

**A CRITICAL REVIEW OF ENVIRONMENTAL  
GOVERNANCE IN PAKISTAN**

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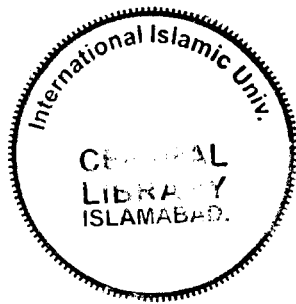
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## A Critical Review of Environmental Governance in Pakistan

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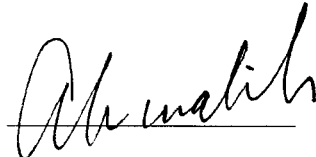
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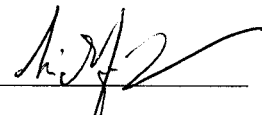
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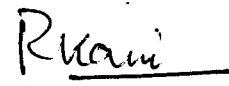
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(30<sup>th</sup> October, 2009)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

**Dedicated To  
My**

**Loving Father**

*And*

**Mother (Late)**

## **ABSTRACT**

Environmental movement in Pakistan started in 1992 after becoming the signatory to Earth Summit 1992. Pakistan developed its first environmental law in 1983 known as Pakistan Environmental Protection Ordinance (PEPO 1983). Pakistan Environmental Protection Council (PEPC) and Environmental Protection Agencies were established at federal and provincial levels, for the implementation of 1983 ordinance and to manage and control different environmental activities as assigned by the ordinance. PEPO 1983 was replaced by Pakistan Environmental Protection Act 1997. PEPC, EPAs, Provincial Sustainable Development Fund and Environmental tribunals were established under the PEPA 1997 for the proper implementation of PEPA 1997. National Environmental Policy of Pakistan (NEP) was made in 2005 to achieve the target of sustainable development by environmental protection and conservation. For the implementation of NEP, legislative and institutional arrangements in the form of PEPA 1997, Pak-EPA and provincial EPAs and many other institutions are present in the country. Beside these environmental institutions, NEP requires strong institutional and legislative arrangements in the different sectors of environment e.g. agriculture, forestry, energy, biodiversity, water supply and sanitation, waste management and air pollution etc. NEP also addresses some cross sectoral issues like environment and health, environment and education etc as NEP provides separate guidelines for each sector mentioned above. Present study is conducted with the aim to provide an input for the improvement of environmental governance in Pakistan. The main objectives are to strengthen the different sector

institutions to make them adoptive to implementation of NEP and to fill the coordination gaps among the environmental and other related sectors (agriculture, forestry, energy, biodiversity, water supply and sanitation, waste management and air pollution etc). Five important sectors addressed by the NEP are studied separately. The existing governance structure of each sector is elaborated somewhat in detail so as to identify flaws and problems prevailing in each sector along with some possible suggestions. Each sector addressed by the NEP is needed to be strengthened in line with NEP guidelines to insure the proper implementation of NEP in the country. By just discussing the PEPC and EPAs, we cannot achieve the targets set by the NEP as it provide separate guidelines for each sector which are of least concern with environmental institutions. So implementation of NEP would be possible only by the collective efforts of all the stakeholders directly or indirectly related with environmental sector.

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**Jamshaid Iqbal**

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## CHAPTER 1

### INTRODUCTION

Governance as defined by Stephen (2002) is the coordination and control over different economic or social activities through some institutions, authorities and association. (Stephen, 2002.). Decisions are made and implemented through some administrative, political, economic or social processes. The study of all these processes and institutions comes under the study of Governance.

Under the Environmental Governance deals with management of the environmental resources. It describes the ways through which goals and priorities of natural resource management are set and acted upon. All the formal and informal rules of decision making process are studied under the Environmental Governance. It requires an appropriate legislative mechanism.

According to Dr Adlan(1999), environmental Governance has become an important tool of modern political system. Environmental concerns have gained an important place in political decision making process. Now a days, it is a common opinion that long term stability of a political system is dependent upon proper management of environmental resources. Natural resources are often degraded politically which results number of administrative problems like migration of rural communities to cities. Moreover government policies also effect the environment

directly or indirectly. So Environmental Governance is a broad term which also deals with many cross sectoral issues. To achieve the goal of sustainable development, it is necessary to explore all the aspects of Environmental Governance with more broader view.

