Environmental Sustainability

Research Study Report

For

PRSP 2

By

ABDUL LATIF RAO

Rao Sustainable Development
Consulting & Services
(SMC-Private) Limited

This Study should not be reported as representing the views of the Ministry of Finance.
This Study was commissioned under the "Support to PRSP-II Formulation Project", as part of the consultative process for preparing PRSP-II. The views expressed in this Study are those of the author and do not necessarily represent those of the Ministry of Finance.

Table of Contents

Summary

PRSP focuses on poverty reduction. There is close nexus between environment and poverty but I PRSP did not consider environmental sustainability as an element to reduce poverty. PRSP is an improvement in this regard but environment has been considered with a narrow focus and as an add-on rather than in a comprehensive way. The natural resource base, ecotourism, ecosystem services and the mainstreaming of environment in the social, NRM, economic and development sectors are missing. PRSP has also not benefited adequately from the contemporary global and national initiatives. However, PRSP has influenced the subsequent key national initiatives, namely Mid Term Development Framework (MTDF) and the National Environmental Policy. Resource allocation for environment has increased. The capacities continue to remain weak due to generic and systemic issues. Monitoring of environment related PRSP results is almost lacking.

The implementation of environment interventions is a mixed bag of achievements, slow progress and a lack of progress. Whereas, the progress on the policy and legal fronts is at the acceptable level, the environmental conditions in the country have not changed much to the better. However, the two outstanding achievements are expansion in the coverage of clean drinking water and the enhanced use of clean fuels including CNG, biogas and lead free petrol. The alternate energy sources are getting more attention now. The National Environment Policy, approved in 2005, is very comprehensive. The Ministry of Environment would focus on and support its implementation. The policy and legal framework is adequate. Now there would be more attention to ***action*** *to enhance environmental sustainability.*

The natural resource base continues to degrade. The most effected resources are air, water, land, biodiversity, forests, livestock, pastures, wetlands, fisheries and the coastal and marine resources. As a result, there is decline in their productivity and consequent decline in livelihoods; increased poverty; and reduced development potential. The rural population, especially the rural poor, has an immediate and strong dependence on environmental resources than the urban people. Thus, they suffer the most.

The industries are slow in complying with the National Environment Quality Standards (NEQS). The SMART Programme of Pakistan Environmental Protection Agency has been launched recently. The unsafe disposal of municipal sewer, solid waste, hospital waste and plastic bags continue to pollute the environment. The air pollution levels, mainly due to transport and industrial gases are high, especially in the mega cities. The negative impact of degraded environment is more on health and vulnerability of the poor.

The EIA process for the public sector and private sector projects is moving but suffers from inadequate expertise and weak public hearing process. The civil society organizations have been advocating the environmental and social issues concerning the controversial projects. The higher courts in the country have also been taking sue motto notice of the controversial projects. The capacities of EPAs and the public hearing process would be strengthened.

Pakistan's development needs in all economic and development sectors are high and development is taking place reasonably well. The use of the environmental safeguards and integration of the principles of the sustainable development could maximize the results with least

negative impacts on the natural resources and the poor. Mainstreaming of environment in the policies, plans and programmes of all social, NRM, economic and development sectors is a pre requisite for sustainable development. The use of Strategic Environment Assessment (SEA), as a tool to mainstream environment, would be promoted and the sector ministries as well as provincial governments would be supported. Environmental Fiscal Reform (EFR) has proved to be another useful tool in many developing countries with positive results. The Ministry of Finance would pursue it.

The weak capacities are a barrier in achieving environmental sustainability. A focused approach for enhancing institutional capacities and the job related competencies of human resource would be pursued. The Ministry of Environment with support of the Planning and Development Division and involvement of its departments and agencies would take a lead and play a stronger role for effective coordination, catalytic action, support and monitoring for ensuring environmental sustainability.

The other key social development, natural resource, economic and development sector ministries and organizations would mainstream environment in their policies, plans and programmes with support from the Planning and Development Division, Ministry of Environment and in partnership with the private sector and NGOs to make up for the weak capacities in the public sector.

Similarly, the provincial Environment Departments with support from other relevant departments and agencies would take lead to ensure environmental sustainability in the provinces. The support of the NGOs would be crucial at the provincial and local levels.

The greater challenge lies in capacity building of the various tiers of the local government since a lot of responsibility has been devolved and the capacities are either lacking or weak. The Local Government and Rural Development Departments in the provincial government would embark upon capacity building of the various tiers of the Local Government with support from the Environment Departments and other relevant sector departments and NGOs.

The following priorities would be pursued for resource allocation and implementation:

- *Governance – Environmental Fiscal Reforms; implementation of the National Environmental Policy and MTDF; Institutional strengthening and competency development; coordination; and providing enabling environment to the private sector and NGOs.*
- *Integration and mainstreaming – introduction and promotion of Strategic Environmental Assessment (SEA); and strengthening EIA mechanism;*
- *Efficiency in resource use – irrigation water and energy*
- *Clean fuels – multiple increase in CNG stations and CNG operating vehicles; promotion of biogas, solar , wind and other alternate energy sources; and reducing sulfur content in diesel;*
- *Pollution treatment plants – industrial effluents, municipal sewerage;*
- *Safe disposal of solid waste – land fills and composting;*

- *Climate Change – clean development mechanism projects;*
- *NRM – dissemination of best practices and scaling up successful projects to programmes, water shed management and water recharging, biodiversity and protected areas, land tenure, integrated pest management;*
- *MEAs – biodiversity, climate change, desertification, hazardous waste related convention and protocols;*
- *Livelihoods – community based eco-tourism, small and medium enterprise development;*
- *Equity/equality – gender and environment; gender integration;*
- *Education – education for sustainable development.*

The preferred indicators for the various sectors are given in Section 6.2 Monitoring and Reporting the Indicators, and a comprehensive list of indicators, for use in the long term with enhanced capacities, is at Annex–1.

Environmental Sustainability Considerations for PRSP2

1. Introduction

1.1 Poverty-Environment Nexus

There is universal linkage between environment and poverty but the understanding of the nexus is not common. The understanding, if any, is quite generic. It is comparatively easy to relate environment with health due to obvious connection between the two due to air born, water born and other pollution related and communicable diseases since these have direct costs of treatment and indirect costs of low productivity of labour because of bad health and the time lost. The poor are more susceptible to diseases and long disability periods and thus more prone to poverty. However, the environment-poverty nexus in other social, NRM, economic and development sectors is a bit complex.

DFID defines the environment as the living and non-living world around us, and the goods and services it provides. These include water, energy and raw materials, and are a recipient and partial recycler of waste. It is also a source of financial, cultural and spiritual value. DFID takes poverty beyond income and includes in it the issues of health, safety, education, food and basic services, as well as vulnerability and exclusion of the poor by state and society.

The understanding and appreciation of the basic environmental functions on which human life depends will clarify the poverty-environment nexus easily. The Dutch have grouped the environmental functions into the following four categories:

- Regulation or stabilization functions such as transformation of energy into biomass, storage and transfer of minerals and energy into food chain, conversion of organic matter, cycling of nitrogen and other nutrients through the biosphere, and regulation of the physical climate system;
- Production functions to provide resources that can be harvested directly or transformed through human works including raw materials for construction, agriculture, industry, fuels, and fertilizers;
- Carrier functions of eco-system such as geological stability, space and the soil structure on which the entire gamut of productive and recreational activities take place; and
- Information functions provided by nature include a cognitive and information framework that the human community used to organize its social relations, dwellings, and inhabited space as well as its spiritual dimension.

The major poverty related elements include low productivity of natural resources, low and degraded environmental conditions, in-access to land based resources and production, and inequity/inequality in distribution of benefits of development. The elements of production in turn include health and skills of human resource and the management and technology as well as

productive capacity and sustainability in production of land based resources. Inequity and inequality in distribution of benefits to the women, marginalized groups and the rural and urban poor is a critical factor but is common in most developing countries as the benefits do not seep down to the poor.

The major renewable natural resources in Pakistan are air, water, land, agriculture, livestock and pastures, wetlands and fisheries, biodiversity and protected areas, and coastal and marine resources. The Considerations of environmental sustainability in production and of poverty reduction in distribution of benefits are vital to achieve the goals of PRSP. Access to land and user rights and harnessing the productivity potential within the parameters of environmental sustainability would enhance benefits to the poor.

Economic growth through development is a valid priority of the developing nations including Pakistan but it is important at the same time to ensure that the positive results of development are maximum and there are no or low negative impacts of it on natural resources, human health, livelihoods and the future development potential.

Some of the development sectors that leave foot prints on the landscape and degrade environment are industry, energy, mining, communication infrastructure, water infrastructure, housing and settlements and tourism. The developments in these sectors, in the absence of environment friendly planning, implementation and monitoring is likely to result in deteriorated environmental conditions due to pollution of air, water, land and noise; problems of occupational health and safety of workers; and damage to or loss of land based natural resources, thus compromising the health and productivity of people, their access to goods and services and job opportunities. The productivity of natural resources may also suffer. Achieving poverty reduction would be constrained due to intense pressure on natural resources e.g. declining water quality and quantity, depleted forests and pastures and polluted air.

