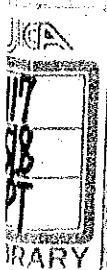


PAKISTAN ENVIRONMENTAL ISSUES:
Government Policy and Foreign Assistance

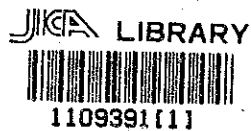
April 1992

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PAKISTAN ENVIRONMENTAL ISSUES:
Government Policy and Foreign Assistance



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Pakistan Office
Japan International Cooperation Agency

国際協力事業団

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パキスタンの環境問題

(政府の施策と外国援助)

はじめに

地球的課題として先進国と開発途上国が協調し、早急に解決を目指さねばならないものとして「貧困と人口」「婦人と開発(WID)」「環境とエネルギー」等が挙げられます。これらの課題については、国際協力事業団は分野別援助研究会等も設定し、援助のあり方について活発な議論を重ね、数多くの具体的プロジェクトが進んでいます。

当パキスタン事務所としまして、これらの課題に積極的に取り組み、質の高い援助の実現へ向けて、パキスタン国政府並びに他援助機関との意見交換を踏まえ一層の優良案件を形成することが重要であることから、人口問題・WID・環境・エネルギーの4課題についてセクターレビュー的調査を実施しました。特に、環境とエネルギー問題については『国家環境保全戦略』が3月1日に国家承認を得、今後の具体化についても4月開催のパリ援助国会議(CG)でも論点の1つになったことから、今後の環境ドナー会議をはじめ活発な議論が展開されると予想されます。

本報告書はパキスタン事務所が事業団内外の関係者の協力を得て、在外専門調整員制度を活用し環境問題分野の基本情報についてとりまとめたものであり別冊のパキスタンに於ける地球的課題報告書3種(人口・WID・エネルギー)並びに社会セクター報告書2種(プライマリー・ヘルスケア分野及び初等教育分野報告書)とともに、内外の援助関係者に広く有効利用されることが望まれます。

1992年4月

国際協力事業団
パキスタン事務所
所長 御手洗 章弘

PAKISTAN ENVIRONMENTAL ISSUES

FOREWORD

As is widely known, the present-day world is confronted with numerous environmental issues, such as atmospheric pollution, soil erosion and flooding, salinity and waterlogging, air, water and marine pollution, sewerage, drainage and industrial effluent by uncontrolled discharge of toxic and harmful solid, liquid and gaseous waste substances into the environment, rapid population growth, and noise and vibration hazards. In order to check further deterioration in the global environment, the nations of the Earth, whether developed or developing, must make concerted efforts to solve the issues despite developmental and financial constraints. In this regard the Japan International Cooperation Agency (JICA) established a number of Study Groups, viz. "Poverty and Population", "Women's Role in Development Issues" and "Environment and Energy", etc. A series of discussions on the global issues took place to explore the ways and means for their solution. In fact JICA has made a lot of efforts towards this end and implemented quite a number of projects in these fields.

The Pakistan Office of JICA earnestly feels that we must struggle against the global environmental problems in an effective manner and it is, therefore, significant that we implement quality projects with close liaison and coordination of the Government of Pakistan and other donors. With this aim in view, we conducted some sort of sectoral reviews on Population, WID, and Environment and Energy. Special emphasis was laid on Environment and Energy since the National Conservation Strategy (NCS) was approved as a national policy in March 1992. Lively discussions were initiated for the realization of the NCS among the relevant organizations including donors of foreign aid.

This report was compiled on the basis of the fundamental information on Pakistan Environmental Issues, by JICA Pakistan Office. I am confident that this report together with other three reports on the issues relating to Population, WID and Energy, and two reports on Social Sector comprising Primary Education and Primary Health Care, will prove to be of great benefit to all concerned with these activities in particular and to the people of Pakistan in general.

April 1992

Mr. Akihiro MITARAI
Representative of JICA
Pakistan Office

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List of Abbreviations

ADB	Asian Development Bank
ADBP	Agricultural Development Bank of Pakistan
CIDA	Canadian International Development Agency
DGNRER	Directorate General of New and Renewable Energy Resources
ENERCON	The National Energy Conservation Centre
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
FATA	Federally Admininstrated Tribal Areas
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNP	Gross National Product
NCA	National Commission on Agriculture
NCS	National Conservation Strategy
NGO	Non-governmental Organization
NORAD	Norweigan Aid
GOP	Government of Pakistan
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IUCN	International Union for the Conservation of Nature and Natural Resources
NWFP	North Western Frontier Province
PEPA	Pakistan Environmental Protection Agency
PEPC	Pakistan Environmental Protection Council
PFI	Pakistan Forest Institute
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Enviroment Programme
UNFDAC	United Nations Fund for Drug Abuse Control
UNHCR	United Nations High Commission for Refugees
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority
WFP	World Food Programme
WWF	World-Wide Fund for Nature

Executive Summary

Introduction and Background

Pakistan is situated in the South-Asian peninsula with a population of 110 million.

Pakistan has very diverse topography and climatic zones, with five major ethnic groups spread over the country.

The government has recently started taking great interest in environmental affairs. The Prime Minister of Pakistan will represent the Group of 77 at the forthcoming United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil.

Environmental Profile of Pakistan

A very high rate of growth of population, poverty, illiteracy and ineffective enforcement of environmental legislation has contributed to the rapidly deteriorating environment in the country.

Industrial and vehicular emissions and lack of waste disposal systems are causing air pollution.

There is a serious lack of infrastructure for clean water supply.

There are practically no international-level sewage treatment plants in Pakistan.

The marine life is under threat due to influx of industrial wastes and oil spills into water bodies, such as the Karachi harbor.

Almost 41% of total land is nonproductive.

Water logging and salinity are rapidly making millions of hectares of land non-cultivable.

There is a acute shortage of forests. The existing ones are being cut-down to supply fuelwood.

Various animal, bird and plant species are facing extinction due to deforestation and hunting.

Countermeasures to Face the Issues

The Environment and Urban Affairs Division is functioning since 1974 to solve the country's environmental problems.

The Pakistan Environmental Protection Ordinance 1983 has been enforced to protect the environment.

Environmental Protection Agencies (EPAs) have been set-up in all of the four provinces, but except for one the rest are practically dormant.

A Pakistan Environment Protection Council (PEPC) has been formed with the President of Pakistan as its head.

The National Conservation Strategy (NCS)

Pakistan became the 23rd country in the world to adopt a National Conservation Strategy (NCS) in March 1992.

The NCS is a policy document about environmental conservation, containing the viewpoint of experts and individuals from all sectors of the socio-economic set-up.

The NCS contains a portfolio of projects totalling US \$ 6 billion.

Implementation of the NCS would be the top priority of the government in the future.

Shortcomings in GOP's Policies

Application of bureaucratic systems to solve environmental problems which require a more imaginative and creative approach.

Irrational pricing and cost recovery policies regarding water, electricity, gas and fertilizers, giving no incentive for efficient end-use.

Prevalent protectionism for local industry.

Weak enforcement of existing environmental legislation.

Lack of funding and commitment for mass programs.

Foreign Assistance Requirements of the GOP

The GOP is very keen to initiate the projects outlined in the NCS.

Safe drinking water supply and waste disposal/recycling are priority issues for GOP.

Setting-up of environmental training institutes in another area where the government requires foreign assistance.

Donors Experience

A number of foreign donors such as World Bank, UNDP, UNEP, CIDA, ADB, etc. help Pakistan solve its environmental problems.

A majority of donors-assisted projects deal indirectly with environment, i.e. they relate to fields such as: water; soil; and forestation.

Donors consider that counterpart agencies are lacking in accountability, professionally-trained staff and are prone to lengthy procedures causing delays.

NGO Perspective

A very large number of NGOs exist in Pakistan-though mostly in the social welfare sector.

Environment is fast becoming a favorite field of work for many NGOs.

NGOs have been instrumental in creating widespread awareness about environmental issues.

A large number of NGOs are now receiving foreign assistance for environmental projects.

Introduction and Background

The fear of an imminent environmental crisis, which was previously restricted to the small developed countries, has suddenly acquired global dimensions. The realization of the fact that unbridled development and growth without regard to the environment is leading to resource depletion and pollution at a mega-scale has alarmed the governments and international organizations.

The fact that environmental problems are not restricted to a particular group of states and resource depletion, degradation of ozone layer and pollution are global in their negative affect gives rise to a number of problems viz-a-viz the handling of these problems. For example, developed countries given the economic resources and the political will on the part of their governments are in a position to streamline their economic activities in accordance with the environmental needs; but the developing countries due to the lack of economic resources and prevalent poverty find it extremely difficult to strike a balance between raising the low standard of living of the people and protection of the environment. However, the contribution by developing countries in the environmental degradation is going to adversely affect the global environment as a whole. Hence, sound environmental policies by developed countries alone are not enough to make the world immune from the specter of a global environmental crises. Rather, efforts at a global level are needed to confront or deal with the environmental problems.

It is primarily for these reasons that a global consensus shared by developing countries as well, with regard to the environmental problems confronting the planet earth, is on the anvil.

1.1 Background Information on Pakistan

With an area of 0.8 million sq. km and a population of 110 million, Pakistan forms a part of the South Asian Sub-system. Pakistan is bordered in the East by India, in the West by Afghanistan; China and Iran border Pakistan in the North and South-West respectively and it has a 800- km coastline with Arabian Sea in the South. Ranging from the snow-clad Himalayas in the North to the desert of Thar in the South, Pakistan offers a variety of topographical features and climates.

Pakistan came into existence on 14th August 1947 as a result of a partition and granting of independence to India by the British. Pakistan's political history is characterized by military's strong influence in the politics of the country.

The military has ruled the country for 24 years. The last military regime crumbled with the death of General Zia in a plane crash, in 1988. His death paved the way for the first party-based elections in 1988, after eleven years. Pakistan Peoples Party's Miss Benazir Bhutto came to power. But even before Benazir could complete her second year in the office, her government was dismissed by President Ghulam Ishaq Khan. In the fresh elections that followed in October 1990, Islamic Democratic Alliance under Mr. Nawaz Sharif swept the polls. After assuming the office, Nawaz Sharif has embarked upon a massive program of privatization, denationalization and deregulation of the economy.

According to the Constitution of Pakistan, President is the head of the state. Previously a figurehead, the President, after the 8th amendment in the Constitution, now enjoys immense legislative and executive powers. Prime Minister is the Chief Executive and he runs the government with the help of his cabinet of ministers. Pakistan has a four-tier judicial structure: civil courts, session courts, High Courts and Supreme Court. The system of the government is parliamentary and legislative stems from a bicameral parliament. Administratively the country is divided into four provinces: Punjab, Sindh, Balochistan and North West Frontier Province.

Broadly speaking, each of Pakistan's four provinces is strongly influenced by ethnic groups namely Baluchis, Punjabis, Sindhis and Pathans, having their own distinct language. There are also many smaller ethnic groups such as Brahvis of Balochistan, Seraiki speakers of Punjab and Urdu speaking migrants from India in Sind.

The ninth most populous country in the world, Pakistan has a per capita income of \$390. Its economy exhibits all the peculiar characteristics of a developing economy.

Agriculture contributes 25.6% of the GDP, employing about 50 percent of the labour force. The GDP during 1990-91 grew at the rate of 5.6% .

Major agricultural crops are wheat, rice, cotton and sugarcane. Major industries are food processing, cotton textiles, petroleum refining, fertilizers, mild steel products and cement. Total investment outlay during 1990-91 was 18.3% of the GNP.

Recently the government headed by Prime Minister Mr. Nawaz Sharif has launched a massive and ambitious program of privatization and liberalization. All state-owned units are being sold-off to the highest bidder and most of the government controls on economic activity are being lifted.

The present government is giving due importance to environment and the Prime Minister has been selected to represent the Group of 77 at the United Nations Conference on Environment and Development (UNCED) scheduled for 1-12 June 1992 at Rio de Janeiro, Brazil (see Annex-E for details about UNCED).

Environmental Profile of Pakistan

Pakistan, given its area and its diverse topographical and climatic regions forms an important part of the global ecosystem. The Indus River Valley has been under cultivation perhaps longer than any other part of earth. Infact, it was on the banks of Indus that the first ever civilization flourished. Traditionally the River and adjacent lands have provided enough food to the people who live here. Nevertheless, within the context of "sustainable development", environmental problems are increasingly being identified in Pakistan. Waterlogging and salinity problems are threatening the productivity of the irrigated lands, industry is polluting water, air and soil in both urban and rural areas.

2.1 Current Environmental Issues

At present, the environment of Pakistan is undergoing rapid deterioration. Pollution of air and water is on the rise. Soil degradation is becoming a menace. Salinity and waterlogging is depriving the country of valuable cultivable land.

