

PART – 2 OVERVIEW OF MAJOR ENVIRONMENTAL DEVELOPMENTS AND TRENDS

Chapter 1 Pakistan – An Introduction

Geography



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The Islamic Republic of Pakistan displays some of Asia's most magnificent landscapes as it stretches from the Arabian Sea, its southern border, to some of the world's most spectacular mountain ranges in the north. Pakistan is also home to sites that date back to world's earliest settlements rivalling those of ancient Egypt and Mesopotamia. Pakistan is part of South Asia, bordering the Arabian Sea, between India on the east and Iran and Afghanistan on the west and China in the north at 30-00-N, 70-00-E. The border for Afghanistan spread over an area of 2,430 km, while China 523 km, India 2,912 km, and Iran 909 km. Pakistan consists of a rectangular mass extending northeast to southwest over about 796,095 sq km (88 million hectares). The total coast

line of the country is 1,046 km with the territorial sea cover of 12 nm. The country is situated about 200 nm to the edge of the continental margin. Pakistan has varied terrain with flat Indus plain in the east; mountains in north and northwest; and Balochistan plateau in the west. The elevation extremes range between lowest point being the Indian Ocean at 0m and the highest point being the world's second highest mountain – K2 (Mt. Godwin-Austen) at 8,611m.

The total arable land is estimated at 27.87% with permanent crop cover of 0.87% (approximately 22.0 million hectares) and others at 71.26%. Of the country's total area, 24% is cultivated, of which about 80% is irrigated. Forests and grazing lands cover about 4%, about 31% is not fit for agricultural use and approximately 2% is under urban cover.

Meteorology

Pakistan is situated in the monsoon region however, it is arid, except for the southern slopes of the Himalayas and the sub-Mountainous track which has a rainfall range of 76 to 127cm. The province of Balochistan is the driest part of the country with an average rainfall of 21cm. Three-fourth of Pakistan receives an annual precipitation of less than 250mm and 20% of it less than 125mm. A large part of the precipitation in the northern mountain system is in the form of snow which feeds the rivers.

The all-pervasive aridity over most of Pakistan, the predominant influence on the life and habitat of the people, coupled with the climatic rhythm, characteristic of a monsoon climate, are conducive to homogeneity of the land. The country has 4 well-marked seasons – cold from December to March; hot from April to June; monsoon from July to September; and post-monsoon (fall) between October and November.

Average minimum and maximum temperatures in winters range between 4°C and 18°C, though on occasions the mercury falls well below freezing point in the northern parts of the country. The summers are usually dry and relative humidity in May and June varies from 50% in the morning to 25% or less in the afternoon. The summers are extremely hot with temperature soaring to 40°C and beyond.

Socio-Economic Profile

Population

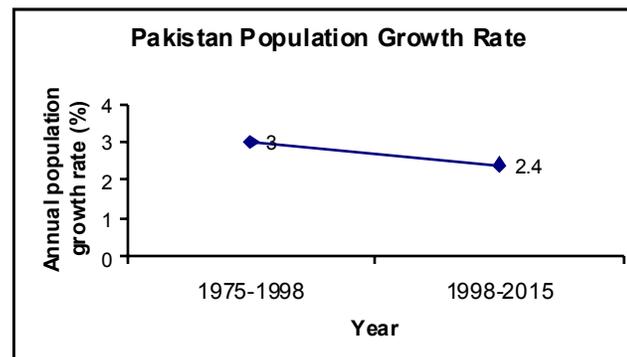
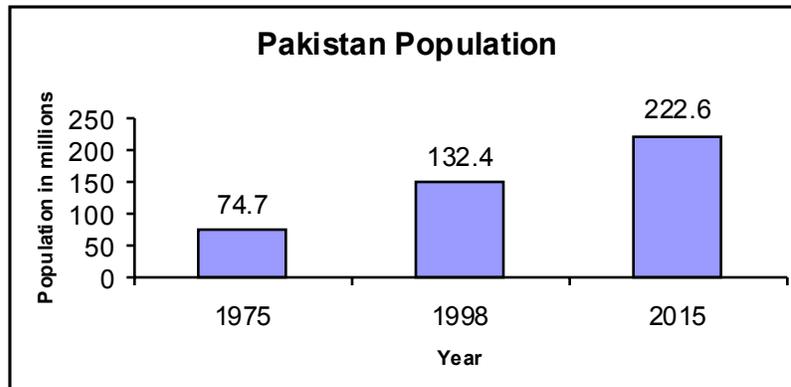
Pakistan's population in mid-2004 was estimated at 148.72 million – 1.9% higher than last year. It was only 32.5 million at the time of independence but 116 million more people were added during the last 57 years. However, Pakistan's population has been growing at a decelerating pace. Population growth has decelerated from 3.06% in 1981 to 1.9% in 2004.

Population Growth Rate

| Year | Population (million) | Growth Rate (%) |
|------|----------------------|-----------------|
| 1995 | 124.49 | 2.47 |
| 1996 | 123.87 | 2.47 |
| 1997 | 126.90 | 2.45 |
| 1998 | 129.97 | 2.42 |
| 1999 | 133.01 | 2.34 |
| 2000 | 135.90 | 2.20 |
| 2001 | 140.36 | 2.06 |
| 2002 | 143.17 | 2.00 |
| 2003 | 145.95 | 1.94 |
| 2004 | 148.72 | 1.90 |

Source: Population Census Organisation and Ministry of Planning and Development Division

Under present trends, it is envisaged that the population is likely to exceed 200 million by 2010. A projection of Pakistan's population between the years 1975 to 2015 with the corresponding population growth rate is depicted in the following graphs.



In Pakistan, rapid population growth substantially contributes to 'resource scarcities'. The population growth, inclusive of all components – increased number of births, decreased number of deaths and inflow of migrants with comparatively smaller out-migration patterns – have created pressure on the natural resource base of the country. Pakistan is exhibiting increasingly severe demand, supply, and scarcities of key natural resources, as well as the resource capture and ecological marginalisation associated with these scarcities.

Labour Force

On the basis of the estimated population of 148.72 million and the participation rate of 29.61%, as per the Labour Force Survey 2001-02, the total labour force is estimated at 45.05 million. Of this, 30.19 million or 67.03% is in the rural areas and 14.85 million or 32.97% is in the urban areas.

Employment Indicators

| | |
|--------------------------------------|---------------|
| Total Labour force | 42.38 million |
| Employed Labour Force | 39.41 million |
| Agriculture Sector | 18.91 million |
| Manufacturing & Mining sector | 4.51 million |
| Construction | 2.25 million |
| Trade | 5.27 million |
| Transport | 1.97 million |
| Finance, Community & Social Services | 5.90 million |
| Others | 5.87 million |

Source: Labour Force Survey 2001-02, Government of Pakistan

A comparison of rural and urban participation rates reveals that the labour force participation rates are higher in rural areas as Pakistan's economy is mainly agrarian and agriculture is a family occupation here. The female labour force participation rate is far less compared to the male participation rate and resultantly their recognised participation in economic activities is also low. No formal estimates are available for female as well as male labour force participation in the informal sector. The total number of the employed labour force in 2004 was estimated at 41.32 million compared to 40.48 million in 2003. The total number of employed persons in urban areas has increased from 13.12 million in 2003 to 13.4 million in 2004. Similarly, rural employment increased from 27.36 million in 2003 to 27.91 million in 2004.

The agriculture sector absorbed 17.4 million or 42.1 per cent of the total workforce in 2004. This sector employed 18.09 million people in 2000 with a relative share of 48.4%. The share of the employed labour force in the community and social services sector, which was 14.2% in 2000, has increased to 15.5% in 2004. Share of the trade sector has also increased from 13.5% in 2000 to 14.8% while that of the manufacturing sector has increased from 11.6% to 13.8% in the same period. The construction and transport sectors accounted for 6.1% and 5.9% workforce respectively in 2004. About 3.72 million people in the labour force were estimated to be unemployed in 2004 compared to 3.65 million in 2003. The overall unemployment rate has increased from 7.82% in 2000 to 8.27% in 2004.

Economy

Pakistan's economy has made significant progress over the last 5 years. Wide-ranging structural reforms, prudent macroeconomic policies, financial discipline and a consistency and continuity in policies have transformed Pakistan into a stable and resurgent economy. A broad-based economic recovery has already gathered momentum, macroeconomic stability has been achieved and the external balance of payments is much stronger today than ever before.

Economic Profile

| | |
|----------------------------------|--|
| Annual Per Capita Income | Rs.28,933 (US\$492 approximately) |
| GDP | 5.1% |
| Imports | Industrial equipment, chemicals, vehicles, steel, iron ore, petroleum, edible oil, pulses, tea |
| Exports | Cotton, textile goods, rice, leather, carpets, sports goods handicrafts, fish and fish prep. and fruit |
| Agriculture Growth | 23.3% |
| Major Crops | Cotton, Wheat, Rice and Sugarcane |
| Industry Growth Rate | 23.5% |
| Major Industries | Textiles, Cement, Fertiliser, Steel, Sugar, Electric Goods, Shipbuilding |
| Services | 53.2% |
| Large-Scale Manufacturing Sector | 68 % (of overall manufacturing) |

Source: Pakistan Economic Survey 2003-04, Government of Pakistan

Social Indicators

Pakistan's performance on its social indicators (contraceptive prevalence, health, literacy, water and sanitation) does not compare well with the average performance for middle-income countries. The access to and quality of rural services and infrastructure is far below those available in urban areas. Further, in the latter case, enclaves of prosperity co-exist in stark juxtaposition to the surrounding poverty.

Pakistan's development experience has fallen considerably short of the existing criteria of sustainable human development with severely adverse consequences for the environment. The unsustainable human development has direct impact where the development process has been resource extractive. Some of its manifestations, resulting in the form of roughly 38% of Pakistan's irrigated land being waterlogged and 14% saline; the annual rate of deforestation ranges from 2.5% to 3%; and a rapid annual increase in CO₂ emissions at the rate of 8% to 10% causing great harm to both humans and the ecology.

The cost of environment related health services remains therefore very high with limited health service access and infrastructure compare to high mortality rate especially amongst children due to water borne diseases. This is a result of close proximity to the sources of emissions and the skewed distribution of sewage, sanitation and piped water facilities. This is true across both the rural-urban divide as well as in urban slums. The health impacts of air, water pollution and productivity losses from deforestation and soil erosion were monetized at \$1.71 billion, or 3.3 percent of GNP, in the early 1990s. The losses attributed to air pollution, in terms of health care costs, near \$500 million per year.

A comparison of various social indicators for the period since 1998-99 shows that indicators like the major source of drinking water, the type of toilet used, and sanitation – all representing living conditions, have significantly improved over the last 3 years. All education-related statistics also show significant improvements. In particular, the gross enrolment at the primary level increased from 72 percent to 87 percent – a 15 percentage point increase in enrolment. Similarly, gross enrolment at the Matriculation level also shows a 15 percentage point increase over the last three years. These comparisons are encouraging as they show that strong economic growth along with massive spending on the social sector and poverty-related programs is now beginning to yield dividends in terms of a decline in poverty, an improvement in living conditions, and an improvement in social indicators

Comparison of Selected Social Indicators (%)

| Indicators | 1998-99 PIHS | 2000-01 PIHS | 2004 HCES |
|---|-------------------------|-------------------------|----------------------|
| Major Source of Drinking Water (Piped Water) | 26.0 | 25.0 | 35.0 |
| Type of Toilet Used by Household | | | |
| Flush | 41.0 | 45.0 | 57.0 |
| Non-Flush | 12.0 | 12.0 | 12.0 |
| No Toilet | 46.0 | 43.0 | 32.0 |
| Type of Sanitation System Used | | | |
| Underground | 14.0 | 14.0 | 23.0 |
| Population Ever Attended School | 50.0 | 51.0 | 57.0 |
| Gross Enrolment at Primary Level (5 to 9 years) | 71.0 | 72.0 | 87.0 |
| Net Enrolment at Primary Level (5 to 9 years) | 42.0 | 42.0 | 56.0 |
| Gross Enrolment at Middle Level (10 to 12 years) | 40.0 | 41.0 | 47.0 |
| Net Enrolment at Middle Level (10 to 12 years) | 16.0 | 16.0 | 20.0 |
| Gross Enrolment at Matric Level (13 to 14 years) | 40.0 | 42.0 | 57.0 |
| Net Enrolment at Matric Level (13 to 14 years) | 9.0 | 9.0 | 12.0 |
| Average Monthly Consumption Expenditure (Rs./month) | - | 6714 | 9065 |

Source: Federal Bureau of Statistics, Government of Pakistan

Environment and Security

Environmental degradation also creates insecurity and, in the extreme, conflict. The link between such degradation and insecurity in Pakistan can be best seen primarily from the vantage point of the poor. Conceptually, environment security is shown as a part of the human security paradigm. It is embedded in the notion that resource conflicts (actual and potential) are a direct outcome of development processes which degrade these resources and deny people access to them. The conflict over forest resources in Dir is an illustration of a wider problem affecting forest-dependant communities in locations as diverse as Kaghan, Gilgit (Fairy Meadows) and Nathiagali.