The essential requirements of sustainable development, poverty reduction and environmental sustainability are illustrated in Fig.1, Fig. 2 and Fig. 3 respectively

Fig.1 – Pillars of Sustainable Development

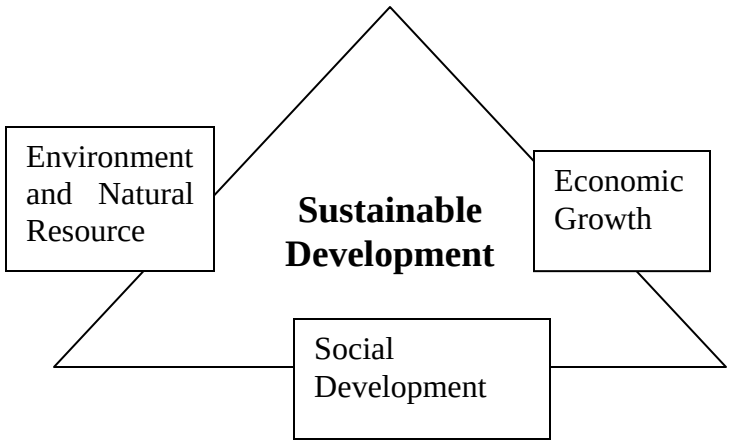


Fig.2 – Essential Requirements of Poverty Reduction and Environmental Sustainability

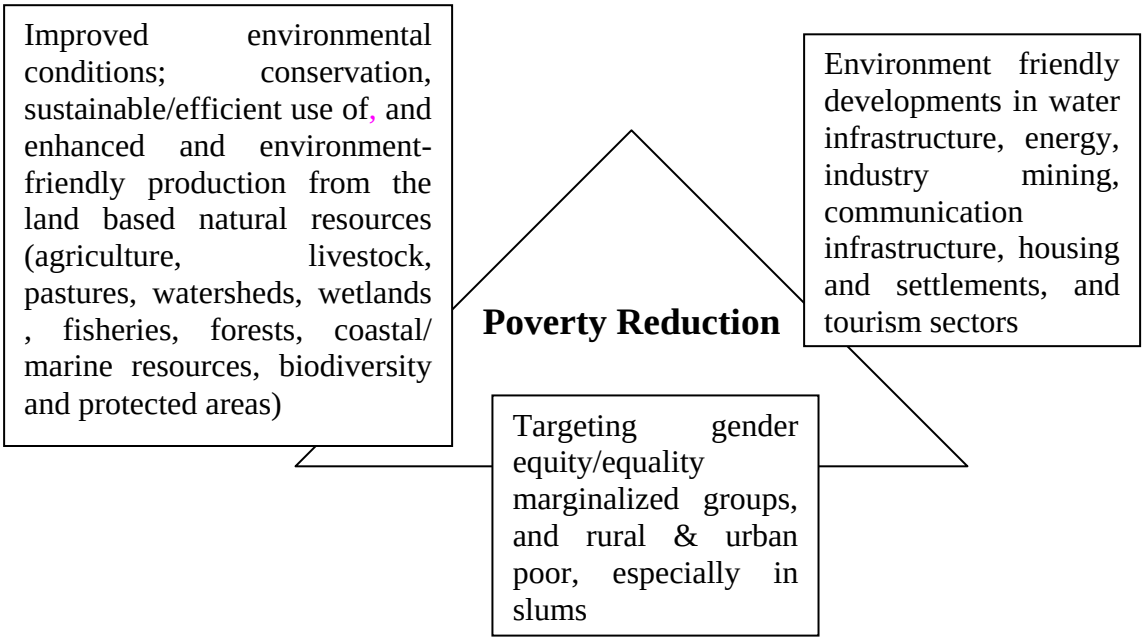
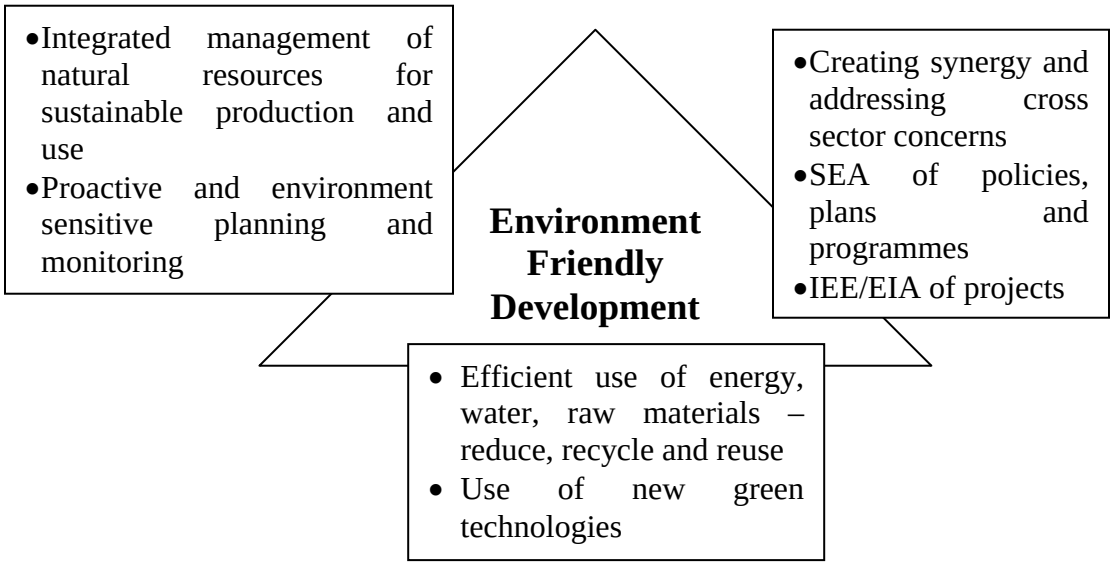


Fig.3- Essential Requirements of Environmental Friendly Development



1.2. The Study - Parameters and Approach

This paper is expected to serve four main objectives:

- Review of PRSP for implementation and gaps in the context of environmental sustainability;
- Create understanding of the poverty-environment nexus, sustainable development, and mechanisms and tools to reduce poverty and ensure environmental sustainability;
- Identify standalone poverty related environmental interventions for PRSP2 and,
- Identify links for mainstreaming environment into NRM, economic, development and social sectors.

PRSP2, like PRSP, is likely to be a condensed umbrella framework and may not pick all details from this paper. However, the details contained in this paper will be helpful in operationalizing the concepts and links, ensuring environmental sustainability in developing and implementing PRSP2; and projecttizing and implementing MTDF regarding the social, economic and NRM sectors.

2. Review of PRSP

2.1. Environmental Sustainability Introduced

PRSP has helped in prioritization of environmental sustainability and poverty reduction for higher resource allocation by bringing these in the lime light, catalyzing thinking to look beyond sector boundaries and considering environment. However, this process remained incomplete, due to its evolutionary nature, as the environment has not been mainstreamed adequately in the social, economic, development and NRM sectors in PRSP

MTDF is influenced strongly by PRSP and UN Millennium Development Goals (MDGs) as its major focus is on poverty reduction. MDG 7 focuses on environmental sustainability. As a result, high levels of investment are provided in MTDF for environment.

2.2. Gaps

As mentioned earlier, the poverty-environment nexus as well as importance of environmental sustainability is not understood commonly. Achieving sensitization takes time and efforts. Thus, there are gaps in PRSP with regard to environment. The approach to get environment related input through a study paper from IUNC/GHK was a good move. However, it seems that PRSP did not benefit much from their comprehensive report. The links and mainstreaming of environment, in particular, are missing in PRSP.

Pakistan was involved in the various global initiatives including WSSD and MDG when the PRSP was being developed but the process of linking the relevant global initiatives with PRSP remained slow due to the sector boundaries and tight deadlines.

Cyclone, continuing drought, earthquake (2005), Tasman Spirit Oil Spill, (2004), and sea intrusion are the major natural and man-influenced environmental disasters that have added to the existing poverty and further degraded the environment in the affected areas of the country. But the PRSP framework regarding the disaster is inadequate.

Pakistan has great potential to develop tourism, especially eco-tourism, due to diversity of landscapes, concentration of very high mountain peaks and glaciers, alpine meadows, forest types, wetlands, deserts, beaches and seascape. There are significantly important cultural and archeological resources besides fascinating biodiversity and protected areas. But this potential remains untapped, especially through community based eco- tourism which is best suited to environmental sustainability and poverty reduction. Unfortunately, this important sector is missing from PRSP, leaving a conspicuous gap.

2.3. Alignment with Global and National Initiatives

Limited stand alone consideration of environment is embodied in PRSP**.** The important national initiatives, namely the National Environmental Policy (NEP) and Mid Term Development Framework (MTDF) are post PRSP but are strongly influenced by it both of these have taken forward environmental sustainability and poverty reduction.

2.4. Implementation

Pakistan Environment Programme (PEP) has helped to enhance capacities and contributions of IUCN- The World Conservation Union, Sustainable Policy Development Institute (SDPI), Planning and Development Division, Ministry of Environment and Pak EPA.

