, are being gradually squeezed of their vigour and diversity. The protection of the living resources is vital for sustenance of ecosystems.

CONCLUSION:

The state of the environment and the conditions of natural and living resources in Pakistan are under stress, in a fragile equilibrium. Desirable status for sustainable and equitable development is attainable by the satisfaction of basic needs and improvement of quality of life, instead of only emphasizing economic growth. The magnitude of accumulated environmental problems owing to the legacy of past neglect and present-day management of the natural resources is evident all over the landscape in Pakistan. Though many fundamental limits and unsound environmental aspects of development persist, assessment and mitigation efforts to arrest further

degradation of the resource base need to be expanded. For the future health of the nation, economically, socially and environmentally safe solutions are the need of the day. Development policies must therefore take into account all of these considerations. If not, actions to mitigate one problem could easily exacerbate others. Nothing can harm the country more seriously than the resource base degradation, as environmental problems in Pakistan are growing at a faster pace than the sectoral growth in the economy.

The water-related environmental problems such as salinity, waterlogging, and desertification are taking about 40,000 hectares of agricultural land out of production yearly. Lack of freshwater flow and marine pollution are taking a heavy toll in terms of destruction of mangroves, delta habitats and wildlife sanctuaries in the Indus Delta.

Aggregation of climatic events, flooding, droughts, desertification, atmospheric pollution, contamination of drinking water supplies, and coastal pollution are taking a heavy toll on the natural resources and habitat. Natural disasters, earthquakes, land and mud slides, sinking of the ground water table, deforestation, and pests and pesticide usage are other environmental problems. It is estimated that Rs. 1,000 million of lost productivity are incurred annually. In 1988, losses due to floods are estimated at over Rs. 5 billion. Environment and human behavior, and social and economic aspects of development, need to be

addressed in a unified and holistic development planning strategy. Strict enforcement of environmental legislation will reduce the environmental degradation. Responsive and timely strategy for economically, socially and environmentally sustainable solutions is the need of present and future growth.

The State of the Environment: A Field Perspective

Mrs. Aban Marker Kabraji
Pakistan Country Representative
International Union for Conservation of
Nature and Natural Resources

We all know that the state of Pakistan's environment is not healthy. Our forest cover is being severely depleted with the consequent erosion of top soils and siltation of rivers and dams, and resulting floods.

Our soils are waterlogged and saline, and creeping desertification and unsound agricultural practices have laid waste thousands of acres of prime agricultural land.

Our cities are polluted, overcrowded and unhealthy and with a population growth of nearly 3% things are not going to get better unless measures are taken with some urgency. I would like to focus in this talk on the attempt being made by the government, NGOs and the IUCN programme to address these crucial issues and the role we think the media can usefully play.

Speakers before and after me will cover at length the particular aspects and technical details relating to the state of the environment in their particular area of specialization. What I would like to do in this talk is to focus on the field activities of an environ-

mental programme run by my organization IUCN in Pakistan, and relate these to the areas of environmental stress and how we try to project our message through the media.

The programme focuses both on environmental conservation and on rehabilitation. The paradigm within which all activities develop is that of sustainable development. And we recognize that no environmental project whether of conservation or rehabilitation will ever succeed over a period of time until people are educated and convinced of its worth, and until attitudes are changed. For this to happen one needs an environmental education aspect built into each project, which involves interaction with the print and electronic media. As I continue, I shall give examples within projects that illustrate what I mean.

First, however, I would like to give a little background to the environmental programme of which I speak, and to explain how one attempts to develop a comprehensive matrix of interaction at

all levels within this country, its people, and their use of their natural resource base.

The IUCN programme works with government and NGOs, with resource persons and institutions, and with the media through the recently established Journalists' Resource Centre for the Environment.

It works at high-level policy making through the development of a National Conservation Strategy and a Coastal Zone Management Plan. It works at the institutional level by supporting the development of initiatives by the Government of Pakistan such as the Wildlife Institute, an environment Institute, and by NGOs such as the NGO Resource Centre. The Journalists' Resource Centre also looks as if it will eventually develop into an institution in its own right.

It works on training and imparting environmental impact information as in running EIA Workshops for civil servants and explaining the methodology and necessity of an EIA. It works in raising environmental awareness and education such as a formal environmental education programme with schools, the Teachers' Resource Centre, and the governments' curriculum review. It also tries to take this initiative into the region and is in the process of organizing a major conference of Indian and Pakistani environmentalists in 1989.

And finally, to get down to where it really all comes together or falls apart, where the success or failure of any

programme is eventually determined, it works in the field.

Now let me stop a minute and explain that all field activities, in fact all activities of the IUCN programme in Pakistan, are developed by a process of consensus - a consensus born of discussion between the agency or people who wish to do something about an environmental problem and IUCN's agreement or prior concern that yes, a potential or real problem already exists and needs to be addressed.

This has also meant however, that there is no grand plan superimposed from above in the determining of which problem needs to be addressed first. It depends on how they are prioritised by the agencies and their concern.

Interestingly enough, this has meant that our major initiatives in the field have all focussed on environmental management activities that have involved a large element of forestry. So, for example, we work in Hunza with the Aga Khan Rural Support Programme on training villagers to plant trees and to regard them as an economic alternative to subsistence agriculture, in Ziarat on the conservation of the juniper forests, in Orangi with the OPP on tree-planting in an urban slum, and in the Korangi/Phitti area outside Karachi on the mangroves and on the other serious aspects of environmental management such as pollution.

In each of these projects, which are but a few examples of the many, we

build in at the initial feasibility stage a process of consultation through workshops of all the agencies eventually responsible for implementation and with the people of the area, through a socio-economic questionnaire, the attitude of the locals to their use of the natural resources. This consultative process helps in ensuring that when the project is to be implemented, it is with the understanding and approval of those directly affected. To add the further dimension of education and awareness for the public, journalists are invited to the workshops and taken to project sites to encourage them to write about the issues.

While this process works well on a project-to-project basis, it has become clear that one needs an easily accessible storehouse of environmental information for journalists and other media persons. An attempt to redress this need was made by the establishment of the Journalists' Resource Centre as part of the National Conservation Strategy or NCS. The NCS itself is the most comprehensive review ever undertaken of the economic development policies of our government as outlined in the five-year plans and their impact on the environment. The JRC has as one of its primary objectives the dissemination of the information that the NCS yields, and its analysis and discussion by the media. Thus the JRC publishes an NCS Bulletin of environmental news, holds press conferences as part of NCS workshops, and develops a communication strategy for the National Conservation Strategy. In addition, it

is in the process of putting together a library and databank on all environmental information available, commissioning studies and articles on environmental issues, and will in its proposed programme be running seminars for the media on environmental reporting, organizing exchange programmes within the region, and offering fellowships for journalists interested in further training on environmental reporting.

JRC was started only a few months ago, but already the response from the media has been considerable and JRC gets more requests than it can handle.

There is high receptivity to environmental issues within certain sections of the media in Pakistan today — most particularly the English print media. Whereas a few years ago, you would be hard put to find one article in a week which related vaguely to the environment, one now finds such articles almost on a daily basis (albeit within the inside pages). And what the English language press reports today, the Urdu press frequently picks up the next day. In some cases in fact, the Sindhi press is ahead of both in reporting on environmental issues particular to Sindh.

This seminar is therefore very timely. We address today an issue whose time has come in Pakistan.

State of the Environment

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How resources have been mismanaged and what kind of environmental problems have emerged in Pakistan are the main issues that I plan to undertake during my talk and slide-projection on the subject of the State of the Environment. But before I do that let me emphasize that there are three fundamental principles that govern the preservation and protection of the environment.

The first principle is sustained use of the natural resource-base. This means that the productive systems do not overuse or exhaust the resources and that we judiciously exploit the natural reserves to maintain their productive capacities. For example, if we need to cut down trees then enough should be planted to maintain their growth and the forest reserves. Similarly if we keep on producing the same crops on the same land, we maintain the soil fertility along with its productive capacity. Each and every resource base has a carrying capacity which is not unlimited. Take the case of grazing land. If it is allowed to have an animal population beyond a certain limit, the animals will overgraze and denude the

soil. That is exactly what has happened in Baluchistan. Most of its area has lost its productive capacity and is deserted mainly because of overgrazing.

The second principle is maintenance of the ecological processes. The Earth's ecosystem works like a machine. It has numerous systems and sub-systems where every nut and bolt has a definite function to perform. If one function fails it affects the overall efficiency of the system, but when any vital part of the system breaks down it reflects on the working of the machinery.

A number of similar things are happening around us and affecting the efficiency of our global machine. Unknowingly we are mismanaging the environment, and this could ultimately lead to the collapse of the earth's ecosystem. The famous gas leaks in Bhopal and Italy are not the only examples to quote here. Even in our own country there are examples where poisonous gases are being released into the atmosphere. In Charsada the management of a chemical plant

releases excess chlorine into the atmosphere not realising what damage this causes to the environment. Similarly, on visiting Pak-Arab factory in Multan I discovered that nitrous oxide gas is being released into the air continuously at the rate of 400 ppm. Now these are the factors that are seriously influencing and interfering in the natural processes of the earth's ecosystem and adversely affect the ecological balance.

The third and the most important factor is genetic diversity. Each and every species created by God on this planet has a certain function to perform. From the micronutrients of the soil to the flying birds in the air, each has a role. A good example to quote here is that of the mustard crop in Pakistan which was found to be declining in its productivity in 1968. In spite of good rain, fertilizers and pesticides, the yield was found to be below expectations. It was found that the pesticide used in the previous years had killed the honey bee which was the main carrier of the pollen grain. As there was no honey bee, there was less transfer of pollen during that year and hence little production of mustard. This is just one of the numerous examples that reveal how limited our knowledge is about the functions of the animal species. What we can say with certainty is that the elimination of genetic diversity would cause irreparable damage to the environment. We need to take careful, preventive measures against this.

Therefore, keeping the above three principles in mind, let's view some of

the slides and see how we are disturbing our ecological processes and what are the problems emerging from the mismanagement of the environment.

Slide I : Peshawar

Glancing through the documents of Peshawar we find that around 400 years ago it was one of the densely forested areas of Pakistan. Babur, the first Moghul Emperor, in his book *Tuzk-e-Baburi*, has documented his experience of hunting rhinoceros in this area. Today there is not a sign of either the animal or the thick forest, a glaring example for mismanagement and the changed complexion of the environment.

Slide II : Murree Hills

It is claimed that 3% of the area in Pakistan is forested. Right as the statistics may be, we ignore the fact that by felling trees we are lessening the density of the forests. An acre of forest can have 1,000 trees as well as 200 trees. As shown in the slide, although we are not reducing the forest area yet, by cutting down trees we are lowering the density and, as is evident in the picture, also increasing soil erosion from the slopes of the Murree Hills.

Slide III : Swat

Mismanagement of forest resources is another great loss, in terms of both revenue and its potential use as a building material. Swat has as much as 22% of its area forested with timber, but unfortunately this useful forest

resource is mostly utilized for burning purposes.

Slide IV : Khyber Pass

A one-time forested area has now turned barren. Overgrazing has even removed the vegetative cover of grass and bushes. One cannot imagine this was once an abode of rhinoceros, which is normally found in thick forests only.

Slide V: Northern Mountaineous Area

The major cause of deforestation and removal of the vegetative cover in the mountains is the increasing livestock population. In the last seven years the livestock population in Pakistan has increased by 16 million, effects of which are evident from the denuded mountains and hilly areas.

Slide VI : Balochistan

Movement of nomads had been one of the traditional practices of these areas. Ever since they have started settling down, they have been adding to the deforestation and disappearance of soil vegetative cover.

Slide VII : Chitral

Safe-guarding forests was at one time a part of the community culture. If somebody ever cut a tree or destroyed the forest, the locals would kill his sheep and distribute the meat amongst the community. This was a punitive pressure adopted for safe-guarding the trees. This tradition has disappeared gradually; Chitral has lost its

value system of community management of forests.

Slide VIII : Dune Stabilizing

Stabilizing the sand dunes has been a serious effort taken up by the forestry department which is growing special trees and bushes for arresting the expanding deserts.

Slide IX : Terracing

Terracing is another useful strategy for the utilization of land in the hilly areas. However, it has certain limitations. Carrying it out on steep slopes could add to the soil degradation. In Swat, slopes beyond 30° increase the soil movement and erosion.

Slide X : Floods

The intensity of floods in the last couple of years has increased substantially. Besides other factors one thing is certain that the major cause is deforestation. Whenever there is rain and runoff, water is absorbed by the vegetative cover of the soil. The greater the growth, the more water is retained into the ground. Removal of vegetation, therefore, increases the water run-off, exposes the soil and intensifies erosion, thereby causing floods.

Slide XI : Crop Damages

Colossal damages to crops due to heavy floods in Pakistan are one of the consequences of environmental deterioration.

Slide XII : Irrigation

Sustained development of irrigation and water resources is an essential feature of development. Mughals developed the art of canal water systems in the sub-continent. They introduced ornamental canals for irrigating the gardens; these were later used for agricultural purposes. Britishers developed an irrigation system in the Peshawar valley and built canals and distributories, but also kept a provision to remove excess water through drains and water outlets. When the population of the Peshawar valley increased, people started encroaching upon these drains and outlets. As a result the excess water drainage was obstructed causing water logging. This is exactly what has happened in Punjab and other areas of Pakistan.

Slide XIII : Watershed Management

Watershed Management is another very important step to control erosion and siltation. Unmanaged watershed areas are great threats to dams and lead to the rise of river beds.

Slide XIV : Urbanization

More and more concrete buildings are replacing agricultural lands. Almost every year 0.6 million hectares of land is being lost to cities. People migrating to large cities not only erode the rural settings, they also try to build up the rural life style in the urban areas. They mostly live along the river sides in temporary shelters and have large livestock herds. Lyari river in Karachi is a

good example where people have even moved into the bottom of the valley.

Slide XV : Squatter Settlements

These kinds of settlements are common in Peshawar and Karachi.

Slide XVI: Drainage & Sanitation

Conditions in cities are pathetic. Often the systems get choked and create hygienic problems.

Slide XVII : Solid Waste Disposal

City wastes normally contain 60% organic material which can be recycled or converted into manure. This usually does not happen. Instead they are disposed of by burning which causes pollution in the cities. There is only one compost plant in Karachi that is utilizing the waste. Otherwise solid-waste disposal is a big environmental problem in the big cities.

Industry, Environment and Media

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Introduction

It was a significant achievement for man to have discovered fire, initially to ward off animals that threatened his life and surroundings. Soon he learned that it could as well help him in improving his quality of life, i.e., he could cook food and keep himself warm. Since then man has continued discovering the secrets of nature and in many ways has used that knowledge for providing comfort in his life. Nature, which has a built-in system of checks and balances, however, started getting disturbed with the onslaught of man's excessive exploitation. This went on unnoticed for a very long time until the turn of the twentieth century when it dawned upon man that this exploitation had taken a tremendous toll. Various disturbances manifested themselves in one form or another. This phenomenon of disturbed inter-relationship of environment and man was very seriously recognized in the industrialized west in the early sixties. Lots of work has since been done to understand and annul this disturbance. It is time that we in Pakistan also become alert to the ensuing situation and join the world movement on environ-

ment for the global as well as national interest. With this point in mind the following sections will cover industry in Pakistan, its impact on the environment and the role of media in creating necessary awareness of the environment.

Industry in Pakistan

Pakistan at the time of its inception in 1947 was primarily an agricultural country. Except for a few mills of flour, rice, cotton ginning, one cement plant, two sugar mills and a few confectionaries there was no industry worth the name. The cottage industry was also of medieval type, except those of sports goods and surgical instruments. In the last 41 years, industries of all kinds have been put up to fill this vacuum. Hundreds of units ranging from small to medium size capacity were raised in all trades of commerce and industry. Leather, sugar, textiles, paper and board, glass and ceramics, chemicals, polyester fibre, PVC, plastics and other such industries sprung up in a short interval leading to a new phase of industrialization in the country. Heavy industries like fertilizers, refineries, steel mills, power

plants, oil and gas explorations, automobile assembling units, and other heavy engineering industries were set up during this interval as well adding a new dimension to the developmental scenario.

Environmental Effects of the Industry

Although Pakistan, as compared to the developed world, is far behind in terms of industrialization, the sudden burst of activity in the economic field has left behind results that can even be seen and felt today. One can see heavy dust being spewed out of a cement plant engulfing a large residential area inside Karachi city. And while flying over Karachi, on the way to Sukkar, clouds of dust can be seen, wind-borne, travelling miles over city areas. Similarly, nitrogen oxide fumes from a fertilizer plant near Multan have been polluting the surroundings ever since its start-up in 1962. There are numerous instances of uncontrolled release of chlorine and ammonia gases from paper, insecticide, and fertilizer plants. The brick and lime kilns, spread all over the country, are another great nuisance creating atmospheric pollution with oxides of carbon and sulphur and particulates. Unchecked CO₂ emission from thermal power plants, industries, and furnaces, is another hazard uncontrolled so far. The effluents from refineries, fertilizer plants and steel mills contain oil, coloring materials, hazardous chemicals and toxic wastes that cannot be allowed by any standards. These effluents are finally disposed into ponds, ravines, creeks and rivers, thus

contaminating the surface and sub-soil waters. Rivers in Lyari and Malir carry effluents from most of the industries of Karachi city which ultimately are dumped in the Arabian Sea. Human population living around these rivers can in no way escape from the inherent dangers these poisonous chemicals pose to their lives. These chemicals to quite an extent have already affected the marine life, which is a source of livelihood for them.

The quality of surface and underground waters, in most of the areas of Hyderabad, Sukkar, Multan, Nowshera, Mardan and other parts of the country are badly affected. Intolerable smells from the stagnant waters from the industrial units is making life miserable for those living nearby. Solid wastes are disposed into the sewage system, which often breaks down creating a civic problem for the residents of the area.

There is hardly any attention ever paid by the concerned authorities to the hazards of electro-magnetic waves from overhead high-tension power transmission, microwave and radio transmissions.

Uncontrolled mining and quarrying in many parts of the country have created problems of increased landslides.

Industry and Environment in the Developed World

The west has suffered much from the environmental problems created by industrialization. All countries have different experiences arising out of

different situations at different intervals of time. However, they all acted very cautiously and fought the battle with great care. As a result of that, a serious campaign against the ill-effects of development started in the early sixties. This led to a full-fledged movement in the seventies, which ushered the world into a new era of knowledge and science. Techniques of environmental data collection, analysis, evaluation and abatement procedures were developed, from which the developed world benefitted a lot and remedied some of the damages of the past. However, there are still very many issues, like the greenhouse effect of CO₂ release in the atmosphere, ozone depletion by chlorinated hydrocarbons or acid rains that confront these countries and are being doggedly pursued for solutions.

Anti-Pollution Laws and Enforcement in Pakistan

The Factories Act of 1934 does mention that harmful effluents should be treated before discharge. The Mines Act of 1923, and the Oil and Gas (Safety in Drilling and Production) Regulations of 1974 do cover environment, but in a limited manner. The lacunae is that the law does not prescribe any control limits. The entrepreneur, public as well as private, believes in maximum return for minimum investment, i.e. social obligations are not given due attention. Though many big industrial establishments have safety engineers on their staff, only a few have up-to-date and effective safety, health and environment programmes.

A recent development is the issuance of the 1983 Pollution Control Ordinance. It is reported that new regulatory authorities are being established at the federal and provincial levels. It will take another 4-5 years to prescribe control limits for various pollutants and commencement of implementation.

It is obvious that the subject of the inter-relationship of environment and human society has not revised much attention in this country, whether from the technical, socio-economic, or political viewpoint.

The underlying reason is lack of awareness of the environment, and therefore lack of necessary response among public, industry and authorities.

How to Create Awareness

One key factor, which has carried forward the movement for better environment in the west, is the media. Media is a forceful means that can attract the attention of people in power and those not in power. Anyone making use of it can add to his advantage the massive support of the people, who can be reached easily through various means of communication. Books, journals, magazines, newspapers, pamphlets, films, TV, radio and satellite networks, have widened the scope of approaching all sections of society in any part of the world.

The Flixborough incident in England, the Three Mile Island accident in USA, the Bhopal disaster in India, and

the Chernobyl nuclear catastrophe in the USSR are worthy examples of good media projection which shook the world with timely and effective reporting.

Role of the Media in Pakistan

The media in Pakistan is not very active and effective on environmental issues for the following reasons:

- a) Media needs materials from scientists, social workers and economists who have evaluated the environmental issues and their impacts and can suggest solutions for their rectification. However, there is scarcity of such people in Pakistan, in spite of some scientists from the Pakistan Council of Scientific and Industrial Research, who have done some work on industrial pollution.
- b) The media are short of people with adequate technical background who can spot and highlight the environmental issues with facts and figures so that they attract the attention of concerned authorities for taking prompt action.
- c) The political stagnancy has not permitted media to probe into new areas of general public interest, such as environment.

However, the situation is not very depressing. Recently articles and letters to the editor have appeared in Karachi newspapers e.g. *Dawn*, *Jang*, *Star* and *Business Recorder* covering issues on the environment and pollution. The Journalists' Resource Centre for

Environment in Pakistan is doing pioneer work in this regard. Pakistan's TV series "Main Aur Aap" presented by Salim Tahir, is a good practical example of how media can project the environment. In one of his presentations he projected effectively the pollution being created by various industries in Lahore town and suburbs.

Low-Income Housing and the Urban Environment

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Pakistan's Urban Crisis

There are four broad components to the urban crisis in Pakistan. First, the inner city degradation. In this, the old city centers containing historic, cultural and civic institutions have been transformed into godowns and wholesale markets. Second, environmental pollution caused by industrial wastes and exhaust of vehicles, which has created enormous health hazards for the urban population. Third, problems related to the maintenance and operation of services, due to which sewerage, water and electric systems do not function, garbage is not collected and disposed of, and transport systems do not work. And fourth, the problem of housing. The rate of growth of katchi abadis increases with every passing year, in spite of government plans for controlling it. This results in the creation of settlements that are a major source of urban environmental degradation. This paper will deal with the last of these components.

Housing Needs and Katchi Abadis

In 1984, 31.2 per cent of Pakistan's population lived in urban centers. By 2000 this figure is expected to increase to 40 per cent, due to an annual population growth rate of 4.4 per cent in the urban sector. To accommodate this phenomenal growth, 270,000 new housing units are required every year. However, only 60 per cent of this requirement is fulfilled, most of it through the expansion of katchi abadis, where there is little or no hope of regularization of tenure or development of services.

At present 26 per cent of Pakistan's urban population lives in katchi abadis. For Karachi this figure works out to 38 per cent. The katchi abadis grow at an annual rate of 7.3 per cent as opposed to 1.5 per cent for the planned areas.