Environmental scarcity often encourages powerful groups to capture valuable environmental resources and prompts marginal groups to migrate to ecologically marginal areas. The leading factors behind this phenomenon are: (i) resource capture, and (ii) ecological marginalisation. The degradation and depletion of renewable resources can interact with population growth to encourage powerful groups within a society to shift resource distribution in their favour. Powerful groups secure or tighten their grip on a dwindling resource and often use this control to generate profits. *Resource capture* intensifies scarcity for poorer and weaker groups. Consequentially, unequal resource access, combine with population growth cause large-scale and long-term migrations of the poorest groups within society. They move to ecologically fragile regions (*ecological marginalisation*) such as steep upland slopes, areas at risk of desertification, tropical rain forests, and low-quality public lands within urban areas. High population densities in these regions, combined with a lack of knowledge and capital to protect the local ecosystem, cause severe environmental scarcity and chronic poverty. These two processes in turn reinforce environmental scarcity (resource scarcity and inequitable resource distribution) to raise the potential for social instability (conflict).

In Pakistan's context the environmental scarcity need to be looked upon with a two-pronged approach: (i) studying the resource depletion or scarcity, and (ii) studying the inequitable distribution of resources. The reason for segregating these dimensions is the supposition that at times resource scarcity may not be the only driving factor for inducing threats to environmental security. There may be times when the available resource, whether scarce or in abundance are distributed inequitably within groups, which could threaten environmental security and trigger conflict.

Chapter 2 Environmental and Economic Development Issues

The word "environment" was unfamiliar to people of Pakistan even after promulgation of the 1983 Environmental Protection Ordinance. Pakistan Environmental Protection Council-an apex body for setting up environmental policies, met for the first time after 9 years since the Ordinance became effective. Even the rules to operate the 1983 Ordinance could not be formulated in 13 years span till it was replaced with a new act of Parliament in 1997. Environmental institutions at the federal and provincial levels were too weak to enforce the laws. Environmental awareness was non-existence and whatever efforts exerted made a little change due to low literacy rate. In that way, a decade passed without happening a significant event in the environmental history of Pakistan since the 1983 Ordinance promulgated.

In 1992, heads of many countries signed Agenda 21 on the eve of Earth Summit in Rio de Janeiro. The Summit was a global commitment to protect environment, and promote sustainable development. That was a time when Pakistan prepared its National Conservation Strategy (NCS), which showed path of sustainable development and determined environmental improvement agenda for the country. At present, the environmental institutions have become custodian of environmental protection and the civil society and media have assumed role of watchdog. The government institutions, NGOs and the media made significant efforts in creating awareness among all sectors of society. The Ministry of Environment, Local Government and Rural Development recently carried out a mid term review of the achievements, impacts and prospects of the NCS. An independent team of local and foreign experts conducted this task and concluded that environmental awareness has been raised and institutions have been built. The review team admitted that civil society institutions were strengthened and their influence enhanced.

The most significant achievements in the recent years are incorporation of environmental concerns in government policies and initiation of process of Environmental Impact Assessment (EIA) in the development schemes. In the forestry sector, a culture of collective effort has been introduced and every sector of society-the institutions, schools and NGOs now realize that planting of trees is their responsibility. Energy conservation, which has importance in the context of emission of greenhouse gases and other pollutants but was not attracting attention in the past, now considered a vital tool for the protection of environment. Fuel efficiency in transport, industry and domestic sector has been taken into Government policies and plans.



After the NCS and raising environmental awareness in the country, the next challenging task before the Ministry was to translate environmental policies into actions. Different organization within and outside the Ministry implemented environmental projects but that approach was fragmented. After the Mid-Term Review of the NCS, the Ministry developed a National Environmental Action Plan (NEAP) which focuses on four core areas viz. clean air; clean water; solid waste management; and eco-system management. An integrated approach with involvement of provincial and local government has been adopted to implement the plan.

However, environment does not exist in isolation and there are several other sectoral developments which directly impact the environment. Sectors where environment has a crosscutting effect include integrated pest management, application of pesticides/herbicides,

green accounting, environmental economics, private sector participation, medicinal plants, energy efficiency, industrial growth, transport urban environment, cultural heritage, tourism/eco-tourism, population, communication, education, gender environmental health, governance, etc.

During the last decade, Pakistan has made diligent progress in the institutional strengthening and capacity building of policy and planning institutions, environmental awareness, and the promulgation of environmental legislation, National Environment Quality Standards (NEQS), and the establishment of environmental tribunals. The energy sector introduced lead-free petrol and since July 2002, all refineries in the country are supplying lead-free petrol and promoting clean fuels including CNG. After the approval of the Pakistan Environment Protection Council in 2001, the National Environment Action Plan (NEAP) has started various small and large programmes for improving the state of the environment in Pakistan. The major objectives of NEAP are to achieve a healthy environment and sustainable livelihoods by improving the quality of air, water and land with civil society cooperation. In this regard, the Initial Environmental Examination (IEE) and the Environment Impact Assessment (EIA) have also been made mandatory for public sector development projects. To implement NEAP, the Government of Pakistan signed a NEAP Support (NEAP-SP) with the UNDP in October 2001. Under NEAP-SP, the Ministry of Environment, Local Government and Rural Development have started various projects in the following six sub-sectors: Policy coordination and environmental governance; Pollution control; Ecosystems management and natural resources conservation; Energy conservation and renewable; Dry land management and water conservation; and Grassroots initiatives.

Pakistan has also revived its environmental commitments during the World Summit on Sustainable Development (WSSD: August 26 to September 4, 2002). The country assessment report for WSSD focused on the protection of the atmosphere; an integrated approach to the planning and management of land resources; combating deforestation and drought; sustainable mountain development; promoting sustainable agriculture; conservation of biological diversity; environmentally sound management of biotechnology and protection of the oceans.



Pollution of air and water, climate change, ozone depletion, deforestation, desertification, and vanishing biodiversity, land degradation, lack of waste management, and lack of urban land use planning and zoning have impacted the ecological balance. This poses a strong justification for integrating environmental concerns into all development and policy processes. In Pakistan, such integration is comparatively arduous as the upfront socio-economic costs of replenishment of ecology are not economically appealing to decision makers despite the fact that such initiatives are imperative.

Key Environmental Profile

| | |
|-----------------------|---|
| National Flower | Jasmine |
| National Tree | Deodar (Cedrus Deodara) |
| National Animal | Markhor |
| National Bird | Chakor (Red-legged partridge) |
| Flora | Pine, Oak, Poplar, Deodar, Maple, Mulberry |
| Fauna | The Pheasant, Leopard, Deer, Ibex, Chinkara, Black buck, Neelgai, Markhor, Marco-Polo sheep, Green turtles, River & Sea fish, Crocodile, Waterfowls |
| Archeologically Sites | Moenjo Daro, Harappa, Taxila, Kot Diji, Mehr Garh, Takht Bai |

| | |
|--------------------------|---|
| Seaports | Karachi and Bin Qasim |
| Fish Harbours/Mini-Ports | Minora, Gawadar, and Keti Bandar |
| Mountain Peaks | K-2 (Mt. Godwin Austin) 2 nd in world, Nanga Parbat 8 th in world, Gasherbrum-I 11 th in world |
| Mountain Passes | Kyber, Gomal and Lowari (NWFP), Kurram and Tochi (FATA), Bolan (Balochistan), Khunjab (Northern Areas) |
| Rivers | Indus, Jehlum, Chenab, Ravi, Satluj, and Beas (tributary of Sutlej) |
| Glaciers | Siachin, Batura and Baltoro |
| Deserts | Thar (Sindh), Cholistan and Thal (Punjab) |
| Lakes | Manchar and Keenjar (Sindh), Hanna (Balochistan), Saif-ul-Maluk (NWFP), Satpara and Kachura (Northern Areas) |
| Dams | Mangla (Punjab), Tarbela and Warsak (NWFP) |
| Energy Sources | Electricity (Hydel, Thermal, Nuclear) Oil, Coal, and Liquid Petroleum Gas |

Source: <http://www.infopak.gov.pk>

Poverty

The poverty-environment nexus is a consequence of both extractive and uneven development. It describes a downward spiralling relationship between poverty and environmental degradation. In Pakistan, like other middle income countries, poverty plays an important role in increasing the vulnerability of the poor to pollution and degradation.



Encouraged by two years of strong growth (5.1% in 2002-2003 and 6.4% in 2003-2004) and over Rs.860 billion of cumulative spending on the social sector and poverty – related programs over the last five years, the Government of Pakistan asked the Federal Bureau of Statistics (FBS) to conduct a sample Survey of Household Consumption Expenditure (HCES) with a view to gauging the impact of socio-economic and macroeconomic policies on the living conditions of the people of Pakistan. The Survey, covering 5,046 rural and urban households (1/3rd of the sample covered in PIHS 2000-2001) from all the 4 provinces of Pakistan, was conducted from April 19, 2004 to May 6, 2004.

Estimates of National, Rural and Urban poverty in Pakistan (%)

| Items | Head Count Index (April 19 to May 6) | |
|----------|--------------------------------------|-------|
| | 2000-01 | 2004 |
| National | 27.30 | 23.10 |
| Urban | 23.10 | 13.60 |
| Rural | 30.60 | 28.35 |

Source: Centre for Research on Poverty Reduction and Income Distribution (CRPRID)

Economic Cost of Environmental Management

Pakistan's NCS envisaged an investment of Rs. 150 billion over the ten years period. The Mid-term review of the NCS revealed that the actual investment of Rs. 77 billion was realized in 14 core areas over 9 years period.

Rs in million

| NCS Core Area Utilization | % Utilized | Total Allocation |
|---------------------------|--|------------------|
| Core Area 1 - 6956.678 | Maintaining soil in croplands 33% | 20887.156 |
| Core Area 2 - 21387.436 | Increasing Irrigation Efficiency 92% | 23304.919 |
| Core area 3 - 1141.051 | Protecting Watersheds 93% | 1231.668 |
| Core area 4 - 6272.356 | Supporting Forestry and Plantation 85% | 7387.087 |
| Core area 5 - 2024.588 | Restoring Rangelands and Improving Livestock 75% | 2699.588 |
| Core area 6 - 3087.100 | Protecting Water Bodies and Sustaining Fisheries 87% | 3550.123 |
| Core area 7 - 951.982 | Conserving Biodiversity 96% | 996.420 |
| Core area 8 - 2279.959 | Increasing Energy Efficiency 90% | 2542.892 |
| Core area 9 - 648.738 | Developing and Deploying Renewables 88% | 741.284 |
| Core area 10 - 985.206 | Preventing and Abating Pollution 169% | 428.610 |
| Core area 11 - 450.145 | Managing Urban Wastes 52% | 870.367 |
| Core area 12 - 6187.719 | Supporting Institutions for Common Resources 92% | 6751.385 |
| Core area 13 - 3466.248 | Integrating Population and Environment Programme 99% | 3495.563 |
| Core area 14 - 758.008 | Preserving Cultural Heritage 81% | 941.103 |

Source: Renewing Commitment to Action: Report of the Mid-Term Review of Pakistan National Conservation Strategy, 2000

Investment in NCS Core Areas (Province Wise)

Rs in million

| Utilization | % Utilized | Total Allocation |
|--------------------------|------------|------------------|
| Federal Level - 758.088 | 81% | 941.103 |
| Punjab - 14570.909 | 93% | 15744.293 |
| Sindh - 5827.073 | 89% | 6581.443 |
| NWFP - 8884.334 | 85% | 10407.475 |
| Baluchistan - 4615.208 | 68% | 6755.480 |
| Northern Areas - 419.005 | 96% | 434.953 |
| AJK - 5009.544 | 84% | 5940.498 |

Source: Renewing Commitment to Action: Report of the Mid-Term Review of Pakistan National Conservation Strategy, 2000

The above tables show that maximum investment has been made in the agriculture and forestry sector. Punjab has made the highest investment in the NCS core areas followed by NWFP, Sindh, AJK, Balochistan, Federal government and Northern areas.