The implementation of environment related interventions is a mixed bag of achievements and slow or lack of progress, mainly due to generic and systemic constraints. Global Environmental Facility (GEF), UNDP, UNISEF, European Union, the World Bank, Asian Development Bank amongst the multilateral donors and CIDA, RNE, SDC, NORAD and DFID amongst the bilateral donors have made substantial financial contribution to support the environmental programmes and projects. The achievements are:

- CNG stations and conversion of vehicles to CNG;
- Clean drinking water;
- Environmental awareness;
- Institutionalization of devolution and its rationalization and strengthening;
- The ever increasing use of information technology and government disseminating Information through websites;
- Vaccination of children against communicable diseases;
- Corporate Social Responsibility (CSR) funding by the private sector – UNILIVER SHELL, ICI, MERCK, SUI SOUTHERN GAS COMPANY, PSO, Oil and Gas companies, Packages Limited;
- Big sustainable use/poverty reduction demonstration projects in rural areas focusing on community participation and sustainable use of natural resources. (e.g. Mountain Areas Conservancy Project-MACP, Environmental Rehabilitation in NWFP and Punjab Project-ERNP, Protected Areas Management Project-PAMP and Pakistan Wetlands Conservation and Management Project-PWP);

- Improvements in weather forecasting which helps in sound and timely decision making in agricultural practices and better management of natural resources and disasters;
- Supportive role of civil society environmental/rural development organizations including IUCN,WWF, LEAD, SDPI, SUNGI Foundation, SHEHRI, SPO, Shirkat Gah, MGPO, AKDN, RSPs;
- Gradually increasing use of EIA tool;
- Emphasis of the government on promoting alternate energy;
- Micro credit and SME development initiatives – SMEDA, AKF;
- Clean production - environmental planning of industrial estates e.g. Sundar Industrial Estate near Lahore;
- Attention to environment and poverty reduction in coastal districts of Badin, Thatta and Karachi(a project in pipeline);
- Expansion of legal framework – bio-safety, WTO, and sector environmental guidelines. bio safety guidelines issued in 2005 will take care of the likely adverse impacts of developments and import of modified organisms, especially agricultural crop cultivars;
- Integrating environment in disaster management - earthquake and Tasman Spirit Oil Spill;
- Improvement in communication infrastructure – motor ways, highways and roads.

Although slow, progress has also been seen on industrial NEQS monitoring. The SMART Programme of Pakistan Environment Protection Agency, has been launched recently. The SMART is a sort of self-monitoring programme for industries.

Some of the key initiatives in the pipeline include

- Permanent home for Pak EPA at Islamabad
- Land fill for Rawalpindi and Islamabad cities
- Six combined industrial effluent treatment plants

The achievements of the National Environmental Action Plan - Support Programme (NEAP-SP) of the Ministry of Environment, according to the Mid Term Review, have been primarily awareness raising and institutional building rather than actual improvement in environment and poverty reduction. There are some other achievements as well but the programme did not operate adequately to achieve its expected results.

2.5. Constraints

2.5.1. Generic and Systemic

- The coordination, catalysis, support and monitoring viz a viz environment have remained weak due to the action nature of interventions at the federal, provincial, district, city district, tehsil, town and union levels .The environmental actions relate to almost all

social, economic, development and NRM sectors. It would be unfair to expect the Ministry of Finance to take lead in ensuring achievement of the environmental goals of PRSP. Ministry of Environment is better placed to play this role and take up this responsibility. This is, however, ambiguous so far. The Ministry of Environment has a vital role in providing leadership and coordination in implementation for achieving the expected environment related results of PRSP, MTDF and NEP.

- Differentiating between the businesses as usual and targeting poverty reduction and environmental sustainability is a challenge for all involved, especially for the sector ministries and provincial and local governments, due to weak institutional capacities and staff competencies; and only incremental shift in their thinking and action. PRSP is taken by some as yet another slogan or a name or a requirement of the donors for funding, rather than a real need for targeted approach.
- Assessment of the impact on environment from the perspective of poverty reduction would remain difficult in the scenario of lack of specificity of interventions for the purpose; weak capacities, objectivity and accountability; and the lack of or inadequate data.
- Absorption capacity of the public sector institutions involved in implementing PRSP and other supportive programmes such as MTDF is rather weak. The existing procedures of public spending add to it.

2.5.2. Environment Specific

Achieving compliance of and enforcing the environmental laws, like other laws, are a challenge for the public sector institutions in Pakistan. It means weak compliance and enforcement of National Environmental Quality Standards (NEQS), inadequate operationalization of EIA mechanism, inadequate or lack of management and treatment of municipal sewer, industrial effluents, and solid waste by the local governments and industries; mismanagement of solid waste, hospital waste and gaseous discharges; and non compliance of emission standards by public and private vehicle owners are some of the examples in this regard. PRSP did not go deep enough to focus adequately on the environmental problems.

3. Environmental Sustainability and Poverty Reduction: Focus and Alignment with the National and Global Initiatives

3.1. Environment in the Perspective of Globalization

The trade related global mechanisms that have a direct bearing on environment and poverty are WTO, and ISO 9000 series for management and ISO 14000 series for environment for the export oriented industrial units. Adherence to the requirements of sanitary and phyto-sanitary, bio-safety, and Intellectual Property Rights in exports is also vital. A positive approach to comply with the requirements would be useful, in the long term, after the avenues of negotiations and reservations have been used successfully to safeguard the national interest.

The land based resources and biodiversity focused Multilateral Environmental Agreements (MEAs) and Programme, to which Pakistan is a party, are Convention on Biodiversity (CBD),

Ramsar Convention on Wetlands of International Importance, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),Convention on Migratory Species of Wild Animals (CMS), World Heritage Convention (WHC). Convention on Combating Desertification (CCD) and Man and Biosphere Programme of UNESCO.

The key climate related treaties and protocols include the Climate Change Convention (CCC), Kyoto Protocol, and Montreal Protocol. Pakistan is also a party to the Law of Seas Convention and some of the oil spill related marine pollution instruments. From amongst the regional initiatives SAARC Social Plan and Environmental Action Plan are worth mentioning.

It is important that Pakistan fulfills the obligations of the treaties and protocols to enhance environmental sustainability for her through its policies, legislation, plans, programmes and projects and also seek the cooperation of international community in this regard. Weak capacities, inadequate domestic legislation and mainstreaming are some of the constraints faced in this regard.

3.2. Global Environment cum Poverty Reduction Initiatives

3.2.1 PRSP Alignment with UN MDGs

The UN MDGSs focus on poverty reduction. MDG7 is specific to environmental sustainability. Its targets include integration of the principles of sustainable development into country policies and programmes; reversing the loss of environmental resources including forest, biodiversity, energy, climate change, ozone depletion; sustainable access to safe drinking water and sanitation; and significant improvement in the lives of slum dwellers e.g. by providing access to secure tenure. These are partially and implicitly addressed in PRSP but in a better way in MTDF. PRSP2 provides an excellent opportunity for furthering environmental sustainability.

3.2.2. PRSP Alignment with WSSD

The World Summit for Sustainable Development – 2002 (WSSD) highlighted the environmental problems facing the planet, with particular emphasis on the links between the state of the environment and poverty reduction. The Johannesburg Plan of Implementation adopted at the WSSD also referred to measures for enhancing environmental sustainability.

3.3. National Environment cum Poverty Reduction Initiatives

3.3.1. National Environmental Policy, 2005

The Policy aims to protect, conserve and restore Pakistan's environment in order to improve the quality of life of the citizens through sustainable development. It provides comprehensive sector and cross sector guidelines, policy instruments, and implementation and monitoring mechanism.

The policy covers not only the stand alone environmental focus of PRSP but extends it to other relevant sectors and themes linking with and mainstreaming environment. The policy is a valuable and timely contribution and a prelude to poverty-environment focus of PRSP2.

The policy, however, lacks prioritization. The Ministry of Environment, for its implementation, envisages the development of an Action Plan, which is not ready yet. A lot depends on the capacity and leadership role of the Ministry of Environment for effective implementation of the policy as well as on the involvement of other ministries for mainstreaming environment. Direct action by the provincial and local governments is key to any real change in environmental scenario. All of them will have to develop and implement their strategies, plans and programmes to play their role in implementation of the Policy to their advantage. Political will, coordination, capacities and financial resources are the major challenges faced in this regard.

PRSP2 provides opportunity for linking with and mainstreaming environment in all sectors and themes that target poverty reduction, thus maximizing the benefits of interventions and eliminating or minimizing the adverse impacts of the initiatives and interventions. Integrating environment at the planning stage takes care of the sustainability of interventions with much less cost than what is needed to fix the problems later.

3.3.2. PRSP Alignment with MTDF, 2005

The Mid Term Development Framework aims at reducing poverty and achieving the UN Millennium Development Goals (MDGs) for enhancing human well-being. It has taken on board PRSP fully, furthering it through detailing, enriching it with the PRSP implementation experience, and linking with and mainstreaming environment at least partially in certain sectors. For instance, environmental sustainability has been fully mainstreamed in the water sector. The policy interventions targeted by MTDF include clean drinking water, partnership, and capacity development. It prioritizes agriculture (agro-industry, agri-business and livestock) and water sectors besides small and medium enterprises, and housing and construction sector for creating jobs, competitiveness and new technologies. Capacity building and skill development are included but with lesser emphasis.