This means that, if things remain as they are, by the year 2000 more than 50 per cent of Pakistan's urban population will be living in katchi abadis. Since these katchi abadis have

no services, sewerage disposal is the main problem faced by them, and since their relationship with the state is, to say the least an unequal one, garbage is not lifted from their lanes and health and education services are not developed. The regularization and development of existing katchi abadis and the prevention of new katchi abadis is therefore not only the most important aspect of housing in Pakistan, but also the major urban environmental issue.

Reasons for the Growth of Katchi Abadis

The press in Pakistan has been very critical of the development of katchi abadis and various editorials have attacked land grabbing and asked the government to take strong action against encroachers. However, the reasons for the development of these abadis has not been explained to us by the media. The reason why katchi abadis develop is that the cost of land developed by the state or other formal sector agencies is far too high and hence cannot be afforded by the urban poor. The procedures adopted for acquiring this land are also long and cumbersome. Even if some of the poor can raise the finances required and complete the procedures, it may take as long as 10 years before the development process is complete and possession is handed over to them. The poor, on the other hand, need land immediately. Again, once possession is handed over, technical assistance and credit for house construction is simply not available.

The government failure to address the needs of the lower-income groups has led to the creation of an informal sector which acquires land through illegal or extra-legal means. This land is sold to the poor without cumbersome procedures, at a price they can afford, and possession is given immediately. The informal sector provides credit and technical assistance for house building and the residents lobby with state agencies for services and acquire them over decades, often in defiance of state regulations. Thus, katchi abadis continue to grow.

Government land meant for the poor continues to be developed as well, often with subsidies, and is acquired by professional speculators or the middle classes for speculative purposes. They thus benefit from subsidies that are actually meant for the poor. All over Pakistan such land lies unused for years. For example, of the 110,470 site and services plots developed by the KDA between 1970 and 1982, only 3,500 have so far been occupied.

The Katchi Abadi Improvement and Regularization Programme

The government of Pakistan is committed to regularize and develop those katchi abadis on state land which were in existence on or before 23 March, 1985. New katchi abadis, or growth on existing ones, after this date, however, are to be treated as encroachments and there is no plan for their regularization. The regularization process inaugurated in the mid-seventies has not yielded successful results. Less than 5

per cent of the sites have been upgraded and only 12 per cent of the population has acquired proprietary rights. In Karachi, for instance, out of 223,000 housing units only 20,000 have actually acquired lease rights over the last 15 years.

There are a number of reasons for the failure of the katchi abadis improvement and regularization programme. The main reason is that the government cannot afford to develop and regularize the katchi abadis at its own cost. It has to depend on recovering its initial investment from the beneficiaries through lease and development charges so that this sum can rotate to other abadis. This recovery has not materialized, and a 20 per cent default in payment completely upsets the viability of the programme. In the case of Karachi, this is exactly what has happened during the sixth five-year plan period.

Again, there are a host of reasons for the beneficiaries not coming forward to pay the regularization and development charges. Many residents of the katchi abadis feel that the regularization announcement has given them a de facto security of tenure and so a de jure security is not really required. Others have little faith in government agencies and feel that payment of the regularization and development charge will not necessarily bring development to their areas. There are complaints that the charge is far too high for the poor to afford and that the procedures for acquiring a lease involve bureaucratic red tape and corruption of the worst kind. In view of

these attitudes, it is felt that the loans the government has negotiated with international agencies for this programme will not be repaid and after an initial start the programme will come to a halt.

Apart from the difficulties involved in recovering finances from the residents, there is a major technical flaw in the programme itself. In the development of the katchi abadis, certain standards have been stipulated. The application of these standards results in dislocating a very large number of residents. Providing alternative accommodation to such residents is a major social, financial and logistic problem. The scope of this problem can be judged by the fact that more than 50 per cent of the 2,103 million rupees required for the Karachi katchi abadis improvement and regularization during the sixth five-year plan period was to be spent on this exercise.

To overcome these difficulties, the programme concept had envisaged major community participation in planning, development financing and future maintenance of the abadis. However, such participation has not yet materialized, and the majority of katchi abadi residents are not even fully aware of the aims, objectives and mechanics of the programme itself.

Two Successful Projects

In spite of the fact that katchi abadis continue to grow and that the Improvement and Regularization Programme has so far been a dismal failure, there are some signs of hope

for the housing sector in Pakistan. These are provided by two pilot projects: the Incremental Housing Scheme, popularly known as 'Khuda ki Basti' in Hyderabad, and the Orangi Pilot Project (OPP) in Karachi.

Khuda-ki-Basti

In the Khuda ki Basti Scheme, the Hyderabad Development Authority (HDA), following the example of the informal sector, has been able to provide unsubsidized land to the urban poor at a price they can afford with immediate possession and without involving the residents in any bureaucratic red tape. The HDA has also managed to keep the speculators out by adopting an appropriate on site screening process and by legalizing tenure only after the full payment of Rs. 9,600 has been recovered over a period of 8 years. This payment is realized through an initial payment of Rs. 1,000 and the rest through small monthly installments. The informal sector has been inducted into the scheme to provide technical help for house building and an incremental, and thus affordable, system for the provision of services has been developed.

Orangi Pilot Project (OPP)

Unlike the Khuda Ki Basti, the OPP operates in existing katchi abadis in Orangi Township. These abadis have a population of about one million. In the seven years of its existence, the OPP has been able to motivate the residents to finance and build their own sewerage systems. In this process

43,000 houses have mobilized over 30 million rupees and almost 3,000 lanes are now free of waste water and excreta. The OPP has provided motivation, technical advice and tools, but has not subsidized construction in any way. The research and extension method, which has made the OPP's low-cost sanitation model so successful, is being applied to a housing programme, a women's welfare programme, an economic programme and an education programme. In addition, due to the awareness generated by the OPP programmes, the residents have also involved their area councilors and the funds allotted to them in the development process. All this has had a major impact on the physical environment. The average expenditure of the OPP on administration, research, extension and capital costs works out to 3 million rupees a year and shows that katchi abadi development is possible without large fundings and the intractable problems associated with "cost recovery." In addition, the people's organizations that are created to finance and develop the services take over the operation and maintenance of the systems.

Lessons Learned from the Two Projects

The lessons learned from the Khuda ki Basti and the OPP model are of great significance to the housing sector in Pakistan and hence to the urban environment. The HDA's scheme has es-

established that, although the poor cannot afford to pay for serviced land as developed by state agencies, they are willing to move in and build on unserviced land provided the cost is low, water is available, and there is the possibility of acquiring other services incrementally over the years. It has also been established that, speculation can effectively be controlled if tenure security is linked to the construction of a house on unserviced land within a month of allotment. Again, if allotment procedures are simplified to on-site negotiations, and if services are to follow habitation incrementally, then direct contact is established between the owners as a group and the government agencies. This makes community awareness and involvement possible. Properly managed this can also lead to community operated and maintained services and community management of credit.

The OPP on the other hand has established that communities can be motivated into organizing themselves, raising finances and developing and maintaining services, provided the unit of organization is small and cohesive. Thus organized, communities become susceptible to advice and can affect government policies and their manner of implementation at the local level. Successful motivation, it has been established, is the result of social, economic and technical research and extension. The process, in addition to mobilizing the community, can also reduce development costs by over 60 per cent of the development charges of the

local authorities, improve the housing stock, establish credit systems where recovery of credit becomes possible, increase incomes affect health and education standards positively, facilitate self government and decision-making at the local level, and make government aid and assistance useful and effective. All this affects environment in the larger sense of the word.

Replication of the Projects

If the growth of katchi abadis is to be stopped, then easy access to land, credit and technical assistance has to be provided to the urban poor. The HDA's Khuda ki Basti scheme shows how this can be achieved. Similarly, if existing katchi abadis, or other low income areas, are to be physically, socially and economically developed, then the methodology of the OPP must become a part of official planning. For the development of the shelter sector in Pakistan the replication of these two projects in a big way is necessary.

The Two Projects and the Media

The media has covered the two projects regularly. However, the importance of the projects for the development of an appropriate housing policy has not been conveyed to the public. Nor has the methodology, developed by the two projects, been seen in the context of the larger environmental crisis in our urban centers. Unless this is done, the real

value of these projects cannot be understood.

Informal Urban Development

However, one issue that the two projects have not addressed themselves to the possibility of the conversion of the areas they are working in into vertical slums. This process is already taking place in a big way in other low income areas of our cities where plot sizes are small and land values are high. As a result, densities in these areas are abnormally high, no consideration is given to light, ventilation, sanitation and safety requirements, and all available open space is converted into built area. In many ways, this development will have far more serious repercussions on the urban environment than the development of horizontal katchi abadis. Large areas of Karachi, like Khadda and Phase 1 of the Lines Area Redevelopment Project, have already suffered this fate. State and development agencies cannot possibly control this growth because of their centralized manner of operation, corruption, and their non-representative nature. It is felt that the local governments, through the elected councillors and with the support of the community, could do a much better job. Maybe another pilot project can be initiated, on the principles developed by the two projects, to deal with this issue. The media meanwhile need to understand this phenomenon, and highlight it so as to put pressure on the relevant communities and state agencies, to tackle it.

Environmental Movements in India : A Journalist's View

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Judging from the stories appearing in the Indian press, the environment is a subject whose time has come. Hardly a day passes without some mention of a development concerning the environment, whether it is dams, pollution, a tribal issue or slum dwellers. Every paper carries more than one such item as a matter of course now.

The Centre for Science and Environment (CSE) in New Delhi, which is a voluntary organization devoting itself to the propagation of information on related issues, has been compiling a "Green File." This is a compendium of news items from various newspapers, in English and Hindi, from all over the country, every month. It is a fat, 200-page document and gives an excellent idea of the length and breadth of the coverage of environmental news and views in India.

This is in addition to the "State of India's Environment Reports" produced by CSE in 1982 and 1985. Although these are heavily documented reports, they are almost an extension

of journalism in that they draw upon the work of hundreds of scribes, full-timers and freelancers all over the country. By any stretch of the imagination these reports are in the forefront in exploring facets of the deteriorating environment in India. Even the Greens party in West Germany has heralded them as classics of their kind. Harford Thomas, a former editor of *THE GUARDIAN* in London, went to the extent of asserting that these reports were something that a country like Britain could emulate.

The CSE is also doing very useful work by collaborating with both non-governmental organizations and official agencies to inspire the message of environmental protection. For instance, the director, Anil Agarwal, has addressed all MPs and the secretaries of all ministries on several occasions. This year during national environment month, which began on 19 November 1988, it is for the second time organizing a fellowship scheme. Journalists are asked to submit proposals regarding a story they want to pursue on a

particular theme. This year's theme is "Conservation of Water Resources".

The journalist who is selected will be paid one third more than his or her monthly salary, plus all expenses, to enable him or her to research a series of articles, with prior permission from the editor and with the understanding that they will be published if found good enough. This has the very satisfactory consequence of reaching a very wide audience through professional skills available and actual research. The message is thus taken through journalists to the corners of the country.

Environment is considered staple fare for all newspapers because it is "non-political." In other words, it does not deal with political parties and their comings and goings and is therefore seen as non-controversial. Actually it is also entirely political because environment deals with specific interests and their manipulation. Environment can be seen as the source of all the resources that make life possible: food, energy, materials, etc. The control of these resources is entirely a political issue, although it does not figure as such because it does not involve political parties.

Increasingly, environmental activists are beginning to make their voice heard. And the press, as well as electronic media, are responsible for disseminating news and views on this vital issue.

This writer has often been asked, both within the country and abroad,

whether there is an environmental movement in India like that of the Greens in Western Europe. My answer, invariably, is that there is not, and there should not be.

There are grassroots movements, which can broadly be said to represent "People's" interests like environment, anti-nuclear activities, peace, health, safety and women's issues, but these are too specific to be united by a single common strand. What would a Garhwali-speaking woman from the Chipko movement in the hills of Uttar Pradesh be able to communicate to, say, the tribals speaking of corruption of Oriya in the hills of Gandhamardhan, where bauxite mining is being resisted?

The Greens have drawn blood in West German elections because West Germany is a highly homogenous society; India is not. Indeed, one of the revelations of the as-yet fledgling environmental "network" in this country is that India is, simply, the country with the greatest ecological diversity in the entire world. In other words, there are no peoples anywhere else in the world, to use a terrible but highly accurate cliché, whose unity is so bound up with their diversity — diversity of language, caste, food, habits, building styles, etc.

To propose one unified, non party movement, therefore, in this country is an exercise in futility. However, movements are growing even in the remotest corners of every Indian state to resist what are the infringements of the basic rights over resources that people require to meet their day-to-

day needs. In Chhotanagpur, for instance, the Jharkhand movement has for a few decades been calling attention to the marginalization of those to whom the land once belonged. This land has been the staging ground for India's massive heavy industrialization process, of which the Tata empire is the most famous, followed up by public sector industries.

In recent years, the slogan "Chhotanagpur, Santhal Pargana: *Poor Bihar Ka Hai Khasana*" indicating how the wealth of Bihar is concentrated in these two regions, demonstrates how the poorest of the poor are no longer prepared to let their control over natural resources be wrested from them.

Over the last decade, adivasis in these two regions have launched what can only be considered a political movement, sometimes by violent means, to resist the cutting down of traditional species like *sal* by the Bihar forest development corporation in order to plant the more commercially profitable teak. The adivasis require *sal* for many diverse needs; teak will only furnish the homes of the rich in the cities. This movement culminated in the Gua massacre eight years ago in which three policemen and 13 tribals were killed. In those days it was treated as a "law and order" problem. Today it would be considered a political tendency. No wonder, then, that the adivasis say "*sal* is Jharkhand, *sagwan* (teak) is Bihar."

People's resistance is also growing against their displacement by big industrial and agricultural projects. The

most concerted of late was the thwarting of the missile testing range in Baliapal, Orissa. It would have been considered inconceivable only a couple of years ago for ordinary villagers to prevent the defense authorities, from bulldozing their way and clearing a site for such a range.

On the mainland across the harbour of Bombay, farmers similarly agitated to raise compensation for land to be acquired for the new port to be built there. Even more significantly, the belated resistance of those who are going to be displaced in three states, Madhya Pradesh, Gujarat and Maharashtra, by the series of dams on the Narmada, once again shows that people who can scarcely eat a meal each day can mobilise themselves and halt the advance of a multi-crore, World Bank funded project, the largest of its kind in the world.

Although the generation of nuclear energy is by no means a major political issue as it is in West Germany and other industrially advanced countries, it has its antagonists here too. In Karnataka, there is fierce opposition to the Kaiga atomic power plant to be set up in the western ghats. In Narora, U.P., the people are also rising against such a potential monster in their midst.

Although such movements, which have their small city support groups, like those rooted in slum-dwellers' movements and even smaller groups fighting for health and women's rights, are by their very nature situated hundreds of kilometers apart from each other

there is now some dialogue between them. Only a couple of months ago, for instance, the social activist, Baba Amte, took the initiative in calling a meeting of all activists from different parts of the country who are fighting against big dams. There is now a loose coalition of such groups which will culminate in a joint action in April next year at the tri-junction of Maharashtra, Madhya Pradesh and Andhra Pradesh, to call for a halt to the series of "cascade" dams on the Indravati and Godavari, which pass through the best preserved tracts of dry deciduous forests where teak thrives. A "Jungle Bachao, Manav Bachao" movement, however loosely organized, is very much a slogan which binds these disparate elements.

Perhaps the best informed grassroots movement in the entire Third World is the Kerala Sastra Sahitya Parishat (KSSP) which now can claim an astounding 20,000 members, mainly school and college teachers and students who, as its name suggests, began by translating scientific works into Malayalam. Inevitably, however, they were drawn into one of the most protracted environmental struggles in the Third World with the controversy over the Silent Valley hydroelectric project. For the first time, ordinary people began to discuss issues like ecology, genetic diversity and the value of flora and fauna. Although every political party in Kerala, from the very powerful CPM to the communal parties, were all in favour of the project, at least the Marxist-led trade union of the Kerala State Electricity Board which wanted to build the dam, the

weight of scientific opinion mobilized by the KSSP succeeded in tilting the scales against the project. Indeed Mr. P. Govinda Pillai former editor of the CPM daily, *Deshabhimani*, who was one of the intellectuals who rallied against the scheme, risked the wrath of his apparatchiks by declaring on a public platform, "Even if Karl Marx orders me, I will not support the Silent Valley hydroelectric project!"

Following the Bhopal gas tragedy, people's concerns for occupational health and safety have also risen to the fore. Traditionally, unions have been concerned with economics, with wages and working conditions rather than their lives and health. In incidental Bombay's textile industry, prior to the prolonged strike, the largest organized sector of the working class in the entire world, with a strength of 200,000 it was far more common for workers suffering from the respiratory diseases known as byssinosis to ask for higher monetary compensation, rather than controls on the emission of dust in congested cotton mills.

The number of social activists who came to the support of the Bhopal victims, including science-for-the-people volunteers, doctors and social workers, focussed on issues of health generally, although there was a tendency on the part of the Bhopal elite to dismiss the complaints of the victims as the opportunism of shanty dwellers who were already suffering from TB in any case. The activists were able specifically to draw attention to the problems faced by women, pregnant and otherwise,

who happen to be in the vicinity of the Union Carbide pesticide plant.

Women have also been organising themselves around occupational health issues in traditional rural occupations. For instance in Nipani in Maharashtra, tobacco workers, among whom are many women, have suffered from dust and chest diseases, as do the co-workers in Kerala.

At another end of the "People's health" spectrum, there have been movements to seek a solution to the drudgery faced by women fetching wood and water, not only in the Chipko movement, but elsewhere in the plains as well. In Bombay, an organization called the Society for Promotion of Area Resource Centers (SPARC) has, among other activities, organized pavement women to design their own homes in a pilot exhibition in order to convince the city housing authorities that they are capable of being literally the architects of their own future.

All these movements, in their separate ways, constitute what Kothari calls the "non-party political process." This has the advantages of lacking the bureaucratic and often authoritarian control that any party exercises. On the other hand, they often rely on volunteers and the idealism and charisma of a few leaders — Chandi Prasad Bhat, Baba Amte, Shankar Guha Niyogi, Siby Soren, Swami Agnivesh, to name just a few. And once these leaders are no longer on the scene, these movements tend to die an unnatural death.

All in all, however, they represent a very dynamic and heartening tendency on the Indian political scene and one which may well force the pace of traditional politics. Already, for instance, many more unions, and the political parties supporting them, are conscious of the dangers to life and limb that their working conditions engender.

Although these movements are often termed "non-political", they are truly representative of people's interests, distinct from the interests of a few leaders and their party apparatus. If one takes just the sites of several current controversies — the Narmada dams, the Baliapal test firing range, the Kaiga nuclear plant, the Indian Rare Earths plant in Udyogamandal (Kerala), the Jharkhand movement — one gets a clear picture of tiny strands which are slowly but surely knitting themselves into a fabric of rich diversity.

In all these concerns, the press in particular, since it is not state-controlled has done good service by highlighting these movements at every stage. Indeed, many activists are also part—, or full-time journalists themselves. The noted Chipko leader, Sundarlal Bahunguna, often pens articles on his way to meetings in the nooks of India. This has therefore become a unique collaboration where the media aid the process of spreading the message of environment.

Role of the Media

Mass Media and Reporting

Mr. Tore J. Brevik

*Chief, Information and Public Affairs
United Nations Environment Programme*

The world's awareness of our earth's environment has never been more intense — so that today we are all to some extent environmentalists. Thus in governments, among people everywhere, in business and financial circles, and in the media, the attention to environmental issues grows wider and deeper. That is a significant and encouraging trend, for the solution to environmental challenges must start with a clear understanding of their fundamental importance for the future of our planet.

This process of understanding has been accelerated by a variety of environmental emergencies and dangers — nuclear accidents in the USSR and elsewhere, drought, desertification and famine in Africa, releases of hazardous chemicals in Europe and Asia, the depletion of the protective ozone layer, the effects of 'acid rain,' and the start of climate change. All have international impact, such that the world is at last beginning to respond as one.

Local, national, and international organizations and individuals are making progress in dealing with environmental problems. They are attacking acid

rain, working to protect the world's climate, and cooperating to protect the world's oceans, regulate chemicals, and counter soil erosion, desertification, and damage to tropical and other forests. In all these tasks and challenges the role of public information, particularly through the mass media, is vital in explaining, publicizing, building awareness, and stimulating action.

In working and fighting for the environment the journalist, the photographer, the film maker, the radio reporter, the TV producer, and the TV camera operator can be just as important — sometimes more important — than the politician, the scientist, and the administrator.

The role of the media is crucial because while governments make the important decisions on the environment, they do not make decisions in a vacuum. They can obviously be influenced by the opinions of their political constituencies, the mass of the people. When people are aware of the importance of their environment, want to preserve it, and are willing to make the necessary effort, governments also want to preserve it.

The striking photograph, the vivid report, the timely article that precisely explains complex matters in plain words - all these are essential weapons and tools in the cause of protecting the environment. They can, and do, contribute as much as the scientist's calculator, the administrator's analysis, and the politician's decision.

At the United Nations and specifically at the United Nations Environment Programme, reaching the media globally is essential. First, the UN and UNEP are global organizations and our responsibilities are worldwide. Second UNEP has a mandate to help catalyze action for the environment. Information is a major part of that catalyzing role.

Information is a basis for action in all human activities. At UNEP we see information as a key to international, regional, national, and community action. How do we distribute the information we have to those who need it and can best use it? There are a variety of channels and targets.

We can inform governments and institutions. We can inform NGOs. We can inform individual citizens or groups who write to us with questions and requests. But clearly the best way to reach everyone is through the mass media - newspapers and magazines, radio and television.

What do we have to tell and give the media? The range is wide. There is the basic media release reporting an event, giving the text of a statement, summarizing a scientific report on

deserts or forests or the atmosphere or water. There is the briefing paper - we call them UNEP Briefs and I have some samples with me today. These are intended as "background" - they summarize and explain issues, trends, major problems of the environment. Some recent "briefs" have covered the ozone depletion issue, the emergence of climate change, deforestation, desertification, water, and soils.

Then we have brochures and booklets - more substantial but still intended for use by the popular media. Recent subjects have ranged from atmospheric chemistry to protection of marine mammals. And of course we at UNEP publish books and use television and film.

TVE, the Television Trust for the Environment, founded by UNEP, is based in London, and its producers and crews travel around the world for reporting on the environment, making programmes that are seen by hundreds of millions of people. TVE cooperates closely in co-production with independent film makers and with major TV networks - commercial and public - on all continents. Our TV films are available to all - for moderate fees and sometimes free. It is sometimes said that no telephone call to UNEP gets a quicker response than one from a TV producer.