The Costs of remediation of environmental neglect in Pakistan, which takes the approach of finding what would it cost annually to restore the environment, is estimated as US\$1076.76 million (1990s estimate). Quantification of environmental degradation in the country is estimated at a total average of annual cost of environmental degradation to the national economy between US\$1.2 to 2.2 billion per year.

Cost of Remediation

| Measures | % of GDP |
|------------------------|----------|
| Water Pollution | 53.97 |
| Air Pollution | 119.4 |
| Land Erosion | 522.59 |
| Solid Waste Management | 187.21 |
| Forest Degradation | 157.40 |
| Ecosystems Management | 36.09 |

Source: Peter Rogers et al (1997): Measuring Environmental Quality in Asia

Environmental degradation is caused not only by large development projects that are subject to Government control but by the combined effect of countless small rural and urban consumers and producer activities that use natural and manmade resources. The strides made in Pakistan in forwarding the environmental agenda from being a stand-alone topic to

one identifying itself as an integral element of the national mainstream development. The conservation agenda has made considerable headway in linking up with economic prosperity, poverty elimination and environmental conservation. The recently launched Medium Term Development Framework 2005-2010 also lends itself to addressing sustainable environmental development as a vehicle for economic growth. The Framework incorporates an informed plan for environment through building upon information provided by the Participatory Poverty Assessment and poverty-environment nexus presented in the Poverty Reduction Strategy Paper. It identifies Pakistan's priorities for sustainable development vis-à-vis the Millennium Development Goals, Johannesburg Plan of Implementation, and Water Energy Health Agriculture and Biodiversity (WEHAB) Framework.

Keeping in view the requirements for planning and implementing environmental development programs, the Medium Term Development Framework has identified targets for five years 2005-2010. A total of 111 programs/projects have been recommended by the Environment Working Group of which 61 in the brown sector, 30 in green sector, 3 cross-sectoral, and 17 in the areas of human resource development and environmental awareness, education and research.

Environmental Targets in Medium Term Development Framework 2005–2010

| No. | Environmental Indicators | Benchmark 2004-2005 | Benchmark 2010-2011 | Targets for 2015 (MDG) |
|-----|--|---------------------|---------------------|------------------------|
| 1 | Forest cover including state-owned and private forest and farmlands (as % of the total land area) | 4.8% | 5.7% | 6.0% |
| 2 | Land area protected for the conservation of wildlife (as % of total land area) | 11.3% | 11.5% | 12.0% |
| 3 | GDP (at constant factor cost) per unit of energy use as a proxy for energy efficiency | 27,300 | 27,650 | 28,000 |
| 4 | Energy production from renewable form of energy (wind, solar, bio-gas, etc.) | 17 MW | 880 MW | - |
| 5 | No. of petrol and diesel vehicles using CNG fuel | 280,000 | 812,000 | 920,000 |
| 6 | Access to sanitation (national) % Access to clean water (national) % | 35 65 | 45 75 | 93 - |
| 7 | No. of industries in Pakistan registered under self-monitoring and reporting program | 30 | 300 | - |
| 8 | No. of continuous air pollution monitoring stations | 0 | 4 | - |
| 9 | % of sulphur (by weight) in high speed diesel | 1 | 0.5 | 0.5 to 0.25 |
| 10 | No. of regional offices of Pakistan Environmental Protection Agency | 0 | 4 | - |
| 11 | Consumption/import of ozone depleting substances in metric tons: a) CFC b) Halons c) Solvents/CTC | 839.7 2.3 56 | 0 0 0 | - - - |
| 12 | Sanitary landfill in major cities | 0 | 2 | - |
| 13 | Development projects having EIA/IEE | < 30 % | 100 % | - |
| 14 | Functional Environment Tribunals | 2 | 4 | - |

Source: Planning and Development Division, Government of Pakistan – 2005

Environmental improvement and mitigation efforts require consistent, vigorous, concentrated and integrated efforts to ensure the halting of further degradation of natural resources and pollution of air and water. An allocation of Rs.642.006 million was made for environment sector projects during the fiscal year 2003-04 and an expenditure of Rs.192.43 million was incurred up till March, 2004.

The targets identified in the Medium Term Development Framework (MTDF) hence require a sizeable level of investment through enhancing the Public Sector Development Allocations. In addition, providing necessary incentives to the private sector for investing in environmental projects is also essential. Overall, the financial outlay of the MTDF has been substantially increased from the last five years' total PSDP allocations of Rs.4.5 billion (both federal and provincial) to Rs.21.7 billion over next five years. This includes Rs.10,743.62 million for brown sector, Rs.9,475.15 million for green sector, Rs.460 million for cross-sectoral and Rs. 1,029.77 million for human resource development, education and research.

Summary Financial Outlay Medium Term Development Framework 2005-2010 (Rs. Million)

| No. | Project/Program | Estimated Cost | | Medium Term Development Framework | | | | | |
|-----|-----------------------------|----------------|----------|-----------------------------------|----------|----------|----------|----------|---------------|
| | | Total | FEC | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | Total 2005-10 |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| 1 | Brown Area (61 projects) | 10,403.62 | 6,681.81 | 928.25 | 2,843.50 | 2,686.00 | 1,945.25 | 2,000.62 | 10,403.62 |
| 2 | Green Area (30 projects) | 10,176.20 | 1,841.20 | 1,668.25 | 2,383.50 | 2,431.00 | 1,769.90 | 1,222.50 | 9,475.15 |
| 3 | Cross Sectoral (3 projects) | 110.00 | 100.00 | 30.00 | 40.00 | 35.00 | 5.00 | - | 110.00 |
| 4 | HRD/CB (17 projects) | 738.17 | 100.67 | 160.50 | 211.27 | 171.00 | 108.50 | 68.50 | 654.77 |
| | Total | 21,427.99 | 8,723.68 | 2,787.00 | 5,478.27 | 5,323.00 | 3,828.65 | 3,291.62 | 20,643.54 |

Source: Planning and Development Division, Government of Pakistan – 2005

New Environmental Development Projects

In order to keep pace with the increasing need for environmental protection and secure checking measures to halt and reverse environmental degradation, several environmental development projects are being planned. Some of these are nearing launch after approval from Central Development Working Party and District Development Working Party. A few recently approved projects are mentioned below:

- Environmental Monitoring System
- Clean Drinking Water Initiative
- Activity Based Capacity Development Project
- Establishment of National Bio-Safety Centre
- Establishment of Pak-EPA Marine Water Pollution Monitoring Centre
- Strengthening of Enforcement Capacity of EPAs

Chapter 3 Global and Regional Partnerships for Environment

Pakistan has become a signatory to many international conventions/Protocols/Agreements and is meeting various obligations with the technical and financial assistance of developed countries. Under the Montreal Protocol, the Ozone Depleting Substances (ODS) based industry such as Chloro Fluoro Carbons (CFC) is under renovation and the consumption of ODS will eventually be phased out by the year 2005. The Government has imposed a ban on the import of used ODS-based equipment, and maximum duties have been levied on the import of new CFC based equipment.

Pakistan has also submitted its Initial National Communication on Climate Change (INCCC) to the UN Framework Convention on Climate Change (UNFCCC) by preparing national Green Houses Gases (GHG) inventories. Several projects aimed at the mitigation of climate change and the adaptation to changing climate are in the pipeline, which will be implemented with the technical and financial assistance of developed countries who are parties to the Convention. Some initiatives have been launched under the UN Convention on Biological Diversity and the UN Convention on Desertification such as the preparation of a Biodiversity Action Plan (BAP) and the Desertification Combat Action Plan.

Different projects are under implementation and various activities are underway to



discourage use of ozone depleting substances, protection of biodiversity, promoting use of renewable energy, energy conservation in road transport sector, enhancing forestry cover etc. The 2002 World Summit on Sustainable Development was a gathering of world governments, concerned citizens, United Nations agencies, multilateral financial institutions and other major actors to assess global change since the historic United Nations Conference on

Environment and Development (UNCED), of 1992. In Johannesburg, the world took a critical look back at UNCED to arrive at a comprehensive, frank and useful review of the past 10 years. The 55th General Assembly session decided in December 2000 that the CSD would serve as the central organizing body for the upcoming 2002 World Summit. The preparations for Rio+10 are underway at three distinct levels: international level – series of meetings of the Commission on Sustainable Development (CSD) and holding Thematic Global Roundtables; regional level – developing regional assessment report, holding dialogues, sharing experience and establishing a regional platform; and national level – preparing review and assessment reports, raising awareness and mobilizing stakeholders. The Government of Pakistan (GoP) also geared up to participate in the WSSD in accordance with the guidelines provided by the CSD. The GoP prepared its Country Assessment Report highlighting achievements, lessons, gaps and way ahead in pursuit of UNCED commitments.

Pakistan signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and ratified it in 1994. The ratification of the Convention triggered a series of activities in Pakistan regarding climate change issues. These included the Asia Least-cost

Greenhouse Gas Abatement Strategy (ALGAS) project completed in 1998, which was the first comprehensive national project on climate change and that covered both quantification of emissions and the setting out of a long-term emissions reduction programme as well as the Country Case Study on Climate Change Impacts and Adaptation Assessments in Pakistan which was also completed in 1998 and which assessed the impact of Climate Change on four major sectors of economy, i.e. agriculture, forestry, water resources and meteorology.

All parties to the Convention are required to prepare a National Communication to the UNFCCC, which contains an inventory of Greenhouse Gases (GHGs), and also indicates policies and measures which the government will take to adapt to or mitigate the adverse impacts of Climate Change. In response to the Convention's requirement of submission of a National Communication, the Ministry of Environment, Local Government and Rural Development (MELG&RD), constituted a National Study Team (NST) to prepare the report. The NST consisted of consultants, Pakistan Agriculture Council, Pakistan Forest Institute, National Institutes of Oceanography, Pakistan Science Foundation, ENVORK – environmental consultant firm, Marine Investigators and some independent sector experts. The Pakistan National Communication (PNC) has been prepared by the National Study Team (NST).

Pakistan is also Party to Convention on Biological Diversity (CBD). Article 19 of CBD provides that the parties may need to consider setting out appropriate procedures for safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse affect on the conservation and sustainable use of



biodiversity. Pakistan has prepared these guidelines to fulfill the obligation. The Guidelines were discussed in a national workshop organized by this Ministry and will soon be finalized.

Being party to CBD, Pakistan has prepared the Biodiversity Action Plan (BAP) as a policy framework that fosters the sustainable use of biological resources and the maintenance of biodiversity. Strengthening and promoting national biodiversity conservation programs and development of international and regional cooperation is also part of implementing the BAP. Special focus has been provided for creating conditions and incentives for biodiversity conservation at the local community level as well as to strengthen and apply more broadly the tools and technologies for conserving biodiversity. To oversee the implementation and coordination of BAP, a Federal Steering Committee has been established. A Biodiversity Working Group is also being established which will be an advisory group on biodiversity issues Provincial Steering Committees are also being established in the provinces.

Pakistan is party to CCD since 1997 and is required to regularly submit reports on the implementation of CCD in Pakistan. First National Report on the implementation of CCD has been prepared and submitted to CCD Secretariat. For fulfilling its obligations under CCD,

Pakistan has prepared a national programme to combat desertification in Pakistan. The final draft of NAP has been prepared after wide consultation of all relevant organizations/individuals. It will be presented to the next meeting of PEPC for its approval. The programme of action aims at:

- Providing a guidelines/framework for sustainable development of the natural resources and preservation of biological diversity in different agro-ecological regions of the country
- Alleviating poverty and improving living standard of the people of arid lands by adopting improved technologies and by having access to extension and support services
- Providing an effective institutional mechanism at various levels of formulating policy and plans and conducting research and development in the arid lands
- Human resource development through capacity building and creating awareness among the masses for identification and tackling area specific problems
- Gender-balanced decision making and effective participation through the recognition of the economic value of women's work

The Maritime Policy for Pakistan is also being prepared for which Ministry of Environment has contributed a chapter which relates with environmental issue along the coast and in the sea.