4. Environmental Governance and Capacities in Pakistan

4.1. Policy and Legal Framework

The subjects of Environment and Ecology are on the Concurrent List of the Constitution of Pakistan. This means the Parliament and Provincial Assembly can legislate on these subjects. However the real action is in the provinces, federally administered territories and districts. Some of the powers in this regards have been devolved through the Local Government Ordinance, 2001 to the district, city district, tehsil , town and union councils.

Most of the natural resources related policies are national but most of the laws are provincial. Now, there exists better understanding in the federal ministries regarding the need for provincial policies and laws for the natural resources, which are the responsibility of provincial governments. The NWFP Forest Policy and Forest law are the relevant examples in this regard.

There is a very long list of environment related laws, rules and regulations for control of pollution, environment friendly development, conversation and sustainable use of natural

resources, and resource use efficiency but the compliance and enforcement of legislation remains weak.

4.2. Institutional Framework

All levels of government have responsibility for ensuring environmental sustainability and also to link it with poverty reduction. The key institutions at the federal level include the Ministry of Environment, Planning and Development Division and Pakistan Environmental Protection Agency. The leadership role of Ministry of Environment includes policy making, planning, international liaison, coordination, catalysis, support and monitoring. The Environment section of the Planning and Development Division is to ensure integration of environment in the sector policies, play a supportive role in resource allocation for environmental programmes and projects, and ensure that the public sector investments are environment friendly. Pakistan Environment Protection Agency is a regulatory body, responsible mainly for enforcement of Pakistan Environment Protection Act, 1997 with the focus on pollution control. The various other ministries, federal departments and agencies have roles to integrate environmental protection and poverty reduction in their programmes and projects. Some of these have natural resource focus e.g. Ministry of Water and Power, Ministry of Food Agriculture and Livestock, Ministry of Kashmir Affairs and Northern Affairs

The provincial environment departments and environment protection agencies have the lead role in the provinces for environment. The role of the planning and development department and other provincial departments is almost a mirror image of the relevant ministries.

The various tiers of the local government have to play significant role in maintaining and improving environment in their jurisdictions as explained in section 4.3 below The tiers of local government include district/city district, tehsil, town and union.

Most of the mega development authorities such as WAPDA, Capital Development Authority (CDA), Sindh Coastal Development Authority (S-CDA), housing development authorities (Defense Housing Authority, Karachi Development Authority, Lahore Development Authority, Rawalpindi Development Authority, Peshawar Development Authority, Faisalabad Development Authority) have established environmental cells or, directorates for maintaining and improving the environment.

The federal, overseas, provincial and even district chambers of commerce and industry and some of the industrial associations have dedicated staff or have nominated focal persons for the environment.

The international, national, provincial and local level civil society organizations are actively supporting the public sector initiatives, and raising environmental awareness.

There are environment related associations of law and environmental assessment professionals. These include Pakistan Environmental Law Association (PELA) and Pakistan Environmental Assessment Association (PEAA).

4.3. Devolution

The global experience of devolved governance is generally positive as it ensures participation of people in decision-making and local governance. Pakistan's devolution framework is provided by the provincial law, namely Local Government Ordinance, 2001, with National Reconstruction Bureau (NRP) playing the role of architect, guide, supporter and monitor at the national level. The level of buy-in of devolution varies from province to province and the teething problems continue to slow progress. However, consolidation and effectiveness of devolution is progressing.

The Ordinance provides that the local governments will work within provincial framework at union, tehsil, town and district/city district levels with decentralized administrative and financial authority for improvements of governance and delivery of services within their ambit.

Besides environment, the other key environment related subjects decentralized to the district government include agriculture (extension), on farm water management, soil conservation, soil fertility, farm forestry, fisheries, basic health (rural, child and women), housing, urban and physical planning and public health, rural development and transport. Other key functions of the district setup include coordination, human resource management, community organization, enterprise and investment promotion, planning and development, public health and energy (micro and for use at local community level). These functions have been grouped into 12 or more offices in a district

Most of the environment related functions in a city district may be grouped by setting up district municipal offices for their integration, development and management. The local government is authorized to levy certain taxes, fees and user charges for the specific services rendered. The local governments are also mandated to control hazardous substances, pollution, and violation of building laws and regulations.

Fourth Schedule of the Ordinance provides a comprehensive list of unlawful activities against which the local government is authorized to take action. A long list of areas in which the local government is authorized to make rules and bye laws is given in the Fifth Schedule of the Ordinance. These include animals, agriculture, boundary walls/hedges/fences and trees, building and land use control, burial and cremation places, culture, dangerous articles and offensive trades, drainage and sewerage, encroachments, environmental protection (pollution), food and markets, lease of land and buildings, gardens and open spaces, planning public health and sanitation, public safety, social welfare and community development, street and lighting, trade and occupation, transport and traffic, and water supply. A list of dangerous and offensive articles and trades is given in an Annex -III of the Ordinance for control and regulation.

4.4. Capacities

The current capacities of all tiers of local government are very low, if not non-existent, to monitor, implement, enforce and ensure compliance. A robust capacity building programme is required to address weak institutional capacities and low levels of skills and competencies. Provincial government led capacity building programmes are needed for this purpose. The Local Government and Rural Development Department can take lead in the provincial government to spear head it with support from federal ministries and provincial departments including the

EPAs, and Environment Sections of the Planning and Development Department and NGOs. The enhanced capacities would help not only in proper implementation of the environment related provisions of the Ordinance, 2001, but also in implementation of the National Environment Polcy and MTDF at the local levels for achieving the expected results of MDGs including environmental sustainability and poverty reduction.

Institutional capacities at the national, provincial, district, tehsil and union council levels to monitor and manage the environment and to link and mainstream environment are weak. The capacity for monitoring progress in environment and poverty reduction related initiatives are far weaker. The expertise of environmental impact assessment is still weak in the private and public sectors, but has improved a lot over the years.
Unfortunately, the Ordinance limits the training need for Nazims, Naib Nazims and members of the councils whereas capacity building is needed across the board for all decentralized and other offices.

5. PRSP2

5.1. Linking Environment with Economic Growth

Environmental consideration is important in development for sustaining high economic growth with equity and improving living conditions of people. Some of the environmental policy level interventions and strategic tools and considerations required in this regard are:

5.1.1. Environmental Fiscal Reforms (EFR)

Some key factors of degradation of the environment are market failure (under pricing, under-valuation), institutional failure (e.g. property rights) and policy failure (perverse incentives, deliberate under-pricing or bias). Environmental fiscal reform (EFR) is an important policy instrument that can address these failures by making greater use of tax sources, cost recovery and removing environmentally harmful subsidies. EFR refers to the introduction and application and a range of taxation and pricing measures including:

- Tax on natural resources extraction.
- Removal of environmentally damaging subsidies
- Introduction of specific product taxes, levies and user charges
- Pollution charges, and
- Reforming other taxes in favour of environment

The potential for some specific uses of EFR in Pakistan include:

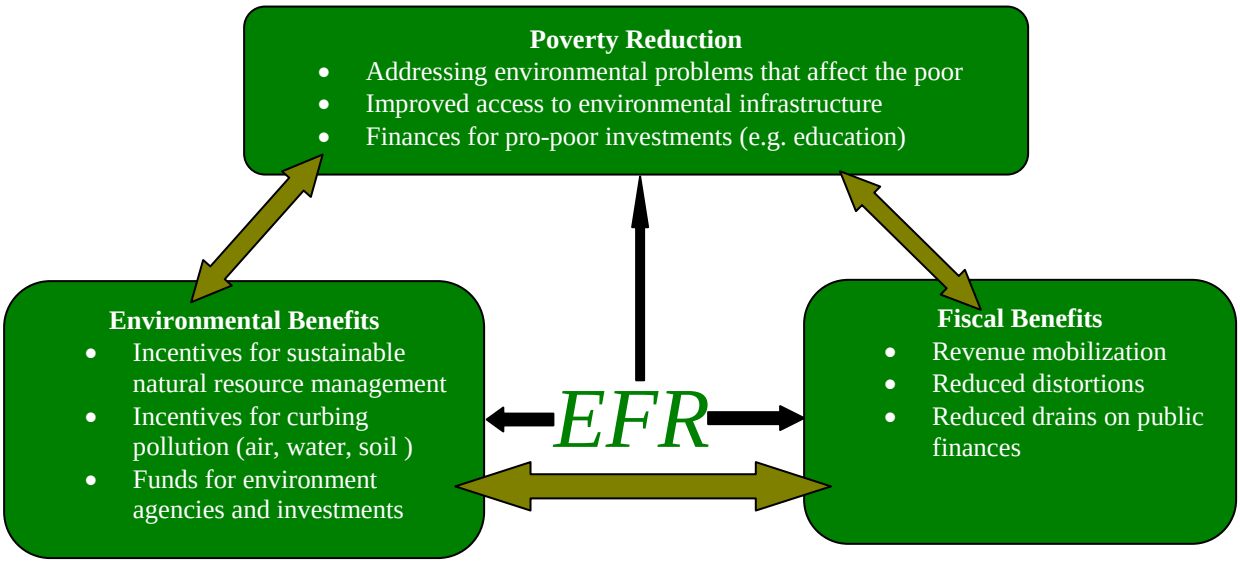
- User charges based on consumption e.g. water, energy
- Rationalization of subsidies to reduce proliferate use e.g. tube-wells and electricity
- Subsidy on substitutes e.g. clean fuels, substitutes of wood, efficient water use equipment
- Compensating the farmers for water shed management practices to reduce silting of mega dams

EFR's have an important role in poverty reduction and environment protection as under:

- Frees up financial resources for pro-poor investments
- Provides for adopting comprehensive poverty reduction strategy and sector development plans
- Corrects market failure
- Raises revenue while protecting the environment
- Range of EFR application is wide – NRM, energy
- Direct contribution of EFR e.g. water, solid waste, air

There are a few references in the WSSD Plan of Implementation on use of EFR in the context of water, energy and pollution. There are links between environmental management, poverty and the millennium development goals, which are shown in Fig.4.