A number of causes exist which may be classified as issues in the environment sector. Briefly, they are:

(i) Increase in Population

The total population of Pakistan on January 01, 1991 was estimated at 113 million. With the current high growth rate of 3.06% per annum (Table-1), Pakistan's population would cross 150 million by the end of this century.

Table 1: Population and its growth by sex (male/female) : 1901-1981

Census	Inter-censal	Population (000)			Annual Average Growth Rate		
	Period (years)	Total	Male	Female	Total	Male	Female
1901	..	16,576	9,000	7,609	..	..	..
1911	10.000	19,382	10,600	8,800	1.58	1.65	1.46
1921	10.000	21,109	11,700	9,400	0.86	0.99	0.66
1931	10.000	23,542	12,900	10,600	1.10	0.98	1.21
1941	10.000	28,282	15,400	12,900	1.85	1.79	1.98
1951	10.000	33,817	18,191	15,626	1.80	1.67	1.92
1961	9.975	42,978	23,017	19,961	2.43	2.37	2.48
1972	11.622	65,321	34,840	30,481	3.67	3.65	3.73
1981	8.455	84,254	44,232	40,021	3.06	2.87	3.27

Source: Population Census Organization-1982
 .. Not applicable

As can be seen from Table-1, Pakistan's population growth rate has been increasing gradually since 1931 onwards, though there has been some decrease in it between 1972-1981. This growth rate causes high unemployment and puts pressure on public services such as electricity, water supply and sewerage-thus giving rise to unhygienic lifestyle of a large number of people which ultimately deteriorates the environment.

Hence, there is an urgent need to curb the high population growth rate to enable the nation to evenly distribute its resources and infrastructure among the population. For this purpose the National Conservation Strategy (NCS) prepared by the Government of Pakistan (see 3.2.2 for details) proposes a US \$ 0.56 billion project to integrate environment and population programs. This project consists of 3 components which are as under:

1. Acceleration of conventional population welfare program through health system and NGOs.
2. Involvement of resource sector extension agents in disseminating family planning goals.

3. Intensive population program in fragile areas with high fertility rates.

(ii) High Level of Illiteracy

Education is considered as a prerequisite for a nation striving to develop. Unfortunately, Pakistan has a very low rate of literacy, i.e. 26.2% (Table-2) when compared with most of the developed countries or even some developing countries, such as Sri Lanka which has above - 90% literacy rate.

Table 2: Literacy ratios by sex, region and urban/rural area : 1972-1981

Sex	Total			Urban			Rural		
	1981		1972	1981		1972	1981		1972
	15 Years & Above	10 Years & Above	10 Years & Above	15 Years & Above	10 Years & Above	10 Years & Above	15 Years & Above	10 Years & Above	10 Years & Above
PAKISTAN									
Both Sexes	26.2	26.2	21.7	47.4	47.1	41.5	17.2	17.3	14.3
Male	38.0	35.0	30.2	58.9	55.3	49.9	26.8	26.2	22.6
Female	15.2	16.0	11.6	35.9	37.3	30.9	6.8	7.3	4.7
ISLAMABAD									
Both Sexes	51.9	51.7	40.1	63.0	63.3	67.3	34.5	33.8	26.5
Male	64.4	63.1	53.2	71.8	71.3	72.7	51.7	49.8	41.8
Female	36.0	37.5	22.7	50.8	52.7	58.2	14.8	15.9	8.3
PUNJAB									
Both Sexes	27.3	27.4	20.7	47.2	46.7	38.9	19.6	20.0	14.7
Male	37.5	36.8	29.1	57.2	55.2	47.8	29.7	29.8	22.9
Female	15.9	16.8	10.7	35.4	36.7	28.0	8.5	9.4	5.2
SIND									
Both Sexes	31.2	31.5	30.2	50.5	50.8	47.4	15.3	15.6	17.6
Male	40.4	39.7	39.1	58.6	57.8	54.5	24.7	24.5	27.5
Female	20.4	21.8	19.2	40.4	42.2	38.4	4.7	5.2	5.8
NWFP									
Both Sexes	17.3	16.7	14.5	37.1	35.8	33.7	13.6	13.2	11.0
Male	27.5	25.9	23.1	49.7	47.0	44.7	22.8	21.7	19.0
Female	6.3	6.5	4.7	21.3	21.9	19.9	7.7	3.8	2.2
BALUCHISTAN									
Both Sexes	10.9	10.3	10.1	33.4	32.2	32.3	6.4	6.2	5.6
Male	16.4	15.2	14.8	40.3	42.4	42.4	10.4	9.8	9.2
Female	4.2	4.3	4.2	17.9	18.5	19.2	2.0	1.7	1.3
FATA									
Both Sexes	..	6.4	4.9	..	..	..	..	6.4	..
Male	..	10.9	..	..	..	..	..	10.9	..
Female	..	0.8	..	..	..	..	..	0.8	..

Source : Population Census Organization -1982
 Fata : Federally Administered Tribal Areas

.. Not available.
 . Not applicable

As can be seen from Table - 2, at the national level female literacy is less than 50% of male literacy. In the NWFP and Baluchistan provinces, female literacy is about 25% of male literacy. If we look at the rural scene, the female literacy rate is extremely low. This can be attributed to our social system where female education is still considered as something inappropriate.

Under these circumstances, it becomes extremely difficult to create public awareness about environment or to undertake public education campaigns through the print media which reaches more people than any other media. Hence, any environmental campaign has to work under the constraint where almost 3/4th of the population cannot read anything.

(iii) Income Distribution and Poverty

Since the middle 70s, when a large number of persons went abroad for employment, foreign remittances have improved the GDP by 5-10%. However, most of this money goes to the lower class which may not use it judiciously and end-up buying large number of electric appliances which put additional burden on the national grid.

The income distribution in Pakistan is neither too unequal nor too just as is evident from Table-3 which shows the pattern of income distribution in Pakistan.

Table 3: Income distribution in Pakistan

Year	Household Gini Co-efficient	Household Income Shares		
		Lowest 20%	Highest 20%	Ratio of Highest to lowest 20%
1963-64	0.386	6.4	45.3	7.1
1966-67	0.355	7.6	43.4	5.7
1968-69	0.336	8.2	42.0	5.1
1969-70	0.336	8.0	41.8	5.2
1970-71	0.330	8.4	41.5	4.9
1971-72	0.345	7.9	43.0	5.4
1979	0.373	7.4	45.0	6.1
1984-85	0.369	7.3	45.0	6.2
1985-86	0.355	7.6	44.0	5.8
1986-87	0.346	7.9	43.6	5.5
1987-88	0.348	8.0	43.7	5.5

Source: Computed from relevant Household Income and Expenditure Survey - 1990.

Note: Gini ratio is one of several but the most commonly used measure of income disparity. Its value ranges from 0 to 1 with 0 representing perfect equality (each percentile of household getting the same income) and 1 perfect inequality (one income class has all the income and every one else have nothing).

The table shows that while income is concentrated in the higher classes, the ratio of highest to lowest class is not bad when we compare this ratio for selected countries (Table-4).

Table 4: Income distribution in selected countries

Country	Year	% age share of household income		Ratio Richest/Poorest
		Poorest 20 %	Richest 20 %	
Malaysia	1987	4.6	51.2	11.1
Philippines	1985	5.2	52.2	10.0
Srilanka	1985-86	4.8	56.1	11.7
Thailand	1975-76	5.6	49.8	8.9
Indonesia	1976	6.6	49.4	7.5
India	1975-76	7.0	49.4	7.1
Hong Kong	1980	5.4	47.0	8.7
Bangladesh	1981-82	6.6	45.3	6.9
Republic of Korea	1976	5.7	45.3	7.9
Pakistan	1987-88	8.0	43.7	5.5

Source: World Development Report 1990-91 except for Pakistan which is based on Household Income and Expenditure Survey 1987-88.

Also, the number of persons living below the poverty line has also declined as can be seen in Table-5.

Table 5: Selected indicators of poverty

	1962	1982
Headcount Index	54.00	23.00
Number of Poor (million)	26.50	21.30
Average Income Shortfall (%)	39.00	26.00

Source: World Development Report (1990-91)

However, the general increase in prices, overpopulation and extreme pressure on resources and infrastructure means that despite such income distribution and declining poverty, the general public may not have enough finances to improve their immediate environment-a costly affair by all means.

(iv) Lack of General Awareness about Environmental Problems

While only very recently, a lot is being written about the environment in general, the public-at-large is still unaware of the environmental problems facing Pakistan. Policies of the education system, media and the government machinery need to be re-oriented to give priority to environmental issues and how the public can help to address them.

(v) Lack of Proper Institutions

While the government has set-up various departments at federal and provincial levels to deal with environmental matters (as discussed in Chapter-3), there is a serious lack of adequate number and types of institutions. For example, there are only two training educational institutes devoted to studies in environment. There are no test labs where pollution or contamination levels could be measured as per international specifications. The existing institutions mostly deal with policy - formulation tasks, thus keeping the implementation, monitoring and control activities dormant. Above all, the few existing institutions have very little coordination due to meager resources and lack of proper communication channels. Thus, the National Conservation Strategy (NCS) proposes a US \$ 0.12 billion project aimed at supporting rural and urban community organizations - to cater for the non-governmental sector.

There is no denying the fact that Pakistan with a per capita gross national product just one ninth the world average is neither a major global polluter, nor a large consumer of resources. Nevertheless, Pakistan is a densely-populated land facing rapid population increase and it is also highly dependent on natural resources, with

severe capital scarcities and limited skill development. As such, it is likely to suffer disproportionately from climate change and other global environmental problems. The implications of the greenhouse effect for Pakistan are difficult to predict, but could potentially be large, affecting patterns of agriculture, fisheries and forestry.

Pakistan's environmental profile would be assessed by analyzing issues concerning the main environmental variables: Air; Water; Land; and Biodiversity.

2.1.1 Air

Data on air pollution in Pakistan is scant. From the little data available it is unclear as to whether the estimates of concentration levels are based on ambient or emission criteria. Despite the data constraints, there is a consensus amongst the specialists that the problems is real and is becoming acute.

In Pakistan the problem of air pollution is restricted to urban centers. In this regard Karachi, Lahore, Faisalabad and Multan are worst hit. Main factors responsible for air pollution are: the rapid growth in the number of motor vehicles and industry; and, to a lesser extent, thermal power plants. Use of gasoline and diesel by motor vehicles, and fuel oil by industry and thermal power plants are resulting in air pollutants like carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter, hydrocarbons, sulphur dioxide (SO₂), smoke, dust and lead compounds (Table-6).

Table 6: Total emissions released from energy in 1987-88 (by fuel-type)

Sector	Total	Nat-Gas	FO	HSD	Kero	Gasoline	LPG	Coal Imp.	Coal Loc.	Fuelwood	Biomass
CO ₂ '000 Tonn.	104,993	18,218	7,638	12,782	3,947	2,880	355	1,931	9,948	24,790	22504
SO ₂ , Tones	590,854	211,9902	121082.4	40534.65	2503.300	0	0	9104.117	417417.1	0	0
CO, Tones	3,570,311	13,249	4,494	0	0	1,073,927	0	0	244,636	1,557,445	676,559
HC, Tones	336,957	0	56,180	0	0	12,273	0	0	0	155,744	112,760
Lead, Tones	519.75					519.75					

Source: RCG/Hagler, ., Bailly, Inc., 1989

As can be seen from Table-6, carbon dioxide is emitted most, followed by carbon monoxide. The major cause of such emissions is inefficient and incomplete burning of fuel. However, such emissions can be controlled considerably by proper operation and maintenance of fuel-consuming equipment and vehicles. It also shows that burning of fuelwood and biomass accounts for more than 50% of CO₂ emissions while gasoline and fuelwood account for almost 70% of CO emissions. Thus, burning of fuelwood not only produces hazardous emissions, but leads to deforestation and land erosion. This situation can be improved by using fuel-efficient cooking technologies in the rural areas of Pakistan.

To cope with this situation, the National Conservation Strategy (NCS) proposes the following projects:

- | | | |
|----|---|--------------------|
| 1. | Energy Conservation by reducing transmission and distribution losses. | US \$ 0.15 billion |
| 2. | Energy conservation in large industries | US \$ 0.36 billion |
| 3. | Energy Conservation in buildings, retrofit and appliances. | US \$ 0.11 billion |
| 4. | Energy-efficient cooking program | US \$ 50 million |
| 5. | Cogeneration in industrial units | US \$ 0.24 billion |
| 6. | Developing and deploying biogas units | US \$ 0.12 billion |

- | | | |
|-----|--|---------------------|
| 7. | Developing and deploying solar water heaters and solar cookers. | US \$ 0.02 billion |
| 8. | Energy and woodfuel plantations | US \$ 0.03 billion |
| 9. | Development of micro-and mini-hydel plants | US \$ 0.06 billion |
| 10. | Retrofitting of pollution abatement equipment in existing formal industry. | US \$ 0.2 billion |
| 11. | Vehicle tune-up and related programs | US \$ 0.008 billion |
| 12. | Setting-up compressed natural gas stations | US \$ 0.016 billion |

A major cause of pollution is due to the fact that urban and rural waste is not disposed properly. In almost 90% of the cities municipal solid waste collection extends to just over 50% of the population. But, it is not disposed properly and is put into open pits, ditches and water bodies, in close proximity to residential areas.