TV is more immediate than print. Often it is more memorable. The moving picture can say more than a thousand words sometimes. But print messages usually last longer. They can be read again. Newspapers and

magazines are passed from hand to hand. They have a long "shelf life". They can be copied and clipped. They are a written record for ready reference. They are available in libraries, or for a few small coins. TV and video are not yet universal, although they are becoming so. Until they do, the daily paper and the weekly magazine and the radio will carry the bulk of the day-to-day news of the environment.

In many countries radio carries a great deal of environmental news and comment, either from the reporters of the radio stations themselves or by using the services of the international region and national news agencies.

In just the 10 years from 1975 to 1985, the number of radios worldwide increased 58 per cent, while TV receivers nearly doubled. In the Third World, radios more than doubled, while TV sets increased three-fold. The UNESCO goal set in 1961 of one TV set per 50 people has been achieved for the Third World as a whole, though in some countries the proportion is higher and in others lower.

For instance, in Nepal, India, Sri Lanka and Thailand, the electronic media have proven persuasive when they adopted ingredients of traditional media of dissemination - humor, discussion, and illustration through dramatization and song and dance. It is an area with a great deal of scope for dissemination of information on environmental issues that affect people's daily lives.

At UNEP we try to monitor, within the limits of our resources, what is published on the environment by newspapers, magazines, and news agencies. We see only a fraction of it - but it is an impressive pile of clippings every day from scores of countries.

Special events of course can attract intense media interest. UNEP recently (October) arranged a series of meetings of experts on the issue of ozone layer depletion, the damage by common chemicals to the ozone layer which protects all life on earth everywhere from excessive ultra violet radiation, the sort of radiation which can cause cancers and eye diseases. The meetings were rather technical, but some 40 leading journalists attended and they wrote many thousands of words and transmitted several hours of television reports.

Similarly, when UNEP in June 1988 held the principal World Environment Day ceremonies in Asia for the first time - the venue was Bangkok - the local and regional media coverage was extensive.

Why is the mass media in many countries now so increasingly interested in the environment? There are several answers.

First, it is a good story, a strong story, an interesting story. Any editor who doesn't think so should think again - and read his competitors. Second, the environment concerns every reader, every listener, every viewer. There is something of vital, practical interest in it for everyone - the farmer, the mer-

chant, the scientist, the student, the politician, the family. All are affected or may be affected by pollution, desertification, deforestation, soil salinity, water quality, climate change. Third, the environment and its protection is now clearly a common responsibility - the media is assuming its part of that responsibility. There are some exceptions, but they are becoming rare - as well as letting down their audiences.

The mass media - from editors to reporters - has everywhere something of a reputation for cynicism or scepticism. Maybe that is true in part. But my own experience - as a journalist, as an information officer in Europe and Africa, and as an international civil servant - is that the media also has a sense of duty and is willing to respond to major public issues when these are competently and clearly put forward.

There are problems. Environmental issues are still of marginal concern in the media of most developing countries. One problem is that news tends to be concerned with events, whereas most environmental issues are background rather than headline stories. Furthermore, many senior editors and news media owners and managers formed their concepts of news priorities and newsworthy issues long before the environment assumed the prominence it enjoys today.

There are other constraints. News is about the unusual, so there is a tendency to emphasize dramatic hazards that are relatively rare. This natural tendency towards the dramatic often results in the media presenting information that is inadequate or not in the

right perspective. The dramatic side of an issue may be emphasized without the background information needed to balance it. This can lead to public misconceptions.

Many of these problems can be overcome by encouraging the emergence of able and frank communicators on the science side and, on the media side, journalists who are prepared to understand in real depth the scientific aspects of environmental matters and to make them intelligible to their audience.

At UNEP we find that the best way to get our message into the mass media and thus to the world public and world opinion is to be factual and objective. We believe that facts and evidence are better persuaders than mere opinion. So we concentrate on presenting information and evidence that have strong scientific support. Facts and figures are often the best arguments.

The rise of the environment in the understanding and thinking of the public and the politicians and the business community has of course been accompanied by the rise of the environment reporter, the journalist specializing in writing or broadcasting about environmental problems and progress. This is particularly true in Europe and the Americas, but it is not confined to those regions. In Asia there is a growing number of journalists specializing in environmental reporting. Indeed several Asian journalists have secured UNEP awards for their years of work in reporting and explaining environmental events and issues. (They work in Thailand, Japan, and China). The

environment is not a "First World" story only. The "Third World" aspects of the environment story are urgent and numerous.

For many years the mass media everywhere had more generalists than specialists - a good journalist took pride in being able to write about almost anything. But more and more we live in an era of specialists. Journalists who concentrate on politics, economics, science and culture are among the print media specialists. Today they have been joined by the "green pens" of the environment reporters. And it is a growth industry, a most promising career for journalists. To those young - or maybe not so young - journalists here today I would recommend thinking about taking up this specialty. You will never be short of a story, and I think you will find that editors and readers are more and more receptive.

It is clear that the media help shape our common future, and that common future depends on achieving sustainable and equitable development. There can be no durable and just development without protection and improvement of the environment, for the environment is the natural resource base for all life on Earth. So when the media reports on our environmental present it is reporting also on our future. What that future will be depends on what we do now and tomorrow and next year for the environment. It is clear that most of the mass media has got that message. It is clear, too, that governments everywhere are being influenced -

positively - by public concern for the environment.

Pakistan's National Conservation Strategy reflects national concern with environmental preservation and sustainable development. It recognizes the country's major problems such as deforestation, soil erosion, desertification and degradation of irrigated lands and makes a concerted effort to address those problems.

The success of this strategy depends to an important degree upon public awareness and concern, for in the end it is the man in the street who has to act to save his own environment. The farmers in the wheat fields of Punjab and on hillside farms in the North, the herdsmen in Baluchistan and the Northwest, will preserve and develop their environment when they understand its problems and what they can do to enhance rather than degrade it. There are problems which the public needs to know about in time. Scientists say that the accumulation of carbon dioxide and certain other gases in the atmosphere is leading to global warming. This could radically affect climate, rainfall patterns and the like in many parts of the subcontinent, over the next few decades. It could also raise sea levels by as much as one meter before the middle of the next century with serious consequences for many island and coastal countries. The Maldives, for instance, could disappear totally, and Bangladesh and other low-lying delta regions would face disastrous losses of land and life.

The causes of this so-called greenhouse warming and the expected sea level rise result from human activities. For instance, the current rapid increase of carbon dioxide in the atmosphere is mainly due to increased burning of fossil fuels - coal, oil and natural gas - and to extensive clearing and burning of forests. Explaining the evolution of climate change now has a high priority in UNEP's information strategy.

These and a host of other environmental problems threaten the quality of life for our own and more particularly, the coming generation. Measures need to be taken to address these problems, to limit their effects, to find solutions, but first the public must be made aware of the problems, their nature, and the possibility of resolving them. It is a task that involves people in all walks of life, and the greatest challenge the media have ever faced - to reach far beyond their historical scope and play a key part in engineering a secure and prosperous future for our planet and all who live on it.

The Role of the National Press in Environmental Awareness

Ms. Amenah Azam Ali

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When I first entered the world of journalism, exactly six years ago, the word "environment" had a very restricted use in the media. It was associated mostly with air and water pollution, which were considered to be problems of developed countries. Many people also equated concern for the environment with a sort of sentimental attachment to endangered species of animals or birds and one would frequently encounter comments like "What use is a Houbara bustard or a green turtle, or a blind dolphin or snow leopard to us? We have much more important things to worry about in Pakistan." At that time, the notion was prevalent that attempts to improve environmental legislation were motivated by some sinister conspiracy to hold back development in this country.

Such attitudes have not disappeared, but there has been a significant change. There is now an alternative set of arguments being forwarded in the media and elsewhere, which seek to convince people that environmental concerns are not just confined to pollution, that protecting endangered species is only one aspect of protecting

and improving the environment as a whole and that environmental legislation is not just a fashionable hobby-horse but a growing and vital necessity in today's Pakistan.

A growing awareness about the environment is evident in the media. Even the letters in columns of newspapers show that people are anxious to voice their concern about what is happening to their living conditions and quality of life. Environmental problems like deforestation, soil erosion, siltation and flash floods have been brought to the news pages of the media as a result of the tragic floods in Punjab and Bangladesh. Air and water pollution and urban pollution in general are now matters of concern for most citizens, who are feeling the ill-effects on their health. The media has begun to respond to this concern with an examination of the sources and causes of pollution.

But despite these promising indications, it would be wrong to conclude that our media has really woken up to the growing importance of environmental issues in our daily lives. The

major questions have not yet been addressed seriously, if at all. Take the case of Kalabagh dam, for example. In all the reams of newsprint devoted to the subject, it is difficult to find a mention of the environmental consequences of large dams. The political, technical and economic aspects of the Kalabagh dam have dominated public discussion instead.

In some cases, journalists and publishers have played a pioneering role in promoting the kind of investigative reporting required to highlight these crucial issues. But, on the whole, the media has played a rather reactive role, reporting on events after they occur — or often, not even then — rather than anticipating these events through an informed perception of current trends.

Over the last two decades, the business of monitoring, analyzing and reporting on the state of the environment have grown into a major activity. Much of the legislation passed in various countries, including many developing countries, owes its origins to the pressure exerted by citizens' groups, individual researchers and other concerned people. Many devices, including petitions, demonstrations, lobbying and direct action, have been used by such people to draw attention to environmental issues. But the most far-reaching and immediate means of communication has been the media, whether printed or audio-visual. In fact, it is the media that have provided public platforms for environmentalists the world over to voice their concerns and discuss the

alternatives to present policies and trends. The results of such media exposure can be seen in the promulgation of environmental legislation and in a greatly enhanced public awareness about environmental issues in countries where the media promotes such reporting.

The fact that the media plays such a crucial role in raising public awareness and enlisting people's support in the struggle for a healthy environment has been recognized by institutions that address environmental concerns. As a result, several media agencies have been created which specialize in producing and disseminating information related to environment and development. Organizations like the Panos Institute, Compass News Features and the Press Foundation of Asia's Depthnews service provide syndicated features specializing in these areas. They engage working journalists on a free-lance basis from all over the developing world to gather together information and opinion on a wide range of topics. Their syndicated services are extensively used and several newspapers in Pakistan regularly publish their articles. In many Asian countries, mainstream reporter and journalists also write regularly on environmental issues and several publications have special columns or sections devoted to environment and development. In countries as diverse as China, Malaysia, Bangladesh and India, journalists have played a major role in raising public awareness on these subjects. In many cases, they have supported, supplemented and publicized the efforts of citizens

groups and non-governmental organizations.

News about the state of the environment in other Asian countries appears regularly in our own newspapers, many of which utilize the various syndicated news agencies I have mentioned earlier. But paradoxically, there is relatively little news about our own environment and one would be hard put to find the names of Pakistani journalists in the features supplied by these environmental news agencies.

Why is this so? Is it because we have no environmental news worthy of reporting? Or are there some other reasons, connected with the nature and orientation of our media?

I would like to suggest here that certain biases are built into the structure of our media and our systems of information exchange. These biases play a major role in curtailing the quantity and quality of information flow with respect to the environment and development. I will outline just five of the major biases:

The first bias, which affects the nature of news gathering itself, starts at the level of reporters. This may be called the political bias. One should not be surprised that reporters in Pakistan are primarily interested in political news: we live in existing times and politics is a national obsession. Thus, even the most banal uttering of politicians who find it difficult to muster enough votes to save their deposits in an election are faithfully reported and prominently displayed in

major publications. On the other hand, many important events, which may affect the lives of thousands of people, receive cursory attention unless some prominent personalities choose to involve themselves.

The case of the drought in Tharparkar is one such example. Though Tharparkar suffered several years of drought conditions, it is only in the past year or so that the situation began to receive media attention, when various politicians became involved. Even then, there have been very few serious investigative reports examining the environmental causes and consequences of the drought conditions.

Another example: a few months ago, I asked one of the city's leading reporters to write a story on the MQM's clean-up campaign in Karachi. His response was that it was a very "dry" subject, not interesting enough to merit his attention. Yet this was a novel situation that could have easily lent itself to lively reporting: a political party was using environmental issues - garbage and pollution - to rally public support on its side.

The habit that we in the media have acquired of depending on statements and handouts by famous and important people is one we need to overcome. Reporters should be encouraged to seek out and present new information and insights. Even those reporters who cannot tear themselves away from the political sphere need not feel there is nothing to interest them in the field of environmental reporting.

In order to understanding political trends, it is necessary to be aware of social and economic trends, too. We live in an age where resources are being rapidly depleted and populations are growing even more rapidly. Such imbalances have a political aspect, too, and the two sides of the picture need to be brought together for a fuller understanding. For example, the issue of rural to urban migration has led to major political consequences in Sind. This issue has its roots in a situation of environmental degradation and poverty, produced by the breakdown of social and economic systems that traditionally preserved the environmental balance.

The issue of rural poverty leads us to the second major bias: that of the urban areas. Inevitably, the majority of journalists live in cities and large towns - that is where the newspaper offices are located and that is where the jobs are. And since news is largely created by those who write for newspapers, it follows that the majority of news events take place in areas where reporters choose to be. So even when articles are written on environmental issues, an urban bias is evident. If we were to conduct a content analysis on environmental reporting, we would discover that much more is written about pollution, for example, than about desertification. I am not suggesting that there should be less written about the urban environment but, rather, that more should be written about the rural environment, where many of the major problems we confront are located. Since agriculture, which is dependent on the irriga-

tion system and on cultivable land, is the mainstay of our economy and the source of employment for the majority of our people, we need to pay much more attention to what is happening in this sphere. The only way to do that is to get our feet dirty and actually move into the rural areas.

So far, it seems as if reporters are to blame for the lack of environmental coverage in Pakistan. I must emphasize, however, that I am not unaware of the many discouraging factors which lie in the way of the would-be environmental reporter. One important factor is money: journalists are, by and large, an under-paid community and few publications provide even expenses, let alone incentives, to reporters who wish to undertake investigative work off the beaten track. It is, therefore, hardly surprising that most people in this business prefer to write about the more easily accessible parts of their environment. But there is also another reason for discouragement: the editorial bias. Reporters have to compete for limited space in most publications and it is only natural that one should not risk seeing valuable time and effort being reduced to nought at the hands of an unsympathetic sub-editor.

Even when reporters overcome the political and urban biases, they may find the fruits of their labour being pushed aside in favour of some piece of political news that demands more immediate attention. The only way to overcome editorial bias is if publications incorporate environment as a legitimate subject of concern into bo

news and feature pages. Happily, some major publishing houses have committed themselves, as a matter of policy, to providing space and support to environmental reporting. In such cases, the onus is on journalists to produce the goods.

But even committed reporters and publishers cannot always produce high quality environmental journalism without external help. The environment is a complex, multi-faceted subject, often combining scientific, technical, social, economic and political aspects. A fully informed perspective would require journalists to explore several sources and types of information. But the path to doing so is frequently blocked by the information bias.

The habit of secrecy and information hoarding is strong in our society. There is also a high degree of suspicion - perhaps justified in some cases - towards the profession. As a result, it becomes difficult to acquire information from those in a position to offer it - for example, researchers, policy makers, industrialists, technologists. Journalists are often taken to task by the public for writing misleading or inaccurate information. But in many cases, access to correct information is either blocked or restricted, or else there is a sort of conspiracy of silence which keeps information confined to select groups. Journalists cannot be blamed for becoming frustrated and discouraged in their search for reliable and detailed backups to stories on environmental issues.

This problem of access has been recognized by the IUCN, in its efforts

to promote greater public awareness about the environment. A Journalists Resource Centre has been set up by IUCN which aims to provide an information pool to back up investigative reports.

However, though the efforts of IUCN and of major publications are encouraging, there is one more bias which seems very obvious and yet is often overlooked. This is the language bias. In any discussion on the role of the media we must remind ourselves that only a small minority of our population can actually read newspapers, in any language, and that the role of the English-language media is even more restricted. Of course, the English-language media does claim to reach an elite audience which includes professionals, decision-makers and other people in a position to either influence or shape policy formation. But environmental problems cannot be tackled at the level of policy-making or legislation alone. Much of the most influential and important contributions to environmental care have had their roots in popular movements and a high level of public awareness. The media can play a major role in reflecting the concerns and problems of the less affluent, and it can reach out to the mass of the population with information and opinion. But in order to do so, it must speak in the language of the masses. Thus the vernacular press has an extremely important role to play and those who are in a position to - and who say they wish to - provide the media with information on the environment must ensure that they do not confine themselves to an English-speaking and reading clientele.

I have mentioned some of the biases which I feel influence the extent and quality of environmental reporting in Pakistan. I am sure that my colleagues in the media could add to these perceptions. But it is only too easy to feel discouraged and to see the negative aspects of a situation. On the positive side, it is clearly evident that there is growing public awareness about the nature of environmental problems we face and a willingness at many levels to tackle them. The media has begun to take these issues seriously and is giving increasing space and prominence to them.

Radio as a Tool for Promoting Environmental Awareness

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Since 1965 I have worked as a development communications designer, writer and producer. Before that I worked as a media specialist in agricultural extension, which brought me into contact with many of the environmental and conservation issues that occupy us today. For most of my career, I have been concerned with how to make effective use of electronic media, particularly radio, in support of a wide range of development topics. Most recently I spent two years as head of a USAID sponsored rural radio project in Liberia. What I propose to do is to share some of the lessons I have learned about the use of media for development in general and environmental education specifically, with a particular example taken from my country's work as part of a radio pesticide safety campaign in Bolivia and my experience with LRCN, the Librarian Rural Communication Network.

I should also point out that my remarks will undoubtedly reflect my own background as a radio, television and cinema producer, so my bias stands revealed at the outset.

By way of introduction, I will comment generally on the question of how best to organize media presentations, and radio messages in particular, in support of environmental awareness and other kinds of campaigns to promote change.

First, I would like to discuss with you how we go about influencing the public's ideas and actions, whether in respect to environmental issues or other social concerns. Ronald Rice and William Paisley in their excellent book, *Public Communications Campaigns*, identify three ways in which institutions attempt to model behaviour. The first model of public persuasion is education - messages telling the public why forests are important and why they should be protected. For example, the United States Forest Service uses a combination of mass media for education, including films, TV, radio, billboards, other display advertising and print. The second approach is engineering - that is, making physical arrangements that inhibit opportunities for abuse. Continuing the Forest Service example, engineering solutions could include the construc-

tion of safe fire pits for campers, construction of fire breaks, etc., measures designed to make the forests "people proof." The third model is based on governmental regulation coupled with prosecution of offenders, the arrest and imprisonment of individuals who start fires, for example.

Application of these three approaches can be drawn from the social arena as well. There have been many educational programmes to promote better health. A very active mass media campaign to reduce the incidence of heart disease has been running for years in the United States. In regard to the second approach, social engineers in the U.S. in the 1960s tried to eliminate social ills and promote racial equality through the creation of an array of projects and agencies to deal with poverty, illiteracy, discrimination, etc.

To illustrate the third approach, in the 1970s the United States government enacted a number of laws to protect the public through the banning of dangerous materials such as certain food additives and control of chemicals discharge into waterways by industry - examples of the regulation/enforcement model of influencing the public's behavior. The last two approaches, engineering and regulation, are generally complex and expensive, with the complexity and expense directly proportional to the level of success produced.

The conflict between these differing approaches sometimes produces an almost schizophrenic situation. A clear example is the smoking issue in the

United States. There are media messages telling people not to smoke. The chief health officer of the U.S. government has stated categorically that smoking kills people, while another branch of government pays subsidies to tobacco farmers. This illustrates a point that we as communicators must never forget: Environmental issues are caught up in a complex web of economic and political concerns as well as medical, social and scientific ones.

Bearing this in mind, it is shocking but not totally unexpected that it took 50 years to remove lead from gasoline in spite of the fact that the environmental dangers were recognized from the beginning.

It is the educational mode, it seems to me, that holds the most promise in respect to the important issues that bring us together at this meeting-using mass media to foster and promote environmental awareness and to encourage behaviour that correctly reflects such awareness. In some cases, in fact, it is only education which seems to hold great promise as a means of solving some of our most pressing social problems on a long-term basis-AIDS, for example.

I believe that radio can play a major role in our efforts to publicize environmental concerns and change distractive and short-sighted behaviour, both individually and collectively. We must always bear in mind, however, that changes in knowledge, beliefs and actions are most likely to occur when we appeal to the individual's self interest

rather than to the "public good". Many early family planning campaigns failed for this reason. (Rogers 1978).

As a second point, we should be "audience-focused" in all our media planning and implementation. This is the domain of "social marketing", which has some useful lessons to teach us as environmental communicators.

"Marketing" is usually defined as "meeting the customer's needs and wants". As an aside, one of the techniques of commercial advertising is to help us rationalize our wants into needs. We know we "want" a computer, but the advertisers give us all the reasons why it is essential to have one. For example, we are told that our children will never be able to compete and make a place for themselves in the world if they aren't computer literate at an early age. So instead of an adult "toy" for us, we can justify this major expenditure as an absolute necessity for our children's survival.

But the real point I want to make is that social marketers correctly insist that there is generally not one audience for our messages, but many audiences, whose special characteristics must be taken into account when designing our campaigns.

Our planning must be "consumer" or "audience" driven rather than "institution" driven. We must know all we can about our audiences and base our decision making on what is going to work most effectively with each audience cluster. This kind of flexibility is sometimes difficult to

achieve because our institutions often tend to be conservative and rigid.

It must also be remembered that we may sometimes be limited by resources and must, therefore, prioritize our target audiences. It is better, in my opinion, to reach a few critical audience groups effectively than to try to cover the entire public with more general messages.

As we look at the audience as discrete groups rather than as a homogeneous whole, the value of local radio versus national radio is worth examining. It is much easier to serve audiences in their own language and to tailor message content to the needs and values of each group when we have access to local stations. This has been clearly demonstrated by the success of LRCN in Liberia.

A final point about marketing is that we must not neglect marketing ourselves as environmental communicators to help secure the resources and support we need to do our jobs effectively. We need research data, "success stories" and endorsements with which to document our usefulness to our sponsors and to attract new support.

Radio works best as an educational tool when it is part of a carefully coordinated system involving a combination of media channels and other components. However, much can also be accomplished by radio alone, as may often be required because of constraints on money, time and message delivery infrastructure. It was such constraints that led to the estab-

lishment of the Liberian Rural Communications Network - local radio stations designed to bear the major burden of development communication in rural Liberia. The results from LRCN's first two years of broadcasting have proven that radio more or less on its own can have substantial impact. LRCN depends primarily upon carefully designed spot campaigns, series of short announcements combined with occasional longer programmes that explore topics in greater depth and present more technical information.