Fig.4- The Benefits of Environmental Fiscal Reforms



Source: IBRD and the World Bank (2005)

Some of the other environmental safeguards in the international trade are the consideration of bio-safety; intellectual property rights; and import and export of endangered wild plants and animals, their parts, products and derivatives.

Environmental costs also need to be considered in the cost accounts and national accounts.

5.1.2. Environment Improvement, Value Addition and Export Marketing

The export targeted sectors include leather, fisheries, livestock, agriculture (including floriculture and horticulture), and handicrafts, medicinal and economic plants. Besides meeting the external requirements, there is a great potential of value addition, small and medium enterprise development and active market development in natural resource sectors.

5.1.3. Rationalization of Import and Export Duties

The use of economic tool in adjusting import and export duties to encourage or discourage import or export of certain equipments and other items, for meeting the needs of environmental sustainability could provide incentives for improvement of the environment e.g.

- Higher import duty on substances, which are ozone depleting and used exclusively in refrigeration and foam industry viz a viz-lower duty for importing substitute substances.
- It would promote monitoring of air, water, land and noise pollution if the laboratory and GIS equipment for the same is importable at low or no import duty and other taxes.
- The other candidates for such concession include CNG kits, especially for two-stroke-engine vehicles, LPG and CNG plants, machinery for hydel power stations, machinery and equipment for energy efficiency, recycling and efficient use of water, industrial effluent treatment plants and garbage disposal trucks
- The equipment used in landfills.
- Increase in import duty on raw materials and machinery used for manufacturing plastic bags may reduce their production and use.
- Higher export duty and tax on raw materials, and comparatively lower export duty and tax on the value added products would encourage the small and medium enterprises.

5.2. Mainstreaming Environment in Social, NRM and Development Sectors

The environment cum poverty reduction aspects in the social, NRM, economic and development sectors are given below in Table-1, Table-2 and Table-3 respectively.

The important considerations for improvements in the NRM sectors from the point of view of environment and poverty reduction include land tenure; social mobilization, awareness raising and capacity development of rural communities; eco-development and enterprise development; provision of alternates of deficit natural resources at affordable price; NRM sustainable use practices; enabling environment for communities and the private sector through policy, legal and institutional reform; and using the lessons learned for replication and scaling up the best practices. Poverty reduction and environmental sustainability aught to be amongst the essential criteria for programmes and projects

But the fact remain that these considerations are often missed in planning and implementation. Here are some examples:

- Housing for sanitary workers, domestic servants and very low income groups are not planned in Islamabad, which is a modern and planned city. This has resulted in slum

areas, difficulty in getting such services, very poor living conditions of slum dwellers as well as social and environmental issues.

- Displacement of owner-farmers from the rural surround of Islamabad for developing vegetable and poultry farms and allotting the acquired land to the influential persons who lacked the will, objectivity and appropriate skills to undertake poultry and vegetable farming. Instead, the capacity of the owner-farmers (who were in a much better position to undertake the same) could have been enhanced and enabling environment and incentives provided to them to achieve the results.
- One of the interventions of DERA Project supports installation of tube wells in the drought affected areas, compounding the problem instead of solving it as it added to the existing excessive pumping of ground water and its further depletion. Mostly, the rich and influential persons benefited but even the drinking water is going to be scarce for the poor in the tube well installed areas in the long term.

Table-1. Environment cum Poverty Reduction Aspects in Key Social Sectors

Sector/ Theme.	Population	Education	Health	Livelihoods, Enterprise Development	Poverty Reduction
Focus	• Reducing growth rate • HRD • Environmental awareness	• Environmental education (EE) • Education for sustainable development (ESD)	• Environmental health • Occupational health • Reproductive health	• Natural resource based enterprises (medicinal and economic plants, eco-tourism ,trophy hunting, bird and other wildlife watching) • Trekking • Small and medium enterprises	• Gender integration • Gender and environment • Women empowerment • Marginalized groups • Rural poor • Urban poor • Slum dwellers
Interventions	• Education • Women empowerment • Family planning services • Reduce child mortality • Clean drinking water • Sanitation • Awareness campaigns • Skill development at local level	• Drinking water and sanitation, hygiene (cleanliness, latrines) • Incorporate EE/ESD in curricula, training • Master trainers/teachers training • Environmental clubs in educational institutions • Student and teacher volunteers for environmental action	• Water and sanitation • Control environmental pollution (air, water, land and noise) • Safe disposal of hospital waste and solid waste • Vaccination against communicable diseases • Raise awareness	• Micro credit • Skill development • Access to technology • Improve marketing • Pollution control from enterprises e.g. poultry farms, tobacco related, coal operated • Treatment of effluents and safe disposal of waste • NRM related livelihoods • Value addition • Control obnoxious enterprises	• Water and sanitation • Livelihoods • Environmental education • Education for sustainable development • Skills development • Access to resources (land-tenure, user rights) • Equity and equality in benefit sharing

Table-2. Environment cum Poverty Reduction Aspects in Natural Resource Sectors

Sector	Water	Agriculture	Livestock and Rangelands	Wetlands and Fisheries	Forestry	Biodiversity, Wildlife and Protected Areas	Coastal and Marine
Goods and Services provided	• Major element in food production (agriculture, fisheries, wildlife, waterfowl, medicinal and economic plants ,livestock, biodiversity, coastal and marine resources) • Water for drinking and other household use. • Water for industry • Water for energy (hydel power) • Water for nature (wetlands, biodiversity, protected areas, environmental flow - delta and estuaries)	• Food (cereals, vegetables, fruits, sugar) • Cash crops (cotton, tobacco, rice, chilies) • Soil conservation • Soil fertility • Raw materials for industry • Preserve gene pool - native cultivars	• Livestock products (milk meat, wool, hides and skins) • Manure • Animal draught power • Grassing • Gene pool including native breeds and wild relatives of livestock and crops • Water recharge • Wildlife in pastures	• High protein food (fishes, shrimps, water fowl) • Early grazing • Flood protection • Thatch grasses • Maintain humidity in arid landscape • Eco-tourism (dolphin and bird watching, angling, waterfowl hunting, wetlands, boating, picnic, local culture and handicrafts)	• Timber • Fuel wood • Grazing • Medicinal and economic plants • Honey, • Biodiversity • Carbon sequestration, • Climate amelioration • Eco-tourism (county-side recreation, landscape, climate, biodiversity, protected areas, traditional life styles, picnic, education, research, hunting) • Water yield • Soil conservation	• Food (animals, plants,) • Fiber and hair of plants and animals respectively • Clothes (fur/skin) • Medicine (animals and plants) • Soil conservation • Water conservation and regular yield • Water • Eco-tourism (protected areas, nature, landscape, seascape species, picnic, education and research) • Hunting • Gene pool • Carbon sequestration	• Food • Recreation and eco-tourism • Biodiversity • Protection from cyclones • Cost effective maintenance of natural and dug out channels to harbors • Climate amelioration • Flushing by sea breeze of air pollutants from Karachi City • Flushing of industrial effluents and municipal sewer from discharge points opening directly in the sea. • Gene pool
Likely adverse impacts of development in the sector and in other sectors	• Excessive / inefficient / inappropriate use in agriculture, industry and households, resulting in ground water depletion, salinity, alkalinity and water logging	• Steep area cultivation • Early silting of mega and other reservoirs • Soil erosion, salinity, alkalinity and water logging,	• Conversion of pastures into marginal agricultural lands, • Over grazing and consequently degraded pastures • Low productivity	• Drainage for agriculture, settlements, industry and other land uses • Pollution from industrial effluents, and	• Depletion of gene pool • Conversion of forest for agriculture and other land uses • Excessive / unsustainable use	• Land use changes • Excessive /unsustainable use • Species becoming rare and endangered • Habitat degradation or loss • Pollution	• Unplanned development • Land based Pollution • Oil spill and oil tanker washing • Destruction of mangroves and