The National Council for Conservation of Wildlife (NCCW) is implementing the obligations of the following three Conventions to which Government of Pakistan is signatory:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetland of International Importance Especially as Waterfowl Habitat (Ramsar)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)

A ban on commercial export of CITES Appendix-I and II species was implemented with exception of scientific use. Similarly the export of mammals and reptiles which are not common in the country, remained closed. The commercial export of common birds, mostly captive bred species was encouraged. This policy was regulated by NCCW in collaboration with Ministry of Commerce and Provincial Wildlife Departments.

For better implementation of Ramsar Convention, Pakistan had notified eight Ramsar sites in collaboration with Ramsar Bureau. With the addition of eight new wetlands, now there are 16 Ramsar Sites notified for conservation of wetland associated biodiversity. This recent increase in Ramsar Sites enhanced the image of the country in conservation circle.

NCCW has also encouraged the Provincial Wildlife Departments to implement the obligations of Convention on Conservation of Migratory Species of Wild Animals (CMS) also known as Bonn Convention. The threatened migratory species like cranes, geese, storks, pelicans etc. are protected in most of the provinces. NCCW, as an obligation of MOU signed under CMS, is trying to protect the threatened Siberian crane in collaboration with WWF-Pakistan and NWFP Wildlife Department. Similarly another Conservation Plan and an MOU is under consideration for conservation of marine turtles. NCCW is also trying to minimize the hunting pressure on Houbara bustard and falcon species in collaboration with Houbara/Falcon Foundation International-Pakistan.

Persistent Organic Pollutants (POPs) POP pesticides were introduced in Pakistan in the 1950s when the federal government began importing DDT and BHC for malaria control and agriculture. Later, large quantities of Dieldrin and Aldrin were also added to the list. When, in the mid-to-late 1970s, the pesticide business was privatized and multinationals entered the market, imports of all pesticides increased even further. This has resulted in a situation where degrading stockpiles of extremely hazardous pesticides are littered across the

country. Officially, all POP pesticides except Chlordane are banned for use and import, with BHC being banned in 1997. However, in Pakistan, POPs have been under extensive usage in the past for agriculture activities. Large accumulations of these pesticides are found in different parts of the country and there is a dire need to safely dispose of these toxic substances and prepare a national plan for the management of the contaminated sites.

Pakistan joined the global effort for the phase out of POPs by signing the Stockholm Convention on 6 December, 2001. In follow up to its commitment, the government launched a project on POPs management and phase out. The objective of this project was to strengthen capacity and build ownership in Pakistan to meet its obligations under the Stockholm Convention, including preparation of a POPs National Implementation Plan (NIP). This project is prepared to help the Government of Pakistan to strengthen capacity and build ownership to meet its obligations under the Convention with the assistance from UNDP. The NIP preparation has been supported through grant funding of US\$537,150 by the Global Environment Facility (GEF) and UNDP.

Trade and Environment

While trade liberalisation, governed by the WTO and environmental conservation government by a set of Multilateral Environmental Agreements (MEAs), generate distinct and occasionally conflicting demands on parties, a country such as Pakistan needs to balance both its search for long-lasting development. The concept of sustainable development offers a suitable umbrella under which to perform this balancing act.

Pakistan has made a number of implicit and explicit commitments in the trade and environment arena in adopting the Ministerial Declaration at the 4th session in Doha in November 2001. For Pakistan the issue is of a very practical nature, beginning at institutionalising trade and environment linkages. Pakistan has to come forward in acknowledging the trade and environmental interconnectedness by taking specific and concrete measures such as development capacity in understanding the implications of regimes such as WTO and MEAs on its national and international businesses. There is an urgent need in the country to improve its industrial and agriculture sectors to cope with emerging well organised international markets. For example, for Pakistan, the entire situation would change dramatically if environmental arguments were to be introduced by some country on cotton and/or cotton products – a major export for Pakistan. The key issue is capacity of Pakistani products to cope with potential actions, regardless of whether these are taken under the WTO or the MEAs.

On the other hand, there are certain opportunities that must be availed for instance, Pakistan can take advantage of present mood in international trade and environment negotiations and push for a restricted definition of environmental good and services.

Chapter 4 Policy and Legal Framework

The conservation challenge in Pakistan, as in the most of the developing world, is to develop strategies that will meet the resource needs of the local communities while also protecting and preserving the natural resources and Mother Nature. Several important policy and legislative steps have been undertaken by the Government to adhere to environmental challenges of the country. Promulgation of the Pakistan Environmental Protection Ordinance in 1983 and subsequently the Pakistan Environmental Protection Act of 1997 have been the landmark achievements in legal reforms for environmental protection and conservation.

Following sections present information on the more significant policy and legal measures undertaken for environmental protection and conservation.

Pakistan National Conservation Strategy

The National Conservation Strategy (NCS) of Pakistan was adopted in 1992 after a long and protracted process of consultation with governmental agencies, academia, NGOs, and civil society organizations engaged in the domain of the natural resource conservation, environmental preservation and sustainable development. The National Conservation Strategy of the Government of Pakistan provides a broad framework for addressing environmental concerns in the country. It comprises 14 core areas viz. integrating population and environment programs, supporting institutions for the common resources, preserving cultural heritage, preventing and abating pollution, conservation of bio-diversity, increasing energy efficiency, restoring range land and improving livestock, maintaining the soil in croplands, increasing irrigation efficiency, protecting watersheds, supporting forestry and plantations and protecting water bodies and sustaining fisheries, developing and deploying renewable, and Managing urban waste. The NCS identifies a need for concrete action in 14 core programs areas. Under the aegis of the Cabinet Implementation Committee, the NCS Plan of Action/Programme has been divided into four components viz. strengthening of institutions, creation of supportive framework of regulation and economic incentives, broad based communications campaign of mass awareness and the implementation of projects in NCS core areas. The National Conservation Strategy Unit of Ministry of Environment, Local Government and Rural Development serves as the Secretariat for the implementation of the National Conservation Strategy and its Plan of Action. Keeping in view the wider range and scope of the activities in the domain of the NCS implementation it was felt substantive that the Cabinet Committee for Implementation of NCS is reviewed and made active. Hence the Cabinet Committee was reconstituted and notified in April 2000.

Given the life of the NCS implementation since 1992, it became imperative to carry out a Mid Term Review (MTR). The process of the MTR was initiated in late 1999 and Mid Term Review (MTR) of the National Conservation Strategy (NCS) was carried out in May-June 2000 by an independent review team comprising local and foreign experts. The MTR report concludes that achievements under the NCS have been primarily awareness raising and institution building and strengthened civil society institutions and their influence. The MTR emphasized on improvement in implementation capacity and need to reinvigorating and refocusing through development of an NCS-2 with more focused approach to serve as Pakistan's Sustainable Development Strategy for 2002-2012 with a greater emphasis on poverty reduction and economic development in addition to environmental sustainability.

Pakistan Environmental Protection Act

Perhaps the most significant legal measure undertaken by the Government of Pakistan is the promulgation of the Pakistan Environmental Protection Act (PEPA). The Act No. XXXIV of 1997 was promulgated as "An Act to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development. WHEREAS it is expedient to provide for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution, promotion of sustainable development, and for matters connected therewith and incidental thereto;..."

PEPA was enacted on 6th December 1997 to provide for the protection, conservation, rehabilitation and improvement of environment, for the prevention and control of pollution, and promotion of sustainable development. Primarily the PEPA improved the PEPO 1983 extending itself to the whole of Pakistan.

The Act particularly focuses on implementation of Council's policies, delegation of powers to government agencies, enforcement of National Environmental Quality Standards, introduction of EIA/IEE review procedures/system, regulatory regime for hazardous substances/wastes, resource generation through establishment of Provincial Sustainable Development Fund and levy of Pollution Charge and providing appellate forum for environmental cases.

Local Government Ordinance and Environmental Protection

In addition, the devolution plan of the government of Pakistan further strengthened the environmental management through linking environmental protection and rehabilitation with local governance. Under the Local Government Ordinance 2001, the devolved local governance structures were trusted with the responsibility to function within the provincial framework. Section 14, Chapter III provided a mandate for administrative and financial authority which is applicable to decentralization of environmental departments. Environmental protection is at serial 48 of the sixth schedule but it only deals with environmental pollution. According to which local government may prepare and implement schemes for the prevention of the pollution of air by gases, dust or other substances exhausted or emitted by automobile engine, factories, brick or lime kilns, crushing machines for grain, stone, salt or other materials and such other sources of air pollution and prevention of the pollution of water or land from such sources as the bye-laws may provide. The sixth schedule further elaborated the jurisdiction of the devolved environmental departments in that the local government may, by notice in writing, require the owner or part-owner, or person claiming to be the owner or part-owner, of any building or land in the area of the concerned local government or the lessee or the person claiming to be the lessee of any such land, which, by reason of disuse or disputed ownership or other cause, has remained unoccupied and has in the opinion of the concerned local government has become a sanitary or environmental hazard or otherwise occasions or is likely to occasion a nuisance, to secure and enclose the same within such time as may be specified in the notice.

While strengthening the institutional set up for environmental protection and management, the Ministry of Environment has also delegated necessary functions and powers to the Federal Environmental Protection Agency under section 26 of the Act and to the Provincial Governments. The Provincial Governments have further delegated these powers and functions to Environmental Protection Agencies and also planning to sub-delegate selected powers to the local government.

Resettlement

Given the lack of specific policy for resettlement and rehabilitation of person and community whose properties are acquired for development purposes, the Ministry of Environment has

formulated a draft policy on involuntary resettlement to safe guard livelihoods of non-titled community living in the project area. The policy is supported by detailed technical guidelines for Planning and Implementation of Resettlement. Based on the draft policy a resettlement of affected person ordinance has also been worked out which will supplement the existing Land Acquisition Act, 1894. The draft policy and the ordinance are in the consultative process with the provincial governments and other stakeholders

Federation of Pakistan Chambers of Commerce and Industry

Convincing the industry to adhere to environmental standards and take steps for pollution control has been one of the most significant initiatives of PEPC and the Ministry. The Ministry of Environment opened dialogue with the industry to address the country's environmental concerns. In response, the industry although initially reluctant, realized that pollution control is not a luxury but essential for the market economy and public health.

Environment Technology Programme for Industry

The Federation of Pakistan Chambers of Commerce and Industry (FPCCI) and other industrial associations took initiative and created environmental cells within their organizations. FPCCI, with the assistance of Dutch funding, initiated Environment Technology Programme for Industry (ETPI) at a cost of Rs.260 million. ETPI is a project which was initiated by the private sector for the private sector. The ETPI, initiated in mid 1996 has made strident progress towards achieving its targets. The ETPI is being implemented in alignment with the National Conservation Strategy (NCS). It will be implemented in twenty industrial sub-sectors in two successive phases. Six priority industrial sub-sectors including: textile; fertilizer; paper and paper board; leather; sugar; and edible oils as identified in NCS, will be covered in the first phase within first three years of the programme.

The most essential component of the ETPI project is the development of the National Environmental Database. The software for the database is being developed by Hagler Bailly, and will consist of three main elements, including: Industrial Sector Profiles; Institutional Profiles; and Environmental Market Profiles. These will be developed for the six industry sub-sectors in Phase-1, and extended to an additional fourteen industrial sub-sectors in Phase-2 of the project. The draft report for the Database Design and the software for the National Environmental Database were developed, and the database formats were field tested by Hagler Bailly as well as by ETPI. The fine tuning of the software was completed in mid May and the draft user's manual for the software has also been developed.

This was perhaps the first breakthrough which instigated industrial units to make investment in the environmental improvement. Industry claims that an investment of Rs. 2700 million has been realized during the last four years and they planned further improvement of Rs.1740 million in the near future. Despite these achievements, extra efforts are still required to promote green productivity and adoption of ISO 14000. The linkages are being strengthened between trade and environment to promote manufacture of environment-friendly products for competing international export market. After several meetings with trade and industry and the provincial governments consensus was built on the mechanism of calculation, collection and deposition of Pollution Charge. The pollution charge will be deposited in Sustainable Development Fund. The Government of Punjab and NWFP has officially communicated their consent to the proposed mechanism while the governments of Sindh and Balochistan are still to take action.