There is no concept of recycling urban waste which includes glass, metal, paper, rags and rubber. Burning of such waste is a common practice which not only deprives the country of recyclable material but also produces unhealthy fumes and ash. Waste-recycling projects can not only eliminate such waste but provide jobs the unemployed.

2.1.2 Water

(a) Water Availability

Pakistan relies on irrigation for more than 90% of its food requirements. The Indus River and its tributaries, and underground aquifers are the two principle sources of water in Pakistan. For irrigation purposes, an elaborate and extensive system of irrigation comprising 3 major reservoirs, 19 barrages, 35,000 miles of canals and about 90,000 water courses exists. In addition to these, there are 254,188 privately owned and 13,000 publicly owned tubewells (see Table-7 for data on water availability).

Table 7: Overall water availability

Year	Surface Water At		Ground Water Through		Total Water Available
	Canal Head	Farmgate	Public Tube Well	Private Tube Well	
1975-76	98.91	59.42	6.61	19.63	85.95
1976-77	97.33	58.40	5.65	20.52	84.57
1977-78	102.69	61.62	6.21	21.61	89.44
1978-79	96.63	57.98	6.62	22.79	87.39
1979-80	105.24	63.14	7.03	23.97	94.14
1980-81	104.81	65.21	7.44	25.14	97.79
1981-82	102.83	64.39	8.16	26.31	96.45
1982-83	108.73	65.24	9.96	26.29	101.40
1983-84	100.51	66.47	10.20	27.02	103.69
1984-85	98.43	59.50	10.08	27.75	102.81
1985-86	96.34	60.81	10.74	28.48	104.73
1986-87	97.57	69.69	10.84	29.19	109.72
1987-88	157.10	71.24	11.06	29.92	112.22

Source: Agricultural Statistics of Pakistan (1988-89)

Table-7 shows that the major source of increase in water availability has been tubewells which account for about 35% of total available water.

Between 1980-88, rapid siltation has resulted in the loss of 4.3% of live storage capacity (actual water storage capacity) of three main water reservoirs i.e Tarbela, Mangala and Chashma. Another 6.9% is expected to be lost by the year 2000.

Moreover, there is an absolute limit to the amount of water available in the Indus Basin, mean value being 1372 million acre feet (MAF). Approximately 104 MAF are already diverted at canal heads. Out of this only about 30% diverted water reaches the crop roots; the rest is lost in canals and water courses or during application in the field.

In order to increase irrigation efficiency and protect watersheds, the following projects have been identified for implementation in the National Conservation Strategy (NCS):

- | | | |
|----|---|---------------------|
| 1. | Irrigation system rehabilitation | US \$ 0.3 billion |
| 2. | Command water management | US \$ 0.052 billion |
| 3. | On-farm water management | US \$ 0.37 billion |
| 4. | Improved water harvesting in torrent irrigated areas. | US \$ 12 million |
| 5. | Integrated watershed management | US \$ 0.4 billion |

53% of the population receives piped water (79% of this is in urban areas; 40% is in rural areas). In urban areas, only 4 out of 10 individuals have water

connections at home. 95% of the rural population uses groundwater. Almost all of it is contaminated and needs at least boiling to make it fit for human consumption. Thus, it is imperative that proper water purification facilities are put-up by the municipalities to avoid water-borne diseases.

(b) Water Pollution

Sewage facilities are scanty available even in the urban areas. We generate about 34,000 wet tones of excretion per day (12.5 million/year), but except for 3 small treatment plants (in Karachi and Islamabad) there are no sewage treatment facilities in the country. For all practical purposes, urban sewage is discharged untreated and raw. Thus this untreated sewage leads to bacterial contamination of the groundwater, which is a major source of water contamination in the urban areas, causing several fatal diseases. In order to manage urban wastes, the following projects have been proposed in the National Conservation Strategy (NCS).

1. Garbage collection and disposal programs US \$ 8 million
2. Energy-from-wastes plants US \$ 0.3 billion
3. Wastewater treatment at livestock farms. US \$ 0.18 billion
4. Construction of oxidation ditches/ other biological treatments. US \$ 16 million

Extensive but inappropriate application of pesticides in a large interrelated system like Indus can have serious consequences for people and animal living downstream. This is also adversely affecting the groundwater. In fact, growing use of pesticides by people with a low literacy rate and with inadequate

information has enormous potential for adversely affecting public health through contamination of water resources. Table-8 gives details on the level of fertilizers and pesticides being used in Pakistan since 1952.

Table 8: Fertilizer off-take and pesticides import

Year	Fertilizer off-take (000 N/Tones)				Import of Pesticides	
	N	P	K	Total	Quantity (000 tones)	Value (Mln Rs)
1952-53	1.00	.	.	1.00	2.0	0.02
1953-54	14.80	.	.	14.80	64.0	0.24
1954-55	14.10	.	.	14.10	164.6	0.35
1955-56	6.60	.	.	6.60	157.5	0.38
1956-57	9.00	.	.	9.00	723.4	2.79
1957-58	16.40	.	.	16.40	727.4	2.93
1958-59	18.00	.	.	18.00	436.7	2.30
1959-60	19.30	0.10	.	19.40	1,349.2	7.17
1960-61	31.00	0.40	.	31.40	4,979.4	19.52
1961-62	37.00	0.50	.	37.50	1,980.3	8.39
1962-63	40.00	0.20	.	40.20	4,594.3	22.09
1963-64	68.00	0.70	.	68.70	1,670.3	6.64
1964-65	85.00	2.20	.	87.20	826.0	7.08
1965-66	69.24	1.25	.	70.49	882.9	11.26
1966-67	107.78	3.91	0.14	111.83	2,443.5	1.65
1967-68	177.44	12.78	0.21	190.43	5,153.1	18.44
1968-69	203.52	38.64	2.48	244.64	1,465.1	3.87
1969-70	272.56	33.80	1.34	307.70	1,998.0	10.49
1970-71	251.50	30.50	1.20	283.20	2,248.0	41.77
1971-72	341.20	37.30	0.70	379.20	2,438.0	39.65
1972-73	346.20	48.70	1.30	436.20	18,484.0	78.72
1973-74	341.90	57.80	3.20	402.90	6,473.6	171.36
1974-75	362.90	60.50	2.10	425.50	6,927.6	257.68
1975-76	445.30	102.50	2.80	550.60	13,758.3	310.42
1976-77	511.10	118.20	2.50	631.80	16,225.7	460.64
1977-78	550.90	156.80	5.90	713.60	12,754.4	254.46
1978-79	684.27	188.00	7.60	879.80	7,727.3	188.81
1979-80	806.20	228.50	9.60	1044.30	4,419.1	167.66
1980-81	843.00	226.80	9.60	1079.50	7,105.0	224.74
1981-82	832.60	225.60	21.80	1080.00	5,481.0	230.62
1982-83	952.69	265.30	25.60	1243.60	8,860.3	396.71
1983-84	914.32	259.81	28.50	1202.63	10,662.5	685.84
1984-85	934.80	293.79	24.67	1253.26	15,889.2	1196.62
1985-86	1128.39	350.07	33.33	1511.79	17,498.9	1416.81
1986-87	1332.35	408.87	42.62	1783.84	20,647.8	1878.39
1987-88	1282.08	392.89	45.03	1720.00	15,765.4	1769.27
1988-89	1324.90	390.41	24.53	1739.84	11,326.5	1382.90
1989-90	1467.60	382.43	40.07	1890.10	10,543.52	1249.27
1990-91(P)	1471.71	387.65	32.83	1892.19	13,030.14	1489.43

Source: 1. Federal Bureau of Statistics
2. Fertilizer Import Department, Ministry of Food & Agriculture.

. : Not Applicable
P : Provisional

According to a study conducted by the Asian Development Bank, only 3 out of 100 industrial plants treat wastes according to internationally accepted standards. The rest goes to local rivers. Unless this trend is checked through strict legislative control, a generation can be lost to industrial poisoning.

The main coastal water problem in Pakistan is in the lower Indus Valley and the Indus Delta and coastal mangrove areas, which serve several ecological functions, including provision of breeding grounds for Pakistan's shrimp and fishing industry. These areas are being damaged as fresh water does not reach them.

Apart from the problems of the mangroves, Karachi harbor is receiving heavy loads of waste in the form of industrial effluent fodder, raw sewage and oil spill from ships and other shipping activities. All this has made Karachi harbor useless for supporting any marine life. Moreover, the contamination of coastal waters is increasingly making sea food from these areas unfit for human consumption. Serious efforts are needed in this area to ensure continuous supply of marine food. The NCS has proposed the following projects for this purpose:

1. Sustaining mangroves at reduced freshwater inflows. US \$ 1.6 million
2. Improved handling of marine catch US \$ 24 million
3. Fishers ancillary employment program. US \$ 2.0 million
4. Utilization of wastelands for fish-farming US \$ 20 million
5. Integrating fish-farming into agro-pastoral systems US \$ 10 million
6. Pen fish culture in small reservoirs on fruit/vegetable wastes. US \$ 8 million

2.1.3 Land

Out of the 88.2 million hectare land area of Pakistan, 34% is cultivable, 41% unproductive and 25% is pasture or forest land (see Tables-9 and 10 for details).

Table 9: Classification of land use

Class	Description	Area (m ha)	Soil Limitations	Production Potential
I	Very good agricultural land	5.2	None for general agriculture	Very high
II	Good agricultural	7.0	Minor	High for general agriculture
III	Moderate agricultural land	4.8	Moderate	Moderate -- for general crops
IV	Poor (marginal) agricultural land	3.0	Severe	Low--for a few crops only
V	Good forest or rangeland	0.2	None/minor for forestry/ rangeland	High for forestry/range development
VI	Moderate forest or rangeland	1.3	Moderate	Moderate for forestry/range development
VII	Poor forest or Rangeland	15.4	Severe	Low for forestry/ range development
VIII	Non-agricultural land	23.2	Severe	None for any economic use
IX	Unclassified	1.8	...	...
TOTAL SURVEYED		61.8		
Unsurveyed		26.4	...	mainly barren or inaccessible land
GRAND TOTAL		88.2		

Source: Mian and Javed (1989)

Table 10: Trends in land use

Total Area = 79.61 million hectares, Five year averages, including percentage reported area

	(million hectares)							
Land Use	1947-1952	1953-1957	1958-1962	1963-1967	1968-1972	1973-1977	1978-1982	1982-1987
Reported Area	46.33	46.61	49.46	52.20	53.22	54.09	54.82	57.96
Forest Area	1.38 2.98%	1.27 2.27%	1.46 2.93%	1.92 3.68%	2.31 4.34%	2.83 5.23%	2.82 5.15%	3.03 5.23%
Not Cultivable	20.73 44.75%	20.68 44.37%	19.76 39.96%	18.57 35.57%	20.13 37.83%	20.74 38.34%	20.28 37.00%	22.69 39.15%
Cultivable Waste	9.19 19.86%	9.10 19.53%	11.25 22.75%	13.00 24.90%	11.53 21.66%	11.00 20.34%	11.51 21.00%	11.72 20.22%
Current Fallow	3.74 8.08%	3.53 7.57%	3.90 7.89%	4.81 9.21%	4.76 8.94%	4.69 8.67%	4.77 8.70%	4.88 8.42%
Net Area Sown	11.27 24.33%	12.03 25.81%	13.09 26.48%	13.90 26.63%	14.49 27.23%	14.83 27.42%	15.43 28.15%	15.64 26.96%
Sown More Than Once	1.04 2.25%	1.30 2.79%	1.52 3.07%	1.89 3.64%	2.14 4.02%	2.95 5.45%	3.78 6.91%	4.39 7.58%
Cropped Area	12.31 26.58%	13.33 28.60%	14.61 29.54%	15.79 30.27%	16.63 31.25%	17.78 32.87%	19.22 35.06%	20.03 34.56%

Source: NCA (1988)

51.5% of our labor force works on lands for agricultural production, producing 26% of the GNP. However, the twin problems of waterlogging and salinity are seriously threatening the cultivable land in Pakistan. For example, out of 13.6 million hectares of land in the Indus irrigation system, about 3.1 million (23%) are saline. Similarly, 1.2 million hectares of total cultivable land is seriously affected by waterlogging.