	• Pollution of water bodies and ground water by industrial effluents, municipal sewer and agricultural discharge • Warm water discharge from certain industries that changes the ecological character of water bodies.. • Reduced environmental flows due to construction of dams with impact on fisheries (yield, species, and spawning of species e.g. hilsa and mahsheer fishes), Indus dolphin, marsh crocodile , riverine forests, , delta, estuaries, agriculture, mangroves, shrimp and fish breeding, sea intrusion, drinking water, livelihoods of people • Ineffective water recharge dams (delay action dams), especially in Balochistan,	resulting in reduced soil fertility and productivity • Irrigation inefficiency • Inappropriate/ excessive use of agricultural chemicals) • Bio-safety issues • Erosion of gene pool including native crop cultivars and wild relatives of crops	and loss of livestock due to communicable diseases. • Imperfect marketing • Poor management • Gradually decreasing gene pool of pure livestock breeds • Zonosis (e.g. bird flue, rabies,) • Vulture crises due to live stock carcasses (dichlorofane used in treatment for pain)	municipal and agricultural discharges • Excessive/unsustainable fishing and hunting. • Lack of management • Change in ecological character (hydrology, species) • Introduction of exotic fish species, • Drought,	• Planting exotic trees (impact on biodiversity, allergy) • Mesquite infestation and water shortage in irrigated forest plantation • Low or no inundation of riverine forests • Reduced flow of water and sediments in the Indus Delta and mangroves • Ever increasing deficit in supply of timber, fuel wood, grazing and other NTFP for the poor.	• Inadequate management/ mismanagement • Weak enforcement of law • Cross sector impacts • Weak political will (e.g. falcon, houbara bustard) • Weak implementation of conservation conventions (CITES, CMS, WHC, CBD, CCC,CDC, Ramsar Conversion, Man and Biosphere Programme) • Weak capacities • Low investment • Lack of management of protected areas • Lack of gender integration	coastal sand bars increasing the susceptibility to higher losses from cyclone and tsunami • Excessive fishing fleet in coastal areas • Excessive fish catch • Inappropriate fishing practices • Sea intrusion in the Indus Delta, which is affecting species, habitats, water quality, agriculture, livelihoods, and has also caused salinity and alkalinity.
Suggested interventions	• Expand access to clean drinking water for all, prioritizing the poor and slums • Improve efficiency in the use of water in agriculture, industry,	• Soil conservation • Integrated pest management • Gradual increase in organic farming • Promoting and using compost	• Land use planning and development planning control • Investment in pasture development to improve productivity	• Land use planning and development planning control • Control drainage of wetlands and,	• Land use planning and development planning control • Forest area not to be converted to other land uses. • Forest landscape	• Management planning of protected areas after prioritization. • Effective management of protected areas	• Integrated coastal zone management planning • development planning control • Marine pollution control

	and urban settlements. • Monitor and control water pollution, • optimal environmental flow downstream Kotri Barrage for Indus Delta, mangroves, agriculture, wetlands and drinking water • Alternate livelihoods for the people effected by sea intrusion in Thatta and Badin Districts. • Improve water and wetland related community based eco-tourism • Women empowerment and gender integration	• Irrigation efficiency • Increase in fodder crops area • Using only treated sewerage for vegetables • Women empowerment and gender integration	• Grazing management • Vaccination against all communicable diseases • Improvement in marketing • Improvement in veterinary cover • Promote and support livestock and poultry feeds, and fodder production and use • Develop capacities and skills of livestock owners, and herd men/ women. • Women empowerment and gender integration	change in their ecological character (hydrology, species) • Pollution control with treatment of industrial effluents, municipal sewer and agricultural discharge • Control introduction of exotic fish species in natural waters • Adaptive strategy for drought • Regulate fishing and hunting for sustainability • Promote eco-tourism • Conserve endemic and native fish species • Women empowerment and gender integration	restoration • Agro forestry in blank areas in the riverine forests not receiving flood water • Enhance productivity of irrigated forest plantations • Partnership with adjoining farmers in managing roadside, canal side and rail side plantation. • Community participation in forest management • Planting of multi purpose trees, • Women empowerment and gender integration	• Recovery of endangered plant and animal populations. • Promotion and encouragement of community based conservation and eco-tourism • Public-private-NGO partnership in management of protected areas, zoos and captive breeding facilities. • Revisiting protected areas categories to accommodate (as far as possible) sustainable use by rural communities • Increased investment • Improved security for visitors • Enhanced livelihoods • Promoting use of alternates and substitutes of natural resources in case of higher demand and consequent unsustainable use. • Women empowerment and gender integration	• Conservation and promotion of cetaceans and marine turtles as well as turtle nesting beaches • Desalination plants, wind and solar energy • Developing tourism infrastructure • Women empowerment and participation • Women empowerment and gender integration

Table-3.Environment cum Poverty Reduction Aspects in the Economic Development Sectors

Sector	Industry	Energy	Mining	Communication Infrastructure	Transport	Water Development	Tourism	Housing and Settlements
Examples	• Biodiversity dependent • Large foot print industries • Green enterprises	• Renewable (hydro, solar, wind, wave, biogas, wood) • Non – renewable (fasal fuels) • Nuclear	• Minerals • Gem stones • Stone quarrying,	• Highways • Roads • Rail links • Ports (air, sea)	• Road • Rail • Shipping • Air	• Rivers • Mega dams, barrages/head works • Link canals, canals, distributaries, minors, • Small storage/ recharge dams • Tube wells • Dug wells and karez	• Nature • Culture • Religious • Mixed	• Mega cities • Other urban centers • Rural settlements
Environmental threats and nexus with poverty	• Pollution (air, water, land and noise), impacting on health of the poor, occupational health and safety of workers • Inefficient use of energy, water and other raw materials depletes resources fast and makes the products more expensive • Landscape is disfigured by the footprint industries	• Air pollution from thermal power generation and energy from fossil fuels and biomass with impact on health • Possibility of radiation effect on the health of workers in the nuclear plant (incase of accident or unsafe handling; also from nuclear waste) • Climate change (due to green house gases) • Damage to biodiversity and	• Mining and quarrying in biodiversity hotspots. • Deforestation • Pollution (air, water, land and noise), • Threats to occupational health and workers' safety • Large footprints on the landscapes • Excessive wastage • Poor working conditions for miners	• Impacts on biodiversity if a passes through protected areas and biodiversity hotspots • Soil erosion and land slides • Fragmentation of landscapes, settlements and communities • Air, water and noise pollution • Ribbon growth along roads and highways. • Negative Environmental impacts of exotic trees	• Air pollution, • Largest user of fossil fuels • Inefficient energy use • Hazy and fogy days • Respiratory and other diseases • Water pollution from washing of vehicles and oil tankers • Noise pollution	• Impact on downstream natural resources and people dependent on freshwater/sediment supply. These include riverine forests, mangroves, irrigated forest plantations, the Indus Delta, estuaries, biodiversity (species e.g. Indus dolphin, hilsa fish, mahasheer fish, marsh crocodile), and hotspots, wetlands,	• Insecurity i.e. law and order situation • Distorted image of Pakistan • Poor rural communities not benefiting much • Tourism sector is not much organized and not proactively promoting tourism • Waste generated and left by trekkers and expeditions in mountains • Inadequate facilities for	• Unplanned development creating problems of all kinds • Poor living conditions in the slums and the poor are deprived of almost all basic needs • Air ,water, land and noise pollution • Solid and hospital waste not managed • Sewerage system inadequate or non-existent

		hot spots from oil and gas exploration and exploitation • Inefficient use • Abstraction and diversion of water upstream through dams for hydropower with downstream impacts on species, agriculture, riverine forests, mangroves, the Indus Delta, estuaries, wetlands, and increase in pollution concentration levels				agriculture, drinking water, livelihoods • Higher concentration of industrial and municipal pollutants in rivers • Sea intrusion • Excessive pumping of ground water, especially in Balochistan for orchards. • Ineffective water recharge dams • Unsustainable and excessive use of water for agriculture •	tourists • Low publicity • Not much visitation to the protected areas	• Lack of zoning and planning control • Partial access to safe drinking water,
Suggested interventions	• Compliance and enforcement of NEQS • EIA of new industrial projects • Environmental audit of existing industries • Energy and water efficiency • Treatment of industrial effluents, safe disposal of solid waste,	• Maximize investment in small hydel power stations • Prefer energy from renewable sources for investment • Ensures compliance and enforcement of NEQS, • Use of energy efficient materials, transport, housing, machinery and	• Improve mining and queering practices and working conditions for miners • Improve occupational health and safety of workers, • Monitor and regulate pollution, • Avoid mining and quarrying in biodiversity	• Environmental impact assessment of projects, • Enforce development Planning control to control ribbon growth along the highways and roads. • Prioritize linking of poor rural area with markets	• Tuning of vehicles , • Control and regulation on washing of vehicles and oil tankers • Phasing out old and inefficient vehicles • Ensure traffic plan and traffic police for urban areas • Use of clean fuels	• EIA of water development projects • Necessary environmental flows , downstream of dams and barrages • Alternate livelihoods to the poor affected by sea intrusion, salinity and alkalinity in the Indus Delta due to construction of	• Promotion of community based countryside recreations and eco-tourism • Promotion of protected areas, outstanding landscapes, seascapes, fascinating wild animals and plant species, wetlands, beaches and other natural	• Planning as a pre-requisite for any new housing/settlement • Prioritization of water and sanitation for investment • Housing for sanitary workers, domestic servants and low income groups in all settlements.(Isl