As an example, a recent campaign of LRCN was called "Our Forest, Our Future" and was designed to educate the public about the value of Liberia's forest areas and to encourage conservation practices.

The campaign, sponsored by the Liberian Forestry Development Authority, was begun because of the rate at which the country's forests are being depleted through commercial harvesting for export and extensive felling for firewood, charcoal-making and field clearing for agriculture. Another theme was the effect timbering and over-hunting were having on Liberia's fast disappearing wildlife.

The audiences were identified as farmers, hunters, teachers, students and the general public. The media mix consisted of 60-second spot announcements combined with dramas, interviews and talks. The 26-week campaign produced a significant increase in knowledge of conservation issues and practices and was followed

by a presidential production forbidding hunting.

I would like to mention another radio-only pilot campaign designed to promote the safer handling of pesticides in Bolivia which was conducted in 1986. It was based on 60-second "mini dramas" which told stories taken from the real experiences of villagers. The announcements were broadcast several times daily in local languages on local radio stations.

The final project evaluation revealed that farmers and their families listened to and comprehended the messages and that there was significant behavioural change in respect to the handling of pesticides.

The Bolivian study also raised some points that I think are important for environmental broadcasters to bear in mind. Of the four messages, the best remembered was one incorporating some humor and novelty despite the seriousness of the theme (24.6%). The least memorable message was one involving tragedy - the death of an infant (11.7%). This can teach us two things: use humor and novelty when appropriate and avoid messages so negative in approach that the audience represses them on emotional grounds.

Radio does not have an impressive record of producing behavioral change by itself, but it can and does happen. A recent radio campaign in rural Liberia increased turnouts for immunization of children up to 300% at some vaccination sites. Generally we are content to arouse interest and provide

information with radio campaigns. In the Bolivian pesticide campaign, for example, research in one rural area produced a message recall rate of 100%. This high rate of recall was later attributed to the strong sense of local identification with the radio station.

But of course recall alone does not necessarily guarantee that desired behavioral changes will occur. It does indicate, however, that information is available to the audience and that the potential for change is increased.

I believe the success of radio campaigns is directly proportional to the quality of planning that goes into them. I would like to take a moment to go through the required steps. We generally divide broadcast campaigns into three parts: Pre - implementation (or planning), implementation (or broadcast) and post-implementation (or evaluation).

First, it is absolutely essential that the broadcaster and sponsor fully agree on the goals of the campaign.

Step 2 is audience research in which we identify, analyze and perhaps prioritize the various groups we hope to reach.

Step 3 is preliminary message design and production of pilot materials.

Step 4 is pre-testing and revision.

Step 5 is planning for necessary inputs and support services (this step may require considerable lead time).

Step 6 is planning for the evaluation that will follow the implementation phase.

Step 7 (if time and resource permit) is implementation of a small-scale pilot campaign, analysis of results and necessary revision of materials.

Step 8 is the actual broadcast of campaign materials to target audiences.

Step 9 is research to determine campaign results.

Step 10 is an economic analysis to measure cost effectiveness.

Step 11 is a review with broadcasters and clients to analyze the campaign and explore its failures and accomplishments to improve future performance.

Step 12 is the use of findings to market the broadcaster's services and extend sponsorship.

I realize full well that it is not always possible to follow this model completely because of obvious constraints - money, time, personnel, transport, levels of administrative and political support, etc. But the point is, we should always follow it to the fullest extent circumstances allow. And we must always be alert for ways to get help from others to share costs and reduce our own investment of resources. In Liberia, for example, LRCN frequently turned to the University's Mass Communications Department for research assistance.

Finally I would like to share some lessons I have learned over the years about informational radio campaigns that I consider important.

1. Articulate goals clearly and precisely, and be sure there is agreement on these goals between development agency and broadcasters.
2. Set reasonable goals that are achievable within available time and resources.
3. Understand your audience - how they are alike, how they are different, their present level of knowledge about the subject, their present attitude toward the subject, and special cultural/political factors that may influence their reaction to the message.
4. Be sure required inputs are or will be available to allow implementation of the activities you are promoting.
5. Remember to link each message to the self-interest of the listener - why he/she should follow your advice.
6. Remember that a coordinated campaign approach generally has more impact than a series of unrelated messages. The campaign approach also allows you to go into greater depth of information.
7. Use repetition of key elements within each message/programme to reinforce learning (but say it in different ways).
8. Avoid message inconsistencies or you will quickly lose credibility.
9. Use all the tools of good radio production as you would for an important entertainment programme.
10. Remember to market yourself and professional, dynamic, effective communication can produce results.

The Role of Television in Creating Environmental Awareness in Pakistan

Ms. Jane Gilbert

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In the United States the social impact of the introduction of electronic communication, including television, has been dramatic. Television has not only fundamentally changed the way information is sorted and circulated, it has also changed the way in which we Americans perceive reality. In developing nations, such as Pakistan, the social impact of television is just beginning to be realized. However, communication by video or television is becoming increasingly necessary to bring problems into the perceptual field of individuals.

I don't think my role today is to conceive anyone with the power of combining vivid, colorful imagery, exquisite music and motivating words. The potential power of television media is inarguable. All too often though, I find television falls short of that potential. Either the members of the audience find the programming uninteresting and/or inapplicable to their lives, or the audience may be truly moved by the programme, but once it is over they are at a loss for how to incorporate what is learned in their every-day life. By the next morn-

ing, the issues they had found so compelling the night before are forgotten until the topic is once again raised by the media.

Therefore, my goal here today is to discuss some of the critical factors that in my experience contribute to effective television/video programming on environmental issues. By effective programming I mean that which not only raises public awareness of the environmental threats to this nation but also compels the audience to modify its behavior in favour of environmental improvement. Firstly, television programming should be creative and diverse. It should strive to incorporate ecological themes into all types of programming.

In Europe and the U.S., *Live Aid* and *USA for Africa* joined together celebrities and entertainment with severe environmental and human crisis. For the first time, the younger generation of these nations became emotionally involved with the environmental problems of the Third World.

The U.N. Environment Programme (UNEP) is currently trying to convince the major networks, feature film producers and music television stations in the U.S. to incorporate environmental messages into their dramas, music, videos and situation comedies. Mexico is broadcasting rock videos and teen-age role-playing scripts regarding family planning issues. Brazil has incorporated ecological motifs into their soap operas.

Portraying ecological themes in entertainment, drama, and news media ensures reaching wide audiences and, more importantly, presents the effects of the environmental crisis on all aspects of our lives.

Secondly, it is very important to understand who are the major contributors to the degradation of the environment and who can affect their decisions, and then to target the audience appropriately.

In a country such as Pakistan where the rural areas can be extremely remote and the cultures diverse, strong regional programming is essential. Programming is most effective when it is introduced by a well respected local member of the community.

Local radio programming still represents the most effective and widespread form of media education in rural Asia. At least for a number of years the focus of rural media programming should remain on radios. One of the most notable rural radio programs on the environment is

on *The Voice of Kenya*, sponsored by the National Secretariat for the Environment. This national radio station has presented a series of solution-oriented radio programmes on deforestation, desertification, the use of pesticides, water supply, improper irrigation, and overexhaustion of soil nutrients.

However, there are some visual formats that are becoming more affordable and accessible for the rural areas. Slide shows, for instance, require little electricity and are light to travel with and relatively inexpensive to produce. In addition, more and more rural communities are getting televisions. Since these TVs are usually shared by the communities, it is important to have regional programming at typical community gathering times so they may watch it. In addition, VHS video cameras are improving in quality and falling in price. These can be used in travelling vans in an information exchange programme. The audio-visual vans offer personal contact where volunteers can conduct an environmental assessment of a community and provide hands-on instruction and back-up with instruction videos. While I was in Ecuador two years ago, the government and USAID were just beginning to implement a large land reform program. Because of a long history of government exploitation of rural small-scale farmers, they were faced with a large amount of public distrust in the programme. To counteract this, the government had plans to train personnel travel into the rural areas with four-wheel-drive vans carrying video cameras and display

monitors. In this way they could show the community local interviews with rural farmers who had applied for land and succeeded, answer questions, provide visual and hands-on instruction for the application process, and, at the same time, they could conduct interviews to determine the community's reaction to the programme and convey its experience with the new land reform program to other neighbouring communities.

Thirdly, effective media programming convinces the audience that the environmental condition directly affects their lives. In the last two months, I have been evaluating successful solid waste recycling programmes in the United States and Canada. In all of the five programmes we looked at, over 50% of the public were recycling newspapers, glass, aluminum, steel and plastic, and many cities had reached 50% participation rates. There were many critical factors behind the success of this programme. However, the most critical factor we found was that there was a local sense of a solid waste crisis. The landfills where they were dumping the solid waste were closing. They had reached capacity.

No new landfills could be constructed because no citizens would allow them to be built near them. The "Not in My Backyard" syndrome that Sharon Friedman spoke of yesterday is a powerful voice against the siting of both solid and hazardous waste. The tipping fees to dispose of wastes in landfills has at least doubled within three to five years. The public is aware

of this problem because the media considers the solid waste management crisis to be a critical news item.

Once the public is aware that the problem of solid waste disposal is affecting their personal health and tax dollars, they will be willing to listen to solutions.

Although solid waste disposal may not be one of the most critical environmental issues confronting Pakistan, the same general rule applies to any environmental problems. The public will not be ready to alter its behaviour until it perceives the problems to be a direct personal threat, whether it is landfills in the United States, oil pollution in Karachi harbor or water logging and salination of agricultural lands. Television programming in Pakistan should strive to be uniquely Pakistani, presenting those issues that are most critical to Pakistan in a format that is most interesting for its audience. Foreign institutions may be able to provide the telecommunication technology and possibly even some training, but not the conceptual development for the broadcasting strategies. This must be done by Pakistanis. Likewise programming on regional issues should be conceived and developed by the regions.

Environmental threats created or influenced by multinational corporations or development banks should be brought to the attention of those populations that can affect foreign investment and loans decisions. Therefore, it is also the responsibility of media professionals to bring the con-

cerns of Pakistan regarding Pakistan into the international arena. Contacting the international press directly is one method to raise the issues. International environmental organizations such as IUCN and UNEP have experience and expertise in getting most concerns voiced to the appropriate audiences. Once a sense of crisis is established within your targeted population, whether it is Pakistani or international, rural or urban, television can inform the population of positive alternatives. In order to motivate behaviour change, the viewer must be convinced that the benefits of incorporating that change are higher than the costs of not doing so.

The farmer must be convinced that careful and conservative use of pesticides will not significantly decrease yields and may reduce costs and improve health conditions before he is prepared to make a process change. The communication of new pesticide management practices must be interpersonal as well as televised.

Likewise an industrial plant manager must be convinced that a toxic waste minimization/recycling programme may improve efficiency, save costs, and minimize his liabilities before he is prepared to make a process change. He too must have interpersonal training and education.

Video or television may not be the final methods for convincing the audience to preserve their environment. However, video can demonstrate that alternatives do exist, that people are confronting these environmental challenges and are finding

solutions that, in the long term, have improved their quality of life. Therefore, the global telecommunication system can serve as a global information system.

The documentary series I worked on in Latin America presented the tropical rain forest story in three major parts. The first part highlights the value of the rain forests and the people who inhabit them. This part describes the flora and fauna of the rain forests in terms of their biological diversity, economic values and intrinsic beauty. This section also highlights the lives of the peoples indigenous to the rain forest and highlights their extensive knowledge of the environment they live in. The second part of the film displays the rapid, uncontrolled destruction of these rain forests and all the additional environmental problems that can bring, including soil erosion, river siltation, regional drops in annual rainfall, and global climatic change. Finally, the major part of the film presents the few efforts in Latin America that people are using for sound management practices in the rain forests, practices that combine the traditional knowledge of the indigenous peoples with the latest most advanced research in biology, agriculture and forestry.

The sequence of presenting the value of a resource, the destruction of the valuable resource and the positive management solutions can serve as a good model. However, ideally it may be more effective to present the sequence phase with an appropriate amount of lead time. This is called message phasing. A typical model of

message phasing would include first providing information and creating awareness of the issues, second motivating behaviour and third reinforcing that behaviour.

However, this level of strategic planning may require cooperation amongst policy planners, media professionals and environmental scientists.

This leads me to my last and I believe most critical factor in contributing to successful use of television. There is much we can learn from the triumphs and failures of mass communication programs on other social issues such as public health communication or agricultural extension. Managers of these programs have found that the most successful uses of film or video are those which serve as a component to a much larger, more comprehensive strategy to both inform and motivate the viewer to change behaviour. While researching past experiences in public health communication, I had a long conversation with a woman from AED, the Academy for Educational Development, which has recently evaluated several health communication programmes all over the world and found that comprehensive strategic planning was essential in developing a successful communication programme.

AED personnel just sent me a copy of a document they completed last June for USAID entitled *Communication for Child Survival*.

This manual details the evaluation of public health communication programmes in the Third World. The

discipline of present communication has emerged from a piecemeal strategy to become a systematic attempt to positively influence the health practices of large populations, using principles and methods of mass communication, social marketing, behaviour analysis and anthropology. The mass communication involves a media mix strategy that is based on research about the prevalence and preference of all forms of communication - interpersonal contacts, radio, television, posters, puppet shows, newspapers, billboards, and so forth. The media mix is evaluated on the basis of:

- Reach and frequency of each medium.
- Impact of each medium.
- Relative cost of each medium.

What I found most encouraging about this manual was the apparent transferability of techniques in health communication to a communication on environmental issues. Many of the important steps and techniques involved were very similar to those used in the United States. Health and agriculture communication is an area where Pakistan has significant experience and experts. One particularly notable program was the promotion of using iodized salt as a preventive measure against goiter, sponsored by the Government of Pakistan and UNICEF in the early 1980s. The project set out to project a more positive image of iodized salt: design a package that would be easily recognized; sell the

salt as food, not medicine; and use radio as the main promotion channel. The new strategy was to combine education with entertainment using Koranic verses to carry the messages along with popular dramas and folk stories and using visual media to back an initial radio campaign. The print material sparked interest through booklets for school children, through posters and mobiles at the stores, and through Koranic calendars.

The first phase of the field evaluation produced promising results. Seventy per cent of the people had heard the radio messages. Eighty per cent of those who had listened to the radio could recall at least three messages: (1) use Peshawari Salt; (2) it is good for one's health; (3) it prevents goiter. In addition, sixty per cent of the radio listeners reported discussion after the programme.

These methods are all similar to those used in North America for raising awareness and motivating behaviour on environmental issues. The difference is a slight change in focus from the individual to the community. Therefore, I expect the same development communication approach could be used in Pakistan for environmental issues.

In summary, the approach I have taken today is to highlight some of the key factors to successful use of all media with a focus on video or film in raising environmental awareness.

Those are:

- Targeting the audience.
- Creative and diverse programming.
- Programming that addresses the interests and cultural values of the audience, programming uniquely Pakistani.
- Television programming that maximizes the use of free resources but is still able to target the audience.
- Attempting to phase messages in a logical sequence, raising awareness and appreciation for a national resource, motivating the audience to act towards positive solutions and later reinforcing that behaviour.
- And finally, the most effective media efforts to inform and educate the public on social issues involve a comprehensive communication strategy, one that is joined by an actual programme to improve the environment.

There is much we can learn from the techniques used for types of social awareness raising programmes in the Third World such as health care programmes and agricultural extension. These new techniques move away from a piecemeal approach to one that incorporates methods of mass communication, social marketing, behaviour analysis and anthropology.

The Role of Television in Increasing Awareness of the Environment

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Television is a powerful tool. Today, access to television is available in remote villages as much as in large urban centres. People of all walks can be reached in every country of the world. That is why when Horizon was established 12 years ago as a not-for-profit organization to inspire people around the world for positive action, we chose to make an international television series the principle means of our outreach.

In its international series *One Second Before Sunrise: A Search For Solutions*, Horizon documents and fosters the most productive initiatives from every corner of the world that people are now undertaking to protect and improve life on earth.

By presenting the efforts of individuals who alone or with an organization, an industry or a government are seeking solutions and finding solutions to problems - or ways to prevent problems - in areas of the environment, health, technology and energy, Horizon is able to share a solution that might be applicable in other parts of the country or in other parts of the

world. People are encouraged, when they see that answers to dramatic, often catastrophic environmental problems confronting us, do exist today. They are inspired to believe that an answer may be found to problems immediate to them. They see that they too can seek an answer to a problem, that they can find a wise approach to development, that they can develop industrially or agriculturally without reducing their store of natural resources, or polluting their water, or destroying their top soil, or damaging human health.

An inorganic chemist who on a four-year journey around the world was faced with the stark reality of the scarcity of fresh water in so many areas of the world, the reality of the magnitude of diseases caused by impure drinking water and the lack of adequate water, spent the next eight years of his life designing an inexpensive, wave-powered device to desalinate water. As we featured his invention in our films, organizations and individuals have responded, seeking to produce and develop them further. A company invested 2.5 million dollars for their

development, and the film was used to help persuade the Ministries of Fisheries and of Agriculture of Somalia of the feasibility and value of using the desalination units. The Ministries are now trying to arrange for units to be installed off the coast to meet some of the country's crucial need for fresh water.

The concerns of the world are perplexing and confusing. The magnitude of many problems is so great that a deep spirit of hopelessness sets in. Acid precipitation is widely considered to be one of the world's most pressing environmental problems. It is causing serious economic, social, and environmental concern all over the globe. It is increasing the acidity of lakes and streams to the point at which aquatic life is lost. It is increasing the acidity of soilwater and shallow ground water to the point of reducing crop yields. It is associated with increased respiratory ailments, damaged buildings and loss of trees.

This issue hangs heavy in people's minds. Many no longer want to hear about it because they fear the situation will just grow worse and worse and that there is nothing they can do to help. Acid precipitations are primarily caused by combustion of fossil fuels, which leads to the formation of sulfur and nitrogen oxides, which are gradually transformed into acids in the atmosphere. Once in the atmosphere, these substances can be carried great distances. They come to earth in the form of rain, fog, mist or snow, or in dry form as gases and particles. More than 16 million acres of forest have

been damaged in Northern Europe. More than 300,000 lakes are vulnerable to acid precipitation in North America alone, and some 14,000 have already experienced the devastating loss of aquatic use due to extreme acidification. The Organization for Economic Cooperation and Development (OECD) has estimated that soil acidification, which releases toxic soil aluminum, has caused crop losses in 11 European countries valued at \$500 million a year.

What can be done to reduce this mounting, ubiquitous problem? There are efforts underway, effective efforts. Horizon is planning to begin its coverage of initiatives to reduce acid precipitation with an episode on Sweden's striking success in reducing sulfur emissions through energy conservation policies and in encouraging the European Economic Community to follow its example.

In 1970, Sweden was producing 925,000 tons of sulfur dioxide. By 1985, emissions were reduced to 270,000 tons; a cut of almost 75%. Although the implementation of new technology, such as fuel-gas desulfurization, has played an important part in this remarkable reduction, it has been the concerted effort to conserve energy and the strictly regulated use of high-sulfur fuels that have had the most significant effect.

Since the oil crisis of the mid-1970s, Sweden has cut its oil consumption drastically. Heat production accounts for 33% of all emissions. Horizon plans to illustrate Swedish advances in

increasing efficiency by filming at the Karlstad Power Station which is representative of many plants around the country. This station, which furnishes both heat and power to the surrounding community of 60,000 people, uses an extremely efficient high pressure, high temperature (150 degrees Celsius) water heating system which emits very low quantities of sulfur oxides. It also makes use of a controlling pump that slows or quickens the output of power according to immediate demand placed on the coal-powered generator. This means that power is generated according to the immediate needs of the community, without the error margin of conventional estimated usage, or the waste of full capacity generation.

The cost of Swedish technology for retrofitting controls on existing plants and building new, clean plants, like the Karlstad Power Station, is now below 3% of the overall cost of the plants.

Filming will cover the use of innovative domestic heat pumps. These pumps are powered by conducting rods inserted into the warmer layers of the earth during the frigid winter months. The pumps generate enough power to accentuate, and thus lighten the burden of, the community power source that supplies domestic heating.

We will also focus on the technological advances in West Germany's emission-reduction programme. The 420-megawatt power plant near Stuttgart, Neckarwerke, uses fuel-gas desulfurization linked with an active catalytic denitrification process, which

makes it one of the cleanest power plants in the world. West Germany is the only country other than Japan that has had success in significantly reducing nitrogen oxide emissions.

The combination of energy conservation measures and improved technology to reduce sulfur and nitrogen oxide emissions can pave the way toward significant reduction of acid precipitation.

The task to reduce acid precipitation is one case among many that requires the joint efforts of several countries. It is often not enough for an individual or an industry or a country to take positive action alone. As in the case with acid precipitation, it will take many countries all applying energy conservation, use of non-polluting fuels, and technological measures to bring about reductions in sulfur and nitrogen oxides that will begin to truly, effectively bring this major problem under control. But the steps being taken in Sweden and in West Germany, and in others we will report on in subsequent episodes, are steps that can mount up to measures of great impact, which can spur on similar efforts by more and more countries as they see that the technology and energy practices necessary to reduce acid precipitation are available and are not prohibitively expensive.

And it is through the media, which exports across national boundaries the idea that multinational efforts are needed, which imparts the word about successful measures that are now possible and now economically feasible,

that more widespread reductions can be brought about.

The media can also bring important developments out from the confines of scientific research. An episode we just filmed in the People's Republic of China on the work of Dr. Zhao Jingzhao with integrated pest management may encourage people in many parts of the world to seek ways to increase the use of natural pest enemies. Integrating the use of natural enemies of pests with reduced use of chemical pest control reduces the financial burdens and the hazards to human and other life from pesticides and insecticides. Dr. Zhao's work with spiders, which he has shown to be the best natural enemy for the control of cotton pests, has helped the people throughout Hubei Province increase their cotton yields while reducing their costs. For many years, he has gone into the fields with the peasants to demonstrate the advantages of spiders. He has encouraged the building of refuges for spiders to protect them during harvests and over the winters.

He is perhaps the first person in the world to have formulated a successful artificial diet for spiders, which enables peasants to raise the best predators in captivity in order to have an ample supply for well-monitored and well-controlled pest management projects. The people of the Province are benefiting. Their income is higher and their health problems from chemical pest control have diminished. People in Pakistan and in other countries that grow cotton can benefit from Dr. Zhao's work, and people who

apply his technology to other crops can benefit from his example.