The reasons for waterlogging and salinity problem are the poor natural drainage system in Indus basin, wastage of water due to un-lined canals and poor water management techniques.

Pakistan is a forest-poor country. Areas classified as forest cover 10 million hectares or 11.5% of the land area of the country, of which about 4.6 million hectares are actually under some form of forest cover. Closed cover forests account for less than a million hectares. About 40% of the forests are coniferous or scrub, while rest are irrigated plantations and riverain and coastal forests (Table-11).

Table 11: Types of forests and area (000 ha)

Forest Type	1968 Area	%	1989 Area	%
Coniferous	923	32	1959	43
Scrub	1088	38	1726	38
Hill Scrub	834	29		
Inland Scrub	230	28		
Mazri	23	1		
Riverain	277	10	296	7
Plantations	222	8	251	6
Irrigated	156	5	234	5
Linear	67	2	17	...
Mangroves	345	12	347	8
Total	2856		4579	

Source: PFI (Annual) -1989

Even this small area under tree cover is slowly being eroded by humans in search of food and fuel, and by animals in search of grazing. This, in turn, has caused gully and sheet erosion, and also contributed to downstream sedimentation. Added to this, more than 100,000 hectares forest in the Indus valley is seriously threatened because of a shortage of water due to changed flood patterns.

The National Conservation Strategy (NCS) outlines following projects to support forests and plantations:

1. Intensive Management of critical forest area. US \$ 0.04 billion

- | | | |
|----|---|---------------------|
| 2. | Afforestation on marginal private lands by land owners. | US \$ 0.02 billion |
| 3. | Community Forestry | US \$ 0.16 billion |
| 4. | Linear plantation | US \$ 0.004 billion |
| 5. | Urban plantation | US \$ 1.6 million |

The threat to coastal mangrove forests occupying 410,000 hectares may have serious consequences for Pakistani economy as well as ecology of the region. The threat emanates from reduced flow of water in the Indus Delta and consequent saline intrusion.

2.1.4 Biodiversity

Biological diversity, or biodiversity, is a global resource made up of the variety and variability of life forms on earth, both wild and domesticated. Broadly, there are two ways to reckon the extent of this diversity: eco-system diversity and species diversity. By any measure, wildlife - both animals and plants - account for most of the world's diversity.

Pakistan's current list of about 6000 flora and fauna is quite impressive. They are found in 3 regions: paleorctic region west of Indus; Oriental region east of Indus; and the Ethiopian region. At the government level, serious thought is being given to protect the country's biological resources. Yet, the coverage of ecosystem in the country's national parks and protected places is far from adequate and policing of existing parks is insufficient.

A number of species are threatened with extinction due to hunting pressure. Included in the list of threatened species are: ibex, snow leopard, houbara bustard and falcon. A greater threat is the disappearance of animal habitat due to development as well as illegal deforestation.

Though some legislation exists to preserve wildlife, strict enforcement is yet to be achieved. The National Conservation Strategy (NCS) has the following projects to conserve biodiversity in the country:

- | | | |
|----|---|-------------------|
| 1. | Management of national parks and protected areas. | US \$ 28 million |
| 2. | Development of new national parks | US \$ 1.2 million |
| 3. | Development of new wetland reserves | US \$ 0.8 million |
| 4. | Medical botanic and germplasm preservation program. | US \$ 8 million |
| 5. | Community management of game reserves | US \$ 2.4 million |
| 6. | Programs for endangered species | US \$ 0.8 million |
| 7. | Captive breeding in private sector | US \$ 5.2 million |

Countermeasures to Face the Issues

Sustainable economic development requires an adroit management of national resources and environment, which, in turn, is dependent upon economic growth and rising standards of living.

Rampant poverty, a high level of illiteracy, uneven income distribution and a resource base which is proving unequal to sustaining a rapidly growing population are the main impediments in the effective management of natural resources and environment. Thus, any strategy chalked out to deal with the management of environment has to cater for the above mentioned plethora of problems. Added to the above factors, distortions in the government policy and institutional inadequacies are also hampering the progress towards the sound management of environment. In short, countermeasures have to be evolved which deal with the problems at various levels.

3.1 Countermeasures for the Issues

The need to renew efforts to address the issue of high population growth, which is likely to remain a critical constraint to any strategy designed to rehabilitate Pakistan's environment and avert further deterioration, is of great importance for Pakistan. Laws existing for the management of national resource and environment should be enforced strictly. New legislation should be introduced to cover the aspects not under the purview of present laws. Furthermore, effective systems to monitor the environmental changes and uniform standards for emissions and effluent discharge have to be worked out. In the context of resource management, major focus should be on watershed management. Besides this, the following countermeasures are also recommended:

Air

- (i) Emission standards must be prepared and strictly enforced for each fuel/activity;
- (ii) Waste disposal should conform to international standards and burning of waste should be replaced with recycling;
- (iii) Plantation in polluted areas should be promoted to ensure cleaner air;

Water

- (i) discharge of industrial, agricultural and domestic waste into water bodies or open grounds should not be allowed;
- (ii) sewage treatment plants should be set-up in major cities;
- (iii) drinking water should be filtered and made contamination-free at supply source;

Land

- (i) waterlogging and salinity should be countered on emergency basis;
- (ii) deforestation should be strictly prohibited to avoid land erosion;
- (iii) extensive plantation should be done all over the country;
- (iv) use of wood as a fuel must be avoided and alternate fuels provided;

Biodiversity

- (i) protection of wildlife should be ensured;
- (ii) the flora and fauna base should be utilized productively (e.g. for medicines);

Miscellaneous

- (i) institutional capabilities must be upgraded to counter the issues;
- (ii) training and research facilities should be created to improve the working of officials involved in environmental duties;
- (iii) public awareness must be enhanced through the help of local and grass-root NGOs;
- (iv) the mass-media (TV, radio, press, and print media) should be effectively utilized to impart formal environmental education to the public; and
- (v) environmental monitoring/evaluation systems should be set-up.

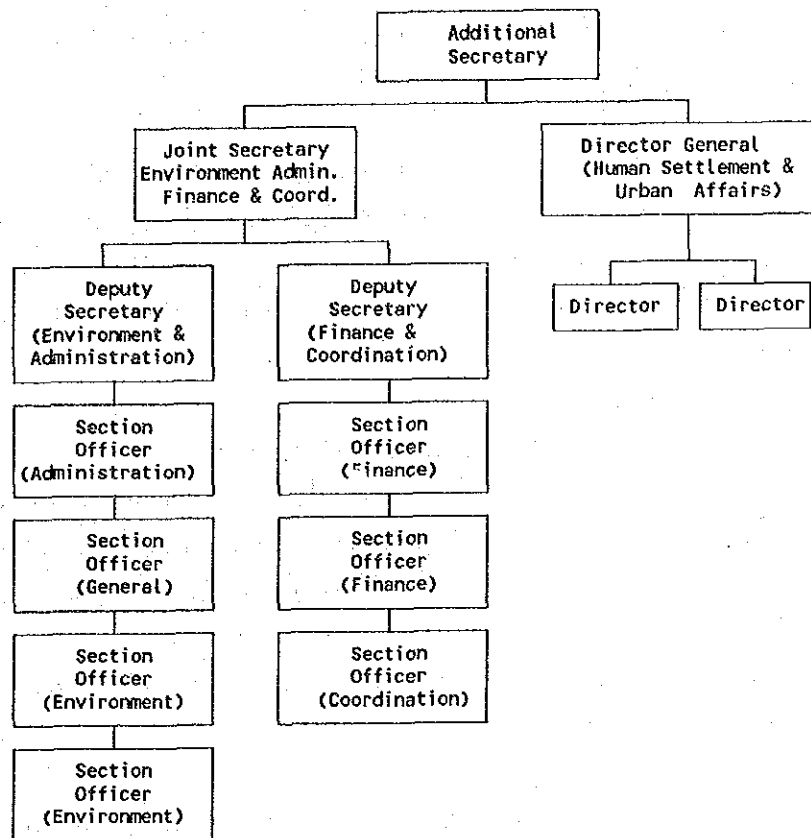
While these were some of the common countermeasures for issues facing the environment, let us see how the Government of Pakistan (GOP) is coping with the issues.

3.2 GOP Policies and Activities for Countermeasures

Pakistan has had no major policy that has been primarily and specifically conceived in the interests of conserving and developing its natural resources sustainably. The *Perspective Plan (1988-2002)* and *Five-Year Plan* make scant explicit references to the environment and natural resources yet, there are complex and forceful linkages between economic policies, instruments and allocations and the conservation or degradation of the environment. In the absence of an explicit policy framework, economic and sectoral policies have worked at cross purposes with respect to environmentally sustainable development and management. This situation may now improve as the GOP has adopted the National Conservation Strategy (NCS) only recently (see section 3.2.2 below).

In Pakistan, at the federal level environmental affairs are planned and managed through the Environment and Urban Affairs Division - founded in 1974 (see Fig. 1 for organizational structure). It controls four provincial Environmental Protection Agencies (EPAs) which are still in the formative stages, except for the EPA in Punjab.

Fig. 1: Organizational Structure of the Environment & Urban Affairs Division



A complete list of government departments dealing with environment is given at Annex-A.

3.2.1 Existing Legislation

The earliest recognition of the importance of environmental matters on the legislative side came with the inclusion of the subject "environmental pollution and ecology" in the 1973 constitution of Islamic Republic of Pakistan. This empowered both federal and provincial governments to legislate on environmental matters.

In 1977, the first ever legislation to facilitate the implementation of environmental objectives was on the anvil when Martial Law was imposed on the country. After much delays and with a much reduced scope of action, Pakistan Environmental Protection Ordinance was enacted in 1983.

Pakistan Environmental Protection Ordinance (PEPO) applies to the whole of Pakistan, its territorial waters and Exclusive Economic Zones. It envisions the creation of Pakistan Environmental Protection Council (PEPC), headed by the President of Pakistan and Pakistan Environmental Protection Agency as its executive holding.

However, the affect of PEPO has been just mariginal and its potential remains substantially unfulfilled. Due to procedural delays, it was not until July 1991 that the first informal meeting of PEPC took place-even though the law mandates bi-annual meetings. Also, since the law vests all the powers in the PEPC, these powers can not be delegated to PEPA or other government agencies without the convening of the Council. In any event, PEPA has yet to be set up, staffed, and empowered to take action.

Nevertheless, better progress is expected in the future. The first substantive meeting was held in autumn 1991, which delegated implementation authority to the PEPA. Other environmental laws and regulations are briefly described below.

- section 8.2 of PEPO makes it mandatory for all projects likely to have an adverse environmental impact to submit an Environmental Impact Statement (EIS) to PEPA, including in it a description of measures for treating emissions and discharges and minimizing adverse environmental affects;
- the water pollution problem in Pakistan is very serious. This is reflected in the high incidence of water-borne diseases. There is no comprehensive national law governing water quality though there are passing references

in PEPO and Industries Act, in addition to a broad provision in the Pakistan Penal Code. However, the legislation in PEPO can be used as the basis for introducing more precise standards and structure penalties. In recent years, provincial and local governments have also made attempts to frame appropriate legislation for this purpose. In general, these laws empower local or municipal institutions to establish standards, frame rules, organize monitoring and inspection and prescriptive penalties for violations;

- about the air quality, there is a broad provision in the PEPO that imposes a fine of up to Rs. 500 on whoever voluntarily contaminates the atmosphere in any place so as to make it noxious to the health of persons dwelling in or near the vicinity. In addition, the Motor Vehicles Ordinance 1965, and Motor Vehicle Rules 1969, contain provisions on vehicular emission. However, these laws have not been enforced effectively or consistently;
- in Pakistan there is no legislation to deal with noise emanating from railway engines, airports/aircrafts, or industrial or construction activity. Although there are laws governing the use of loudspeakers and noise associated with road transport, these have been infrequently and arbitrarily enforced;
- the only piece of legislation dealing specifically with the issue of hazardous waste is the Pakistan Nuclear Safety and Radiation Protection Ordinance 1984. There is no similar provision for the control of non-radiative, toxic wastes;
- under the Agricultural Pesticides Ordinance 1971, the government can prohibit the sale of unregistered pesticides. Since the enactment of the law, the government has cancelled the registration of six chemicals: diclorin; heptachlor; amitaz malic; hydrozide; captan; and lepothos - which

explains way others have been withdrawn by the manufacturers themselves to pre-empt government action.

3.2.2 National Conservation Strategy (NCS)

In Pakistan, environmental concerns first made their appearance during 70's. Since then societal as well as state response to the environmental chaos is gradually taking concrete shape.