After expiry of the NEQS grace period was granted to the industry, the industry representatives requested deferment of implementation of the NEQS for some years to enable industry to prepare and take corrective actions. They also pointed out stringency of the standards and suggested their amendment. The Government did not agree to defer

implementation of the NEQS, however, a high level committee under the Chairmanship of Mr. Shamsh Kasim Lakha was constituted to determine the modalities for enforcement of the National Environmental Quality Standards. The Committee was also mandated to review the standards and propose amendments, if and where deemed necessary. The Committee was represented by, Trade and Industry, NGOs, Environmental Experts and government institutions. This Committee came up with a set of recommendations that included amendment in the NEQS; certification of laboratories; introducing self-monitoring and reporting system; levy of Pollution Charge in accordance with agreed formula; and awarding incentives to industry.

The industry claims that a sizeable investment has been made in the industrial sector since the NEQS were established. It has been estimated that at present about Rs 800 million per annum is the size of environmental investments in the industry sector of Pakistan. It is assumed that growth rate of environmental investments will be in the range of 5-8% per annum and with this growth rate, the environmental investments in the country by year 2010 will be in the range of 1.3-1.7 billion per annum (The Environmental Market of Pakistan by Azher Uddin Khan, November, 2000). It is expected that the international market pressure, enforcement efforts by the federal and provincial EPAs, and better macro-economic and governance conditions, the environmental investments will further enhance.

Clean and Alternate Fuels

Introduction of clean and alternate fuels has been yet another area for policy intervention by the GOP. Government's clean fuel programme is under implementation to reduce air pollution caused by vehicular emission. Initially, it was planned to introduce unleaded gasoline in year 2005 but the Ministry of Petroleum and Natural Resources is now planning to review the programme schedule so that unleaded gasoline and low sulphur diesel could be made available in the market in near future. As part of the clean air programme, 200,000 cars have been switched over to CNG. Rickshaws (three wheelers) have also been successfully converted to CNG with the assistance of Canadian International Development Agency (CIDA). Although this has been done on experimental basis but at the same time efforts are being made to promote use of CNG in Rickshaws through motivation and some incentive schemes. ENERCON has setup tune up stations in different locations and now a line of credit is being established to encourage private sector to set up tune up stations for vehicles. ENERCON is also implementing the first ever UNDP/GEF funded \$ 7.00 Million "Fuel Efficiency in the Road Transport Project". The project aims to reduce at source emissions of greenhouse gases (GHGs) and other pollutants by improving fuel efficiency of road transport vehicles in Pakistan. It will provide benefits at various levels. The vehicle owners will benefit from fuel savings and lower fuel bills. The workshop owners will benefit from the increased business in vehicle maintenance. The country will benefit from reduced fuel imports. The global environmental benefits will be in the form of reduced GHG emissions. In addition, addressing the noise pollution levels and implementing the Cabinet decision on banning of pressure horns, campaigns have been launched at the federal and provincial levels. Thousands of pressure horns were removed from vehicles while negotiations with pressure horn manufacturers have been initiated to discourage manufacturing of multi-stage pressure horns. Noise standards are also being formulated for the first time in Pakistan.

Mass Awareness

Given the mandate of NCS, a mass environmental awareness programme has been started with Pakistan Broadcasting Corporation (PBC) since October 1999. This involves broadcasting of the environmental awareness spots on Radio Pakistan, FM 101 and FM 100 for the purpose of creating mass awareness about the natural resource management and halting the environmental degradation. The NCS Unit intends to launch radio spots in four regional languages also. The NCS Unit has printed a handbook on the Pakistan National

Conservation Strategy which has been provided free of cost to various governmental/non-governmental organizations, schools, and Pakistani Missions abroad for information.

Involvement of NGOs and civil society in the implementation process of the National Conservation Strategy (NCS) has been a key element to support participative environmental care. Accordingly, Ministry of Environment, LG&RD has been providing financial assistance, to Non-Government Organizations, since 1991-92, to support them to work as partners with Government for the implementation of Small Environment Related Development Projects in the 14 core areas of the NCS (National Conservation Strategy). NGO Fund Management Committee under the Federal Minister had held various meetings and approved 76 projects of 76 NGOs against the budget allocations for the year 1999-2000 and 2000-2001. Several NGOs are implementing the Projects in close coordination with the concerned provincial Governments

The Government of Pakistan prepared this long term Plan for the development of forestry sector over a period of 25 years from 1993-2018. The Plan reviewed in detail the state of Pakistan's forestry and suggested a number of approaches, policies, strategies and programs to meet wood demand, improve environment and promote social and economic well-being of rural communities. It also identified the social, economic and physical causes of forest depletion in the country, and proposed five areas of development programs, namely; Soil Conservation and Watershed Management, Forest Management, Wood Production and Industrial Development, Ecosystem and Biodiversity and Provincial and Federal Institutional Strengthening. The programs were presented as investment profiles giving objectives, scope, strategies, costs and benefits. The FSMP, highlighting the forestry issues at national and provincial levels, stipulates investment of Rs.48 billion during the next 25 years with resultant increase in forestry resource from the existing 5% to 10%. Based on the recommendations of this plan, World Bank prepared an investment programme of \$ 25 million for forestry development in Punjab. Similarly, the Asian Development Bank prepared an investment programme of \$ 42 million for forest sector development in NWFP with \$ 1.5 million as Federal component for monitoring and updating the FSMP.

The Central Forestry Board, which was constituted in 1954 to provide a platform for the improvement of Forest Policy remained dormant for most of the time. This board has been re-constituted and named as "Federal Forestry Board (FFB)". The first meeting of the board was held in April 2001 to discuss various issues related to the Forestry Sector. The board comprises representatives from the Provincial Forest Departments including AJK and Northern Areas, NGOs, Progressive Farmers and other stakeholders. The purpose of the board is to develop policies and strategies related to the Forestry Sector and also monitor the activities of the Provincial Forest Departments including the forest cover changes, data taking place at the national level.

The National Council for Conservation of Wildlife (NCCW) took a bold decision on the issue of exemptions in the proposed ban on hunting. The quota for trophy hunting of Markhor, Urial and Ibex was decided. It was also decided to ban the menace of bear baiting. In 1983 the Wildlife Wing of the NWFP's Forest Department began the Chitral Conservation Hunting Programme, a trophy hunting programme for Markhor. This was not strictly a community-based conservation program because all proceeds went to the government. The programme lasted for 8 years until the GoP banned the export of trophies along with all big game hunting throughout Pakistan. In July 2000, NCCW recommended that Community-based Trophy Hunting Program (CTHPs) be exempted from the hunting ban. In August 2000, the Federal Cabinet officially banned big game hunting, except for exemptions recommended by NCCW for CTHPs. This ban applies to all big game species and provides a role to NCCW for regulating harvest of both CITES and non-CITES species such as ibex, blue sheep and urial. The longest running CTHP in Pakistan is the Torghar Conservation Project (TCP) on tribal lands in the Torghar range of northwest Balochistan. The late Nawab Taimur Shah Joge zai

initiated this project and Sardar Naseer Tareen in response to concerns about the status of Afghan Urial and Suleiman Markhor population in the Torghar Hills. With technical input from US wildlife biologist, TCP initiated a conservation programme to stop poaching. Using revenue from the sale of a small number of trophy hunts local people were hired as wildlife guards. TCP was formalized as a registered NGO – the Society for Torghar Environmental Protection (STEP). In the first 10 years, STEP generated about US \$ 460,000 from hunts for 14 Markhor and 20 Urial. Two senior conservation NGOs are major proponents of CTHPs in Pakistan. Pakistan was the second to develop the CTHPs beginning in the Barr Valley in Northern Areas. Asiatic or Himalayan ibex have been the focus of WWF's CTHPs. IUCN-Pakistan's involvement in trophy hunting also began and it implemented a Pre-investment Feasibility (PRIF) project- Maintaining Biodiversity in Pakistan with Rural Community Development.

The NCCW has encouraged the provincial Wildlife Departments for better management of protected areas particularly national parks of the country. Through consultative process, the national parks short listed for management at global standards include: Lal Sohanra National Park (Punjab); Kirthar National Park (Sindh); Khunjerab National Park (Northern Areas); Chiltan Hazarganji National Park (Balochistan); Margallah Hills National Park (ICT); and Chitral Gol National Park (NWFP). Provincial Wildlife Departments are also being encouraged to bring more areas under the protected areas network. NCCW in collaboration with Provincial Governments got control of bear baiting practice, which was causing a bad name for the country. The effective advocacy and control measures have reduced the bear baiting events in the country, which has been acknowledged by World Society for Protection of Animals (WSPA).

National Environmental Policy

The National Environmental Policy (2005-15) is being prepared to provide an overarching framework for achieving the goals of sustainable development through protection, conservation and restoration of Pakistan's environment. The Policy aims to improve the quality of life of people of Pakistan through conservation, protection and improvement of the country's environment and effective cooperation among government agencies, civil society, private sector and other stakeholders. Key objectives of the policy are:

- Secure a clean and healthy environment for the people of Pakistan
- Attain sustainable economic and social development with due regard to protecting the resource base and the environment of the country
- Ensure effective management of the country's environment through active participation of all stakeholders.

Whereas the guiding principles for the National Policy are as under:

- Principle of sustainable development.
- Principle of equitable access to environmental resources.
- Creation of demand for a better environment.
- Respect and care for the environment.
- Integration of environment into planning and implementation of policies, programs and projects.
- Changing personal attitudes and behaviors
- Precautionary principle.
- Polluter pays principle.
- Substitution principle.
- Improving efficiency with which environmental resources are used.
- Cradle to grave management.
- Best available technology.

- Decentralization and empowerment.
- Extensive participation of communities, stakeholders and the public.
- Accountability and transparency.
- Increased coordination and cooperation among federal and provincial governments, NGOs, private sector and academia.
- Increased regional and international cooperation.

The Policy is organized around specific sectoral issues to advise interventions. These are:

- Water supply and management
- Energy efficiency and renewables
- Agriculture and livestock
- Forestry and plantations
- Biodiversity and protected areas
- Air quality and noise
- Climate change and ozone depletion
- Pollution and waste management

The Policy also recognizes cross sectoral issues including population, gender, health, trade, poverty, and local governance. The Policy also recognizes the importance for policy framework for disaster management as well as fulfilling Pakistan's commitments for multilateral environmental agreements.

Six specific policy implementation instruments have been identified:

- (i) Integration of environment into development planning;
- (ii) Legislation and regulatory framework;
- (iii) Capacity development;
- (iv) Economic and market based instruments;
- (v) Public awareness and education; and
- (vi) Public-private partnership.

An extensive process of consultation and debate is underway as part of the finalization of the Policy to launch it as a key step for environmental sustainability in Pakistan.

Chapter 5 Institutional Setup for Pakistan Environmental Protection Act

Pakistan Environmental Protection Council

The Pakistan Environmental Protection Council (PEPC) was first constituted in 1984 under section 3 of the Pakistan Environmental Protection Ordinance, 1983 with President of Pakistan as its Chairman. In 1994, an amendment was made in the Ordinance to provide for the Prime Minister or his nominee to be the head of the Council. The Council was reconstituted after enactment of the new law i.e. Pakistan Environmental Act 1997 as per section 3 therein. Pakistan Environmental Protection Council is an apex statutory body. The Chief Executive is the Chairperson of the Council and the Federal Minister for Environment, Local Government and Rural Development as its Vice Chairperson and Governors of all the provinces are its members besides others. The Council is represented by trade and industry, leading NGOs, educational institutions, experts, journalists and concerned ministries.

The Major functions of the Council include:

- Coordinate and supervise enforcement of the Pakistan Environmental Protection Act
- Approve comprehensive national environmental policies and ensure their implementation within framework of a national conservation strategy as may be approved by the Federal Government from time to time
- Approve the National Environmental Quality Standards
- Provide guidelines for the protection and conservation of species, habitats and biodiversity in general and for conservation of renewable and non-renewable resources
- Coordinate integration of the principles and concerns of sustainable development into national development plans and policies
- Consider the national environment report and give appropriate directions thereof

The Council has held 9 meetings since its inception and took decisions of national importance to protect and conserve country's environment. The Council approved the National Environmental Quality Standards, set its rules and made advances in dealing with a variety of critical national environmental issues such as deforestation, industrial and vehicular pollution and hazardous/ hospital land wastes. The council succeeded in incorporating environmental concerns in governmental policies and plans. In the 9th meeting held under the chairmanship of the President of Pakistan, the National Environmental Action Plan (NEAP) was approved with the aim to improve environmental conditions in the country with special emphasis on providing clean air; clean water; solid waste management; and eco-system management. The Council's directives are reproduced below.