At Horizon, we are continually struck by how far scientific research that might address the world's most daunting challenges has progressed, and yet how narrowly the news about that research has spread. Consider halophytes, salt-tolerant plants, for example. One third of our planet's land mass is classified as uninhabitable or marginal desert, and many important agricultural regions are plagued by increasing concentrations of salt due to scant supplies of fresh water, over-irrigation and mineral deposition. The combination of salt, sun, and sand makes the battle for survival a difficult one. Yet we have found that researchers at centers in the Middle East and in the United States have discovered and developed salt-tolerant species of plants that can provide food, fodder, and industrial products and, at the same time, can stem further desertification even while allowing the reintroduction of grazing. Desert dwellers, traditionally nomadic communities, need reliable sources of grazing for their animals. Part of the reason for encroaching deserts is overgrazing - the thin arid soil cannot support enough vegetation for livestock. Valuable perennial herbs, shrubs and grasses have almost disappeared in many areas.

The research institutes have been developing salt- and drought-tolerant fodder shrubs for over twenty years. Of the saltbushes *Atriplex nummularia*, a fodder bush native to Australia that has a high protein content, is the most

successfully developed species. It is highly palatable to sheep and goats, and it constitutes good cover. The hardness of the saltbush is such that the plant maintains its root structure even through concentrated feeding. Because the bushes are perennial and remain green all year, they can be relied upon to provide year-round fodder as well as permanent ground cover, preventing further desertification. At the Fodder Production Program, near Fouka in Egypt, over 200,000 saltbush plants have been grown over a six-year period with exceptional domestic herd maintenance results.

Saltbushes grow throughout the world. They hold promise for rejuvenating soils, for bringing to life desert areas inland and coastal, and for holding back encroaching deserts.

Of the many varieties, *Atriplex nummularia* is one of the most palatable. Initial introductions of this saltbush have proven successful in North and South Africa and in South America.

Doctors R. Ahmad and San Pietro of the Department of Botany of the University of Pakistan are studying salt-tolerant plants for greater use here in Pakistan.

Many of the traditional crops of Pakistan can now be grown with salt water. Strains of rice, wheat and cotton are now being grown which have the ability to resist salt. These and other crops now growing in areas of the Middle East, including melons, tomatoes, onions and Chinese cab-

bage, are flourishing with salt water to the point of yielding substantial economic returns.

It is important to keep in mind, however, that halophytes should not be used as a substitute for good agricultural practices but only when and where conventional crops cannot be grown.

Some halophytes can even be grown on sand dunes, such as the buffalo gourd, a native of the southwestern United States and northern Mexico. It contains seeds which produce a high-quality edible oil, comparable to soybean oil. The root of the buffalo gourd provides a good quality starch. The new techniques used to grow the gourds yield an average of 7 tons of starch per hectare, a result similar to maize in terms of both quality and yield.

For water-logged conditions, as exist in many areas of Pakistan, *Kallar Grass*, another halophyte may be a major contributor to meet nutritional and economic needs.

Doctors Malik, Aslam and Naqvi of the Nuclear Institute for Agriculture and Biology in Faisalabad are among the scientists studying the use of *Kallar* in Pakistan.

Scientists have found *Kallar* has several exceptional features. Its rugged, deep-root system helps to open hardened soils and hold nitrogen-fixing bacteria. The *Kallar* grass recovers well from grazing and can be cut for hay. Pastures can be estab-

lished from seed, rooted slips or stem cuttings. And *Kallar* grows best in water-logged soils, on lake or river margins and seasonally flooded areas.

Thus, it can grow in rice fields and irrigation canals as well.

Horizon will film an episode on halopytes beginning next month to share the knowledge now gathered about these salt-tolerant plants and trees, to take that knowledge from mainly scientific circles to people all over the world through our television series in hopes that wide benefit might come from the increased awareness of the scientific advances and new applicability of halopytes.

Alongside the pathbreaking endeavors of scientists and experts, we have found that laypersons, sometimes using techniques that have been practiced in circumscribed locales for thousands of years, also have ideas that can provide great benefits from wider use. Aquaculture is an ancient art in the nations of East and South Asia. Last year, a Horizon team discovered in a peasant village in the Peruvian Amazon that integrated aquaculture was gaining a foothold in tropical South America. Using farm animals — pigs, ducks, and chickens — peasants near Pucallpa build ponds in which a fish population thrives on plankton that the animal wastes feed. The fish ponds provide an ample supply of protein and a means of livelihood that represents a viable and indeed attractive alternative to migrating agriculture, a practice that

threatens the fragile tropical forest ecosystem.

The United Nations Environment Programme has offered to help Horizon arrange to show versions of the aquaculture episode on battery-powered VCRs along the Amazon and its tributaries. Special versions of this and other episodes, personalized for targeted audiences, will be prepared as training films to encourage more widespread use of innovations such as the integrated aquaculture techniques.

To further the use of initiatives presented and greater sharing of knowledge, Horizon encourages communication between the viewers of its television series and our organization by providing information at the end of each program so people can contact Horizon through local addresses in each country where the programme is broadcast. This means viewers spend little time or money in getting to try a script or information on initiatives from Horizon. Viewers can also share information with Horizon about solutions to their particular problems, which our research team will then evaluate for possible inclusion in Horizon's database or in programmes and publications.

There are many ways in which we can build the strength of our outreach through the media. The more we make available knowledge of preventive measures, the more we can share knowledge of alternative choices for wise development, the more we can share knowledge of ways to reduce pollutants, to save and protect fresh

water, to protect human health, to provide clean, renewable forms of energy, and to protect our natural resources, the better the world will be for all the intricate and interdependent forms of life.

We can make a significant difference to the fate of the earth by sharing knowledge of what can be and is being done to protect and improve life on earth.

Environmental Reporting

Dr. K. F. Jala!

Chief,

*Environmental Coordinating Unit
UN/ESCAP*

It was not long ago in January this year that ESCAP convened a regional conference on media and the environment. Some 69 journalists from 18 countries of Asia participated. The conference gave birth to the Asian Forum of Environmental Journalists as the apex body of the national forums in Bangladesh, China, India, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka and Thailand. Subsequently, the eleventh forum was constituted in the Maldives by President Mamun Abdul Gayum on the occasion of the World Environment Day 1988. The chairman of the Asian Forum and the chairman of the national fora from India and the Philippines are fortunately present at this meeting and I am sure we will be enlightened by them on their experiences in promoting environmental awareness elsewhere in Asia. ESCAP, in cooperation with the Asian Forum of Environmental Journalists, has also published a guidebook on environmental reporting which has been distributed to the members of the national forum of environmental journalists of Pakistan. This guidebook, first of its kind anywhere, has been

widely circulated throughout the world and is currently being translated into Chinese, Thai, Bengali and other Asian languages for use by the local journalists and reporters. In fact, one of the objectives of organizing this seminar is to introduce this guidebook to the journalists in Pakistan. At the request of the environmental journalists of Asia, ESCAP has also established what we call Environmental Information Dissemination Service through which newspaper clippings on the environment from all over Asia are collected, compiled and disseminated to the journalists. Those of you receiving these may have noted a significant increase in the column-inches of environment reports in the Asian newspapers. The environmental journalists of Asia should be commended on this achievement.

Having stated this, let me now turn to the fact that the field of environmental reporting is much more tricky and complex where a lot remains to be achieved. The first problem is the lack of clarity on the interrelationship between environment and development. In the developing countries of Asia,

development planners and decision-makers are still debating such questions as: Are environmental problems due to development or due to lack of it? Is poverty the cause of environmental degradation or is it the other way around? Do environmental constraints place limits on economic growth? The World Commission on Environment and Development, which is popularly known as Brundtland Commission, in its report called "Our Common Future", has tried to answer some of these questions. The report has also provided a sense of direction for those who wish to ensure that development is environmentally sound and sustainable. Brundtland Commission has essentially related environmentally sound and sustainable development (ESSD) as a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional change meet the needs of present without compromising the ability of future generations to meet their own needs. ESCAP uses a more operational definition of ESSD which is the harmonious and long-term balancing of basic human needs and nature through efficient and equitable enjoyment of the Earth's bounties. Time simply would not permit me to go into this question in any greater detail. I simply wanted to emphasize the point that there has been a renewed effort to analyse the complex relationship between environment and development and to suggest some action programmes on this basis. The media, therefore, should make some effort to understand and publicize this complex interrelationship.

The other constraints of promoting awareness of the media are the lack of space, the hard news approach, media's preference for crisis reporting and finally and perhaps most importantly the editorial attitude and external influences. We all know the significant role played by editors in assigning reporters space to cover environmental stories. With all due regards to the editors present here, I would like to mention that some editors appear to misjudge what readers would like to see; a number of studies in the United States and Canada have revealed that editors attached priority to items that sharply contrasted with public programmes. However, while editorial attitudes about the worthiness of environmental issues is of some concern, the ability of environmental journalists to convince editors about the newsworthiness of environmental stories must be enhanced. The Book tells us that the environmental reporters should be well informed, be aggressive in presenting good topics to the editor, be aware of government policies and efforts on environmental issues and track down some positive environmental happenings that benefit readers in their coverage area. I am sure during the course of this seminar some of these problems will be discussed and ways and means will be found to strengthen the role of media in promoting environmental awareness in Pakistan. I also hope that this seminar will provide an added strength and vigour to the existing forum of environmental journalists of Pakistan, through wider participation of media throughout the country. ESCAP will continue to sup-

port your effort in promoting a better environment and quality of life in Pakistan.

The Role of the Print Media in Promoting Awareness of the Environment

Mr. I. A. Rehman

Chairman

Pakistan Forum of Environmental Journalists, Lahore

One of the most fundamental distinctions between an animal and a human being is the difference in their roles towards nature. Both the species derive sustenance from nature and both interact with it. But an animal only alters the environment by destroying parts of it and has no capacity to change it for its benefit. The human being, on the other hand, possesses the means with which he can mould the environment to help him live better. The human being can not only destroy nature, he can also preserve it.

Unfortunately, a greater part of human activity over the last many thousand years was directed at destroying the earth's ecosystem. There were sages, in different parts of the globe and in various ages, who tried to warn their fellow beings, sometimes in the name of religion, sometimes as worshippers of beauty, and sometimes on grounds of reason, that indiscriminate destruction of the environment would ultimately degrade the quality of their life. These warnings failed to generate a broad based effort in the field of environment till a

quarter century ago when humankind realized that:

"A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreparable harm to the earthly environment on which our life and well-being depend. Conversely, through fuller knowledge and wiser action, we can achieve for ourselves and our posterity a better life in environment more in keeping with human needs and hopes."

Now environmentalists in different parts of the world are assessing the colossal harm done to humankind's common habitat through ignorance or indifference. And the most frightening part of the finding is that, the damage caused in the past apart, degradation of the earthly environment continues unabated. Every minute the world is losing 20 hectares of forest. In Asia

alone 8.5 million hectares of forests are felled every year. The world's deserts are growing by six million hectares per year and at this rate one third of the cultivated land in the world will become desert within two decades. Depletion of the ozone layer in the atmosphere, the global greenhouse effect on climate, and the threat of extinction of biological varieties have become the dominant concerns of all those who strive to secure a better life on our planet.

We in Pakistan also are assessing the harm we have caused ourselves through centuries of neglect. There was a time when the Indus Valley was covered with thick forests and its animal population boasted of a wide variety. Our ancestors destroyed both, out of ignorance of the need for balance between the pressure for material advancement and the environmental imperatives. It is not necessary to go into ancient history but a few recent instances of environmental neglect may be recalled to highlight the problems we have created for ourselves.

We started creating a canal system to irrigate our cultivable wastelands about a hundred years ago but took no steps to protect these lands against the adverse effects of artificial irrigation. The result was that within 40 years or so some of our most fertile tracts became unfit for cultivation due to waterlogging and salinity. We built barrages on rivers and cut canals without ascertaining their effect on subterranean water flows, with the result that wells in the Sind's delta went dry. There was a natural drain,

called Sukh Nullah, which ran from the northeastern Punjab through Sind. We blocked it at numerous places and created such a problem that a new drain has to be dug at a cost of millions of dollars. We have built large housing colonies without providing for disposal of secretion, a basic need of which our ancestors were aware five thousand years ago. Only a few months ago our country suffered extensive devastation by floods that were a direct consequence of our failure to take prudent care of the environmental consequences of our actions.

I will not dwell any more on the extent of harm Pakistan has suffered and is suffering as a result of neglect of environmental needs. Extremely valuable research has been carried out by the Environment and Urban Affairs Division of the Government of Pakistan, the IUCN and the Pakistan Council of Scientific and Industrial Research as well as some public-spirited individuals. The papers presented during the present seminar will give a fairly comprehensive idea of the gravity of the situation we are facing. The stark reality is that we have a grim battle on our hands to protect our environment from any further degradation, a battle which is to be fought in the chambers of authority, on educational campuses, and above all in the minds of ordinary citizens. Everywhere and at each stage of the struggle the print media has to play a crucial role.

It is true that in Pakistan, as in other SAARC countries or even in the wider ESCAP region, the print media has been outstripped by the electronic media. Whereas audio-visual means of

communication can reach the entire population, the print media can serve only a small section of the population in view of the fact that the literacy percentage for our purpose is well below 20 per cent and the total press readership is perhaps around 2 per cent of the population. Yet the print media today has a much greater audience than pioneering naturalists like Thoreau, Tolstoy or William Morris ever had. In all developing societies it is still the cheapest and the most easily reusable means of converting the people. Its handicap in matching the electronic media in terms of instant communication is more than offset by its capacity to influence authorities, opinion-makers and communicators in the less demanding forms of media.

Besides, we know from experience that in most of the developing countries, the print media can be, to some extent at least, free from constraints that inhibit the largely state-controlled electronic media. Consequently, it has a certain advantage by virtue of its ability to plead for causes that do not, for one reason or another, attract the various institutions in the organized sector.

The role of the print media in spreading awareness of issues related to environment is obviously determined by its potential and the degree of commitment to humankind's common future those working in this field can in practice maintain. Simply put, the task before the media is to bring the Pakistan society into the mainstream of the international environmental movement by making both the state authorities

and the people aware of the efforts, experiences and achievements of other countries in this field and by identifying domestic areas of concern and fruitful endeavour.

It will be seen that in the performance of this task the media has first to demolish the many myths that Pakistan shares with most of the Third World countries. Three of these myths need specially to be noted.

First, there is a view, shared regrettably by many of those in authority and by large segments of society, that the threat to the environment is a bogey created by the advanced countries to slow down the progress of less developed states. This specious plea has considerable appeal in areas where the demand for modernization of production activity is so pressing that the people are prepared to pay any sacrifice for development. Fortunately, this myth is the easiest of all to explode. To begin with, the advanced countries are already equipped with many effective means of restricting industrialization of the less affluent States; they hardly need ecology as a new pretext to keep the developing countries backward. It is also known that the politics of international aid, by and large, rarely makes any allowance for the environmental interests of the recipients of aid. There is hardly any area in Pakistan where the harmful effects of environmental degradation — desertification, land sickness, water and air pollution, deforestation, hazards to health posed by indiscriminate use of pesticides, etc. — on the quality of life cannot be demons-

trated with the help of examples from the population's own experience. It should also be possible to explain that nobody is objecting to development, only such development is now considered a positive factor of progress as can be sustained. Human beings' right to mould their environment to their advantage is not to be suppressed, only prudence in tampering with mother nature is counselled.

The second myth is the view that concern for environment cannot receive priority in a society where a large population is still struggling to obtain the basic necessities of life, where about 40 per cent of the people do not have the means to buy a wholesome diet. The poor who are forced to scavenge for throwaway crumbs at refuse dumps, it is said, can scarcely be persuaded to bother about the germ-infested containers. This myth, too, will not survive a concerted demolition effort. It can be shown that neglect of environmental consequences of our actions adversely affects the quality of the basic necessities of life whatever the nature or measure of their availability. Further, those striving to reach the minimum essential levels of diet or housing facilities are worse affected by indifference to the environment than the more fortunate members of society. Thus, the movement for environmental protection, far from adding to the deprivation of the disadvantaged, has the potential to mitigate their plight. It can become a powerful weapon to reduce social inequalities.

The third myth, and one that has especially been widespread in developing countries like Pakistan, is that where

the people are still in the process of evolving political institutions responsive to their aspirations, including their natural desire to breathe in rarified air and live in an environment that does not cause them physical discomfort and mental tension, and where the print media is still engaged in securing the freedom needed to espouse popular causes, it is not easy to give environmental issues due importance. This is a matter those working in the media have to resolve among themselves. It is true that only democratic governments fully aware of their national interest would be amenable to the media's pressure for sanity in ecological matters. It is also true that only a free media would be able to generate effective pressure or to acquire the degree of credibility needed to convince the people of their role in promoting sustainable development. However, we have also learnt from experience that it is only by agitating issues affecting the life and happiness of ordinary people that the areas of political and media freedoms can best be extended. Instead of considering a healthy environment the end result of democratisation and freedom of expression, we may reap better rewards by treating the movement for preventing environmental degradation as a means of making democracy richer in its yield and media freedom more meaningful and satisfying. In any case, the recent happy developments in Pakistan should relieve a large number of writers and journalists of quite a few overriding concerns and enable them to take a harder look at their surroundings and the contribution these surroundings make to the misery of

their fellow human beings and other living organisms.

Along with demolition of the obstacles to a rational attitude towards environment, print media has to uphold the cause of environment as a vital national interest. The role of the media as a channel of communication between the State authorities and the people is well known. But its role should not be confined, as was suggested earlier, to what either side wishes to say to the other. There is little problem in publishing what the administration wishes to claim as its achievements in the field of environmental amelioration or what it expects the public to do on its part. Likewise, there is no difficulty in securing a wider audience to citizens when they complain of adverse environmental conditions. A more essential task is to remind both the authorities and the public of their rights and obligations as have not been formulated in their actions or demands.

To be able to fulfill this role, all of us working in the print media have to give a healthy environment its due place in our vision of life. I am sure I am not exaggerating if I submit that guarantees of an environment conducive to the fullest possible growth of our bodies and minds is one of the people's most fundamental rights because environment includes all the basic needs. If people anywhere do not have access to clean drinking water, if they are forced to consume adulterated food, if human settlements are without the minimum essential facilities for disposal of garbage, if

animals are mercilessly liquidated, and if natural flora is being destroyed, we must feel as much concerned and as indignant as we have learnt to be in the event of denial of some more frequently highlighted political and civil rights.

Before referring to some specific issues pertaining to the promotion of awareness of environmental themes in Pakistan, may I take the liberty to refer to an intentional dimension of the subject. Humankind's need of a hospitable planet is indivisible. In many respects Pakistan shares environmental problems with its neighbors, and some of these problems can only be solved through regional collaboration. Unfortunately, our region has been lagging behind other regions in the world in developing intra-regional cooperation in various fields. Further, I have no hesitation in admitting that we in Pakistan have tended to be somewhat indifferent to the concept of regional cooperation as dictated by geography and commonality of material interests. In order to promote a fair understanding of the country's environmental problems and create mass awareness of the urgency to solve them, the print media will have to stress regional cooperation and campaign for peace in the area which is at once a means to and a fruit of cooperation and with which our ecological future is inextricably linked.

The media in Pakistan, as perhaps elsewhere, has to exert its persuasive influence to remind the state authorities to accept their obligations in response to the UN General Assembly's resolution on the report of

the Brundtland commission on Environment and Development. The state should welcome the media's efforts in pointing out gaps in legislation necessary to fulfill its environmental obligations as well as any instances of non-compliance with statutes.

A more important task before the print media is to concretize vaguely visible environmental issues and to stress the need for a rational set of priorities. For instance, it may not be enough to point out evidence of environmental degradation without investigating in detail the economic, social and cultural consequence of such phenomena. Those who feel concerned with environment cannot requit themselves of their obligation by functioning as mere observers; they have to approach their assignment with the passion that this noble cause demands.

As elsewhere, a major battle has to be fought with the development agencies. And the range is extremely wide. We need dams on rivers. All right, but we must not repeat the mistakes of the past, and all environmental safeguards must be met. We cannot meet our energy requirement without building nuclear power stations. Fair enough, but let us first be convinced that no safer alternatives are available and that the skills and resources needed to maintain adequate safety standards have been acquired in advance. There need not be any refusal to take up issues with the local authorities on development priorities. One may ask whether the need to protect the population of Lahore against the pollution spread by the open sewers is

less important than the fixing of iron railings around public buildings.

There are valid reasons for concentrating on environmental problems in the major urban centres and around industrial estates, for there destruction of ecological balance and rise in pollution has reached crisis dimensions, but let us not consider the rural areas to be free from environmental problems. Indeed, there the process of environmental degradation is not only more ominous but also manageable if only the people could be made aware of the hazards they are creating for themselves.

The other day I glanced through a recent UNDP publication which told us about social forestry in Thailand, the successful campaign to control the weed menace in river Sepik of Papua New Guinea, and the tapping of Tunisia's geothermal waters.

This is just a small indication of the contribution the print media can make in familiarizing the people in its area of circulation with models of sustainable development elsewhere, by assuming its role as a channel for dissemination of knowledge and ideas about environmental protection, as in other spheres. Also an indication of the possibilities of dealing with the problem of vanishing mangroves along the coast of Karachi, the plight of Tharparkar, deforestation in the Northern Areas, the use of prohibited insecticides in our plains, the soaring noise levels in metropolitan centres and the sheer madness of letting the Indus Dolphin or the Houbara bustard become extinct.

The Role of the Print Media In Promoting Public Awareness of Environmental Issues in Pakistan

Mr. Khalid Ahmed
Assistant Editor,
The Nation, Lahore

The print media functions in a narrow domain, as indicated by the country's literacy statistics. Officially, we are 25 per cent literate; i.e., about 26 million people should be able to read, if not to write.

But this is not the whole truth. A minister in Islamabad once said, and has been often quoted, that the actual literacy rate is no more than 8 per cent. Taking this as the authentic figure, there are only 8 million literate.

If the print media could make these 8 million people aware of their environment, it would be a job well done. But circulation statistics show that no more than 2 million people read newspapers, mostly Urdu publications and small dailies which carry news regarding local politics. Newspapers and periodicals (so-called 'digests' sell better than most newspapers in Pakistan) are the vehicles that should carry the environmental message. Periodicals are mostly supplementary readings; some people who read newspapers buy a digest once a month.

The environment has degenerated in Pakistan more rapidly than the improvement in the quality of life. Industrialization, which should have raised the standard of living, has destroyed the very base on which life depends. Pollution in the Malir and Lyari rivers in Karachi, degeneration of the mangrove forest in the Indus delta, and the eruption of slums all over the country are the shocking results of lop-sided development. Lahore's Dek nalah lost its fish a long time ago because of the industry in Kala Shah Kakoo; but it is a story of the past for the citizens of Lahore, who now live either in the vicinity of factories located inside the metropolis or in the subhuman conditions in the katchi abadis now comprising 30 per cent of the city.