Environmental considerations started in the world with the rapid increase in population, industrialization and other developmental activities. Stockholm Declaration is perhaps the first regular step towards environmental concerns, carried out in a United Nation Conference in 1972. Stockholm declaration mainly emphasized that environment and development are inter related to each other. Moreover government of a country was held responsible for environmental protection and to create a balance between development and environment.

After Stockholm declaration of 1972, an environmental movement started in the world with serious efforts. In 1980, World Conservation Strategy was developed, in 1982, World Charter of Nature was made, and World Commission on Environment and Development was framed in 1987. Caring for the Earth 1991 and then in 1992, Rio Declaration played an important role to give a proper direction to the environmental movement in the world. Brundtland Commission of 1987, first time introduced the term Sustainable Development. Agenda-21 was an important outcome of Rio Declaration. It suggests practical actions to be taken to achieve the target of Sustainable Development. Most of recommendations of Agenda-21 are reflected in Environmental Laws of different countries.

Although Pakistan promulgated its first environmental law, Pakistan Environmental Protection Ordinance (PEPO) in 1983, Pakistan Environmental

Protection Council (PEPC) was established in 1983, Pakistan Environmental Protection Agency (Pak-EPA) was established in 1985 and defecto Environmental Policy in the form of National Conservation Strategy (NCS) was launched in 1984, but regular environmental concerns started in Pakistan after Rio declaration 1992. In 1997, Pakistan Environmental Protection Act (PEPA 1997) took over the Pakistan Environmental Protection Ordinance 1983. PEPA 1997 establishes the provisions for environmental protection, conservation, rehabilitation and improvement, pollution control and sustainable development. Following institutions are established for the implementation of PEPA 1997.

Pakistan Environmental Protection Council (PEPC) (Sec.3 of PEPA 1997); as a policy making body. Main functions of the council are to implement the law, to approve environmental policies, to approve National Environmental Quality Standards (NEQS), to provide guidelines for protection and conservation of biodiversity and renewable and non renewable resources, to integration of sustainable development plans into national development plans and policies, consider the National Environmental Report and to give directions to concerned agencies to implement projects to achieve the objectives of the Act (Sec. 4 of PEPA 1997).

Pakistan Environmental Protection Agency (Pak-EPA); to implement policies approved by PEPC and to initiate environmental legislation, to provide guidance on environmental matters. It also approves the courses, topics and books for environmental education. It may undertake inquiries or investigations into environmental issues on complaints (Sec. 6 (2) (a) of PEPA 1997).

Provincial Environmental Protection Agencies (Sec. 8 of PEPA 1997); to act according to the powers delegated under sec.26 of the PEPA 1997.

Provincial Sustainable Development Funds (PSDF) (Sec.9 of PEPA 1997); to provide the financial assistant for the environment related projects and programs.

Besides these institutions, many reforms have been started in Pakistan and different environmental laws, policies, plans and programs are available for protection and conservation of environmental resources. In 1992 an important step was taken in the form of National Conservation Strategy (NCS, 1992). NCS deals with fourteen important areas. Later National Environmental Action Plan (NEAP) was developed suggesting the government to focus on four important areas; clean air, clean water, waste management and ecosystem management.

National Environmental Policy of Pakistan (NEP) was launched in 2005 to achieve the target of sustainable development through environmental protection, conservation and rehabilitation (NEP, 2005). NEP provides the separate guidelines for different sectors of the environmental concerns like, water supply and management, energy efficiency and renewable, agriculture and livestock, forests and plantation, biodiversity and protected areas, air quality and noise, climate change and ozone depletion and pollution and waste management. Along with environmental sectors, policy also discusses some cross sectoral issues closely related with sustainable environmental management like population and environment, gender and environment, health and environment, trade and environment, poverty and environment and environment and local governance.

For its implementation, policy suggests the following instruments;

- Development planning should be integrated with the environment
- Formulation and implementation of Legislation and to develop regulatory framework
- Capacity development of different related institutions
- To introduce and use the fiscal and market based instruments
- Awareness of general public through education and training.
- Joint venture of Government and private sector

Despite these institutions, legislations and policies, in Pakistan the environmental degradation is occurring with rapid pace. According to Dr Khan, Pakistan has an effective institutional mechanism with poor Governance and unable to provide proper checks and balances to control the environmental pollution.