	• Certification of industries for ISO 9000 series and ISO 14000 series • Plan and manage environment friendly industrial estates • Develop and enforce zoning regulations in settlements for industries, if established in and around. • Women empowerment and gender integration, specially small and medium enterprises • Awareness raising • Capacity building	equipment • Use of clean fuels (natural gas, CNG-LPG, solar wind, wave and biogas) in transport, houses, businesses and industry, • EIA of energy projects • .Women empowerment and gender integration • Awareness raising • Capacity building	hotspots, since these provide valuable goods and services to the poor • EIA for mining and quarrying projects • Reduce waste • Treat the abandoned quarry sites and mining pits		• Reduce sulfur contents in diesel and furnace oils • Control overloading • Expand the network of CNG stations and CNG operated vehicles.	mega dams upstream • Improve design of water recharge dams • Reduce water extraction and diversion with efficient use	areas as well as cultural properties, • Improving security situation and soft image of the country • Investment by the private sector in developing tourism facilities and infrastructure • The public sector to provide the necessary enabling environment and incentives • Women empowerment and gender integration • Awareness raising • Capacity building	amabad City lacks such provision) • Women empowerment and gender integration • Awareness raising • Capacity building

5.3. Priorities of Environmental Sustainability for PRSP2 and MTDF

- Safe drinking water to continue as a priority in PRSP2.
- Implementation of the National Environment Policy and MTDF
- Improved coordination between different levels of government
- Strengthening institutional capacity of relevant agencies of the federal and provincial government and of all tiers of the local government.
- Developing the competencies of human resource for playing their roles effectively.
- Creation of enabling environment for the private sector and civil society for enhancing their contribution to environmental sustainability.
- Increasing the extent and scale of environmental impact assessment of the public and private sector projects; improvement in information dissemination and public hearing process of EIA; and monitoring of projects for mitigation measures during implementation.
- Undertaking Environmental Fiscal Reforms (EFR)
- Multiple increases in the number of CNG stations and number of public and private vehicles converted to CNG; and import of CNG operated buses and other heavy vehicles.
- Construction and maintenance of combined industrial pollution treatment plants and municipal sewer treatment plants.
- Development and maintenance of proper land fills for urban areas.
- Supporting the community based eco-tourism
- Support for developing the natural resources related small and medium enterprise development.
- Encouragement to Clean Development Mechanism (CDM) projects regarding climate change.
- Institutionalization of NRM related best practices and scaling up of successful projects to programmes.
- Promoting energy conservation
- Supporting irrigation efficiency
- Higher levels of investment in water recharging and water shed management
- Scaling up integrated pest management practices
- Prioritizing biodiversity conservation and protected areas for investment, planning and management with community participation.
- Promoting the Education for Sustainable Development (ESD)
- Promoting the understanding of gender-environment nexus and gender integration
- Integrating/mainstreaming environmental sustainability and poverty reduction in policies, plans, programmes and projects of all sectors, especially development sectors - industry, mining, and water and communication infrastructure and in land based production sectors

– agriculture, water, livestock, rangelands, forestry, coastal and marine, wetlands and fisheries.

- Enhancing implementation of multilateral environmental agreements (MEAs), WTO.
- Supporting change in land tenure in favour of poor rural communities from de-facto communal ownership of land and natural resources to de-jure ownership of the same.

5.4 Institutional Strengthening and Competency Development

The efforts in institutional strengthening have mostly remained confined to the national level with mixed results. NWFP among the provinces is fortunate to get best attention with commensurate results. Limited success has been achieved in other provinces with limited input. The local governments have been targeted for capacity building only in the districts of Chitral, Abbotabad, Dera Ismail Khan, Gawadar, Badin and Kila Saifulla, in the context of developing the integrated district vision. Most of the other districts lack environment related capacities. A lot more efforts have gone into competency development of individuals working in the federal ministries and departments and in the provincial organizations, academia and media. Unfortunately, the enhanced capacities have not translated into improvement of environment to the same extant. It seems that the generic and systemic problems are barrier to this. For instance there is very high turn over rate. Often expertise and trainings are not considered in the placement decisions. The incentives and motivations for improving performance are also lacking in the public sector.

6. Implementation and Monitoring

6.1. Implementation Arrangements

PRSP2 is relevant all levels of government i.e. federal, provincial, district, city districts, tehsil, town and union. The mainstreaming of environment is required in all social, NRM, economic and development sectors. Effective coordination is a vital need.

MOE is best suited to take up leadership and coordination role. The ministry can achieve better results if it performs the coordination, catalytic, support and monitoring role, rather than implementing action oriented projects for which the departments and agencies under it or in the provinces are more appropriate. These include Pak EPA, ENERCON, NCCW, ZSD, PFI and provincial departments. Alternately and as a preferred option, the trend may change form nationally executed projects to the provincial projects. This will free some of the capacities to focus on big picture and to reach out to the key ministries and provincial governments.

Prioritization of intervention and giving lead on specific initiatives to other ministries and federal and provincial departments is another need to deploy the limited resources for maximizing the results.

Higher level of support from the Environment Section in Planning and Development Division can help to improve the effectiveness of the MoE, if the two work together closely under any formal administrative arrangements. This section can lead on and coordinate with all other sections in the Planning and Development Division and the environment sections in the provincial Planning and Development Departments for mainstreaming environment in the sector

policies, plans (MTDF), programmes and in ensuring IEE and EIA of all major public sector projects. MoE can also get support of the Environment Section in rationalizing resource allocation for the priority initiatives and interventions.

Pak EPA has the lead and coordination role in working on environmental pollution, EIA of major public and private sector projects, and prioritization and handling of important environmental disasters and issues. There is a great potential for the involvement of the Ministry of Local Govt. and Rural Development and of the provincial Local Government and Rural Development Departments to support the local governments in performing their environment related roles.

There is also scope for strengthening partnership with the private sector and civil society organizations. Accomplishment of PRSP and MTDF will require enhanced capacities especially at all tiers of local government, besides improved coordination. Increasing the number of staff will not be useful, as it would only make the management wieldier. Rather skills, professionalism and quality than quantity can provide results.

6.2. Monitoring and Reporting the Indicators

An exhaustive list of indicators is given at Annex-I. All of these merit considerations for use in the long term with enhanced capacities to assess the impact of environment related interventions on environmental sustainability and poverty reduction. Currently, the capacity for such monitoring is rather weak.

Some of these indicators are suggested for PRSP2, based on the existing data collection parameters, and comparative ease and cost effectiveness in collection of new data for the indicators. These indicators focus on improvement of environment and have direct relationship with the results of poverty reduction. These are given below:

Preferred Indicators for Environmental Sustainability that have Direct Impact on Poverty Reduction

Water

- Percent increase in the number of households having access to safe drinking water(separately for rural and urban areas)
- Percent increase in the number of sewerage, industrial effluent treatment plants separately.
- Stability or Percent increase in the ground water table in select water deficit areas in the provinces.

Agriculture

- Percent increase in the area under organic farming
- Percent decrease in the vegetable area irrigated by un-treated sewage or industrial effluents.
- Percent increase in the production of compost.

- Percent decrease in the area affected by salinity, alkalinity and water logging.
- Percent decrease in the old stocks of pesticides.

Livestock and Rangelands

- Percent of livestock vaccinated against communicable diseases
- Percent increase per unit in the yield of livestock
- Percent increase in the volume of livestock and poultry feeds produced.

Forestry

- Stability or Percent increase in the area and growing stock of forests and irrigated (block and linear) forest plantations (FAO Annual Forest Assessment Reports).
- Percent increase in the quantity of non timber forest products (NTFP) harvested on sustainable use criteria in select areas.
- Percent increase in the area reforested.

Coastal and Marine

- Percent increase in the coastal area covered by the integrated coastal zone management planning.
- Stability or Percent increase in mangrove area.
- Stability or Percent decrease in sea intrusion.
- Percent decrease in the area going out of cultivation in the coastal districts of Sindh due to sea intrusion.

Biodiversity and Protected Areas

- Percent increase in the land of protected areas
- Percent increase in the land of protected areas covered by the management plans.
- Percent increase in the land of protected areas managed effectively.
- Percent increase in the number of national and foreign visitors to the protected areas.
- Percent increase in the income from trophy hunting
- Percent increase in investment (expenditures) on protected areas and biodiversity.

Eco-tourism

- Percent increase in the number of national and foreign tourists (separately)
- Percent increase in the national income from tourism
- Percent increase in the income of select rural communities from eco- tourism

Industry

- Percent increase in the number of combined industrial effluent treatment plants
- Percent increase in the number of industries participating in the SMART programs of Pakistan Environment Protection Agency.
- Percent increase in the number of EIAs of public sector and private sector projects.
- Percent increase in the number of strategic environment assessment (SEA) of policies, plans, programmes and laws.
- Percent increase in the number of cases filed and the number of cases decided by the Provincial Environment Tribunals.

Energy

- Percent increase in investment (expenditures on small hydel power units).
- Percent decrease in the sulfur contents of diesel oil and furnace oil imported.
- Percent increase in the number of energy saver bulbs sold.
- Percent increase in the volume of natural gas used by industrial units

Mining

- Percent decrease in the number of mine accidents.
- Percent decrease in mining and quarrying in protected areas.
- Percent decrease in number of miners injured or died in mine accidents

Housing and Settlements

- Percent increase in the number of cities, towns and rural areas having proper landfill facilities to manage solid waste fully or partially.
- Percent increase in volume of solid waste managed properly in select cities.
- Percent increase in the quantity of compost prepared from the organic solid waste from urban settlements.
- Percent decrease in the quantity of plastic bags of black colour or of small thickness.
- Percent increase in the quantity of hospital waste managed from the public sector and private hospitals (formal and non formal)
- Decrease in number of hazy days in Islamabad/Rawalpindi and fogy days in Lahore and Quetta Cities.