Awareness of the degradation of the environment requires that those affected by pollution should be looking at the environment rather than looking at themselves. So intense is the pressure of human settlement on land, and so involved is the population in surviving, that it cannot spare attention to

consider the pollution problem. There is so much illness in the localities where most of the people requiring awareness live that it is impossible to make them feel anything. Nothing concentrates the mind inward more than disease.

A beginning must be made, however. Reaching the people is difficult, but one can reach the state apparatus. The media can reproach the government and challenge the populist ideologies of the politicians. If the press becomes vocal, it can put the bureaucracy on the defensive forcing it to push files a little faster. Pakistan now has an ordinance on environmental protection - a result of a campaign in the press. Now journalists should demand the creation of an environment authority as promised in the ordinance. This authority might have the clout to compel the state to implement some of the provisions of the ordinance.

The first task is to make those involved with the print media aware of their responsibility to create environmental awareness. First efforts made by the UN Economic and Social Commission for Asia and the Pacific to persuade Pakistani journalists to organize themselves on this front have been largely unsuccessful for the same reasons as those described in a UNESCAP handbook on its experience in India. It is the reporter one has to rely on for the actual compilation of a professional report on pollution, but before that, it is the editor or the owner of the newspaper who should be converted to the cause.

When there is juicy political news to attract readership, why should a reporter be spared for a pollution story? When a political report can be done and filed in the same day, should a good reporter be allowed to disappear for days on end to talk about high lead and mercury levels in the local river because a factory is discharging effluent into it? If the newspaper is getting some of its revenue from the offending industry's advertisement, why should the editor make his paper unpopular? What if the industry reported in the paper goes to court? Has the reporter got his samples right, are the samples legal, and which lab will stand by him in case he is pushed into a corner?

If the civil servant and the industrialist have agreed to cut corners in the process of industrialization, it is hazardous for a reporter to challenge their world view. Faisalabad is the centre of Pakistan's labour-intensive textile industry. It gives jobs, it consumes the country's most important agricultural output, and it exports value-added goods. A reporter has to fly in the face of all this to emphasize that Faisalabad is becoming polluted. Its fields are poisoned, and its underground water is increasingly unfit to drink.

This is not to say that the newspapers are not talking of pollution, but what they do is not good enough - it is unprofessional and therefore ineffective. The Urdu papers carry short, stereotyped complaints about rubbish heaps when they wish to take on the municipality. They complain about

food adulteration, but the complaints are seldom backed up by hard facts. The fault lies in the format. The two-inch story illustrated with a photograph is too much of a stereotype to promote public awareness. It is in fact quite lethal to awareness, because it dulls our consciousness rather than stimulating it. Instead something like this should be done:

1. Choose the good reporter in place of the novice who is usually assigned to the rubbish-heap detail until he is ready to take on subjects considered more important.
3. Let him investigate the system of rubbish collection in the city — the vehicles and people employed.
4. Choose the format not of a filler for the forgotten regions of the paper, but of a feature to be given a prominent place.

Some ethical questions also arise. Editors and owners will have to decide whether they will continue to allow politicians to make their career by handing out ownership rights in katchi abadis, or whether they will in principle oppose katchi abadis as a method of urban growth. The newspapers have a tendency to play along. Their role is to speak for the people, and this at times means defending the rights of katchi abadis. When an illegal settlement comes into being through squatting, the papers keep quiet. When it becomes a katchi abadi which poses serious environmental hazards, then the editorial

policy is to force the government to legalize it. It makes the paper popular. It makes popular the chief minister, who is pictured in the paper handing out ownership rights.

It is important not only to make the air people breath clear of pollutants, but also to keep down the number of mouths that breathe in a given restricted space. Here again is an ideological hurdle that the print media will have to cross. Newspapers in Pakistan have not yet started talking straight about the problem of over-population and its present rate of growth, because that would involve recommending birth control. The media in Pakistan have seen governments go through contortions to disguise their efforts at population control until the word contraception has become a swear word. The papers have kept silent when they should have spoken out against hypocrisy and argued in support of the inevitable.

The same is true for the question of noise pollution. The use or misuse of the mosque loudspeaker is subject to the most tortuous style of rationalization, yet the complaint is real. Who among our editors will allow a feature on the lives of those who live in the firing range of a loudspeaker, backed up by social and medical evidence?

UNESCAP has been talking to journalists in Pakistan. I am grateful for these efforts, because every contact with UNESCAP representatives makes me concentrate more on the dangers that our society is exposed to. The dangers are real, and the more

one learns about them, the more they seem to overshadow political problems in importance.

But UNESCAP should also talk to the people who effectively control the newspapers and persuade them to break the mould of conventional newspaper reporting. If this results in a commitment to publish even one solid investigative report on the environment in a month, it will be a breakthrough that might even inspire a return to investigative reporting in general in Pakistan.

The print media may not be able to reach the rural world, where most of our illiterate population lives, but an attempt must be made to write about the hazards posed by the overuse and misuse of pesticides and fertilizers. One wishes the TV and radio could tell our people about deforestation and desertification instead of indulging in empty lyricism about nation-building; but the margin that is left to the newspapers should be honestly filled by them.

TV and radio are unlikely to recognize that there is no contradiction between nation-building and environmental reporting. The print media are in a far better position to accomplish this. Leave the loudspeakers alone until you have the guts to speak out; leave contraception alone until you realize that it is the only way out; leave the katchi abadis out for the time being. But let us start writing investigative reports about our rivers, our streams, our trees, our sewerage systems and the smoke that comes out of factories

and develop the expertise that we will need tomorrow.

Perhaps UNESCAP, the Rural Development Authorities and the Journalists' Resource Centre for the Environment should get together in an exclusive conference with the members of the Council of Pakistan Newspapers Editors and extract from them the following undertakings:

1. I will publish an illustrated investigative story on the environment at least once a month.
2. I will give it proper space and coverage.
3. I will allow a deadline on the story that makes it possible for a reporter to organize the theme and give it the treatment it deserves.

Problems Faced by the Media In Reporting on the Environment In Pakistan and their Possible Solution

Mr. Mahmood ul Aziz
Vice President,
CPNE, Karachi

The creation of public awareness of the state of the environment in Pakistan is one of the cherished goals of the media, especially of the newspapers and the news agencies. Unfortunately, the environment news at home does not receive the same priority as spot news related to politics or sports. The reason is obvious. The movement for creating environmental awareness in Pakistan is not very old. In fact it is a movement which has yet to have a full participation from all sections of the society. Being one of the many developing countries, Pakistan is still facing the dilemma of fixing its necessary economic priorities and incorporating environmental protection measures in its developmental policies.

Increasing population and poverty have kept adding to the problems faced by the people. The growth in the industrial sector has been tremendous in the past, and so has the pressure on natural resources. The growing urban population in Pakistan has, as well, resulted in various imbalances. Services and facilities hardly keep pace with urban growth with the result that

pollution in the air and on the ground has become a major health hazard, not only to individuals but to the nation itself. This situation faced today is basically due to the lack of priority given to the protection of the environment in the first three decades of Pakistan's history.

The politicians, the bureaucrats and the technocrats responsible for running the government and the administration gave a very low priority to the protection of the environment. All campaigns directed at the environment were basically publicity gimmicks. Take the case of the Tree Plantation Campaign in the country. Each year in the middle of the year, when the monsoon arrives, the campaign is launched with greater emphasis on the general public to have more trees planted and increasing the forest area in Pakistan. Ceremonies mark tree plantations by the president, prime minister, governors, chief ministers, ministers, secretaries, mayors, deputy commissioners down to the smallest revenue official at the Taluka level. Seeds and plants thus dis-

tributed, as officially claimed, during the past forty one years work out to over four hundred million. Given the mortality ratio of fifty percent, there should have been around two hundred million trees and good plants available from these tree plantation exercises. But do we really have them? The answer is "No." Who is to be blamed for this neglect? The media? But what about all the big names associated each year in the official launching of the campaign? Had they showed some interest and followed the outcome of all these exercises, results would have been much different. Similarly, there is what we call the 'cleanliness campaign' in the cities. The top officials get involved in a much publicized drive and for a few years a particular urban area looks clean, but soon the exercise ends and we are quickly back to where we started from.

Why is garbage burnt in many urban areas daily? Why are smoke-emitting vehicles allowed on the roads? Why are chemicals allowed to be released in the rivers? Why have the tanneries located between Lahore and Gujranwala made the most productive agricultural land a smelly nauseating place? Why does a thick dust cloud and smog hang around the Lahore-Rawalpindi station during the winter seasons? Why are there no safety regulations for the workers of the Asbestos Cement sheet industries? How come hazardous traders and small industries' manufacturers are allowed to run businesses in thickly populated cities and towns? Why do health officials become touchy and uncomfortable on any reporting of a spreading

disease or a potential epidemic? All these questions surface in the minds of those who are interested in reporting on the state of the environment in Pakistan. It is often in search of answers to these questions that reporters run from pillar to post and finally run into an iron wall of official silence, bureaucratic red tape and counter-questioning.

In the past forty years of my association with journalism, initially as a reporter and gradually rising to the position of managing director, I have always found the officials concerned reluctant to part with information on any environmental issue. If a journalist approaches an officer in the municipal corporation and wants to collect some information, say on the mode of garbage collection and disposal, the immediate reaction and thought arising in his mind would be that why does he need it? He starts fearing that the information might be used for defaming him or his institution. Similarly if any reporter tries to gather information or seeks details on the allocation of funds for any scheme regarding civic improvement there is never a ready answer forthcoming. The officials concerned are always fidgety in replying to such questions. Under such situations it is very difficult for the reporters to do in-depth analysis for environmental reporting. Good reporting and factual environmental writing by the journalists can only be done if the officials in the related agencies cooperate and there is whole-hearted participation by philanthropic organizations and individuals.

Unless the bureaucrats and the technocrats cooperate with the media in providing the correct picture, there can be no news worthy of creating an impact on the public, hence little change in the present state of affairs of the environment in Pakistan.

In spite of all the limitations there have been several good stories in the past like the very recent coverage on 'Change Manga' forest of the Punjab and the Kirthar Range in Sindh which are being ravaged by uncontrolled visitors and campers.

There are lots of other environmental issues in Pakistan which require a good study and reportage. I hope and pray we begin to discharge our responsibilities in this field in a spirit of dedication. Then only would the awareness of environmental balance grow in the readers and viewers of the printed and electronic media in our country.

The Role of the Asian Forum of Environmental Journalists

Mr. Aditya Man Shrestha
Nepal

The Asian Forum of Environmental Journalists is a regional body established a year ago in Bangkok, at the initiative of ESCAP, to promote education and to raise public awareness on environmental issues in the Asian countries. The Environmental Journalists Forum of Pakistan is one of the ten founder members which is actively involved in promoting the above objectives. Although the Forum is trying its best to transmit the message of urgency and the seriousness of the Asian environmental problems, I have no hesitation to say that the magnitude of the problem is much bigger than organizations like ours can really cope with. We are just a part of the whole movement whose role is to mobilize people for action and motivate them for participation. Public awareness and people's consciousness is the real key to the protection of the global environment.

The overwhelming stress laid on the behaviour and attitude of people towards AIDS, the killer disease, is a good example of how the people need to react and protect themselves rather than look for excuses like medical protection, legal prohibition on sex,

travel requirements of carrying AIDS-free certificates, etc. There is no denying the fact that a lot of money is being poured into medical research in this field and strict restrictions are being imposed on the movements of AIDS victims, yet a permanent solution is no way near in sight. We, the environmentalists, are facing a similar situation as far as environmental problems are concerned. Numerous programmes and projects involving millions of dollars have been undertaken in the Asian countries with little success in arresting deforestation, erosion of land, or pollution, or in protecting the valuable genetic resources, the natural habitat of these diminishing species and the atmosphere. Primarily it is the lack of public awareness that is leading to general apathy and non-cooperative attitudes at the grassroot level. Take the case of the community forestry programme in the villages of the Asian countries. It has miserably failed in spite of the concerted efforts of the project planners and the keenness of the government agencies. The forest resources in these areas have no chance of survival unless managed by the local communities themselves.

It is encouraging that the governments as well as the international agencies have realized the importance of the people's participation, but it is unfortunate that nothing substantial has been forthcoming. The World Bank and the Asian Development Bank have expressed their interest in such activities but without any commitment or support.

Lack of funds has always been one of the great impediments for the promotion of activities of any organization. Asian Forum also has suffered because of it. With no secretarial support or financial assistance it has been very hard for the newly-born Asian Forum to operate. We failed to approach the funding agencies in the manner and at a time appropriate to their requirement, which perhaps counts more than the cause we are fighting for. It would not be out of place to expect from ESCAP, who was instrumental in establishing this body, to take some fresh initiatives for bailing out this organization, as it has done in the case of many other regional bodies.

Asian Forum and the ESCAP already have experience working together, and have made substantial contributions to the enhancement of environmental coverage in the media. We however regret that its potential is not being exploited to its maximum only because that it has yet to be widely distributed. To overcome this we are planning to hold workshops for the media people in the Asian region.

The environmental information service, anyway, is gaining momentum. It has been received well by the media and a lot of enthusiasm has been shown by the journalists. The newsletter of the Forum has not only communicated among the different national forums but also has maintained closer links with the international environmental community. Through this exchange we hope to apprise each other of the environmental problems in the individual countries and their transboundary impacts, both at the regional and global level. Recent floods in Bangladesh and the heavy torrential rains in South Asian countries have played havoc in the region. This loss could have been avoided or minimised by timely and substantive reporting. Asian journalists, therefore, have a crucial role to play. The Asian Forum will try to provide opportunities to the journalists to make in-depth study of such problems in the region and to communicate them to the public in an objective and effective way.

Reporting Techniques

Defining Environmental Reporting

Dr. Sharon M. Friedman

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More and more people are talking about the environment, but sometimes it seems as if they can't agree on whether something is an environmental issue. The same confusion faces journalists who want to write about the environment. What is environmental reporting anyway? How about those that include energy or agricultural and marine activities? Where do development and poverty fit into the environmental reporting picture?

Asked what they thought environmental reporting includes, a class of university journalism students in the United States responded with a list of topics that included toxic wastes, chemical spills, floods, erosion, nuclear plant failures, solid waste disposal, acid rain, water pollution, oil spills, noise pollution and endangered species. This response typifies general perceptions in the United States about the environment — that it primarily involves unfortunate occurrences within the nation. Clearly, media coverage of these environmental problems influence this viewpoint.

This view is a narrow one. Missing from the student's list were many en-

vironmental problems not common to the United States but prevalent in many Asian countries including deforestation, overfishing, waterlogging and salination. Missing too were the key global interrelated environmental issues of sustainable development, overpopulation and poverty.

Ask the same question to students in China, India, Indonesia, Nepal or Malaysia and their answers would not match those from the United States because these nations and their media define a different environmental reality for their citizens. In Singapore, for example, environmental issues revolve around public health concerns. In the Philippines, issues connected with farming, deforestation and fishing are of major interest. In India and China, among many other issues, nuclear power problems can be classed as environmental.

One interesting aspect that probably would be similar for various populations is that they would respond by citing environmental problems almost exclusively and rarely would they discuss an environmental issue that has been dealt with positively. This too is a

reflection of media coverage where environmental problems get much more space than environmental successes.

Several Definitions of Environmental Reporting

To define environmental reporting just by the issues it includes may be too narrow. A much broader definition states that since the environment involves the active relationship between people and their living and non-living environs, there is very little reporting that is not environmental. Therefore environmental reporting includes coverage of health, economics, politics, commerce, development, physical resources and a wide variety of scientific research. In short, people's interactions with the living and non-living components of their environment, which alter the environment by using, redistributing or disturbing its resources, constitute a topic for environmental reporting.

A more restricted way of defining environmental reporting might be that it covers environmental concerns on a continuing scale, from those that are international in scope to those that are smaller-scale and personal. It includes problems as well as positive activities. International problems worth covering include the ever-present growth of human populations, poverty and lack of food to feed increasing numbers of people and the interrelated problems of environmental destruction — deforestation, desertification, soil erosion and habitat destruction. International positive activities include the

concerted efforts led by the United Nations to limit the amount of ozone in the stratosphere, international treaties to protect endangered species and cooperative efforts among nations to help transfer appropriate technologies. Nationally, there are the problems of increasing urbanization and the accompanying air, water and noise pollution that are part of the environmental beat. Positive national activities would include sustainable development planning and projects that take into account preservation of natural resources. On the more person-oriented scale, pesticide use is a concern both for the farmer who must use the pesticides and the person who eats the sprayed fruits and vegetables. Good land management, controlling mosquitoes, cleaning up garbage and litter all are positive environmental activities on the smaller, more personal scale. They require coverage too.

From either the very wide or somewhat more restricted definition, you can see that environmental issues cross traditional mass media specialties or "beats" such as politics, science, medicine or agriculture. In the United States, the environment warranted its own beat and reported in many newspapers when environmental concerns were just emerging in the 1970s. Not many environmental specialty reporters remain today except on a few of the nation's largest and most prestigious newspapers. This is because environmental concern is institutionalized into daily life as well as governmental activities, and therefore many different reporters cover environmental issues, depending on the

area from which the issues emerge. For example, if a story is about an environmental health hazard, then the medical or science reporter might handle it. If it involves legislation, then a political reporter might write about it. Of course, many newspapers in the United States do not have specialty reporters such as an environment, science, health or political reporter. Like elsewhere, they depend on general assignment reporters to write about environment and other issues.

In China, there is a great interest in specialized environmental reporting. *China Environmental News* is a national newspaper with a 600,000 copy distribution. In addition, there are 96 environmental journals and publications at the provincial, municipality and autonomous region level. About 400 full-time and part-time environmental journalists work in China.

No other Asian nation has as extensive an environmental reporting activity as does China. Other nations have environmental journalists on some publications. For example, in Bangkok, one major English-language newspaper has a reporter who covers some environmental as well as other issues plus a popular nature columnist, who often writes about environmental concerns. In Manila, a free-lance columnist writes about the environment for a major newspaper, while in Singapore, the science reporter often covers environmental activities.

Throughout Asia, the feature service, *Depthnews Asia*, also provides environmental coverage for the media.

But, for the most part, environmental issues are covered in Asia often the way they are covered in the United States, by a non-specialist, general assignment reporter.

The Journalism of Uncertainty

This strategy, however, often creates problems because environmental reporting is different from other types of reporting. The differences show up in many areas. First, many environmental stories are stories based on uncertainty. For example, scientists may not know a particular pollutant's source or how dangerous it is for human health. That is uncertainty. Experts often disagree about many things such as what can be done to stop deforestation while continuing to provide fuelwood for a growing population and maintain needed exports of timber. A report from one prestigious organization can totally contradict that of another organization. That too is uncertainty.

The scientific process that contributes data to environmental issues also is uncertain. The very nature of scientific evidence and knowledge is tentative and uncertain. For example, for many years, scientists all over the world have argued about the dangers of low level radiation exposure. The basis of the argument relates to whether there is a level low enough so that no harm will occur or whether exposure to any level of radiation — no matter how low — is harmful. Many distinguished scientists believe there is a line below which there will be no harm; other just as equally distinguished scientists say that

this is not the case. Evidence to support either side is hard to come by since, if there were damage, it would appear only after a long period of time. So here is uncertainty too and it affects governments who need to set radiation safety standards and people who receive low doses. For instance, will people exposed to the low levels of radiation that spread over parts of Europe in 1986 due to the Chernobyl accident suffer from cancer in the future? Various experts can provide what they believe will happen based on their views about low-level radiation exposure, but there is no single certain answer.

The amount and type of information that comes from government officials also can lead to uncertainty, particularly in an emergency situation. During the Bhopal accident in India, according to many journalists, the government "gave out limited information and only added to the confusion." Officials said, "the water is safe, but boil it before you drink; the vegetables are safe, but wash them before you cook." While claiming fish was safe, they closed the fish and meat markets and banned the slaughter of animals. Officials also refused to answer questions about what tests had been conducted and when. With such critical questions of public health at stake, a reporter must be able to find answers to this uncertainty too ("*The Bhopal Disaster*," p. 221).

Environmental Stories are Complicated

Another area that differentiates environmental stories from others is their

complexity. Most have many facets, involving not just technical information but also financial, political and social considerations. Much of what is covered can affect human health, often more than one generation, and involves evaluating complex costs and benefits. Often there are not just one or two sides to an environmental issue but quite a number. And environmental concerns usually do not develop overnight; they build over time.

Although they often are covered as a single event story — someone made an announcement today about a new government effort to save forests — there is much more to an environmental story than just the announcement. In this example, there could be discussion of the general problems of deforestation, of how deforestation is occurring in the country or a particular region, and of its causes, particularly those related to development or lack of land or population growth. Previous steps the government has taken and their success could be investigated as could measures other governments have used and recommendations from inter-governmental bodies such as ESCAP and other U.N. organizations. Another tact could explore how science could help reforestation efforts and whether universities in the region are working on the problem. Recently in Thailand, the army moved into the northeast region to help protect forests, and one could easily picture stories on why the army got involved, whether this suggests a significant policy change, whether people living in the forests and using the wood must be relocated and what effects this could have on them.

Money is an overriding consideration in environmental stories — money to clean up pollution, money to save endangered lands or species, money that governments will have to use to resettle squatters, money that will come from industries attracted by lax environmental laws. Stricter environmental protection has profound impacts on the economic bases of communities and nations alike. How can it be balanced with development so that both can go on side by side? How can development be sustained over time so that natural resources will be preserved rather than destroyed?

Environmental issues have a long tenuous string of interrelated concerns — much like the interrelations of ecosystems themselves — which all have an impact on people's lives. Environmental reporters need to deal with all of them in order to cover a story properly, and this requirement guarantees that environmental stories will be complex.

Environmental Stories often are Technical

A third difference between environmental and other stories is the technical information often involved in environmental issues. Environmental issues contain many scientific, technical and economic aspects and it is necessary to interview experts about them. Often the experts will talk in the language of science which is full of jargon and hard for laypersons (including reporters) to understand. It is the reporters' job to try to get these experts to help them translate the techni-

cal language into a form readers can understand.

Unfortunately, it is common to read environmental stories in which a reporter simply repeats what an interviewed expert said without trying to clarify or elaborate on it. A reader finishing the article will come away with very little understanding because the writer did not or could not explain what the expert meant. Unlike many other news beats where reporters simply report facts or what someone has said, an environmental reporter has to do a lot of explaining. This usually means that he or she must talk to more than one person about an issue looking for clarification and explanation of technical points and other opinions or points of view.

Often one expert is not enough on an environmental story. In an article on a pesticide spill, for example, to do a thorough job, a journalist may have to interview specialists in toxicology, epidemiology, economics, groundwater movement, meteorology and emergency evacuation, not to mention a variety of government officials. But where does a reporter find all these experts? Just looking for them takes time and interviewing them takes even more time. Often too, experts are not willing to help reporters understand the technical issues involved, let alone be quoted in a story. Even if you do find an expert willing to help you, there is always the danger of his and your not knowing the limits of his own understanding. Surrounded by technical detail and jargon, how is a reporter to know what is important and how to

determine the significance of the facts?