- Environmental protection should be treated as a movement by active participation of Government, civil society and private sector. Education, training and mass awareness would be supported to create required public pressure for greening of industry and its products. Government agencies should set examples by selective interventions with high demonstrative value
- All government policies in different sectors of economy like power, trade, fisheries, agriculture, and education shall be made sensitive to environmental consideration. Environmental protection will be an integral part of these policies before these are considered and approved by the Government
- All future development projects having potential adverse effect on environment shall be subjected to Environmental Impact Assessment, review and approval procedures. For this purpose, capacity of all environmental regulatory agencies shall be strengthened. All projects in the private sector presented for investment to the banks and national

development financial institutions shall be subjected to environmental screening and review

- An Environmental Fund shall be established at the Federal level to support and finance decisions and directives of the Pakistan Environmental Protection Council to give required leverage to the implementation and follow-up of the Council decision. The Federal Government will provide seed money for its establishment
- Forest cover in the country may be gradually increased to attain a reasonable level of these resources for ecological, water and other socio-economic development needs
- Proper management of National Parks should be emphasized and a phased programme for bringing additional areas under National Parks may be prepared
- A pilot program for clean-up of selected Lakes and Rivers, Cities and Towns, and Villages may be initiated and financed with the active participation of the Provincial Governments and involvement of civic agencies, NGOs private sector
- Ministry of Information and Media Development shall allocate more time for environmental awareness. In this regard, support of the private and corporate sector shall also be encouraged
- A national award shall be instituted for outstanding accomplishments in the field of environment.

Pakistan Environmental Protection Agency

Section 5 of the Pakistan Environmental Protection Act (PEPA), 1997 stipulates that “The Federal Government shall, by notification in the official Gazette, establish the Pakistan Environmental Protection Agency to exercise the powers and perform the functions assigned to it under this Act and the rules and regulations made there under....” The Pakistan Environmental Protection Agency (Pak-EPA) was created with thin staff and meager resources under the 1983 Ordinance. This was followed by the creation of the Punjab EPA in 1987, the Sindh EPA in 1989, and the Baluchistan and NWFP EPAs in 1990. The federal EPA (Pak-EPA) holds the key mandate for pollution control. After enactment of 1997 Act, the functions and responsibilities of Pak-EPA enhanced and this institution was strengthened technically and logistically to meet the environmental challenges. Pak-EPA also provides technical support to the Ministry of Environment. Some of the tasks of the Pak-EPA, as defined in the 1997 Pakistan Environment Protection Act, are:

- Administer and implement the provisions of this Act;
- Prepare national implementation policies for approval by the Council;
- Take all needed measures for the implementation of the national environmental policies approved by the Council;
- Coordinate environmental policies and programmes nationally and internationally; and
- Promote public education.

Pak-EPA, under the Act, also has the powers to ensure the enforcement of the NEQS. It functions as the implementing arm of the PEPC, and as such, has both monitoring as well as regulatory authority on matters related to the environment. The provincial EPAs have been delegated, through their respective provincial governments, the powers to implement this Act within their jurisdiction, thus ensuring that the provisions of the Act are applicable throughout the country. The provincial EPAs, set up as they were before the completion of the NCS, reflect the diversity of the Departments they were initially placed under, and were naturally influenced by the thinking and policies of that Department. For instance, recruitment rules in the provincial EPAs are different, with each still reflecting the legacy of its original parent department.

Whilst there are opportunities for generation of funds within the EPAs, such as charging for EIAs and for carrying out training courses, current financial regulations are such that resources generated by the EPAs are not able to be kept by the EPAs themselves. This has added to the challenge of limited financial resources within these institutions.

The influence that EPAs can and do exert over those sectoral and planning agencies connected to the annual and five year plans is limited to their participation in the various sectoral committees set up for these purposes. At the individual level, however, usually relying on their personal networking skills, EPA personnel have been successful in injecting environmental concerns in the overall planning process. These interventions have at times been more productive than the formal mechanisms of coordination and integration across sectoral boundaries. The EPAs exert their influence through exercising their position power, in the form of rules and regulations. They are in turn influenced by the expertise found within the policy research institutes or by donor funded consultants. More recently the private sector has begun to influence the EPAs through industry associations and the like, where the power behind this type of influence is both resource as well as expertise. The EPAs relationship with the PEPC that of being its implementing arm ensures that their work, at least at the Federal level, is in tune with the overall direction laid down by the Council.

Other Institutions for Environment

Federal Ministry of Environment

In 1975, Environment and Urban Division was established in the Ministry of Housing, Works and Urban Affairs. The first piece of legislation to consider environment as a whole was the Environment Protection Ordinance of 1983, which sanctioned establishment of Pakistan Environmental Protection Council chaired by the Prime Minister, Pakistan Environmental Protection Agency and provincial Environmental Protection Agencies. Since then many institutional, policy and regulatory developments have taken place at the Federal and Provincial levels. These, inter-alia, include creation of the Ministry of Environment, promulgation of Pakistan Environmental Protection Ordinance-1983, development of the National Conservation Strategy (NCS)-1992, enactment of Pakistan Environmental Protection Act-1997 and preparation of the Forestry Sector Master Plan and Biodiversity Action Plan.

The Ministry of Environment is headed by a Federal Minister heads the Ministry while the Secretary holds the administrative charge. Additional Secretary is responsible for different sections dealing with environment, forestry, local government and urban affairs. A National Conservation Unit is responsible for coordination of implementation of the country's Conservation Strategy. The Local Government Wing of the Ministry comprises of Local Government and Rural Development sections. The Local Government deals with the matters pertaining to new local government system introduced on 14th August 2001. The Rural Development side deals with the infrastructure development programs primarily in rural areas such as Khushhal Pakistan and donor assisted rural access roads projects. Ministry has a web site <http://www.environment.gov.pk> which contains useful information about its charter, legislation, programs, news/events and implementation status of international conventions and protocols.

Energy Conservation Centre

The Energy Conservation Centre (ENERCON) was created in 1986 to serve all energy conservation activities, including policy formulation. ENERCON soon thereafter began its activities as the Government's implementation body for the National Energy Conservation Plan. Under the plan, ENERCON was charged with a wide range of responsibilities including:

- Formulating energy conservation programs in all the main energy consuming sectors
- Planning and initiating energy conservation actions nationwide
- Outlining policy guidelines to support energy conservation initiatives
- Developing a comprehensive data base on opportunities for energy conservation

- Supporting training activities on energy conservation applications
- Undertaking field research and pilot demonstration activities on specific energy conservation options and technologies
- Monitoring the implementation of conservation programs by other public and/or private sector entities

ENERCON has been successful in building up a capability for collecting data, undertaking various forms of field research to identify energy saving opportunities and initiating a number of activities (e.g. information dissemination and outreach, training etc.) to raise public awareness. ENERCON has been able to "identify" opportunities that would yield over Rs. 3500 million in energy savings, and also to implement a series of specific energy conservation measures as targeted technical services to enable end-users in key sectors to realize about one third of the potential savings. ENERCON's comprehensive approach to energy conservation- which targets all sectors of the economy- is unique among developing countries: it applies a dynamic combination of strategies, including technical assistance, awareness campaigns and financial incentives. This approach has contributed to the success of ENERCON's field research and pilot demonstration activities and has made Pakistan's energy conservation efforts a model for other developing countries.

Pakistan Forest Institute

The Pakistan Forest Institute, Peshawar (PFI) is a national organization mandated for training and research in forestry and allied disciplines, for the conservation and management of natural renewable resources in the country. It was established in 1947 and at present is functioning as an attached department to the Ministry of Environment, Local Government and Rural Development, Islamabad. For these reasons, it has got an international recognition as well as a forestry institution of regional importance. Since its inception, the research activities of PFI remained focused mainly on applied research and development of technology packages for the promotion and scientific management of natural renewable resources. In this regard a major breakthrough has been achieved in dry-zone afforestation techniques, biological rehabilitation of degraded lands, rehabilitation of waterlogged and saline areas to increase their productivity and combat desertification.

National Council for Conservation of Wildlife

The National Council for Conservation of Wildlife (NCCW) was established in July 1974 and is working under the guidance of Inspector General of Forests formulate appropriate policies for the conservation of wildlife, coordinate implementation of the policies by the Provinces and liaison with International Agencies and non-Government Societies for conservation of wildlife. NCCW tried to fulfill its functions efficiently, during the last one and half year. The department gets policy guidelines from the Council headed by the Minister with representation of civil society and provincial wildlife department. NCCW coordinates the efforts of Provincial Wildlife Departments for wildlife conservation. In addition, it also fulfills the obligations of conventions and protocols to which Government of Pakistan is a signatory.

Zoological Survey

Zoological Survey Department was established in 1948 and is now functioning as an attached department of the Ministry of Environment, Local Government and Rural Development with the objectives to obtain information on distribution and population dynamics of faunal species; set up and maintain standard zoological collections for reference; set up Zoological Museum for reference in provinces with emphasis on the fauna of the region; undertake research on the ecology, biology, physiology and biochemistry of important marine animals; advise the government on all zoological matters including conservation, management, export and import of wildlife; and impart wildlife education and create public awareness about wildlife conservation.

Centre for Rural Development and Municipal Administration

Akhtar Hameed Khan National Centre for Rural Development and Municipal Administration (AHK NCRD & MA) was established as a federal training and research institution in the year 1979. It was declared as an attached department of the Ministry of Local Government and Rural Development in 1988 and was re-named as Akhtar Hameed Khan National Centre for Rural Development & Municipal Administration (AHK NCRD & MA) in the year 2000 in recognition of invaluable services rendered by Late Dr. Akhtar Hameed Khan for the cause of community development, strengthening of civil society and socio-economic empowerment of the poor and marginalized people living in informal settlements in Pakistan. The main functions of this Institution is training and research in the field of Local Government, Rural Development, and allied disciplines i.e. Training Courses; Conferences, Seminars and Workshops; Research; Liaison with International Agencies and Organizations; Policy Support to the Ministry; Collaboration with Provincial Local Govt.& Rural Development Academies.

Chapter 6 Implementation Status of Pakistan Environmental Protection Act

Specific responsibilities and authority assigned to the Pakistan Environmental Protection Agency (Pak-EPA) vis-à-vis oversee the implementation of the Pakistan Environmental Protection Act (PEPA) of 1997. Amongst these, responsibilities adhering to sections 11, 12, 13, 14, 15 and 16 of the Act merit particular mention.

Soon after the enactment of new law (PEPA), Ministry of Environment, Local Government and Rural Development through the Pak-EPA set its priorities to operationalise provisions of PEPA. The following series of actions were taken:

- Drafting and notifying rules and regulations under section 31 and 33
- The Pakistan Environmental Protection Council (PEPC) was reconstituted to give more representation to provinces, trade and industry as well as civil society and NGOs.
- 2 Environmental Tribunals were set up – in Lahore and Karachi respectively. The Karachi Tribunal has jurisdiction for Sindh and Balochistan while the Lahore Tribunal covers Punjab, NWFP and Islamabad Capital Territory.
- 3 of the 4 provinces designated Environmental Magistrates under the provision of Section 24 of the PEPA.
- Federal Government delegated authority to provinces for implementation of PEPA.
- Self Monitoring and Reporting system for the industry including the Self Monitoring and Reporting Tool (SMART) software development to streamline data reporting.
- Establishment of National Coordination Committee headed by the Director General of Pakistan Environmental Protection Agency under section 7(k) of PEPA has been an important step towards supervising implementation of environmental policies and increasing provincial level coordination.
- Analytical methods and sampling procedures have been developed to assist the research and development as well as implementation monitoring system.
- The following rules and regulations have so far been finalized in consultation with stakeholders:
 - National Environmental Quality Standards (Self-monitoring and Reporting by Industries) Rules, 2001
 - Environmental Samples Rules, 2001
 - Provincial Sustainable Development Fund (Procedure) Rules, 2001
 - Provincial Sustainable Development Fund (Utilization) Rules, 2001
 - Pollution Charge for Industry (Calculation and Collection) Rules, 2001
 - Composition of Offences and Payment of Administrative Penalty Rules 2000
 - Hazardous Substances Rules, 2000
 - National Environmental Quality Standards (Environmental Laboratories Certification) Regulations, 2000
 - Pakistan Environmental Protection Agency (Review of IEE/EIA Regulations, 2000)

While the two regulations viz. Environmental Laboratories Certification Regulations and Review of IEE/EIA Regulations are in place, all the other rules are being notified.