According to Dr Khan Sustainable development and environmental protection should go side by side. Dr Khan focuses on restructuring of existing environmental institutions and reviewing of environmental laws and policies. A major change in national policies is required and it is necessary that national policies and plans should reflect the environmental concerns.

As discussed earlier Pakistan environmental Protection Act was developed in 1997 and NEP was made in 2005. There is a big gap of about eight years in the ages of law and policy. Actually this age gap is the major constraint for the implementation of NEP under the existing legislative arrangements of the country. Under these circumstances a possible thinking may be that NEP should be revised in line with prevailing legislative arrangements in PEPA 1997, but practically it was impossible, as policies are made to address the current situations of a particular sector

or organization to achieve some specific objectives but laws are more general in their context. Under these situations we can not expect from law to provide all necessary legislative arrangements for the implementation of NEP. If we have a critical look over the instruments of policy implementation as suggested by the policy itself, we will come to conclusion that most of the instruments are directly related with environmental sector of Pakistan or in other words, Ministry of Environment and its related institutions are responsible for the implementation of NEP. Whereas policy provides the separate guidelines for different sectors e.g. agriculture and livestock, energy and renewables, forestry and plantation, water supply and management and biodiversity etc. All these sectors (as addressed by NEP), have their own administrative, legislative and institutional set up which is developed to achieve the targets of respective sectors. Again we come towards the NEP guidelines provided for different sectors. For example, for agriculture and livestock sector, policy provides a guideline "to promote high productivity livestock". No environmental institution can directly deal with this issue of promoting high productivity livestock. It is the responsibility of livestock department.

Regarding functions of Pak- EPA, preparation of national policies under the supervision of PEPC, is one of the main functions of the Pak-EPA. (Sec 6, sub section 1 and clause b of PEPA 1997). Moreover according to sub section 6 of section 5 of PEPA 1997, Federal Government is responsible to set up sector wise Advisory Committees comprising the members from relevant sectors, educational institutions and NGOs.



Only if the above mentioned two provisions of PEPA 1997 are implemented properly, the problem of implementation of NEP in each sector will be solved. But unluckily Government of Pakistan could not establish such successful advisory committees in relevant sectors. Under these circumstances it is necessary to study and analyze each sector discussed by NEP so as to identify the administrative, legislative and institutional flaws in relation to implementation of National Environmental Policy of Pakistan, 2005.

The present study focuses on the five key environmental sectors, water supply and management, energy efficiency and renewables, agriculture and livestock, forestry and plantation and biodiversity and protected areas to identify the administrative, legislative and institutional imperfections in these sectors so as to suggest some proper arrangements for individual sector to implement the National Environmental Policy of Pakistan having a goal of sustainable development through environmental protection. Moreover one can get detailed information about the each sector discussed, regardless of environmental considerations, which may explore further research options for each sector.

### **1.1 Aim of the study**

To provide an input for the improvement of environmental governance in Pakistan

### **1.2 Objectives of the study**

- To provide an input for the improvement of administrative, legislative and institutional capacity status of different environmental sectors in the context of

environment to properly implement the policy guidelines proposed for each sector.

- To provide an input to improve the coordination in different environmental sectors (water supply and management, energy efficiency and renewables, agriculture and livestock, forestry and plantation and biodiversity and protected areas) and environmental institutions (PEPC, Pak-EPA).
- To suggest an applicable and practical frame work of governance for the proper implementation of National environmental policy, keeping in view the socioeconomic conditions of Pakistan.

### **1.3 Framework of thesis**

After this introduction the next chapter (Chapter 2) presents and discusses the need for studying the different sectors like water supply and management, energy, agriculture, forestry and biodiversity (literature review). From there we move on the next chapter “Methodology” (Chapter 3) which illustrates methods and sources of data collection. Next chapter “Findings” (Chapter 4) presents a comprehensive governance structure of each sector studied for the present research along with NEP guidelines for each sector. In chapter 5 (Results and Analysis) sector wise results and analysis are presented based on findings. After that in Chapter 6(Discussion and suggestions) each sector is discussed in the light of results obtained from each sector and some suggestions are given for the improvement of existing structure of governance. At the end final conclusions are presented.