Until recently the government's policy response to the environmental concerns was characterized by a degree of fragmentation and incoherence. Although several environmental problems were recognized and addressed through ameliorating policies or legislation, this was done on a case by case basis rather than through a coherent integrated policy - framework.

It was in response to the above fact that GOP, through the Environment and Urban Affairs Division, initiated work in 1988 on the formulation of NCS, which became a unique blend and synthesis of opinions and influences of a variety of international organizations, NGOs, government departments, bureaucrats, area specialists and even people at the grassroot level. Its main aim is to organize and co-ordinate public action on existing environmental concerns and to extend the action to areas hitherto excluded from public action. The first task in the formulation of the strategy was the formulation of an integrated framework for the analysis of environmental and economic management. This framework outlined the three way interaction between aggregate economic and demographic activity, environmental resources and economic and social activity sectors.

Interestingly, it was a Swiss-based NGO, The International Union for the Conservation of Nature and Natural Resources (IUCN) which, through support from CIDA and the UNDP, set up the NCS secretariat in Pakistan to help the government in the preparation of the Strategy. A series of workshops and

seminars were held to solicit public input. Number of sectoral paper were written, public hearings conducted and several conferences were held before the draft of the NCS was ready for circulation among federal and provincial departments for review and comments. Finally, on March 1, 1992, the Federal Cabinet approved the NCS-making Pakistan the 23rd country in the world to adopt such a Strategy. Annex-F gives the Table of Contents of the NCS.

The main objective of the NCS is to ensure development with the least disturbance to the environment thus improving the productivity of the natural resources as well as environmental quality.

The NCS acknowledges the fact that Pakistan's environmental problems arise not because of over-use of resources but because of bad use, poor use, under-use or unuse of so many resources which the country has. It does not mean that there is no pressure on existing resources-rather it means that we have to tap our potential resources to ensure environmentally sound and sustainable development.

The following are the NCS objectives:

- to maintain the capability and productivity of the soil, the quality and useability of waters and the breathability of the air;
- to prevent the extinction of plant and animal species;
- to ensure the sustainable utilization of species and ecosystems;
- to make all economic development sustainable so that the rate of development can not only be enhanced today but also be maintained tomorrow;
- to reduce the rate of population growth as quickly as possible, while simultaneously improving the quality of the human resource base; and

- to make the sustainable city an ideal to be approached if not achieved.

Thus, the Pakistan NCS will provide a direction, some compass bearings, some indication of how the carrier ahead can be used to advantage instead of constituting a carrier and a hazard.

In this regard NCS has set up the following goals for Pakistan till the year 2000.

- increase industrial and agricultural production on a sustainable basis for our export needs and to meet the needs of a growing population.
- conserve and develop renewable resources in ways which will lead to sustainability;
- recycle or treat all wastes including sewages and toxic wastes;
- improve efficiency in energy use;
- reduce the rate of population growth to about 2% per year;
- promote human resource development with the objective of universal education and training;
- make the public aware of the environmental issues; and
- strengthen the research and data base for conservation and development initiatives.

The Government of Pakistan had detailed a large number of environmental projects in the NCS which need to be implemented if Pakistan is to ensure that the deteriorating environment is not only stopped from further deterioration but put on the path of improvement thus paving the way for sustainable development.

Henceforth, all environment-related foreign assistance projects would have to conform to the ones outlined in the NCS. Thus, there is a unique chance for external donor agencies to select projects from the Strategy and be assured of prompt response from the government since it has already institutionalized the whole process of strategy-formulation by making it a part of the Environment & Urban Affairs Division.

3.3 Shortcomings in GOP's Policies

With the preparation of the National Conservation Strategy (NCS), the stage is set for confronting the environmental issues in a bold and decisive manner. However, a number of shortcomings still exist in GOP's policies which may be classified as under:

- (i) application of bureaucratic systems to solve environmental problems which require a more imaginative and creative approach;
- (ii) irrational pricing and cost recovery policies regarding water, electricity, gas and fertilizers, giving no incentive for efficient end-use;
- (iii) prevalent protectionism for local industry;
- (iv) weak enforcement of existing environmental legislation; and
- (v) lack of fundings and commitment for mass awareness programmes.

These shortcomings will have to be addressed before Pakistan would be in a position to challenge the environmental crisis it is facing.

Foreign Assistance Requirements of the GOP

As the GOP is waking up to the reality of the environmental problem in the country, it finds it difficult to generate funds for the environmental projects.

Environment-related projects cover a very broad spectrum ranging from the problems of creating awareness among the people to solving or tackling the pollution problems. In other words the environmental problems have to be tackled at a variety of levels. Given the enormity of the problem, GOP relies on foreign donors for the financing of environment-related projects

Due to the enormity of the environmental problems facing Pakistan, almost all areas deserve special attention of foreign donors. But the pressing need for foreign aid has always been in the areas of management of water resources, providing civic facilities to urban dwellers, and institution building at the government level. The already rudimentary facilities available in Pakistan's urban areas are under severe pressure due to the massive population influx from the rural to urban areas. Basic facilities like health and sanitation are a luxury to most of the people living in the cities. Added to this, the urbanization at such a fast pace is leading to acute managerial problems.

Technical expertise in environmental affairs is already a scarce thing in Pakistan. GOP definitely needs aid to run training programs, workshops and seminars on environmental issues so as to train people who will manage environmental projects. Moreover, such training programs would help building institutions at various levels catering for the environmental problems.

4.1 Priority Issues for the GOP

- (i) The recent adoption of the NCS by the Government of Pakistan is bound

to reorient the priority issues. The emphasis would be an implementing the strategy through the various projects and programs mentioned in it. Hence, NCS and its implementation would be the most important element from the GOP's perspective, demanding enormous foreign assistance.

- (ii) Another priority area is safe drinking water supply. Water is the biggest source of pollution and disease, since proper filtration facilities are quite inadequate.
- (iii) Sewage treatment and waste disposed / recycling is also considered as a priority issue demanding foreign assistance.
- (iv) The setting-up of training, research and testing facilities in the fields of environmental management and testing, are also much needed, since in the absence of such facilities no environmental programs would be effective. It is interesting to note that except for the Asian Development Bank, no other donor is seriously contemplating the setting-up of environmental training institutes in Pakistan. Hence, it is one area where tremendous opportunities exist to initiate viable projects.

4.2 Foreign Assistance Requirements of the GOP

The Government of Pakistan through the NCS, has already indicated a large number of projects which need foreign assistance. The total portfolio amounts to US \$ 6.0 billion (Rs. 150 billion). Most of these projects and their estimated costs have already been mentioned in sections 2.1.1-2.1.4.

While exact details of each project have yet to be worked-out, the Government has done some spade work and further meetings can be held with it to determine the details.

Donor's Experience

5.1 Profile of Donors

Given the scope of environmental problems and financial problems of the GOP, a number of foreign donors are active in providing help for environment-related projects. Some of the foreign donor agencies are International Organizations like UNDP, UNEP and World Bank, while some are country-specific donor agencies like NORAD, WWF, Swiss Development Corporation and CIDA etc. Most recently, the Global Environmental Facility (GEF), administered joint by the UNDP/World Bank, has also joined the ranks of major donors in the field of environment. A list of these donors is given at Annex-B.

A survey of these donors was conducted and the result of the survey is as under:

a) Most Crucial Issues Facing Pakistan (Urban + Rural)

(i) Poverty

While the number of poor people has declined over the years, there are still a very large number of people who are either very poor or unable to maintain an environmentally-sound lifestyle.

(ii) Illiteracy

Lack of education makes it difficult for the donors to interact with the target audience using conventional approaches.

(iii) Deforestation

Growing population is cutting-down trees to cook food or warm themselves. This is causes widespread land-erosion.

(iv) Inadequate Water Supply

Due to inadequate water-supply, a large number of people have to use contaminated water from open wells or streams. This causes a large number of fatal diseases.

(v) Diminishing Resources and Infrastructure Facilities

The rapidly-growing population in putting tremendous pressure on the resources and services thus causing environmental deterioration.

b) Most Implementable Programs

Almost all donors were of the view that it is not the program but the counterpart agencies and departments which determine whether a program would succeed or not. For obvious reasons, they did not name such departments.

c) Most Difficult to Implement Programs

In response to this issue, it was replied that changing social behavior without community participation in environmental projects was a difficult job. In Pakistan, local-level participation is usually absent which causes many project failures.

d) Strengths of Counterpart Agencies

(i) Educated Staff

In most of the execution and technical agencies of the government, highly-educated Staff exists-making it easier for the donors to interact with them on various projects.

(ii) Permanency

Most of the government departments are permanent in nature, allowing long-term partnership with donors.

(iii) Organized Working

Government departments are well-organized and work under pre-determined rules of business. Hence, the donors are aware of the framework within which they must operate.

(iv) Resource Availability

Government agencies usually have the human and physical resources required to interact with donors.

(v) Authority

Government agencies have the required authority to implement projects designed or funded by the donors.

(vi) Centralized Control

Most of the central government departments which allows better response from them when the donors are routed through the central government.

e) Weaknesses of Counterpart Agencies

(i) Lack of Accountability

It is felt by donors that in some cases, permanency of jobs, lack of incentives for extraordinary work and above all a clear-cut process of accountability causes lethargic behavior in government departments.

(ii) Lack of Professional Commitment

In case of central or parent ministries, non-professionals can abound, thus making it difficult to interact with them in a professional environment.

(iii) Red-Tapism

Traditional bureaucratic practices are still being followed and delays due to lengthy procedures, absence of key persons on account of other engagements and a general state of lethargy causes very costly delays. This can be verified from the fact that every year a large number of foreign-assistance projects are either not initiated or are lapsed due to non-response from the government agencies.

(iv) Lack of Trained Staff

While technical and pertinent staff does exist in execution agencies, the parent ministries and departments have a serious lack of well-trained staff. Such staff needs special training in project-formulation, project appraisal, government-donor interaction, etc.

(v) Lack of Community Participation

As is the case in bureaucratic set-ups, there is very little community participation in government's planning activities. Since environmental projects require active

participation of the people, it is required that some arrangement (such as : government-NGO committees) must be devised to ensure the input of the general public in the project formulation stage.

5.2 Achievements of Donors

While very few donors work directly or solely in the field of environment, a large number of them do work on projects related in one way or another to environment (see Table-12 and Fig.2 for a list of some such projects). As can be seen, mostly projects are related to water, soil, agriculture and livestock. Most of these projects have already been completed.

5.3 Common Problems of Donors

Most of the donors blamed governmental delays, red-tapism and lack of counterpart personnel and funds as common problems facing them, as detailed above under "Weaknesses of Counterpart Agencies".

Table: 12:

Environment-related Projects by External Aid Donors

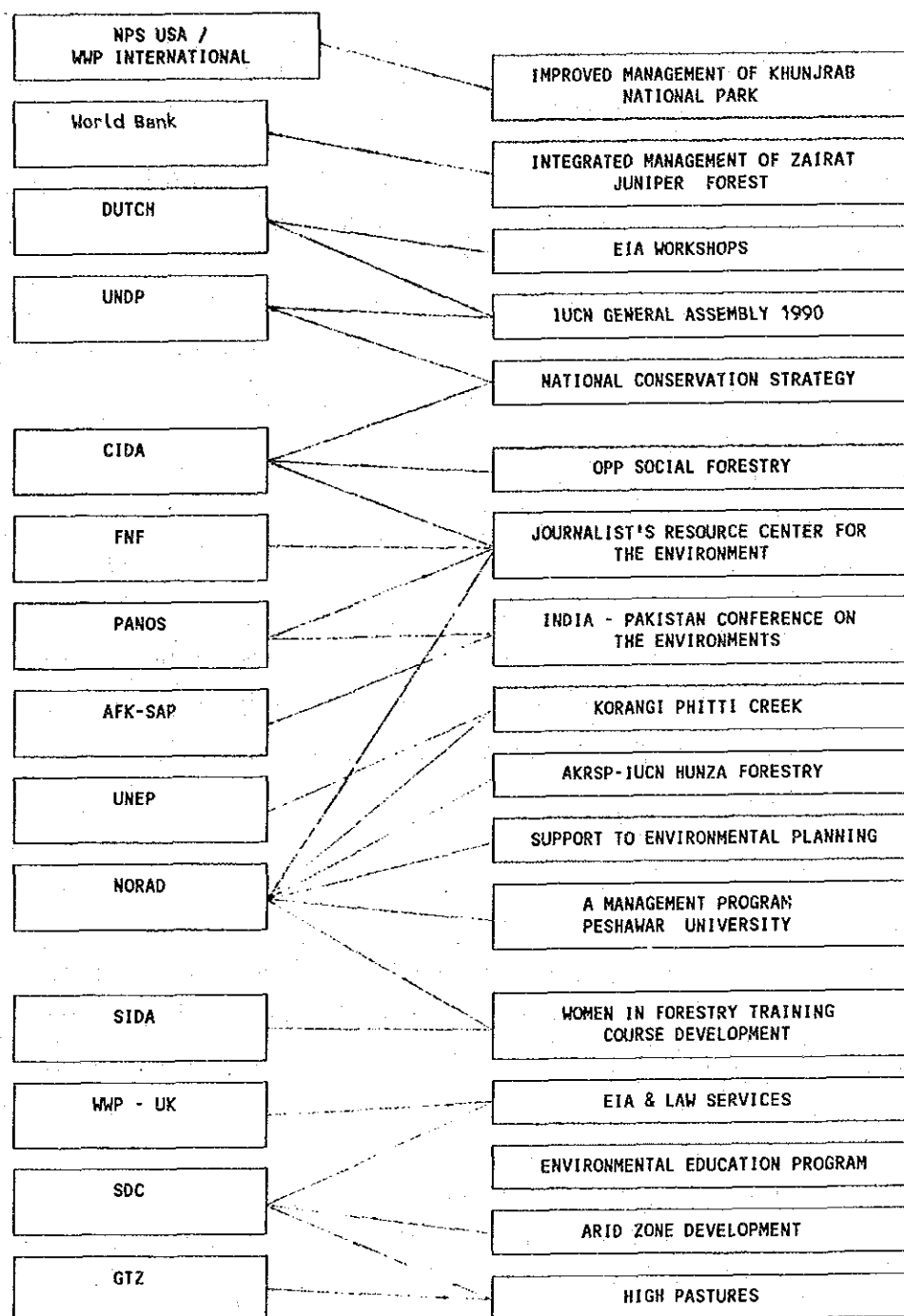
<u>Donor</u>	<u>Project</u>	<u>Aid Amount</u> <u>US \$ '000</u>
I. <u>Bilateral</u>		
Australia	Pakistan/Australia Coordinated sheep and wool Research and production project	4,310
Canada	Salinity Control and Reclamation, Mardan Left bank Outfall Drain	22,900
France	Solar Electrification	266
Germany	SCARP VI	6,557
	Livestock Production in Punjab	3,160
	Forestry Development of Kaghan Valley	3,902
	Pakistan Forestry Institute	1,738
Netherlands	Groundwater NWFP /Investigation Phase II	2,870
	Drainage IV	2,815
	Baluchistan minor Irrigation and Agricultural Development	1,739
Switzerland	Left Bank Outfall Drain	9,600
	Kalam Integrated Development Project	2,004
United Kingdom	SCARP VI	13,063
	Drainage IV	11,017
	Left Bank Outfall Drain	26,634
	Baluchistan Small Irrigation Development	83,947
United States of America	Baluchistan Area Development	40,000
	Management of Agricultural Research and Technology	30,000

	Forestry Planning and Development	25,000
II.	<u>Multilateral</u>	
ADB	Left Bank Outfall Drain	122,000
	Sind Livestock Development	25,700
	Baluchistan Livestock Development	7,740
	Baluchistan Fisheries Development	35,400
European Community	Solar Energy for Rural Areas	1,264
	Baluchistan Livestock Development	4,703
FAO	Assistance to Livestock Production Research Institute	172
	Dairy Development Advisor	120
	Meat Production and Processing	95
	Updating of the Livestock Sector Survey	64
	Assistance to Rangeland and Livestock Survey	40
	Assistance to Local Council Tree Plantation Programme	25
IBRD/IDA	Left Bank Outfall Drain	150,000
	SCARP VI	70,000
	Fourth Drainage	65,000
	SCARP Mardan	60,000
	Khairpur II	14,000
	Private Tubewells and Rural Development	30,000
	SCARP Transition and Improvement	30,000

	Integrated Hill Farming Development	19,400
	Punjab Livestock	10,000
	Hill Farming Technical Development	3,000
IFAD	Barani Area Development Project	9,500
	Gujranwala Agricultural Development	8,400
	Malakand Agricultural Development	10,000
OPEC Fund	Left Bank Outfall Drain	10,000
UNDP	Investment Project Preparation in Water and Agriculture	3,600
	International Institute of Waterlogging and Agriculture	1,871
	Renewable Energy Technologies for Rural Areas	1,679
	Fruit Development in Baluchistan	2,240
	Fruit Development in Baluchistan	1,939
	Livestock Development Centre, Bahadurnagar	2,545
	Coordinated National Programme for Livestock Feed Resources	1,727
	Improvement of Cattle Breeding	194
	Marine Fisheries Development	1,483
	Watershed Management Research & Education	1,652
	NWFP Forestry Pre-Investment Centre	928
	Development of Sericulture in Pakistan Forest Institute	678

	Establishment of Pulp & Paper Lab	266
	Hazara Forestry Pre-Investment Centre	167
	Protection of Forest from Fire in Azad Kashmir	93
	Seminar on Social Forestry	76
UNFDAC	Agricultural Development/Drug Abuse Control in the Buner Sub-Division	8,676
	Dir District Development	14,000
UNHCR	Income Generating Project in Refugee Areas	20,000
WFP	Rural Development Works in NWFP and FATA	15,507
	Assistance to the Tarbela and Mangla Watersheds	18,558
	Watersheds Management in Dir and Swat	6,675
	Range Management and Afforestation in Punjab	3,940
	Integrated Land Management in Kashmir	1,890
	Mangla Watershed Management Project	2,880

Fig-2: A Matrix of Donor Agencies and Environmental-Related Projects



NGO Perspective

Government alone cannot carry out any meaningful sustainable Development without the active participation of local community, private sector and NGOs.

There is a need to encourage and strengthen grassroots level people's organizations and NGOs without which it would not be possible to implement the government's ambitious National Conservation Strategy.

6.1 Profile of Environmental NGOs

The non-governmental sector is relatively new in Pakistan. However, recently a large number of NGOs have come into existence. Pakistan has almost 8,500 of them - though mostly in the field of social welfare and charity. Very few of them deal with environment (see Annex-C for a list of such NGOs).

6.2 Achievements of NGOs

NGOs have been instrumental in creating widespread awareness about environmental problems through seminars, workshops, symposia, print media, radio and TV. Some of them have even undertaken pilot demonstration projects in various parts of the country.

Unfortunately, the magnitude of Pakistan's environmental problems is so great that these achievements seem relatively insignificant.

6.3 NGO and Donor Agencies Coordination

In Pakistan, mostly CIDA, GTZ and UNDP have been actively supporting various local NGOs in a significant manner. CIDA helped IUCN to prepare the NCS. UNDP has recently launched a program to help NGOs to improve the urban environment. GTZ conducts training courses for NGOs in the field of fuel-efficient cooking technologies.

It is essential that foreign donors employ more and more of local NGOs so that the funds are spread evenly all over the country. Recently, the Government of Japan has started disbursing funds to NGOs under its Small Scale Grants scheme.

Survey of Foreign-Assisted Environmental Projects

A survey was made to determine what sort of foreign-assisted environmental projects exist in Pakistan. This section highlights results of this survey.

7.1 Inventory of Major On-going, Past and Proposed Projects

An inventory of such projects is given in the following pages. Only those projects have been included which are most relevant to environment. It can be seen that purely environmental projects are few in number and are quite diverse since environment encompasses a large number of sectors.

No	Donor	Project	Region(s)	Agency(s)	Start	End	Cost Million \$	Sum. Page
1	World Bank	Environmental Protection & Resource Conservation Project	Pakistan	Environment & Urban Affairs Division	July 92	June 98	62.3	52
2	UNEP/GEF	Fuel Efficiency in Road Transport	Pakistan	ENERCON	1993	1996	7	53
3	NORAD	Sustainable Forestry Development in the Agha Khan Rural Support Program	Northern Areas	Agha Khan Rural Support Program (AKRSP)	1990	1991	0.85	54
4	UNEP /NORAD	Coastal Zone Management Programs	Karachi	Several Local government Departments	1989	1991	0.45	55
5	CIDA/UNDP	The National Conservation Strategy of Pakistan	Pakistan	Environment & Urban Affairs Division	Mar 86	Mar 91	1.1	56
6	Swiss Develop Corp/WWF	Environmental Awareness & Educational Program	Karachi Gilgit	Teacher Resource Center & Agha Khan Educational Service	1990	1993	0.15	57

No	Donor	Project	Region(s)	Agency(s)	Start	End	Cost Million \$	Sum Page
7	To be determined	Industrial Combustion System Tune-up & Upgrade program	Pakistan	ENERCON	1993	1996	35	58
8	To be determined	Tubewell Energy Audits & Retrofit for Improved Energy Efficient and Performance	Pakistan	ENERCON	1993	1996	0.3	59
9	CIDA	NCS-Phase-III	Pakistan	E & UA Div	1991	1993	2.6	60
10	ADB	Strengthening of Environmental Management In Pakistan	Pakistan	E & UA Div	1990	1992	0.66	61
11	ADB	Institute of Environmental Management	Islamabad	E & UA Div	-	-	1.3	62
12	Dutch	Minor Irrigation & Agriculture Department	Baluchistan	Provincial Irrigation Department	1991	1993	5.0	63
13	UNDP	Renewable Energy Technologies for Rural Areas	Karachi (Rural)	DGNRER	1990	1994	1.67	64
14	WFP	Assistance to Terbela & Mangla Watersheds	Terbela Mangla	NWFP Forestry Depart	1983	1992	18.7	65
15	UNDP /FAO	Watershed Management Research and Evaluation	NWFP	Pakistan Forest Institute	1987	1991	1.65	66

7.2 Summaries of Selected On-going and Proposed Projects

To facilitate project evaluation by JICA, summaries of some relevant projects on environment are being given on the following pages:

1. Title: Environment Protection and Resource Conservation Project	2. Region(s): Pakistan
3. Donor: World Bank	4. Implementing Agency: Environment & Urban Affairs Division
5. Cost: US \$ 62.3 million	6. Period: July 1992-June 1998
7. Goal: Institutional Strengthening of the Pakistan Environment Protection Agency (PEPA)	8. Purpose: To strengthen PEPA as the execution agency for the Pakistan Environmental Protection Council (PEPC)
9. Project Components: <ul style="list-style-type: none"> - Training and education - Project design and evaluation - Institutional building 	10. Expected Outputs: <ul style="list-style-type: none"> - Environmental Impact Analysis capability imparted to GOP officials - Conduct of studies - GOP officials imparted higher education - National Environmental Quality Standards formed
11. Beneficiaries: Environment & Urban Affairs Division	
12. Current Status: To Initiate soon	
13. Implementation Issues:	

1. Title: Fuel Efficiency In Road Transport	2. Region (s): Pakistan
3. Donor: UNEP/Global Environment Facility (GEF)	4. Implementing Agency (s): ENERCON
5. Cost: US \$ 7 million	6. Period: March 1993 - June 1996
7. Goal: To achieve medium and long-term objectives of improving energy-efficiency of road vehicles	8. Purpose: To reduce at-source emission of green-house gases.
9. Project Components: <ul style="list-style-type: none"> - Identification of fleets of vehicles - Assessment of auto tune-up programs - Creation of revolving fund to promote purchase of equipment - Comprehensive assessment of project 	10. Expected Outputs: <ul style="list-style-type: none"> - Creation of auto tune-ups centers in 8 cities - Creation of diesel tune-up centers - Fuel substitution demonstrations - Urban development of infrastructure
11. Beneficiaries: GOP; general public	
12. Current Status: Modalities being discussed with GEF	
13. Implementation Issues:	

1. Title: Sustainable Forestry Development in the Agha Khan Rural Support Program	2. Region (s): Northern Areas
3. Donor: NORAD	4. Implementing Agency(s): Agha Khan Rural Support Program (AKRSP)
6. Cost: US \$ 0.85 million	6. Period: Phase - I : 1987 - 1989 Phase - II : 1990 - 1991
7. Goal: To build village forestry management capabilities in AKRSP	8. Purpose: To apply sustainable forestry packages through villages.
9. Project Components: <ul style="list-style-type: none"> - Pilot program to test forestry interventions - Training and extension - Feasibility studies - Economic analysis 	10. Expected Outputs: <ul style="list-style-type: none"> - Application of sustainable forestry packages in 1350 villages - Development of training and extension material - Training of 45 Village Forestry Specialists
11. Beneficiaries:	Residents of Northern Areas
12. Current Status:	Operational
13. Implementation Issues:	