National Environmental Quality Standards

The National Environmental Quality Standards (NEQS) is the most outcome of the PEPA, 1997. As stipulated as one of the key functions of the federal Environmental Protection Agency, NEQS were established with essential parameters to check municipal, liquid and gaseous emissions along with noise, smoke and carbon monoxide limits for vehicular exhausts.

NEQS were first promulgated under Pakistan Environmental Protection Ordinance 1983 however implementation thereof remained weak. Approval of National Conservation Strategy by the cabinet in 1992 reinstated enforcement of NEQS as an essential step towards environmental sustainability. Subsequently, between 1996 to 1999 NEQS consultations, development, and enforcement was upheld by environmental stakeholders. In April 1996, the Pakistan Environmental Protection Council (PEPC) set up the Environmental Standards Committee known as Shamslakha Committee. The task of the committee was to review, inter alia, the NEQS and suggest changes with consideration of conditions in Pakistan. The committee realized that some of the parameters were more stringent as compared to other countries of the region. The task of rationalization of NEQS was referred to Expert Advisory Committee. Representatives of FPCCI and industry associations were made members of the committee. The Committee realized that some of the parameters were more stringent than other countries of the region. So the task of the rationalization of NEQS was referred to an Expert Advisory Committee to review and suggest changes, if and where required. Before initiating the task, the Expert Committee was expanded to also include representatives of trade and industry. The Expert Committee identified ten parameters - eight (8) for liquid effluent viz. BOD (biological oxygen demand), COD (chemical oxygen demand), TDS (total dissolved solids), Chlorine, Sulphide, Chromium, Ammonia, and Temperature, and two (2) for gaseous emission viz. SO₂ (Sulphur dioxide) and NO_x (Oxides of Nitrogen) for review. After consultation with various organizations, Expert Advisory Committee completed its task and proposed it to the ESC. Finally when the PEPC endorsed the proposed revised NEQS, the Pakistan Environmental Protection Council recommended approving the revised draft of parameters for NEQS. In December 28, 1999 the council approved the revised NEQS. These NEQS were made effective under SRO 549(1) 2000 dated 8th August 2000. While comparing NEQS announced on 24th August 1993 with those announced on 10th August 2000, only six parameters for inland water discharge namely: pH, temperature, TSS, fluoride, cyanide & iron were revised.

Implementation of NEQS in Pakistan remains a challenge for the EPAs as compliance to NEQS by industry has been weak and less than forthcoming. Similarly, the stringent reporting requirements and standards recognized by NEQS have not been fully understood by the industries. In compliance with the NEQS the industries are required to submit monthly reports giving quantitative estimates of BOD, COD cr and copper in case of waste water and CO, So, No concentrations in case of gaseous emissions on the basis of measurements carried out by an EBAE certified laboratory. To instill a culture of self-responsibility amongst the industry sector, the Self Monitoring and Reporting System and Tools have been introduced.

Bringing industrial pollution levels of existing industry to the limits specified in the National Environmental Quality Standards (NEQS) has been a priority concern for the PEPC and the Ministry. After the establishment of NEQS, initial response of industrial sector to pollution control was discouraging perhaps due to unawareness, non-availability of indigenous technology and lack of resources. Changing minds-set and convincing industrial community of the harmful effects of emission was a difficult task. A two pronged approach has been adopted to effectively implement the NEQS. These include: introduction of self-monitoring and reporting system coupled with development of Environmental Improvement Plans (EIPs). The second approach is to enforce the NEQS through issuance of Environmental Protection Orders under section 16 of the Act. The former is a 'common sense approach' whereby the industry will voluntarily provide their levels of pollution to EPAs on regular basis and meantime develop their EIPs as part of future planning. The later is a 'command and control approach' for those industries neither willing to join self-monitoring programme nor desirous to improve their environmental conditions

Self Monitoring and Reporting System

The Ministry of Environment in consultation with stakeholders revised the National Environmental Quality Standards and notified Environmental Laboratories Certification Regulations, 2000. A Pilot phase of self-monitoring and reporting system was initiated for 50 industrial units at the federal level and was completed successfully in March 2001. Now a full-scale implementation is to be undertaken by the provincial EPAs. The Federal Government also offered incentives to industry in terms of reduction of custom duty on import of anti-pollution equipment. The Pollution Charge formula was consented by the Council while the mechanism for its collection and deposition was negotiated with the industry representatives who agreed to follow mechanism on the line of Export Development Fund (EDF). Following EDF mechanism the Pollution Charge collected, will first be deposited in the provincial treasury and then the provincial governments will provide grant equivalent to the deposited amount in the Provincial Sustainable Development Fund to be established by each province under the Environmental Protection Act 1997).

Under self-monitoring and reporting, the industries were authorized to generate their own environmental reports under user-friendly software with the title of SMART. Pilot phase of the SMART was run with more than 50 industries. These industries voluntarily joined the self-monitoring and reporting in the pilot phase. The system proposed by the Environmental Standards Committee takes into accounts the resources and interests of both EPAs and industries. It classifies industry into three categories A, B and C each corresponding to a specified reporting frequency. Category A industry will report their emission levels after every month, category B industry quarterly and category C industry biannually. Industrial units will get their effluent tested from a laboratory and enter the results in the electronic forms. The federal EPA has provided complete information on SMART through website and printed information materials.

Pollution Charge program

Section 11 of the Act pertains to prohibition of certain discharges or emissions. This section states that "subject to the provisions of this Act and the rules and regulations no person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the National Environmental Quality Standards or, where applicable, the standards established under sub-clause (l) of clause (g) of sub-section (1) of section 6".

This section goes on to describe specific measures to be undertaken by the Government, namely through Pak-EPA for control and abatement of polluting substances. In particular, the Act assigns the fender government to:

- Levy a pollution charge on any person who contravenes or fails to comply with the provisions of sub-section (1), to be calculated at such rate, and collected in accordance with such procedure as may be prescribed;
- Any person who pays the pollution charge levied under sub-section (2) shall not be charged with an offence with respect to that contravention or failure; and
- The provisions of sub-section (3) shall not apply to projects which commenced industrial activity on or after the thirtieth day of June, 1994.

In pursuit to ensuring continuation of industries' commitment for contributing toward cleaner and safer environment, the EPA yet again undertook a significant action in the form of legal action against polluters. For the first time, EPAs have started issuing Environmental Protection Orders to polluters under section 16 of the Act. It has been reported that EPA, Punjab has served 143 EPOs; EPA Balochistan 89 and Federal EPA 3 EPOs to polluting industry while EPA Sindh issued several show cause notices but due to compliance by the industry they did not served EPOs. On public complaints, a few industrial units, which were causing excessive pollution, were even closed down or served with warning notices.

Government had established two environmental Protection Tribunals-one in Karachi and other in Lahore to decide environmental cases and appeals against the orders of EPAs. Three more Tribunals will be set up in different cities.

The pollution charges were proposed to levy on industries discharging effluent in excess of NEQS. The proposed calculation basis for pollution charge determination was at a rate of Rs. 50 per unit of pollution load. It was also agreed that the pollution charge will be levied on the basis of yearly proportionate increase, i.e. in the first year 10%, second 20%, and third year 40%, and fifth year 80% will be levied. After that industry will pay full pollution charge.

Hazardous Substances

Sections 13 and 14 of the PEPA, 1997, in particular provide guidance to manage and regulate hazardous substances as the key strategy for pollution control and abatement. While section 13 prohibits the import of hazardous waste – “no person shall import hazardous waste into Pakistan and its territorial waters, Exclusive economic Zone and historic waters”; section 14 of the PEPA goes on to describe the management of hazardous substances – “subject to the provisions of this Act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle or import any hazardous substance except: (a) under a licence issued by the Federal Agency and in such manner as may be prescribed; or (b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Pakistan is a party.

Significant headway has been made in controlling the limiting movement of hazardous chemical and other substances. The pesticide business in Pakistan has been a large industry and putting controls in place to check hazardous substance has not been an easy task. The fact that more than 70-80% of pesticides used in this country are being used on cotton crops makes the agriculture sector the major recipient of hazardous substances as well as the most significantly affected sector. According to a recent report by the Pakistan Agricultural Research Council (PARC), as many as 10,000 farmers are poisoned annually by indiscriminate use of pesticide in cotton growing rural areas only.

Pesticide manufacture, import and usage is controlled by the 'Agricultural Pesticides Ordinance', 1971 and the Agriculture Pesticide Rules, 1973. Until now 21 pesticides have been de-registered and their import banned. Imports of banned pesticides, their illegal storage in warehouses, pilferage from warehouses and adulteration are problems related to lack of implementation of the pesticide ordinance. Monitoring the movement of pesticides as well as other hazardous substance has been an active area of operations for Pak-EP and provincial EPAs.

Emission Control and Air Quality Improvement

Section 15 of PEPA 1997 states, “subject to the provisions of this Act, and the rules and regulations, no person shall operate a motor vehicle from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the National Environmental Quality Standards, or where applicable the standards established under clause (g) of sub-section (1) of section 6. For ensuring compliance with the standards mentioned in sub-section (1), the Federal Agency may direct that any motor vehicle or class of vehicles shall install such pollution control devices or other equipment or use such fuels or undergo such maintenance or testing as may be prescribed. Where a direction has been issued by the Government Agency under subsection (2) in respect of any motor vehicles or class of motor vehicles, no person shall operate any such vehicle till such direction has been complied with.” The rapid increase in Pakistan in number of vehicles from 0.8 million to about 4.0 million within past 20 years poses great concerns for maintaining air quality standards

Progress in this regard has been in 3 particular areas – improvement in ambient air quality, introduction of clean and alternate fuels and controlling noise generated by traffic and moving vehicles. Several measures have been taken to improve the standards of motor vehicles thus controlling emission levels. Special tune up centres have been set up as well as motor vehicle examination systems have been strengthened. This is further supplemented through establishing a comprehensive clean fuel program as well as introducing alternate fuels such as compressed natural gas. Disbanding of pressure horns and confiscating the illegally installed pressure horns has also contributed towards halting the noise level as part of air quality measure.

Environmental Tribunals

The Federal Government has established two Environmental Tribunals-one each in Karachi and Lahore. The Karachi Tribunal has jurisdiction over the Sindh and Balochistan provinces while Lahore Tribunal covers Punjab and NWFP Provinces. It is intended to establish three more Tribunals so as to have independent Tribunal in each province and in the federal capital. The Federal and Provincial Governments have designated senior civil judges as Environmental Magistrates to take all contraventions punishable in respect of handling of hazardous substances and pollution caused by motor vehicles.

Environmental Laboratory Certification

An Environmental Laboratory Certification Regulation 2000 has been notified whereby a network of technically sound laboratories is being established through out the country. The certified laboratories will be authorized to test environmental samples and assist public and private sector to get their level of emissions tested.

Sustainable Development Fund

The Governments of Punjab, NWFP and Balochistan have reported establishment of Sustainable Development Board /Fund under section 9 and 10 of the Act. The Governors of NWFP and Balochistan have approved a grant of Rs. 5.0 million for the Sustainable Development Fund in their respective province.

Environmental Emergencies

Section 33 (b) place responsibility on Pak-EPA for “preparation of emergency contingency plans for coping with environmental hazards and pollution caused by accidents, natural disasters and calamities”. It is in view this responsibility that Pak-EPA took immediate action on the 2003 Tasman Spirit Oil Spill calamity in southern city of Karachi. The Tasman Spirit oil spill on the Karachi coast last year caused colossal damage to environment, marine life and human beings, contaminating approximately 2,062 sq kms marine area as well as affecting 300,000 people, the largest number in any oil spill in history. The Natural Resource Damage Assessment Study revealed alarming facts, like damages to seabed sediments in 270 sq kms area caused by petroleum hydrocarbons and 2,000 sq kms area impacted by oil and suggested reimbursement of costs incurred in responding to spill as well as compensation of financial losses and costs of the natural resource damage. Pak-EPA prepared a contingency plan in collaboration with city government and other stakeholders to check the environmental degradation in the area. The role of Pak-EPA as an effective institution in face of emergency situations has been recognised by line ministries and relevant departments as well as the civil society and NGOs. A key success factor in limiting the hazardous effects of Tasman Oil Spill was the active collaborative role played by Pak-EPA with its provincial counterpart agency as well as other actors.