#### **1.4 Limitations of the study**

- The present study area is so important that all the environmental sectors and cross sectors should be covered but because of time constraints the study was limited to only five important environmental sectors water supply and management, energy efficiency and renewables, agriculture and livestock, forestry and plantation and biodiversity and protected areas.
- Each sector discussed in the study has a complicated institutional and administrative structure. So only important and environment related structure of the sectors were studied.

## CHAPTER 2

### LITERATURE REVIEW

Since the establishment of Pakistan Environmental Protection Ordinance 1983, the first piece of environmental legislation and formulation of National Conservation Strategy 1992 (NCS) of Pakistan, the first regular policy of Pakistan in the field of environment, the scholars and scientists have been continuously adding their research based findings and valuable criticism for the improvement of environmental situations in Pakistan.

Since the promulgation of Pakistan Environmental Protection Ordinance 1983 up to a period of nine years till 1992, when Pakistan took part in Earth Summit 1992, environmental concerns in Pakistan could not get momentum as discussed in a report, “environmental concerns-Pakistan scenario” (2005). The report highlights the poor performance of environmental institutions like Pak-EPA and Pakistan Environmental Protection Council (PEPC) during this period from 1983 to 1992. Pakistan took part in Earth Summit of Rio De Janeiro in 1992 and became its signatory and of many other international environmental agreements afterwards as discussed in the report “environmental concerns-Pakistan scenario” (2001). According to the report this was the starting point of environmental concerns in Pakistan.

NEP, 2005 sets the targets of protection and conservation of environment and sustainable development in the country. These targets can not be achieved by mere strengthening the

institutions directly under the Ministry of Environment and established under the PEPA 1997, Pak-EPA, PEPC and PSDF etc. This is a joint effort by all the stakeholders directly or indirectly related with environment. The main problem is of coordination of environment with other development activities. Many institutions were established in different sectors during and before the period from 1983 to 1992 and a number of legislative and policy reforms undertaken during this period. National Energy Conservation Center (ENERCON) to manage the energy conservation in Pakistan was established in 1987, Pakistan Agricultural Research Council (PARC) was set up in 1981 with the main function of conducting and coordinating the research activities in agriculture sector, Agricultural Price Commission (APCom) and Pakistan Forest Research Institute (PFI) were established in 1981 and 1948 respectively to manage the agriculture marketing and research in forest sector. Almost all these institutions nourished under their own administrative and jurisdictional set up with little or no environmental considerations. Unless the administrative and legislative framework of institutions other than those established under PEPA 1997 (EPAs, PEPC, PSDF, Environmental Tribunals) is studied and analyzed, it will be quite difficult to achieve the goal of environmental protection and sustainable development. This may be the way we can coordinate environment with other developmental activities in the country. The idea of coordination of environment and development is not new one, but the question is how this coordination is possible?

While discussing the nature of rules, Lubna Hassan (2001) write that rules are made by human to achieve some objectives and later institutions are shaped on the basis of set objectives. Hence if rules have been made to achieve certain objectives, then there should be proper institutional arrangements to properly achieve the objectives. Further discussing

Lubna Hassan (2001) make this idea clear that if the government has set some objective for the forestry sector then a comprehensive institutional set is required to achieve the objectives set by the Government. We elaborate the idea by discussing the term “objectives”. Rules as suggested by Lubna Hassan (2001) may be formal or informal. Formal rules are man made and informal rules nourish and develop with the passage of time and the represent the code of conducts over a long time and are little effected by the changes in society. Hence the in formal rules are much helpful to design the interactions in society. Specific objectives will lead to the formulation of specific rules and general objectives will develop some general rules. The idea of general objectives may help to formulate the multidimensional rules and regulations by different sectors of environment addressing not only the specific sector but also the environmental considerations with in the sector. A comprehensive study of prevailing institutional arrangements of different environmental sectors (Agriculture, energy, forestry etc) will be helpful to understand the underlying rules and regulations and hence the objectives. Surely the objectives are needed to be redefine in accordance with environmental concerns and NEP guidelines provided for each sector.