Transport

- Percent increase in the number of vehicles using CNG (separately for light and heavy vehicles)
- Percent decrease in the number of violation cases regarding vehicle emissions.

Education

- Percent increase in environmental clubs in the educational institutions.

Health

- Percent decrease in the number of patients suffering from communicable diseases (separately for water born, air born and others)
- Percent increase in vaccination against the communicable disease

Disasters

- Comparative percent increase in the extent and scale of support to the victims of the disaster(s)e-

Annex-1

Comprehensive List of Indicators for Environmental Sustainability that have Direct Impact on Poverty Reduction

Water

- Percent increase in the number of households having access to safe drinking water (separately for rural and urban areas)
- Percent increase in the number of sewerage, industrial effluent treatment plants separately.
- Percent increase in the volume of sewer and industrial effluents treated before discharging into water bodies.
- Stability or percent increase in the ground water table in select water deficit areas in the provinces.
- Stability or improvement in the quality of ground water in and around select urban and industrial areas.
- Percent increase in investment on building or strengthening flood protection embankments
- Percent Decrease in terrestrial storage of untreated saline discharges, sewage and industrial effluents.

Watersheds

- Percent increase in the watershed area of the settlements in mountains under sound management

Agriculture

- Percent increase in the yield of select crops per unit area.
- Percent decrease in the water used per unit yield of select crops.
- Percent increase in the area under organic farming
- Percent increase in the income of organic farmers.
- Percent decrease in the use of agricultural chemicals (fertilizers, pesticides and herbicides) per unit yield of select crops (cotton, sugarcane, rice, vegetables, fruits)
- Percent decrease in the cost of production of select crops per unit area based on less use of agricultural chemicals and efficient irrigation.
- Percent increase in the area planned for cultivation of cash crops and perishable crops to safeguard appropriate returns to the farmers.
- Percent decrease in the vegetable area irrigated by un-treated sewage or industrial effluents.

- Percent increase in the production of compost.
- Percent decrease in the wastage of perishable crops and fruits due to food processing and area planned for cultivation separately.
- Percent increase in income from food processing and value addition of perishable crops and fruits.
- Percent increase in area in the native cultivars (for gene conservation for the future)
- Percent decrease in the area affected by salinity, alkalinity and water logging.
- Percent decrease in the steep area (>45 degrees) under cultivation.
- Percent decrease in the old stocks of pesticides.
- Percent increase in the quantity of certified seeds of high yielding varieties sold to farmers.

Livestock and Rangelands

- Percent decrease in milk yielding livestock of high quality slaughtered (when dry) in Karachi City.
- Percent of livestock vaccinated against communicable diseases
- Percent increase in the income of farmers from livestock products
- Percent increase in the number and kind of high quality livestock of pure indigenous breeds (gene pool) and cross breeds maintained.
- Percent increase per unit in the yield of select livestock
- Percent increase in the productivity of rangelands/ pastures in select areas.
- Percent increase in the area under fodder crops.
- Percent increase in the volume of livestock and poultry feeds produced.

Forestry

- Stability or percent increase in the area and growing stock of forests and irrigated (block and linear) forest plantations (FAO Annual Forest Assessment Reports).
- Percent increase in the yield of timber, NTFP, and economic value of environmental services (water, biodiversity, carbon sequestration, climate amelioration, tourism) provided by the select forests in the various eco-regions.
- Percent increase in the quantity of non-timber forest products (NTFP) harvested on sustainable use criteria in select areas.
- Percent increase in the income of people from NTFP in select areas.
- Percent increase in the area reforested.

Coastal and Marine

- Percent increase in the number of visitors to the beaches, mangroves and other coastal areas for recreation.

- Percent increase in the income of those providing services at the beaches and other coastal areas to the visitors.
- Percent increase in the coastal area covered by the integrated coastal zone management planning.
- Percent increase in the coastal area managed in accordance with management planning and development planning control.
- Stability or percent increase in mangrove area.
- Stability or percent decrease in sea intrusion.
- Percent decrease in the area going out of cultivation in the coastal districts of Sindh due to sea intrusion.
- Percent increase in the type and extent of natural resource- based enterprises (e.g. medicinal plants)

Biodiversity and Protected Areas

- Percent increase in the land for protected areas
- Percent increase in the land of protected areas covered by the management plans.
- Percent increase in the land of protected areas managed effectively.
- Percent increase in the land of protected areas re-designated to higher categories of protection and sustainable use.
- Percent increase in the number of national and foreign visitors to the protected areas.
- Number of natural areas or mixed natural and cultural areas or cultural properties designated as World Heritage Ssites and Man and Biosphere Reserves
- Percent increase in the number of rural people benefiting from protected areas directly and indirectly.
- Number of species and populations of endangered species(dolphins, marsh crocodile, big and small cats, other carnivores, fur bearers, wild ass, marine turtles, endangered resident and migratory birds, endemic fishes,) recovered.
- Number of species recovered and farmed for trade, on sustainable basis, and tourism (marsh crocodile, gavial, ungulates, fresh water turtles)
- Percent increase in the number of exotic birds bred-in controlled-captivity exported and Percent increase in foreign exchange earning.
- Percent increase in the income from trophy hunting
- Percent increase in investment (expenditures) on protected areas and biodiversity

Eco-tourism

- Percent increase in the number of national and foreign tourists (separately)
- Percent increase in the number of tour handling agencies and tour guides
- Percent increase in the national income from tourism

- Percent increase in the income of select rural communities from eco- tourism

Industry

- Percent increase in the number of combined industrial effluent treatment plants
- Percent increase in the volume of effluents treated.
- Percent decrease in patients of work-related diseases in the industrial and mining labour.
- Percent increase in the number of industries participating in the SMART Programme of Pakistan Environment Protection Agency.
- Percent increase in the number of EIAs of public sector and private sector projects.
- Percent increase in the number of strategic environment assessment (SEA) of policies, plans, programmes and laws.
- Percent increase in the number of cases filed and the number of cases decided by the Provincial Environment Tribunals.

Energy

- Percent increase in investment (expenditures on small hydel power units).
- Percent increase in the number of households using clean fuels (natural gas, bio gas, solar and wind energy)
- Percent decrease in the sulfur contents of diesel oil and furnace oil imported.
- Percent increase in the households using energy efficient stoves.
- Percent increase in the number of energy saver bulbs sold.
- Percent increase in the energy efficient houses.
- Percent increase in the volume of natural gas used by industrial units
- Percent decrease in oil and gas exploration/wells in biodiversity hot spots

Mining

- Percent decrease in the number of mine accidents.
- Percent decrease in mining and quarrying in protected areas.
- Percent reduction in wastage in marble and gem quarrying
- Percent decrease in number of miners injured or dead in mine accidents

Housing and Settlements

- Percent increase in the number of cities, towns and rural areas having proper landfill facilities to manage solid waste fully or partially.
- Percent increase in volume of solid waste managed properly in select cities.

- Percent increase in the quantity of compost prepared from the organic solid waste from urban settlements.
- Percent decrease in the quantity of plastic bags of black colour or of small thickness.
- Percent increase in the number of cities, towns and villages rated for zoning, cleanliness (solid waste and sewer), traffic flow, and air quality and noise levels.
- Percent increase in the quantity of hospital waste managed from the public sector and private hospitals (formal and non formal)
- Percent decrease in accidents related to hazardous substances (in storage, transport, use)
- Decrease in number of hazy days in Islamabad/Rawalpindi and fogy days in Lahore and Quetta Cities.

Transport

- Percent increase in the number of vehicles using CNG (separately for light and heavy vehicles)
- Percent increase in old vehicles phased out.
- Percent decrease in the number of violation cases regarding vehicle emissions.
- Percent increase in the number of settlements served by traffic plan and traffic police
- Percent increase in replacement of animal driven or manual transport/careers with automotive transport.

Education

- Percent increase in the primary, secondary, tertiary, vocational training educational institutions and in-service training institutes/centres teaching environmental education or education for sustainable development.
- Percent increase in environmental clubs in the educational institutions.
- Success in improving the quality of education, especially in the public sector institutions.

Health

- Percent decrease in the number of patients suffering from communicable diseases (separately for water born, air born and others)
- Percent decrease in number of patients suffering from work related diseases in industry, mining and transport.
- Percent increase in vaccination against the communicable disease

Disasters

- Percent decrease in the man-influenced disasters e.g. oil spill, flood
- Number of small and big oil spills managed and percent decrease in the damage viz a viz volume, contents and speed of oil spilled, currents, and distance from the shore, settlements, coastal facilities and other resources.

- Percent decrease in the extent and scale of damage to human beings, livestock, land and other properties separately by comparable earthquake(s), cyclone(s), tsunami, flood(s) and drought
- Comparative percent increase in the extent and scale of support to the victims of the disaster(s)
- Extent and scale of success in adapting to climate change, and managing drought, cyclone, oil spill, tsunami, flood and earthquake in agriculture, livestock, forestry, fisheries, tourism, housing and settlement, biodiversity, health and water sectors.