1. Title: Coastal Zone Management Program	2. Region (s): Karachi
3. Donor: UNEP; NORAD	4. Implementing Agency: Several local government departments
5. Cost: US \$ 0.45 million	6. Period: 1989-1991
7. Goal: To assess the resources in the creek ecosystem in the Indus delta	8. Purpose: To identify main threats against the creek ecosystem and suggest remedies
9. Project Components: <ul style="list-style-type: none"> - Investigative studies - Inventory of natural resources - Data base development 	10. Expected Outputs: <ul style="list-style-type: none"> - Studies related to: - assessment of industrial pollution sources - Marine Pollution survey - Socio-economic survey - public health survey
11. Beneficiaries: Departments concerned with management of the creek	
12. Current Status: Just Concluding	
13. Implementing Issues:	

1. Title: The National Conservation Strategy of Pakistan	2. Region (s): Pakistan
3. Donor: CIDA; UNDP	4. Implementing Agency(s): Environment & Urban Affairs Division.
5. Cost: US \$ 1.1 million	6. Period: Phase-I : March 1986 - August 1986 Phase-II: May 1988 - March 1991
7. Goal: To prepare a policy document for the conservation of environment	8. Purpose: To conduct a broad - based evaluation of economic policies for their impacts on the natural resource base.
9. Project components: - Conduct of workshops and seminars to obtain expert opinion - Preparation of NCS document - Feedback on the document	10. Expected Outputs: - 29 sectoral papers - 4 provincial conferences - Population & environment conference - 5 sector workshops - 7 Issues of NCS Bulletin - Press Package - NCS document
11. Beneficiaries: Government of Pakistan	
12. Current Status: Just concluded	
13. Implementation Issues:	

1. Title: Environment Awareness and Education Program for Pakistan	2. Region(s): Karachi / Gilgit
3. Donor: - Swiss Development Corporation - Worldwide Fund for Nature	4. Implementing Agency(s): Teacher's Resource Center (TRC), Karachi, & Agha Khan Education Service, Gilgit.
5. Cost: US \$ 0.15 million	6. Period: 1990 - 1993
7. Goal: To raise environmental awareness through adults literacy projects.	8. Purpose: To initiate a long-term effort aimed at improving the environment through public participation.
9. Project components: - Feasibility report - Teacher training - Curriculum Improvement	10. Expected Outputs: - Feasibility Completed - Teacher Training initiated - Improved Curriculum produced - Non-formal education initiated - Public awareness campaign initiated.
11. Beneficiaries: Teachers' school children; non-formal students; public at large	
12. Current Status: Operational	
13. Implementation Issues:	

1. Title: Industrial Combustion System Tune-up and Upgrade Program	2. Region (s): Pakistan
3. Donor: To be determined	4. Implementing Agency (s): ENERCON
5. Cost: US \$ 35 million	6. Period: 1993-1996
7. Goal: To achieve multiple objectives of reducing at source emissions by increasing efficiency	8. Purpose: To reduce air pollution due to industrial emissions
9. Project components: <ul style="list-style-type: none"> - Boiler and Furnace tune-up - Upgrade of industrial combustion - Setting-up of a burner test facility 	10. Expected Outputs: <ul style="list-style-type: none"> - Savings of 90 million giga-joules of energy (over 20 years) - Reduction of 17, 000 tones of CO2 per year - A burner test facility set-up
11. Beneficiaries:	Public and Private sector Industries
12. Current Status:	Donor to be determined
13. Implementation Issues:	

1. Title: Tubewell Energy Audits and Retrofits for Improved Energy Efficiency and Performance	2. Region (s): Pakistan
3. Donor: To be determined	4. Implementing Agency (s): ENERCON
5. Cost: US \$ 0.3 million	6. Period: 1993 - 1996
7. Goal: To achieve multiple objectives of reducing at-source emission of greenhouse gases	8. Purpose: To reduce air pollution and global warming caused by emissions from tubewells
9. Project Components: <ul style="list-style-type: none"> - Tubewell audits in areas with: <ul style="list-style-type: none"> * deep water table * shallow water table * open wells - Training of field staff - Database development - Final reports 	10. Expected Outputs: <ul style="list-style-type: none"> - Audit of tubewells in selected areas - Overall efficiencies improved in the range of 5% - 7% for diesel and 20% - 30% for electric tubewells
11. Beneficiaries:	Public and Private sector tubewell owners
12. Current Status:	Donor is to be determined
13. Implementation Issues:	

1. Title: National Conservation Strategy: Phase - III	2. Region (s): Pakistan
3. Donor: CIDA	4. Implementing Agency(s): Environment & Urban Affairs Division
5. Cost: US \$ 2.6 million	6. Period: July 1991- June 1993
7. Goal: To move forward the implementation of the NCS.	8. Purpose: To conserve the natural resources of Pakistan.
9. Project Components: - Support to E&UA Division - Monitoring and evaluation	10. Expected Outputs: - Strengthening of the E&UA Division to implement the NCS - Coordination among various agencies for NCS Implementation
11. Beneficiaries: Government of Pakistan	
12. Current Status: On-going	
13. Implementation Issues:	

1. Title: Strengthening of Environmental Management In Pakistan	2. Region(s): Pakistan
3. Donor: Asian Development Bank	4. Implementing Agency(s): Environment & Urban Affairs Division
5. Cost: US \$ 0.66 million	6. Period: Dec. 1990 - August 1992
7. Goal: To strengthen the management of environmental matters.	8. Purpose: To create self-sufficiency in dealing with environmental matters
9. Project Components: <ul style="list-style-type: none"> - Preparation of a pre-feasibility study - Environmental Management completed - Environmental Impact Assessment (EIA) guidelines prepared. - Review of environmental Legislation completed. 	10. Expected Outputs: <ul style="list-style-type: none"> - Pre-feasibility Study on the setting-up of an Institute of Environmental Management completed - Environmental Impact Assessment (EIA) guidelines prepared. - Review of an environmental legislation completed.
11. Beneficiaries:	Government of Pakistan
12. Current Status:	Near completion
13. Implementation Issues:	

1. Title: Institute of Environmental Management	2. Region (s): Islamabad.
3. Donor: Asian Development Bank	4. Implementing Agency (s): Environment & Urban Affairs Division
5. Cost: US \$ 1.3 million	6. Period: 18 months (whenever initiated)
7. Goal: To strengthen the knowledge base of government officials.	8. Purpose: To enable government officials to plan and manage environmental projects on their own.
9. Project Components: <ul style="list-style-type: none"> - Construction of the Institute - Training of government officials - Hardware supply - Library 	10. Expected Outputs: <ul style="list-style-type: none"> - A 2 - class room, 10- trainee office room institute constructed with dormitory and library. - 12 government officials trained. - A series of short courses offered to government officials.
11. Beneficiaries: Government of Pakistan	
12. Current Status: At the pre-feasibility stage.	
13. Implementation Issues:	

1. Title: Minor Irrigation and Agriculture Development	2. Region(s): Baluchistan
3. Donor: Netherlands	4. Implementing Agency(s) Provincial Irrigation Department
5. Cost: US \$ 5.0 million	6. Period: 1991-93
7. Goal: To implement small scale irrigation schemes and agriculture extension	8. Purpose: To help the small farmers in sustainable agriculture
9. Project Components: <ul style="list-style-type: none"> - Preparation of works - strengthening of agricultural extension - Village community development 	10. Expected Outputs: <ul style="list-style-type: none"> - More Organized agricultural practice - More strengthened government departments - Preparation for Phase-II (1991-94)
11. Beneficiaries: Small farmers	
12. Current Status: On- going	
13. Implementation Issues:	

1. Title: Renewable Energy Technologies for Rural Areas	2. Region (s): Karachi (Rural)
3. Donor: UNDP	4. Implementing Agency(s): Directorate General of New and Renewable Energy Resources (DGNRER)
5. Cost: US \$ 1.67 million	6. Period: 1990-94
7. Goal: To launch pilot demonstration projects using solar energy	8. Purpose: To determine the feasibility of using solar energy in the rural areas.
9. Project Components: - Technical assistance - Hardware supply	10. Expected Outputs: - Trained staff of DGNRER - Solar power stations installed
11. Beneficiaries: People in rural area of Karachi	
12. Current Issues: On- going	
13. Implementing Issues:	

1. Title: Assistance to the Tarbela and Mangla Watersheds	2. Region(s): Tarbela & Mangla
3. Donor: World Food Program	4. Implementing Agency(s): NWFP Forestry Department
5. Cost: US \$ 18.7 million	6. Period: 1983- 92
7. Goal: To provide income-generating employment to the unemployed and increase agriculture productivity	8. Purpose: To improve the environment and increase forest area
9. Project Components: <ul style="list-style-type: none"> - Range management - Soil conservation - Forestry 	10. Expected Outputs: <ul style="list-style-type: none"> - Afforestation = 180,000 acres - Soil conservation = 10,000 acres - Range management = 5, 000 acres
11. Beneficiaries: Small Farmers	
12. Current Status: Coming to an end. May be extended up to 1997.	
13. Implementation Issues:	

1. Title: Watershed Management Research and Evaluation	2. Region (s): NWFP
3. Donor: UNDP/FAO	4. Implementing Agency (s): Pakistan Forest Institute (PFI)
5. Cost: Us \$ 1.65 million	6. Period: 1987-91
7. Goal: To maintain long-term productivity of the Indus Basin through watershed management	8. Purpose: To increase land productivity and reduce flood damage through better management
9. Project Components: <ul style="list-style-type: none"> - Technical assistance - Training of Personnel - Hardware supply 	10. Expected Outputs: <ul style="list-style-type: none"> - Better - trained forest staff - Sustainable research and evaluation capabilities through better management
11. Beneficiaries: Forest Departments of all Provinces	
12. Current Status: Completed	
13. Implementation Issues:	

List of Government Departments Dealing with Environment

<u>No</u>	<u>Department</u>	<u>Name & Designation</u>	<u>Telephone</u>
1.	Environment & Urban Affairs Division Government of Pakistan Shaheed-e-Millat Secretariat Islamabad.	Mr. Shams-ul-Haq Joint Secretary	822757
2.	National Conservation Strategy (NCS) Environment and Urban Affairs Division Shaheed-e-Millat Secretariat Islamabad	Mr. Kamran Aslam Joint Secretary	822757
3	National Physical & Standard Laboratories (NPSL) H-9 Islamabad	Dr. S. S. H. Rizvi Director General	851590
4	Environment Protection Agency, Punjab 4-Layton Road, Lahore	Mr. M. A. Saleemi Director	311190
5	Environment Protection Agency, NWFP 1st Floor, State Life Building The Mall Peshawar	Mr. Farooq Azam Khan Director General	278042
6	Environment Protection Agency, Baluchistan Quetta	Mr. Taj Mohammad Faizi Director General	
7	Environment Protection Agency, Sindh F-1/B-2, Block-7, Clifton Karachi	Mrs. Mehtab Akbar Rashdi Director General	
8.	Institute of Public Health Engineering and Research University of Engineering & Technology Lahore	Professor Shaukat Hayat	339248
9.	Pakistan Council of Research in Water Resources 4-St. 41, F-6/1, Islamabad	Mr. Naseer A. Gillani Director General	826146 850368

List of Major Donors Dealing with Environment

<u>No</u>	<u>Donors</u>	<u>Name & Designation</u>	<u>Telephone</u>
1.	Canadian International Development Agency (CIDA) C/O Canadian High Commission, Diplomatic Enclave, Islamabad	Ms. Lois Marsha First Secretary (Development)	211101
2.	United Nations Development Program (UNDP) Diplomatic Enclave, Islamabad	Mr. Neil Buhne Asst. Rep.	212071
3	GTZ 31-C, Circular Road, University Town, Peshawar	Mr. Atif Masroor Program Officer	
4	British Council H. No 23, St. No 87, G-6/3, Islamabad.	Mr. Les Philips Representative	822503
5	Norwegian Aid Office (NORAD) H-No 9, St. 84, G-6/4, Islamabad.	Mr. Ragnvald Dahl Representative	822231 823937
6	Friedrich Nouman Foundation (FNS) H-No 18, St No, 35 F-6/1, Islamabad	Mr. Sabur Ghayur	813819
7	Small Projects Office (SPO) 24-D, Rashid Plaza, Blue Area, Islamabad	Mr. Mike McGarry	820983 821492
8.	World Bank 20-A, Shahrah-e-Jamhuriat, Ramna 5/1, P.O.Box 1025, Islamabad.	Mr. Petros Aklilu Senior Projects Officer	819781-5
9.	United States Agency for International Development (USAID) 18-6th Avenue, G-5, Islamabad.	Mr. Laiq Ali Environment Liaison Officer	824071
10.	Delegation of the Commission of the European Communities H-No 8, Margalla Road, F-6/3, Islamabad.	Mr. T. C. O' Sullivan Head of Delegation	821928
11.	Asian Development Bank 38, Khayaban-e-Iqbal F-6/3, Islamabad	Mr. Jahed-ur-Rehman Senior Project Implementation Officer	818791-94