Phillip Tichenor, a journalism professor in Minnesota, has pointed out that scientific and technical information in environmental issues is very much a part of the adversary process. Many environmental issues boil down to a battle of interpretation over technical information (Friedman).

An example of this occurred in Bangladesh and Nepal shortly after the 1986 Chernobyl accident when a controversy arose over whether dried milk imported from Poland would contain radioactive levels that were harmful as a result of the Chernobyl accident. Technical information about radiation testing and levels abounded in the controversy, such as that if the milk exceeded 300 becquerels per kilogram in Bangladesh and 370 becquerels per kilogram in Nepal, government officials said they would not allow it into the country. A becquerel is a measure of the disintegration activity of atoms at a radioactive source. Yet, according to an article in *The Rising Nepal* (4/30/87), a panel of scientists expressed the view that milk and other foodstuffs used in Nepal should be totally free from hazards of man-made atomic radiation as far as possible and that the country should adopt a national standard for radiation.

So what was a reporter to convey to his or her readers? Was 300 or 370 becquerels per kilogram safe, and by the way, just how much radiation was that and what did becquerels mean?

Despite the fact that government officials told reporters that 370 becquerels per kilogram was the safety standard used by the United States and the European Economic Community, reporters in Bangladesh followed up the safety question by comparing this radiation standard to those of several European nations and found that it was higher. They concluded that the government level had been set too high for public safety, and they publicized this widely. As this example indicates, sometimes in environmental controversies, technical information and the expertise to understand it can be weapons, as Tichenor says, "in a struggle for supremacy and political control."

Another aspect of concern about technical information is secrecy. Darryl D'Monte, a free-lance environmental writer in India, pointed out:

Commercial, bureaucratic and political interests ensure that the public is kept in the dark on many vital details regarding any development which affects the environment. This information may be actively suppressed; alternatively, and equally frustrating, is the erection of so many procedural hurdles as to make access virtually impossible. The tendency on the part of some government departments is to claim that every document is "confidential" and not available to a journalist; even printed documents are withheld on this score. Public and private sector companies, on the other hand, seek refuge behind the fact that divulging such infor-

mation would provide a handle to their competitors. A standard reason for not allowing a reporter to visit a chemical plant, for instance, is that details of the processes and design would aid a competing corporation (D'Monte, p. 7).

Balancing Viewpoints are Needed

A fourth factor that makes environmental stories different from others covered by the media is that there are so many people, organizations and sides involved in the issues. While some other concerns also may involve many groups, because environmental issues are complex and technical, it is often difficult for a reporter to balance the various viewpoints. Some reporters try to present the arguments of different groups with an even approach that presents one side and then the other. This type of quantitative balance appears fair, but may not be because many more knowledgeable people may accept one side of the argument over the other; yet both are given equal weight in the coverage.

Another approach is to try to evaluate the "scientific standing" of the evidence, that is, for the reporter to try to decide how good the scientific or environmental evidence is. To do so, reporters would have to know the subject well or consult with groups of experts. But experts can be biased or support the status quo for political reasons. So reporters must be very careful in trying to balance all the views involved in an environmental

controversy and this is often a very difficult task.

Other Differences in Environmental Stories

Environmental stories also differ from other stories because a high level of emotionalism often surrounds an environmental controversy and reporters have to be careful not to inflame or panic people.

In Thailand, for example, citizens were so incensed about the building of a processing plant for tantalum (a metal of strategic importance often obtained as a side product of tin mining) which they thought endangered their health and environment that they burned the plant down.

On the other hand, there is often the need to get people interested in environmental issues, and to do that, reporters have to show how an environmental issue can affect people. One environmentalist has said that "to create environmental-mindedness, it is necessary to stress personal experience and develop perceptions through all the senses." This means that environmental stories must show people the relevance of the issue — how it will help or hurt them or have some impact on their lives — and that can lead to more emotionalism.

Another difference about environmental stories is that one article often is not enough to cover an issue. Environmental problems and solutions are typically long-range, and there may be long-term impacts that are unforeseen

at the time of the controversy. This requires in-depth treatment, with careful attention over time to the developing stories and their side issues.

A last aspect that differentiates environmental articles from others is the need that many people feel for journalists to be activists. This is particularly true in Asia where journalists themselves as well as officials from governmental and non-governmental organizations have called upon reporters to actively help alert people to environmental problems and call their attention to how they can help solve them. They seek to have reporters actively help form public opinion on controversial issues and, in some instances, follow up on whether environmental complaints printed in newspapers or aired on radio and television have been handled by officials in charge. This activity goes beyond the "watchdog" role and has reporters actively participating in the environmental education process. One example of this involves reporters working on, participating in and reporting extensively about the "Save the Western Ghats March" in India, which started in November 1987 and ended in February 1988 ("Save the Western Ghats").

Another example of active participation involves a campaign by Philippine journalists to preserve the habitat of Asiatic dowitchers on Olonggo Island. About 100 of these endangered birds were sighted on the island in 1987. The journalists wrote a number of articles on the birds, some of which were carried all over Asia. There also was ex-

tensive radio and television coverage. Besides writing articles and frequently visiting the island to monitor the birds, members of the Philippines Environmental Journalists, Inc., passed a resolution asking the government to declare the island a sanctuary for the birds.

No doubt reporters can play a major role in making people aware of environmental issues and they should do so. However, they also should be careful to remain as objective as possible in covering environmental topics and be cautious to avoid being manipulated by interested parties of any type in a controversy.

So there are many reasons environmental stories should be treated differently from other news stories. Taken all together they might appear intimidating to a reporter who wants to write about an environmental issue, particularly if he or she does not specialize in the field. But the general reporter need not fear environmental reporting if he or she approaches it with all these differences in mind and tries to deal with them. To do effective environmental reporting, journalists will have to go beyond their normal reporting routine and invest more time and effort, perhaps even their own time, if an editor will not let them do so on the job. But the investment will pay off both for the reporter and his or her readers. We encourage all of you to work hard at writing on environmental issues, whether you do so only 5 per cent or 50 per cent of the time. The best way to get started on reporting about environmental issues is to

prepare in advance. After that you have to pay attention to relating to your readers and working on ways to simplify complex information.

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Advanced preparation and Interviewing for Environmental Journalists

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Recently during research my co-author and I did for *Reporting on the Environment: A Handbook for Journalists*, published by the U.N. Economic and Social Commission for Asia and the Pacific in the Spring of 1987, we interviewed print, radio, and television journalists, national government officials, U.N. officials and university science and journalism professors to find out, among other things, what they thought the major environmental issues were in their region. We were quite surprised on one occasion to be told that there were really no newsworthy environmental issues in a particular area. As far as we were concerned, there was a wealth of stories to be covered, some about problems and others about solutions or successes in combating those problems.

In another country, we noted that the media paid a lot of attention to deforestation issues, but little to those of the air, water and noise pollution present. When asked why these conditions were not covered, a reporter said that they were just part of the way of life and people did not question them.

These differences in perceptions about environmental stories are not unusual and may point out the problem of defining environmental stories. They also point out another problem - that reporters may not be knowing where to look for environmental story ideas.

Finding Environmental Story Ideas

Environmental story ideas, both positive and negative in nature, are actually all around us. You can find them by travelling about a city or the countryside. Careful observation on your part might turn up some environmental problems of interest to many people.

More traditionally, story ideas often come from many different places. Probably the most common sources are press releases, reports and statements by local and national government agencies. Press releases often provide enticing clues to follow up for an effective article. As often as possible, they should be only the starting points for stories, not entire stories in themselves. Use them to alert your-

selves to story ideas and then develop these ideas more fully with background research and interviewing before you write the story.

Frequently you can sift stories out of government reports. While these often are long and dull, they still may be full of important information and statistics that will give you an excellent lead for a story. It may be an effort to work your way through government reports, but that effort often pays off. If your government requires that companies apply for air, water and hazardous waste discharge permits, ask to see them. Often examining these permits and then comparing them with inspection reports will show up major problems, according to one environmental reporter (Detjen).

For example, an Environmental Impact Assessment (EIA) of plans for a massive 900-megawatt coal-fired power plant in the unique and scenic Trincomalee Harbour in Sir Lanka disclosed that the plant will emit a minimum of 42 tons of gases (primarily sulfur and nitrogen oxides) into the air every day. The EIA also noted that this plume of polluted air might travel as far as Colombo because of prevailing wind patterns; so the pollution would not only affect the Trincomalee area but also could result in acid rain over the tea estates in the hill country of Sir Lanka (NGO Campaign). Such information makes for effective environmental articles that can mobilize action for or against a project.

Talking with government officials also can pay off. Much of what they say will be quotable and make good additions

to your articles. In other situations, they might quietly give you a hint of a story to cover or they might even leak information for their own purposes that could put you on the trail of an important article. Do not always try to speak with the highest official in charge. One effective environmental reporter says that some of his best stories often come from lower-echelon field inspectors or workers in environmental agencies. He explains they can often provide tips about what a company is doing and how political pressures are being brought to bear on the situation (Detjen).

People in local and national health departments can often provide valuable story ideas. They can give you information about a possible cancer-causing substance as well as the health effects of pollutants or pesticides.

International organizations also are good sources for stories. They issue press releases and reports too. One excellent place to look for story ideas is in the many environmental publications issued by various United Nations organizations, including ESCAP, the U.N. Environment Programme (UNEP), the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). Not only do these publications focus on many issues, but they also provide an international perspective from which to evaluate the actions of your own government. The reports often contain the names of people who can give you additional information and serve as sources for your story.

Non-governmental groups interested in environmental areas are another good source of stories. Sahabat Alam Malaysia (Friends of the Earth Malaysia, called SAM for short) is a grassroots community NGO formed in 1977. It is involved in a wide range of environmental issues arising from the problems of rapid industrialization and the disruption of traditional lifestyles. It has done basic documentation work in more than 100 related subjects on the environment and development and put these data into memoranda to various governments as well as articles for the press. It publishes a bi-monthly newsletter, *Suara Sam*, and has issued a number of reports including those on a radioactive waste dumping controversy and on pesticide use. It also has published a *Directory of Environmental NGOs in the Asia-Pacific Region*.

An organization closely allied with SAM is the Asia-Pacific People's Environment Network (APPEN). It is a coalition of more than 300 groups in the Asia-Pacific region. It also has links with networks in Latin America and other Third World countries through SAM, which acts as the coordinator for APPEN.

Another effective NGO is the Centre for Science and Environment in India. The Centre is the author of two highly effective reports on India's environmental situation. *The State of India's Environment 1984-85: The Second Citizen's Report* contains a great deal of valuable information for journalists. In fact, journalists sometimes worked for the Centre as research fellows, and

they helped put together the first and second citizens' reports.

Other NGOs are equally as effective in providing information for journalists, citizens and governments. The Wildlife Fund Thailand was the publisher of a major position paper on the recent Nam Choan Dam controversy. In London, the International Institute for Environment and Development has sponsored a series of excellent Earthscan publications on a number of environmental issues including carbon dioxide, climate, international trade in wildlife, new and renewable energies, water and sanitation. These booklets are written in easy-to-understand language and are excellent sources for reporters for generating story ideas and finding background information. Sometimes labor union officials can tell you about environmental or occupational health problems at factories. While you should listen to these groups carefully — they are interest groups — their tips can be invaluable as starting places for stories.

Do not overlook industries as a possible sources, particularly if you want to write something positive about their activities. While it may not be as much a tradition in Southeast Asia as it is in the United States for industries to work with the news media and release information to them readily, perhaps some multi national companies within Southeast Asia would provide information if you asked. Some of these companies have well-qualified environmental scientists working for them who could provide interesting ideas for articles. Also, they could be-

come sources for background information or explanations when you need them. For example, when information was not forthcoming from the company that operated the Three Mile Island Nuclear Plant during the accident, many reporters called experts at other companies that operated nuclear plants for advice and explanations. The same thing happened during the Bhopal accident. When Union Carbide, the company involved in the accident, could not be reached, reporters turned for information to other chemical firms as well as to the trade association that represents chemical manufacturing companies in Washington, D.C. Of course, what company officials say must be regarded as presenting only one viewpoint.

Another good source of environmental story ideas is a university professor. Scientists do research in marine biology, ecology, air pollution, geology, forestry, hydrology and biology, among other things. Besides giving you ideas for articles, scientists can explain technical concepts to you and provide background information for stories. Their research projects could be the sole source of a story or serve as part of a larger story on an environmental issue. In addition, since they must keep up to date in their fields, they can help you evaluate what others have learned or claimed about a specific environmental situation.

A list of research projects at a university would be a good place to start looking for a story. Some departments and colleges even publish research journals and newsletters. For example,

a recent issue of the Silliman Journal from Silliman University in the Philippines included research articles on preserving giant clams as well as information about the recovery of a coral reef after typhoon damage. Both of these are good subjects for articles. The Marine Conservation and Development Programme at Silliman has its own quarterly newsletter, which also could provide some good story suggestions. When such printed information is not available, a phone call to the appropriate department chairmen could turn up leads.

Academic journals also are published independently of universities. There are many famous ones internationally that many environmental and science writers follow closely. An important U. S. publication is *Science*, while a valuable British publication is *Nature*. *Science Age* in India and *Nature* in Indonesia are from the Asian region. They and others like them can provide good information for story development. But you must remember that their prime audience is scientists and other technical people, so you will find these journals difficult to understand. Also they will be expensive to obtain. Academic journals from your own nation probably would be as much help to you as the ones just cited. One good thing to remember about academic journals: the articles appearing in most of them are reviewed by other researchers before the journal accepts them for publication. Therefore you can be fairly certain they are legitimate. However, don't use the article as the sole source of your story.

Be sure to contact the researcher involved and talk to him or her as well.

Scientific meetings and lectures are another excellent source of information. Not only do these opportunities enable you to hear what a person says, but they also allow you to make a source contact for the future. Meetings and lectures make it possible for you to talk with a range of environmental scientists and garner fresh story ideas.

Another source of story ideas comes from articles that appear in local and international newspapers. Frequently a story will focus only on one facet of a topic while ignoring things that are not central to the main news story. A reporter who reads carefully may just find one or more other stories buried in the first one. In addition, an article about an environmental matter in another country could spur you on to check if the same thing exists where you are. Stories distributed by the feature service, *Depthnews Asia*, cover a wide range of issues in the region and could give you ideas about how to localize the coverage for your area.

Last, but not least, on the list of places to get story ideas is your own clipping file. You can generate your own article topics by reading and collecting materials on particular environmental subjects that you can later use as references for articles. Again, *Depthnews Asia* stories are excellent resources from which to work. By collecting your own materials you do not have to depend on your editors to know what to cover; you can be better informed about environmental issues than they are.

You also can use this method to prepare yourself for potential environmental news stories and interpretive features long before the story is undertaken. Pick several of the most common environmental news topics for your coverage area and make an effort to obtain reading material from representatives at the institutions mentioned above. Then just file the material until you need it or until you have a chance to sit down and go over it for story ideas. Make sure to add new material to your file periodically.

Finding Good Sources to Interview

In one environmental journalism class assignment in the United States, university students were asked to write a paper on the effects of herbicides sprayed on grass around houses. The obvious place to begin was with the businesses that did the spraying. When they did not give much information, students called government agencies responsible for maintaining environmental safety. They also failed to get information from these sources. Next they telephoned a national government health agency and got no information. At that point they felt they had exhausted all their leads.

What the students failed to do was to think out the circumstances of the problem step by step, in order to find other potential sources of information. Because people in the potentially affected areas keep dogs and cats as pets and those animals walk on the sprayed grass, one potential information source could have been veterinary doctors. They might have treated some

animals for herbicide burns or poisoning. Also, they were more likely than many others to have read something about the matter in a professional journal. The same was true of pediatricians who could have read something about related health problems in a medical journal.

The students ran out of time for their project and concluded that there was little or no information on the subject. Six months later, a national environmental affairs journal carried an in-depth article on the topic, based on interviews with mothers who had formed groups to fight against such herbicide spraying. Thus, the story was "there," but the students were not persistent enough to track down sources of information.

This situation points out the importance of seeking out the best sources you can for environmental stories. In many instances, they will come from the same groups that we have said will give you good story ideas: government officials, members of international and non-governmental organizations, industry scientists and managers, university scientists and health officials.

In Asia as well as the United States, there is an overdependence on the use of governmental officials because they are readily available and are considered credible. Since government officials are busy regulating and enforcing environmental laws and directing environmental programmes, they will always be major sources for stories. However, too often reporters take the easy way out and contact only

government officials, overlooking better sources. Remember, there are many sides to environmental issues, so government officials should not be the only ones you contact.

International organizational sources could provide information that will help put national problems into perspective. Staff members, consultants and volunteers from non-governmental groups may be very knowledgeable about local and national environmental issues. The Centre for Science and Environment's *The State of India's Environment 1984-85* report contained information on such topics as grazing lands, soil erosion, India's water budget, inland fisheries, governmental forest lands, population, women and natural resources, hazardous products, mosquito-borne diseases, firewood in cities and genetic resources, among others. SAM and APPEN recently provided information via press releases on pollution of fishing grounds at Calancan Bay in the Philippines, on a call to ban the export of frog legs from Bangladesh and on the potential of and possible dangers from biotechnology.

Industry scientists could provide an accurate scientific analysis of events. When one industry or company is involved in an environmental story, consider interviewing scientists and other representatives from other firms in the same field of production for another view.

University professors often can explain scientific, social, health and political aspects of environmental events and

impacts in greater depth than government representatives can because their research makes them experts in particular fields. Cultivating university scientists as information sources takes effort, but it is worth it. Find one source willing to talk to you and then he or she may lead you to a second source, breaking down barriers that you might be unable to get past on your own. Remember, too, a university professor may be the most unbiased source you can find.

Beyond these standard sources consider interviewing some person who has experienced what you are writing about. For example, think of all the potential victims of some form of environmental damage and contact them. Said an environmental reporter:

Sometimes the individuals who really know what is going on aren't immediately obvious. For example, on stories about air pollution, check with airline pilots, park foresters (who may know of dying trees caused by automobile pollution), window washers, etc. On stories about water pollution, check with fishermen, boat captains, etc. (Detjen).

Involving ordinary people or "victims" in your story has its dangers. They can give you colorful quotes that are not accurate or they can unintentionally mislead you because they do not know all the circumstances. However, as long as you keep their shortcomings in mind, including ordinary people in your story often improves it.

Conducting Good Interviews

Conducting a good interview means being prepared. Unless an environmental reporter is covering a breaking story, background research must be done.

Every reporter has been taught that he or she had better know something about the person and the subject before going into an interview. People resent if you ask about facts that you could have learned in advance. Find out whether the individual you are interviewing has written anything about the subject or given any speeches. If so, get hold of them; they will help you ask better and more precise questions. If the person is an important official, the newspaper library might contain a file on him or her. The person also might be listed in books that provide background about noted people. Remember, if you are unaware of the source's background, you will not be able to detect inconsistencies or half-truths in what he or she has to say.

To prepare yourself on the subject matter, you need to gather information from many different perspectives.

Problem Definition

Your background research should include gathering information that can help you identify the many aspects of the environmental issue on which you are working. You need to work out how aspects interact and what impact various ecological, social and political interrelationships will have on the situation.

Similar Past Cases

Background research also should identify past cases of similar occurrences for several reasons. One is, so comparisons can be made in your article. Another is, so you can ask interview questions such as "How does this event compare with event 'X' that happened in 1985?" Also, looking at past coverage of a similar event will show you how someone else treated the story and might even give you some ideas for interview questions.

Technical Information

Thorough background work should prepare a reporter to understand as much technical information as possible. You need to enhance your knowledge of the technical aspects of environmental issues. Various publications can help as can seeking simple explanations from qualified people who will not be part of your story. Consulting glossaries also can help prepare in this area.

Site Visits

If a potential interview will involve discussion of a particular event at a site, you should try to visit the site first to get a good mental picture of it. This will help you formulate questions and make you aware when an interviewee's answers conflict with something you have observed first-hand.

Background and Context

Pursue background and contextual information as well as facts in your re-

search. Your audience needs to know how an environmental problem came about, what can be done about it by officials, how it will affect their lives and what they can do about the situation. They need to know how their individual actions about the environmental issue can have an impact on future situations.

General Interviewing Guidelines

One of the reasons you need to do all this background research is to help prepare questions in advance for your interview. Doing this will help you make sure you ask questions about all the topics you want to cover in the interview. It also will help keep you in the direction you want your story to proceed.

In writing out your questions, there are several different things you need to keep in mind. The authors of *Advanced Reporting, Beyond News Events* suggest that you first deal with deciding how many of your questions should be general or specific. They note that "specific questions produce more usable materials for journalists than do abstract or hypothetical inquiries. However, if you ask only questions that are specific and narrow, you risk putting your subject into a straitjacket of your making." Many experienced journalists like to use general questions to try to get some wide-ranging answers. However, John Brady in *The Craft of Interviewing* warns:

Generally if your subject is at home with words and ideas, lead him out with an open, general question. If he is ill at ease, make him comfort-

able with a question about the concrete, easily explained.

Other things of concern that several journalism professors have suggested you consider when preparing to interview include:

- Avoid constructing "leading questions" that steer the interviewee into a predetermined answer.
- Always ask just one question at a time, not one with two or more parts, and keep your questions short.
- Make sure your questions are very clear.
- Always ask basic, fundamental questions about technical information. While you can do background preparation on technical subjects, you cannot know everything. If an expert says something you do not understand, stop him or her and get an explanation in simple terms.
- Don't be afraid to ask tough questions that cause a person to think, reflect and search. Such questions could be embarrassing to the interviewee. Several ways to minimize the discomfort suggested by the authors of *Advanced Reporting* are: (1) attribute the question to someone else by creating the impression that "other people" are interested in this information; (2) ease into the question gently; (3) wait until late in the interview to ask the question when rapport has been well established. After asking the tough questions, ask a few easy

questions to end the interview and leave the interviewee in a better frame of mind.

- End an interview with a summarizing question that asks the interviewee whether you have missed anything that was important to the subject (Keir, et al.).

When starting off an interview, it often is useful to try to establish rapport with the person by engaging in a bit of light conversation before asking serious questions. However, how much rapport-building is needed depends on the interviewee. You can antagonize a busy, important person by this effort. A third way to start an interview includes summarizing the problem you are going to discuss and explaining why it interests you. Another way is to tactfully refer to the person's position on the issue. For example, "I understand that you are not in favor of the new desertification control plan. Would you explain why you oppose it?"