A comprehensive legal and regulatory framework has its basis in the principles of justice and equity, a system that treats everyone equally (Akhtar 2005). Exploring the idea of a justice and equity based system Akhtar (2005) considers it a system evolved in a consistent manner to meet the needs and aspiration of people. The basic principles of equity and justice have their roots in almost all legislations and policies addressing environmental protection and conservation. As discussed by Akhtar (2005) the presence of law by itself does not guarantee a well governed state. It is access to justice and the interpretation of the statutes leading to proper enforcement and implementation of laws and regulations that makes them

accepted and effective, and encourage the people to accept the rule of law. As discussed by Lubna (2001), without enforcement a rule is meaningless. According to Lubna enforcement may be voluntary or it may have involuntary enforcement. In later cases enforcement may be through some government agencies and authorities or through the society and it is more difficult and problematic than that of voluntary acceptance. Voluntary acceptance is more appreciable than enforcement by power. Actually nature and contents of the laws, rules and regulations and policies, decide whether these are capable to get social acceptance or not. A rule developed keeping in view the existing social and economic set up of the state, of course would have social acceptance. By critically analyzing the governance framework of an institution or organization, it will be possible to identify the gaps and problems hindering the proper enforcement of an available framework of governance.

Drawing conclusions from reviewing a number of capacity development initiatives in Pakistan, a draft report to capacity development workshop, David and Khan (2007) list the following problems and challenges with regard to developing public sector capacity in Pakistan.

- Inappropriate efforts of capacity development with bogus analysis of institutional needs and capacities.
- Capacity development programs are made and launched without considering the existing social and political structure which has great influence on the institutions.
- Senior officials show little interest in such capacity development programs.

While reviewing the legal and institutional set up of Pakistan for environmental protection Ahmad (2006) analyses and discusses the effectiveness of PEPA 1997 for environmental protection and conservation. The Pakistan Environmental Protection Act

1997 has become fully functional and the rules and regulations are enforced like, National Environmental Quality Standards, Self-monitoring and Reporting by Industries Rules, 2000; Environmental Samples Rules, 2001; Provincial Sustainable Development Fund Board (Procedure) Rules, 2001; Pollution Charge for Industry (Calculation and Collection) Rules 2001; National Environmental Quality Standards (Environmental Laboratories Certification) Regulations 2000; Pakistan Environmental Protection Agency Regulations 2000; Provincial Sustainable Development Fund (Utilization) Rules 2002; Composition of Offences and Payment of Administrative Penalty Rules 2002 and Hazardous Substances Rules, 2002.

Similar studies were conducted by Naseem (2003) while discussing the legal and regulatory frame work of Pakistan for the implementation of NEP, Naseem (2003) highlights the institutional framework of Ministry of Environment. PEPC being responsible for policy making and implementation of PEPA 1997 is not functioning and performing as assigned by PEPA 1997. Further criticizing the role of Pak-EPA and provincial EPAs, Naseem (2003) suggests these institutions to be strengthened and equipped with latest knowledge and techniques.

As discussed earlier, National Environmental Policy of Pakistan has multidimensional goals and it sets the diverse targets for different environmental sectors while addressing the cross sectoral issues separately. The process of formulation of NEP is also a matter to be criticized here, as NEP had also been formulated under the same traditional and conventional instruments used to develop other policies of Pakistan.

Exploring the process of formulation of National Drinking Water Policy and national Sanitation Policy of Pakistan, Malik, Ahmad & Zai (2008) say that Evidence-based advocacy played a major role in influencing the Government's decision for policy formulation. This



advocacy is the common feature of almost all the national, Provincial or even regional policies of the Pakistan. The task of formulation of Drinking Water Policy was assigned to the Pakistan Environmental Protection Agency and that of the Sanitation Policy was given to the Environment Wing of the Ministry of Environment. The handling of these tasks by two separate wings of the same ministry resulted in coordination problems and subsequent delays (Malik, Ahmad & Zai 2008).

The debate over the process of formulation of NEP and whether it addresses the goal of environmental protection and conservation and sustainable development comprehensively and precisely, has its own place in the study “A critical review of environmental governance in Pakistan”. At the moment we focus our discussion on the issue of presence of, appropriate legal and regulatory environment, Sound and well coordinated institutional mechanism having sufficient financial and technical capacity, independent and highly professional administrative structure of respective sectors responsible for the implementation of NEP.