Chapter 7 Environmental Impact Assessment

Section 12 of PEPA, 1997 states “No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effects an environmental impact assessment, and has obtained from the Government Agency approval in respect thereof....”

The PEPA makes the Federal Environmental Protection Agency as well as the provincial EPAs responsible for a number of specific tasks in pursuit to observing the environmental impact parameters. The Pak-EPA and its provincial chapters are to review the initial environmental examination and accord approval, or require submission of an environmental impact assessment by the proponent as well as review the environmental impact assessment and accord its approval subject to such conditions as it may deem fit to impose, require that the environmental impact assessment be re-submitted after such modifications as may be stipulated or reject the project as being contrary to environmental objectives. There are special conditions stipulated under Section 12 of PEPA such as every review of an environmental impact assessment shall be carried out with public participation and no information will be disclosed during the course of such public participation which relates to trade, manufacturing or business activities, processes or techniques of a proprietary nature, or financial, commercial, scientific or technical matters which the proponent has requested should remain confidential, unless for reasons to be recorded in writing.

The EIA process requires stringent conditions before EPAs approval is permitted and communicated. The Act also directs specific details for EPAs to maintain records for IEE and EIA projects containing brief particulars of each project and a summary of decisions taken thereon open for public disclosure. However, introducing EIA culture in a country like Pakistan has been a difficult and challenging task particularly when the environmental institutions were weak and awareness level was low. It is quite encouraging that now the EIA process has begun in the country in an organized manner after notification of EIA Regulations 2000 and availability of IEE/EIA reports and review Guidelines (developed through a long consultative process). The federal EPA (Pak-EPA) has the key mandate for pollution control and compliance of NEQS. For this, Pak-EPA has developed sector specific guidelines on Environmental Impact Assessment (EIA) to facilitate project proponents. These include guidelines for major thermal power stations; roads; chemical and manufacturing plants; oil and gas exploration and production; new township development; water supply projects; industrial estates; municipal waste disposal; and sewerage schemes. The Federal and Provincial Environmental Protection Agencies (EPAs) have developed their capacity to review and issue environmental clearances. The review process is carried out through public participation. Further capacity of EPAs is being enhanced through on the job training. The EIA process has further augmented after the Chief Executive's directive to financial institutions on restriction of loan without environmental clearance from concerned institution. Media role on highlighting projects without EIA is a motive force.

EIAs became part of the environmental due diligence process in Pakistan during the early 90's. The early EIAs included sketchy baselines, limited focus on brown or pollution issues, narrow view of project specific impacts, and general recommendations for mitigation. The general intent was to complete a requirement with minimum possible time and effort. The EIA process would justify rather than make the project environmentally acceptable.

The Pakistan Environmental Protection Ordinance of 1983 provides impetus for EPAs to enact EIA. The PEPO Section 8 states that every proponent of a project the construction or completion of which is likely to adversely affect the environment shall file with the Agency, at the time of planning the project requires an EIA. After the guidelines were prescribed by the Pak-EPA it became mandatory for all new projects with effect from 1st July, 1994 to seek environmental clearance from responsible agency.

The EIA package included two sets of guidelines: general and sectoral. The general guidelines covered several areas including policy and procedures for filing, review and approval of environmental assessments; guidelines for the preparation and review of Environmental Reports; guidelines on public consultation; guidelines for sensitive and critical areas and fulfilling of Pakistan environmental legislation and NEQS. The sectoral guidelines were developed with an aim to specifically address different types of industries and environmental sector for which EIA will be imperative. These guidelines included amongst other, major thermal power stations; chemical and manufacturing plants; municipal waste disposal; new township development schemes; oil and gas exploration and production units; roads and communication infrastructure; water supply projects; sewerage schemes; and industrial estates.

Later, upon recognising the need to address varying aspects of environmental impacts of key sectors, some additional sectoral guidelines were developed with the collaboration of NWFP and Baluchistan EPAs and IUCN. These guidelines included more specific parameters for industrial sector development; urban environmental plans; forestry sector development; and agriculture sector development.

The EIA process in Pakistan has been further strengthened under section 12 of PEPA, 1997 through finalisation of guidelines after an extensive consultative process with the stakeholders. Later the IEE/EIA Regulations were notified in 2000. The Pak-EPA has been efficient in laying out the policy and procedures for filing, reviewing and approving EIAs. This is done with the intention of informing the proponents of the details regarding EIA process and approval. The Pak-EPA has also identified specific guidelines for the preparation and review of Environmental Reports, public consultation and guidelines for sensitive and critical areas especially those directly related to national security.

Current Status of EIA in Pakistan

In direct compliance to the PEPA 1997, specific powers have been delegated to provincial EPAs for effective implementation of EIA. The notification of IEE/EIA Regulations, 2000 has made it mandatory for both public and private sector projects to undertake EIA for all initiatives in order to fulfill the requirements of NEQS before finalising the project details. The public and private sector project proponents are also held accountable through public consultation process for establishing a mutual and agreeable solution to any given environmental impact envisaged by the planned initiative. The rate of implementation on EIA as a requirement for projects has been encouraging but increased impetus is nevertheless required to make EIA a second nature for all public and private sector projects. The number of projects fulfilling EIA requirement have generally increased over the last 3 years. A comprehensive nationwide statistical analysis of EIA compliance is however still not possible due to lack of data available for various provinces. The tables below present information on IEE and EIA collected from Sindh whereas similar information from Punjab and NWFP is yet to be compiled for a nationwide depiction.

| Year | Number of Projects Completed IEE | Number of Projects Initiated IEE |
|-------------|---|---|
| 1998 | 7 | 11 |
| 1999 | 12 | 8 |
| 2000 | 10 | 14 |

| | | |
|-------|----|----|
| 2001 | 15 | 15 |
| 2002 | 12 | 10 |
| 2003 | 17 | 19 |
| 2004 | 8 | 12 |
| Total | 81 | 89 |

| Year | Number of Projects Completed EIA | Number of Projects Initiated EIA |
|-------|----------------------------------|----------------------------------|
| 1998 | 0 | 1 |
| 1999 | 0 | 0 |
| 2000 | 3 | 3 |
| 2001 | 1 | 3 |
| 2002 | 9 | 11 |
| 2003 | 8 | 7 |
| 2004 | 0 | 3 |
| Total | 21 | 21 |

Source: Sindh-EPA

Despite non-availability of data, there is increased reporting from all provincial EPAs that increasing number of proponents are approaching the federal and provincial EPAs for assistance in filing EIAs and seeking environmental approvals. This increase is also directly due to the fact that the federal Planning and Development (P&D) Division as well as provincial P&D Departments have been advised to ask for environmental approvals issued by respective EPAs from proponents before undertaking review/screening of proposed initiatives. Mainstreaming EIA as a key requirement for project approval process has therefore been beneficial in enacting this process in Pakistan by the private sector.

The public sector has also come forward in adhering to environmental protection responsibilities. The sectoral line ministries as well as public sector organizations are being repeatedly reminded by the Ministry of Environment as well as the Pak-EPA and provincial EPAs to seek environmental approvals for their projects at inception stages.

Public participation is an important aspect of EIA and an early reminder for fulfilling this requirement has essentially been ensured in all EIA review process. Efforts are under way to enhance the capacities of provincial EPAs and P&Ds for effective environmental review, follow up monitoring and upholding public participation.

Another vital aspect of instilling an EIA culture is raising the level of awareness amongst public and private sector proponents as well as general public. For this purpose, Pak-EPA has taken upon itself the responsibility of building a conscious society through organising training workshops, seminars and other information events. These events are well attended by NGOs, public sector decisions makers, technical experts, private sector organisations and other opinion stakeholders. In addition, mobilising print and electronic media for promoting consciousness on significance of EIA is yet another key strategy for encouraging self-discipline amongst target groups.

A major milestone in the movement of EIA in Pakistan has been the recent decision of the ECNEC. ECNEC took a landmark decision on 27th July 2004 whereby it added the requirement of submitting an EIA report along with project documents at the time of seeking approval. This decision has become immediately effective and in case of development projects having environmental implication, an EIA is now invariably part of project approval process.

Areas for Improvement

Although significant results have been achieved in promoting an EIA conscious process of development, much still needs to be done. The question of adequate capacities within public as well as private sectors remains a critical area of concern. For this purpose, the emerging needs for fulfilling EIA requirements demand that long-term capacity building mechanisms of existing research and development institutions need strengthening. Another option yet to be explored for meeting the growing number of projects entering into EIA processes is that of outsourcing EIA implementation to registered institutions, universities, associations etc. who can fulfill the criteria set by the Pak-EPA. The time of essence and proper monitoring and following up on progress is of vital importance in this regard. Pak-EPA in consultation with the provincial EPAs needs to chalk out the criteria for the registration of institutions, universities, associations etc. for conducting EIAs.

There is a general hesitation for facilitating public consultation although recognised as an important aspect of EIAs. This hesitation partly stems from the lack of experience of both public and private sector proponents in social analysis of developmental plans and projects. The civil society organisations having extensive expertise in social mobilisation such as the Rural Support Programs can play a positive role here. These organisations have earned community confidence through their inclusive paradigms for sustainable development over past several decades. These organisations can provide technical assistance to public and private sector organisations as well as Pak-EPA/provincial EPAs and line ministries for conducting public consultations. Following up on the recommendations and results of the public consultation has been another area of concern for the masses at large as well as the EPAs. Again facilitating a well defined monitoring and follow up system with the help of civil society organisations can come to the rescue of participating proponents.

Although much has been accomplished to integrate EIA into policy framework and operational mechanisms of project approval processes, there remains a few areas which could play an important role in implementing EIA. Amongst these are specific policy steps required for instance through making EIA an integral part of feasibility report/PC-II. Similarly, a easy excuse for not fulfilling the EIA requirements has been the high costs related to this exercise. Thinking and planning before hand for operational costs for conducting EIA could address the hesitation of proponents for undertaking this costly exercise. One option is to build all costs to be incurred for undertaking EIA as part of the project cost (project/PC-I preparation cost).

For public sector, requirements of EIA could be made more stringent by establishing a process whereby EIA summary/finding forms an integral part of the PC-I and is reported to the project fora. In case of private sector/donor funded projects the concerned EPAs could approve the EIA, if it is required given the nature of the project. These are measures specifically to ensure an informed project approval process.

The area of monitoring and ensuring that reporting takes place as per the mitigation measures identified by EIA, has been the weakest link in promoting EIA. For this purpose several steps could be planned. For instance, the Implementation of project according to EIA recommendations may be ensured through a strong role of EPAs in monitoring the project progress. Similarly, third party monitoring through for example, registered research and development institutions, universities, Pakistan Environmental Assessment Association etc., can be explored.

The need to update knowledge can not be ignored in the EIA movement. The global trend of information updates and newer knowledge development vis-à-vis best practices in EIA can form a vital source of information for strengthening the EIA movement in Pakistan. The present format of project approval forms could include specific finding of the project EIA for

facilitating the decision making process. This could happen only when there is continuous process of updating EIA guidelines and manuals. This update must adhere to the emerging national requirements and with the involvement of all stakeholders.

Strategic Environmental Assessment in Pakistan

At a global level, the EIA movement has passed through several significant milestones. In pursuit of developing a holistic and inclusive approach within EIA, the formalized, systematic, and comprehensive process of evaluating the environmental impacts of any given policy, plan or program has introduced the concept of Strategic Environmental Assessment or SEA. The SEA addresses the environmental evaluation of projects (or plans and policies) as well as their envisaged long-term social impacts. It does include the preparation of a written report on the findings of the environmental evaluation, and using these findings in publicly accountable decision making, specific social impacts are assessed.

The primary consideration is that early integration of environmental and social concerns in decisions about policies, plans and programs (anticipating and preventing adverse effects at source) are not delayed beyond necessary. SEA also considers and identifies best practical options for addressing environmental and social effects envisaged.

In Pakistan, SEA is still in its formative stages. In 1970, the first set of legal and policy precedents for SEA were developed under EIA framework however, formal implementation did not take place until late 1990s. This too happened when provision for SEA was made by an increasing number of countries between 1999 and 2001. At a global stage, SEA is on the threshold of widespread adoption and further consolidation. The most significant policy framework in Pakistan which incorporates SEA as a significant tool for addressing the environmental concerns is the Government's Mid Term Development Framework (2005-2010).

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