Choose and phrase your questions with care and present them in an organized manner. You should have a clear plan for how the interview is to proceed and should stay in control of it throughout. However, if the interviewee goes off in a direction that is more interesting, do not fear following that tangent if it will make a more effective article.

Dealing with Technical Experts

Dealing with scientists and other technical experts is always difficult for a layperson. Many scientists are reluctant to talk to reporters because they

fear they will be misunderstood, misquoted, quoted out of context, or quoted in a manner that makes them look bad in the eyes of their scientific peers.

It is important for you to understand that there are many risks involved for technical experts when they work with journalists. The scientific community does not reward its members for informing the public and, in some instances, it may ridicule them for doing so.

Scientists and other technical experts also feel uncomfortable dealing with a reporter and his or her editor who have what control? In addition, they like to be precise in how their facts or data are reported. According to Robert Trotter, a U.S. social science writer:

In many cases, scientists want to see a full, dispassionate discussion of their work — including all pertinent details and background information. But reporters, who have to deal with deadlines, space problems, and editors, may have to sacrifice some of the more technical details and emphasize some of the more striking aspects of a story. In doing so, they may be less accurate or less complete than the scientists would like. But if science writers care about what they are doing, they can learn to be both accurate and readable (Friedman, et al., p. 107).

Because of this lack of control and their fear of peer criticism, many technical experts ask to review articles

before they are printed. Some may not agree to an interview unless that condition prevails. Most newspapers do not like to have full texts of articles reviewed before publication, but sometimes you can work out a compromise. A reporter can read back material he or she took from the interview to the expert to make sure it is accurate. Also, during the interview process, the journalist should periodically and carefully go back over technical, complicated or sensitive material. One reporter suggests using phrases such as: "Let me make sure I have my facts straight," or "If I interpret your conclusions this and such, would you agree?" She said that this approach serves two purposes: (1) to check on accuracy, and (2) to reassure the scientific source that she wants to be accurate and that she will take care not to misinterpret what he says or does (Friedman, et al.)

It is important to reassure technical experts that you will make every effort to present their information accurately. Again, don't be afraid to ask them basic questions if you do not understand what they are saying. You will never be able to write up something accurately if you do not understand it in the first place. (For further information on dealing with technical experts, see *Science Writing in Asia: The Craft and the Issues*, by Adlai J. Amor, Paul M. Icamina and Mack Laing, published by the Press Foundation of Asia in Manila and *Scientists and Journalists: Reporting Science as News*, edited by Sharon M. Friedman, Sharon Dunwoody and Carol Rogers, published by The Free Press in New York.)

Avoiding Passive Journalism

Too many environmental articles only react to events such as some official making an announcement or an organization issuing a report. This is passive journalism, where someone else determines what reporters cover by managing events. For effective environmental reporting, journalists need to determine when and how to cover a story.

Research on environmental journalism coverage in United States has shown that, in many instances, reporters at the national and local levels lacked initiative. Our review of selected environmental articles produced in 1986-87 in English-language newspapers in some of the ESCAP-member countries shows this to be the case there as well.

You must get beyond the coverage of events. Do not cover the environment from report to report or crisis to crisis. This is a disservice to readers because environmental problems do not go away once a report is issued. You must follow up such events with more in-depth reporting over a longer period of time. You also need to take the initiative and suggest to your editor stories that your background research shows should be covered. Try to convince him or her to give you time to investigate environmental issues in depth.

One important part of long-term coverage is the opportunity to try to track the costs and benefits of an environmental matter or event. Benefits

can be defined in several ways. The first is where you can measure changes that take place in behavior, environment or the quality of life. These changes might reduce numbers of deaths, birth defects or lost days of work. The second category of benefits is less tangible - it is the implication that something beneficial will happen eventually because of some change in the system. For example, if development in a nation is sustainable, it should preserve natural resources and enhance the nation's economy in the long term.

You can divide costs into two categories. Anticipated costs are those taken into account by researchers and planners when they seek solutions to environmental problems. But there also are unanticipated costs or "side effects" that may result such as when a dam is built to help improve irrigation but it leads to increased salinity in the soil.

Providing such information allows readers to put environmental issues into perspective and helps them to understand how the impacts of an event or issue can or will affect them. Such public understanding and awareness is critical for long-term environmental management.

Another way you can help readers understand is to occasionally use a different approach to an environmental story that is more prospective. Most journalists practice retrospective journalism - that is, they react to events and write an article after something has occurred. They go to a source, ask him or her what happened and rebuild

the story after the fact. But in environmental stories, you can find out what the problems are and decide for yourself to cover them, rather than wait for an event to occur. You would seek out sources for the article. For example, you could write about how difficult it is to farm soils reclaimed from tropical forests by working with a farmer for a few days. You could describe his plight and weave into the story why the soil has deteriorated, the interactions that go on within the rainforest ecosystem, how experts and government officials are trying to deal with the problem, whether it relates to an increasing population and the social and economic impact of the situation. Don't forget to highlight anything positive in the situation, particularly if someone has devised a new method that is effective for dealing with such soils.

Initiative, creative approaches to environmental coverage, in-depth balanced coverage ----- all of these are a part of the journalistic responsibility you bear. Remember you are a link in a chain - the information chain - and whether you are a strong or weak link depends upon how well you prepare for and creatively approach your environmental articles.

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Environmental Coverage In Dawn and Jang: A Content Analysis

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In order to measure the cognizance of environmental issues shown by the Pakistan press, we selected two major national dailies of Karachi, i.e., *Jang* and *Dawn* for content analysis studies. It can be hypothesized that being the largest and leading dailies in Urdu and English respectively, they will project environmental issues with maximum regard for reader's interest.

The standard methodology of content analysis has been followed in the study. Issues of *Jang* and *Dawn* for a three-month period (January - March 1988) were selected, and their environment content has been divided into three broad categories.

A. Terrestrial Ecosystem

This category covers items dealing with land-based ecology.

B. Aquatic Ecosystem

This category covers water bodies, life therein and their surroundings.

C. Atmospheric Ecosystem

This deals with the condition of the atmosphere.

Each of these three major categories has been further divided into sub-categories as follows:

A. Terrestrial Ecosystem

1. -- Deforestation, forest degradation
2. -- Erosion and sedimentation
3. -- Desertification
4. -- Species extinction and wildlife
5. -- Urban habitats and unplanned development, energy sources depletion
6. -- Public health awareness

B. Aquatic Ecosystem

1. -- Increased maritime transport
2. -- Radioactive and nuclear wastes
3. -- Indiscriminate use of agricultural chemicals and pesticides
4. -- Increased number of human settlements in the vicinity of water bodies including the takeover of wetlands and ground and surface water problems.

C. Atmospheric Ecosystem

1. -- Natural dustfall
2. -- Industrial pollution and acid rain
3. -- Thermal power plants
4. -- Household heating and lighting
5. -- Radiation and nuclear emissions
6. -- Noise pollution
7. -- Greenhouse warming and ozone destruction

A look at Table 1 shows that the total quantum of environmental coverage in

both dailies for a three-month period was 4,767.8 col. cms against a total space of 12,071,296 col. cms. This works out to a mere 0.37% of the total space.

Jang has an environment content that is considerably lower than *Dawn's*. For January, February and March *Jang* had an environment content of 1,170.9 col. cms or 0.22 per cent of its total space against *Dawn's* content of 3,596.8 col. cms or 0.49 per cent of its total space. This is not surprising because, to a large extent, readership determines content. As the English

Table 1

Environmental Coverage in DAWN and JANG for January, February and March 1988 as Percentage of Total Space

Newspapers	Month 1988	Total Space	Total Environmental Coverage	Environmental Coverage As % Age of Total Space
DAWN	Cumulative	728,352 ccms	3,596.80 ccms	0.49 %
	January	258,336 ccms	1,614.40 ccms	0.62 %
	February	228,096 ccms	754.50 ccms	0.33 %
	March	241,920 ccms	1,227.90 ccms	0.51 %
JANG	Cumulative	542,944 ccms	1,170.90 ccms	0.22 %
	January	168,480 ccms	382.90 ccms	0.23 %
	February	188,960 ccms	292.50 ccms	0.15 %
	March	185,504 ccms	495.50 ccms	0.27 %

reading citizen has access to Western media, he is more familiar with and interested in development and environmental issues.

Jang's environment content for the months of January, February and March was 0.23 per cent, 0.15 per cent and 0.27 per cent of the total space. Leaving aside a few common topics, *Dawn* and *Jang* gave attention to different issues. For instance, species extinction, which is a topic getting a lot of attention in the West, had 232 col. cms in January's *Dawn* as opposed to 37.7 col. cms in *Jang* of the same month. During the period under study, i.e. the first three months of the year 1988, there were no unusual happenings to affect our research; the elections and the Kalabagh controversy had not picked up steam yet. However, two or three minor issues may have affected our study, a meningitis epidemic caused category A6 on public health awareness to swell to 98 col. cms and 81.5 respectively for February and March. In January this category did not get any coverage at all. Another factor that could have affected category A3 (desertification) was the draught in Thar. Category A3 deals with desertification. The seasonal cleaning of canals was also reported by both dailies.

Editorial Coverage

Both *Dawn* and *Jang* had consistently higher editorial coverage of the environment-related issues and lower news content. The gap between editorial and news content is wider in *Dawn* than in *Jang*, which explains

Dawn's ability to cover more specialized topics.

The general trend emerging from the analysis is that newspapers have a tendency to avoid issues that involve technical jargon, definitions and explanations and stress the simple and obvious. One handicap is that of space. Explanations take up valuable space in the newspaper which has the primary target of updating the reader. Qualitywise one cannot but be impressed by the editorials and features. *Dawn* has the advantage of feature services like Depth News, Compass News Service, etc., but both *Jang* and *Dawn* have good contributors like Prof. Nasir Gazdar, Arif Hassan and Nasima Binte Siraj who write regularly on environmental issues.

As against editorial coverage, the environment-related news items tell a different story. News coverage reflects a lack of concern about environmental issues. For example, the headlines were casual and uninteresting and the news stories were edited with brevity as the prime objective.

Our study shows (Table II) that the first major category, i.e. Terrestrial Ecosystem, got more coverage than any other category. In *Dawn* the total editorial and news content for this category in the three month period measures 2,558.7 col. cms against a cumulative environment content of 3,596.8 col. cms or 71.13 per cent. *Jang*, likewise had a total of 863 col. cms or 74.72 per cent.

Table II:

Comparison of News and Editorial

DAWN

Month 1988	Category A		Category B		Category C		TOTAL	
	News	Editorial	News	Editorial	News	Editorial	News	Editorial
January	158.0 ccms	722.2 ccms	87.0 ccms	63.3 ccms	-----	583.9 ccms	245.0 ccms	1,369.4 ccms
February	162.5 ccms	378.0 ccms	34.5 ccms	55.0 ccms	83.5ccms	41.0ccms	280.5 ccms	474.0 ccms
March	548.0 ccms	590.0 ccms	57.0 ccms	17.5 ccms	5.0 ccms	10.4ccms	610.0 ccms	617.9 ccms

JANG

Month 1988	Category A		Category B		Category C		TOTAL	
	News	Editorial	News	Editorial	News	Editorial	News	Editorial
January	72.0 ccms	94.5 ccms	33.0 ccms	55.4 ccms	15.0 ccms	113.0 ccms	120.0 ccms	262.9 ccms
February	48.0 ccms	208.0 ccms	4.5 ccms	32.0 ccms	-----	-----	52.5 ccms	240.0 ccms
March	191.5 ccms	239.0 ccms	49.0 ccms	16.0 ccms	-----	-----	240.5 ccms	255.0 ccms

In the Terrestrial category more emphasis was given to category A3 and A4, i.e. desertification and species extinction and wildlife. Wildlife is a popular issue in the West and it is receiving increasing coverage in our press also, especially in the English newspapers. In the month of January, *Jang* had 37.7 col. cms under A4 (wildlife) as against 232 col. cms of *Dawn* in the same category.

In spite of Karachi's having the dubious distinction of being number four among high cancer risk areas in the world, category A6 on public health awareness was almost totally ignored by both the newspapers. In January it had the lowest quantum of

any terrestrial category in *Dawn*, i.e. 36 col. cms. *Jang* did not carry even a single item on the subject for the entire month of January. The month of March tells a different story, partially because of extensive reporting about the meningitis epidemic. In March the A6 category, i.e. Public Health Awareness, got the highest quantum in the entire terrestrial set, i.e. 98. col. cms in editorial and 85 in news. *Dawn* continued the trend of ignoring this category in February and March too.

One of Karachi's major problems is the declining quality of urban living and the lack of life-sustaining facilities like water and sewerage, yet category A5, which dealt with urban habitat,

had very little editorial or news recognition. Nothing was said about the squalid housing conditions and about the need for more parks and open spaces. The only issue that got some coverage was water shortage in cities due to broken pipelines.

In the Aquatic Ecosystem category, the only sub-category that got some recognition was B4, the category dealing with increased human settlements in the vicinity of water bodies, including the takeover of wetlands. The reason for this may be Karachi's coastal location. Newspaper coverage of the Aquatic Ecosystem, besides the aforementioned sub-category, was virtually nil. *Jang* had a total of 88.4 col. cms for this category in January as opposed to *Dawn's* 150.3 col. cms. In February and March *Jang* gave 36.5 and 45 col. cms to the Aquatic category while *Dawn* had an aquatic content of 89.5 col. cms for February and 74.5 col. cms for March. Issues like increased maritime transport and radioactive and nuclear wastes are not even mentioned. Indiscriminate use of agricultural chemicals and pesticides is a major threat to the ecological balance of the aquatic ecosystem, yet it has not been given any coverage.

In the third major category, the Atmospheric Ecosystem, noise pollution was the only issue covered in January. The rickshaw menace and early blaring of loud speakers seem to have bothered many people since most of the editorial content on noise pollution in *Dawn* was in the form of letters to the editor. We did not observe any other source of noise pollution getting

coverage. *Jang* did not have a single item on the atmospheric ecosystem for the months of February and March. In January however, there was a total of 27 col. cms in this category as opposed to *Dawn's* total of 583.9 col. cms for January, February and March.

Both, *Dawn* and *Jang* have shown scant regard for the effects of thermal power plants, household heating and lighting, radiation and greenhouse warming. Very little has been said about industrial pollution, acid rain and the ozone layer destruction. Some of these issues are already so much in the public eye because of documentaries and National Geographic specials on television that they do not need much educating and explaining, so it is pure negligence on the part of our press not to give them due coverage.

As our study was confined to the press and to only two Karachi dailies for just one quarter, our findings are at best indicative and tentative. We did not have the opportunity to refer to the content in other media that may have relevance to environmental issues. Off hand, it can be said that T.V. and radio also show a growing awareness and interest in environment issues in the form of increased showing of National Geographic specials as well as national programmes such as documentaries by Obaidullah Beg on Thar and the process of desertification. There is also a growing sense of responsibility about increasing public health awareness. Writers like I.A. Rahman have also written about the

rapid urbanization of big cities and the consequent ecological imbalance.

Since the journalist is usually pressed for time and is bending over backwards to stay current and to update the reader, it would be advisable for the Department of Urban Affairs to set up small groups of environment and academics, who should function as resource persons and be willing to feed the media with environment-related information and data from time to time. It is very important that the citizenry is educated about the environment since an enlightened public can help rectify the ecological imbalance by influencing policy decisions at various levels. It may be pointed out that 70 per cent of Pakistan's population is in the age group where it is expected to witness the 21st century. Policy measures taken today will affect the very same generation of people who formulate them, and they will be around to live out the consequences of their policies. Planners and decision makers need to re-establish a healthy relationship between people and their environment. There should be consistency in environmental coverage rather than sporadic reference. For the greatest value and impact, the reporting of ecological issues should be continuous and inclusive. There is a need to back the proverb, "the chain is not stronger than its weakest link."

Recommendations and Closing Address

Seminar Recommendations

Various proposals coming largely from the speakers and participants of the technical sessions were put to the house at the final session. A number of amendments were proposed and agreed to by the participants. The text, appearing below, is the edited version of the final recommendations:

1. There is a dire need for creating awareness and mobilizing public and private sector participation for arresting the deteriorating state of the environment in Pakistan.
2. The print and electronic media in Pakistan are the principal environmental communicators for the public. Environment should therefore be made a separate sector of reporting through newspapers, journals, movies, films, TV, radio, etc.
3. In order to highlight issues on a regular basis, newspapers may bring out special features on environment periodically. Since many of the environmental problems are of complex nature, which requires systematic and deeper analysis, it is suggested that investigative reporting, along with followup based on due consideration of the viewpoints of the professionals, industrialists and the public, should be encouraged.
4. Accessibility of information for investigative reporting should also be facilitated by the government at all levels. No data, information or report should be treated as a secret document; they should be made available to the public on demand.
5. Due consideration should be given to the establishment of an environmental data bank. The proposal of the Environment and Urban Affairs Division to establish an Institute of Environmental Management and an Institute of Urban Affairs at the federal level should be expedited.
6. Short study tours, group training programs, environmental clinics and workshops in various aspects of environmental conservation and protection should be organized from time to time for the journalists, industrialists and other public and private sector groups and organizations concerned with the environment. Care should be taken in designing such activities so that they have more direct impact, like hands-on demonstration, audio-visual presentations, etc., on the public.
7. Environment seminars should be held regularly on rotation in all provinces. Next seminar to be held in Lahore.

8. Universities and other educational and training institutes may be asked to consider the inclusion of environment as a subject of study. Environmental journalism may also be included in the curriculum of the journalism departments.
9. In environmental reporting awards may be constituted for best contributions in the print and the electronic media.
10. Researching and designing pollution control should be encouraged for enhancing the quality of air, land and marine environments and highlighting the role of media in creating awareness for the people of Pakistan.
11. The establishment of the Environmental Protection Agency at the federal level needs to be expedited. Likewise the provincial governments should also set up EPAs on the pattern of the Punjab government.
12. An annual report on the state of the environment should be published by the Federal Government.
13. The final report of the seminar should be translated in regional languages and made available to all the media agencies.

Closing Address

Mr. Jahangir Badr

Federal Minister for Housing and Works

Distinguished delegates, ladies and gentlemen,

With the approval of the report, this Seminar has come to its successful conclusion. However, before I formally announce the closing of the Seminar I would like to take this opportunity to express my gratitude to the Governor of Sind, who despite his busy schedule and heavy engagements was kind enough to inaugurate this Seminar.

I have learnt that issues of national importance relevant to the theme of the Seminar were discussed in detail here. It is gratifying to note that papers presented by all resource persons were of a high standard and reflected a profundity of knowledge and experience. I am impressed by the zeal with which the delegates participated in discussions. The observations and the suggestions made during the Seminar are of significant importance and will help in the framing of governmental policies and action plans in the future.

This Seminar has been timely as it will enable the government to benefit from its recommendations while it is engaged in the preparation of programmes towards environmental ma-

nagement for sustainable socio-economic development. The economic development and the standard of living of the people of a country are closely related with its environment. As we step up our efforts towards development, the environment is also affected with increasing intensity. We have not yet developed consciousness about the extent of the benefit we receive from the process of development and at what cost. While statistics of our economic development please us, we forget that in the process we are also suffering from losses. For instance we daily observe that our mountains are getting denuded of forests, the land is being waterlogged, wildlife is gradually diminishing and the levels of air and water pollution are accentuating.

I am pleased that local and foreign experts who are participating in this Seminar have given serious thought to the importance of creating environmental awareness through an effective involvement of the mass media in the country. The awareness of environmental problems and the need to protect and preserve our environment is a big challenge. The only institution in the country involved directly in environmental issues is the Environment

and Urban Affairs Division of the Ministry of Housing and Works. I must say that this Seminar is a humble beginning, but a beginning all the same. The task before us requires strengthening of the institutional framework both at the federal and provincial levels manned by dedicated and qualified personnel and backed by adequate financial and research facilities. We need to have a clear and correct idea of the situation, to produce appropriate strategy and local technology to combat our environmental problems so that we do not get entangled into a cobweb of unsuited imported technology. No research has been carried out on environmental issues and our knowledge of difficulties that lie ahead is still superficial.

It is, however, encouraging to note that the Environment and Urban Affairs Division has so far been able to have the Pakistan Environmental Protection Ordinance promulgated and that subsequently they have succeeded in establishing an institutional framework at both the federal and the provincial level in the form of Environmental Protection Agencies. Environment Impact Assessment at the planning stage of individual projects has been introduced and environmental quality control standards prepared. A coordinated environmental education programme is in progress. Environmental management training for administrators has already started. A separate department of Environmental Planning and Management has been established at the University of Peshawar. A National Conservation

Strategy is also under preparation. Efforts are also being made to establish a National Institute of Environmental Studies at the federal level.

While all these efforts are commendable and deserve appreciation, I would emphasize that awakening public awareness is the key element of efforts to build and maintain a wholesome environment. The media in this regard can play an important role, and I am confident that this Seminar will create a definite awareness of environmental issues and concerns in the country. I am sure that the exchange of knowledge and experience on this important subject with local and foreign experts will be able to give necessary redirection to our policies and elicit the support and participation of the people in our programmes.

Our elected government while taking stock of the situation is fully determined to remove the bottlenecks in the working of various functionaries so that the work being done by them could be translated into physical reality and thereby forestall the process of degradation of socioeconomic development in the country. We will also endeavour to ensure that the subject of environment is accorded due priority in the allocation of financial resources in its future planning. With these measures it would be possible to improve the quality of life of our masses which is one of the principal objective of development.

In the end I take this opportunity to extend my gratitude to the chair persons of various technical sessions who

so ably chaired the respective sessions and to the speakers for their contribution and hard work. My special thanks go to our distinguished guests from abroad and particularly the United Nations Economic and Social Commission for Asia and the Pacific, United Nations Environment Programme and the United States Agency for International Development for their most valuable contribution. I am indebted to the Council of Pakistan Newspaper Editors and the All Pakistan Newspapers Society for their close collaboration and interest in making this Seminar a success. I am also thankful to the participants, particularly the journalists who are here from all over the country, for their active participation in this Seminar. My thanks are also due to the Government of Sind, Industries and Mineral Development Department, Karachi Development Authority, Pakistan Steel Mills, Pakistan Automobile Corporation and Orient Advertisers for their cooperation and hospitality. Last but not the least, I congratulate the Ministry of Housing and Works and the officers and staff of the Environment and Urban Affairs Division for organizing this Seminar.

As I pointed out earlier, this Seminar was organized with a view to exchange knowledge and experience among local and foreign experts, particularly from the media, to create awareness of environmental issues among the masses, and I am confident that our journalists who have always been keen to guide the people in the right direction will now take an initiative to educate the people in this direction.

With these brief remarks, I announce formal closure of the Seminar. Thank you.

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