List of Major NGOs Dealing with Environment

<u>No</u>	<u>NGOs</u>	<u>Name & Designation</u>	<u>Telephone</u>
1.	Rural Development Foundation (RDF) Mauve Area, G-9/1, P.O.Box 1170, Islamabad	Dr. M. Sadiq Malik Executive President	859787 858972
2.	Family Planning Association of Pakistan (PASBAAN) 3-A, Temple Road, Lahore	Mr. Yasmin Shahid Senior Director	61482 213099
3.	International Union for Conservation of Nature & Natural Resources (IUCN) 1, Bath Island Road, Karachi-75530	Mr. Nasir M. Dogar Program Administrator	73082 573046 573079
4.	Pakistan Environment Protection Foundation (PEPF) H-N0 63, St 2, Defence Officers Colony, Khyber Road, Peshawar	Mr. M. Y. Orakzai President	87939
5.	Energy & Environment Society of Pakistan 123-J, Model Town ,Lahore	Mr. Mohammad Nazim Chairman	851583
6.	Sungi Development Foundation H No 19, St 59 F-8/4, Islamabad	Mr. Omar Asghar Khan Chairman	256323
7.	Agha Khan Foundation 65-C, Chaklala Scheme I, Air Port Road, Rawalpindi	Brig. Iqbal Shafi Director	584812 584814
8.	Journalist Resource Centre 1, Bath Island Road, Karachi-75530	Ms. Saneeya Hussain Media Director	534101-3
9.	World Wide Fund for Nature (WWF) C/O Milkpak Limited, 1st Floor, Yaseen Plaza, Blue Area, Islamabad.	Ms. Jehan Ara Moeen Director	817748
10.	South Asian Partnership, 72-B, New Muslim Town, Lahore	Mr. Tehseen Javed Chairman	866390 831980
11.	Pakistan Environment Development Action Research (PAEDAR) H-No 41, Bhatti Road, F-7/1 Islamabad.	Syed Ayub Qutab President	823790

<u>No</u>	<u>NGOs</u>	<u>Name & Designation</u>	<u>Telephone</u>
12.	Margalla Hills Society 7, Street No 2, F-7/3, Islamabad.	Mr. Roedad Khan President	811644
13.	All Pakistan Women Association (APWA) 65-Jail Road, Lahore	Mrs. Farida Tariq Director	
14.	Foundation for Integrated Development (Find) 21- B, St-21, F-7/2, Islamabad.	Mr. Gul Najam Jamy Executive Director	824456
15.	The Society for Conservation and Protection of Environment (SCOPE) P.O.Box 15913 Karachi-75080	Mr. Tanveer Arif President	476321 404809
16.	Stop Pollution and Recycle (SPARE) P.O.Box 2845 Islamabad	Ms. Renata Chaudhry Coordinator	
17.	SHEHRI- Citizens for a Better Environment 206-G, Block 2, PECHS Karachi-75400	Ms. Fehmida Riaz Coordinator	441769 442578
18.	Pakistan Volunteers Organization (PVO) P.O.Box 2024 Islamabad	Mr. Asif Ali Chairman	
19.	Pakistan Forum of Environmental Journalists (PFEJ) C/O Weekly View Point Lawrence Road, Lahore	Mr. I.A. Rehman Chairman	

Selected Bibliography on Environmental Publications

Following is a selected bibliography of publications, including books, seminar proceedings and data sources on environment related issues in Pakistan.

BIBLIOGRAPHY

A. Government Publications

1. Environment and Urban Affairs Division, Government of Pakistan, National Report to the UNCED : March 1992.
2. Planning Commission, Government of Pakistan, The Five Year Plan and Perspective Plan 1988 - 2003, Islamabad: 1988.
3. Environment and Urban Affairs Division, Government of Pakistan, Environmental Profile of Pakistan: 1988.
4. Federal Bureau of Statistics, Statistics Division, Government of Pakistan: Social Indicators of Pakistan; 1990

B. Donor Publications

1. UNDP, Environmental Protection and Industrial Pollution in Pakistan, UNDP, Islamabad: October 1989.
2. UNDTCD, Energy and Environment: Impacts and Controls, Publication No. TCD/NRED/E.16: October 1990.
3. UN/ESCAP, Reporting on the Environment (A Handbook for Journalists) : 1988.
4. Asian Development Bank, Technical Assistance to Pakistan for Strengthening Environmental Management: January 1990.

C: NGO Publications

1. FinD, National NGOs' Consultation on UNCED-1992, Proceeding of a 1-day Consultation held by FinD at Islamabad: December 1991.
2. South Asia Association of Non-Governmental Organization (SANGO), Regional Consultation on People's Participation in Environmentally Sustainable Development, Proceedings of a 3-day Consultation held by SANGO, and ELCI (of Kenya) at Islamabad: November 1989.
3. Rural Development Foundation, Consultation on National Conservation Strategy, Proceedings of a 2-day Consultation held by RDF at Islamabad: June 1991.
4. World Resources Institute, USA, World Resources 1990-91, Jointly produced by WRI, UNEP and UNDP: 1990.
5. IUCN, Pakistan's Environment - A Historical Perspective and Selected Bibliography with Annotations: 1989.

D. Other Publications

1. Arshad M. Khan, A. I. Jalal, A. Mumtaz, F. Bashir (Pakistan Atomic Energy Commission, Long - Term Planning for Energy in Pakistan with Particular Emphasis on Environmental Aspects, Islamabad: Undated paper.
2. John R. Armstrong and Vaqar Zakaria, The Role of Energy Conservation in Environmental Protection in Pakistan, ENERCON Report : January 1989.

The United Nations Conference on Environment and Development (UNCED)

The United Nations Conference on Environment and Development (UNCED) - popularly known as the "Earth Summit" - is taking place in Rio de Janeiro, Brazil, from 1-12 June 1992. It will be a unique event bringing together head of states, head of governments, politicians, policy-makers, professionals, NGOs, private sector, media and various community groups to discuss the future of planet earth.

The primary objective of UNCED will be to lay the foundation of a global partnership between developing and more industrialized countries, based on mutual need and common interests to ensure a safer earth in times to come.

The complex interrelationship between economic development and environment was first recognized at the United Nations Stockholm Conference on Human Environment held in Sweden in 1972. However, very little was done between 1972 and 1987 to integrate concerns for development and the environment in economic planning and decision-making. Thus, the overall environment of the world deteriorated as is evident from phenomena such as: ozone-layer depletion; global warming; acid rain; and deforestation.

This state of the world environment was highlighted by the 1987 report of the World Commission on Environment and Development, called "Our Common Future". Thereafter, the UN decided in December 1989 to hold UNCED to reverse trends and establish the basis for a sustainable way of life as we move into the 21st century.

UNCED would essentially address the following issues:

- Protection of the atmosphere (climate change, depletion of the ozone layer, trans-boundary air-pollution);
- Protection of land resources (combating deforestation, soil loss, desertification and drought);
- Conservation of biological diversity;
- Protection of freshwater resources;
- Protection of oceans, seas and coastal areas, and the rational use and development of their living resources;
- Environmentally sound managements of biotechnology and hazardous wastes (including toxic chemicals);
- Prevention of illegal traffic in toxic products and wastes;
- Improvement in the quality of life and human health;
- Improvement in living and working conditions of the poor by eradicating and stopping environmental degradation.

The Conference will look at underlying patterns of development which cause stress to the environment. Poverty in developing countries, levels of economic growth, unsustainable patterns of consumption, demographic pressures and the impact of the international economy are development issues that will be addressed.

It is expected that at the end of UNCED, the following would have been produced:

- An "Earth Charter" that will embody basic principles which must govern the economic and environmental behavior of peoples and nations to ensure "our common future";
- "Agenda 21", a blueprint for action in all major areas affecting the relationship between the environment and the economy. It will focus on the period up to the year 2000 and extend into the twenty-first century;
- The means to carry out the agenda by making available to developing countries the additional financial resources and environmentally sound technologies they require to participate fully in global environmental co-operation and to integrate environmental considerations into development policies and practices;
- Agreement on strengthening institutions in order to implement these measures;
- Conventions on climate change, biological diversity and, perhaps, forestry may be negotiated prior to the Conference and signed or agreed to in Brazil.

A preparatory Committee, open to all member states of the UN, has been established for preparations for the conference. Popularly called the Prepcorn, it is headed by Ambassador T.Koh of Singapore.

The last Prepcorn meeting was held in New York from March 3-April 2, 1992. Unfortunately, the developed countries did not commit enough resources for the developing countries to improve their environment. Also, the gap between Northern and Southern countries' perceptions about

environment and development is widening as UNCED is drawing closer. Hence, at this juncture there is great danger that UNCED may not prove to be as effective as it had been originally perceived -unless there is a dramatic change in the stance of the northern and southern countries.

However, even if UNCED fails, it would always be remembered that it has created tremendous interest in environment at all levels. Nations, NGOs, private sector and the media have started talking about the environment and it is expected that all future development activities would give due importance to environmental aspects.

Table of Contents: National Conservation Strategy (NCS)

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- Chapter 4. Existing Institutions
- Chapter 5. Present Policies and Programmes Related to the Environment

PART 2. ELEMENTS OF THE NATIONAL CONSERVATION STRATEGY

- Chapter 6. Objectives, Principles, and Instruments
- Chapter 7. Issues and Opportunities in the Primary Sectors
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- Chapter 9. Supporting Programmes

PART 3. IMPLEMENTATION ARRANGEMENTS

- Chapter 10. Action Agenda and Implementation Strategy
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Terms of Reference of Survey

1. Objectives of the Study & Proposed Methodology

The study aims at analyzing major issues and processes underlying the environmental problems confronting Pakistan; GOP's policy regarding environmental issues; to give a broad overview of the major past, present and proposed environmental projects undertaken through foreign assistance; and finally, in the light of the findings of the study, an attempt would be made to provide guidelines to JICA for its contribution through funding of environmental projects in Pakistan.

To achieve its aims, a narrative cum analytical approach has been followed. Analysis is firmly supported by authentic and concrete data.

2. Data Collection

In order to make the study authentic, rigorous data collection procedures have been adopted. Data collection exercise rests on a two-phased approach. In the first phase Primary Data was collected; followed by the collection of Secondary Data.

Primary Data

This phase consisted of collection of primary data in the form of government documents, reports by various International Organizations and personal interviews and questionnaire surveys.

The primary data collected dealt with the followings heads:

(i) Current Environmental issues in Pakistan

This section looked at the nature as well as the magnitude of the environmental problems confronting Pakistan.

The primary data relevant to this section was classified on the following lines:

- environmental profile of Pakistan; and
- current status of major environmental variables (Water, air, land etc);

(ii) Countermeasures for dealing with the environmental issues facing Pakistan

In this section, first various countermeasures available and GOP's policy/activities in this area were analyzed. Secondly, the shortcomings inherent in the GOP's countermeasures have been highlighted.

This section forms the basis of further discussion on the topic of environmental issues in Pakistan.

(iii) Foreign assistance requirement of the GOP

The GOP's departments, which relate to environment, were visited so as to ascertain their real needs in terms of foreign assistance vis-a-vis dealing with the environmental issues

(iv) Donors Experience

A large number of foreign donor agencies are working in the field of environment, in Pakistan. Some of them, especially the ones which are large and have been here for long, were contacted to obtain the following information:

- most crucial issues facing Pakistan (classified under urban and rural sectors);
- most implementable programs
- most difficult to implement programs;
- strengths/weakness of counterpart agencies;
- common problems faced by the donor;
- suggestions for improvement; and
- concrete results/achievements by the donors (if any).

(v) The NGO Experience

Besides foreign donors, a large numbers of local and foreign NGOs are working in the field of environment in Pakistan. Some of these were also interviewed on the same lines as given above.

Secondary Data Collection

The primary data provided a very definite picture and was further supplemented by secondary data collection. This section details this process.

(i) Selected Bibliography in the Environment Sector in Pakistan

Under this activity a bibliography of all such reports, publications, papers, books and articles which are relevant to this study and present a complete picture of the state of environment in Pakistan, was compiled.

(ii) Inventory of Major On-going, Past and Proposed Foreign Assisted Projects in the Environmental Sector.

While environment is a relatively new field in Pakistan, a large number of donor agencies have been working in this area for the past many years. It was essential that a survey is made of the major environment projects implemented in Pakistan through foreign assistance.

This survey essentially gives the following information about such projects:

- title;
- donor;
- amount (including utilization status);
- start/end dates;
- region; and
- counterpart government agency

3. Data Analysis Procedures

The primary and secondary data was cross-checked to eliminate discrepancies. Also, only those responses were considered worthwhile which have appeared more than once in the responses given by various individuals and organizations.

The quality of response was verified by looking at published reports for cross-checking. At times, we had to go back to a respondent more than once to reconfirm his/her response.

JICA