Adding to Naseem (2003), for reviewing the legal and institutional framework for the implementation of NEP, a multidimensional approach is required keeping in view the multidimensional structure of NEP. It requires a comprehensive sector wise study of legislative and institutional arrangements and then by carefully analyzing the available information about a specific sector, results can be drawn leading to suggestions to improve the prevailing conditions of each sector keeping in view the environmental obligations set by the NEP.

## CHAPTER 3

### METHODOLOGY

The document “National Environmental Policy of Pakistan” (NEP) was obtained from the office of Federal Environmental Protection Agency (Pak-EPA) Islamabad. The NEP was studied and analyzed comprehensively and critically to evaluate its guidelines provided for each sector. Also the implementation instruments as suggested by the NEP were critically studied and analyzed.

Pakistan Environmental Protection Act (PEPA-1997) was studied to analyze its relevance with existing structure of governance in Pakistan especially to evaluate legislative support for the implementation of NEP.

Following institutions were visited and interviews of some key persons were conducted.

**Pakistan Environmental Protection Agency (Pak-EPA), 311. Margalla Road F-11/3 Islamabad: visited on 4<sup>th</sup> November, 2008.**

Interview of Mr. Zia-ud-din khattak, Deputy Director (Research and Investigation) was conducted

**Punjab Environmental Protection Agency, Opposite LCCA ground, Gaddafi Stadium Ferozpur Road Lahore: visited on 20<sup>th</sup> November, 2008.**

Interview was conducted in the office of Dr. Shagufta Shajahan (Director General)

**NWFP Environmental Protection Agency, 3<sup>rd</sup> Floor, Old Courts Building, Khyber Road Peshawar: visited on 15<sup>th</sup> December, 2008.**

Interview was conducted in the office of Dr. Muhammad Bashir (Director General)

**National Energy Conservation Council (ENERCON), ENERCON Building, G-5/2 Islamabad: visited on 6<sup>th</sup> January, 2009.**

An Admin Officer was interviewed

**Pakistan Agriculture Research council (PARC), Islamabad: visited on 23<sup>rd</sup> January, 2009.**

**Pakistan Forest Research Institute (PFI), Peshawar University Campus, Peshawar: visited on 17<sup>th</sup> January 2009.**

**Capital Development Authority (CDA), Islamabad: visited on 14<sup>th</sup> April, 2009.**

Following literature and documents were consulted.

**National Environmental Policy of Pakistan 2005**

**Pakistan Environmental Protection Act 1997**

**National Drinking Water Policy of Pakistan 2007**

**National Sanitation Policy of Pakistan 2006**

**National Energy Conservation Policy of Pakistan 2005**

**National Forest Policy of Pakistan 2002**

**Livestock Development Policy of Pakistan**

**Biodiversity Action Plan**

## CHAPTER 4

### FINDINGS

NEP guidelines along with detailed administrative and governance structure of each sector is presented here.

#### **4.1 Water Supply and Management**

##### **4.1.1 Policy guidelines**

National Environment Policy provides the following guidelines for water supply and management sector.

- To promote the safe drinking water by developing the legislations and appropriate policies
- To establish the water treatment facilities of high coverage
- Monitoring of water quality
- To promote the low-cost water treatment technologies
- Rain water harvesting in rural and urban areas
- Artificial recharge of ground water
- To develop and promote the metering system for measurement of water consumption
- To enforce the Water Conservation Act
- Formation and implementation of National Sanitation Policy

- Treatment of wastewater

#### **4.1.2 Existing institutional framework of water supply and sanitation**

Until 2001 Local Government Ordinance (LGO), Public Health Engineering Department (PHED) was responsible for water supply and sanitation in rural areas and Development Authorities and Sanitation Agencies in urban areas.

Under LGO 2001, Tehsil Municipal Administration (TMA) is responsible for water supply and sanitation in rural areas. In urban areas, public sector Water Boards and Water and Sanitation Agencies (WASAs) are responsible for the service provisions. Karachi Water and Sewerage Board (KWSB) is providing the services in Karachi urban areas.

#### **4.1.3 Existing policies and regulations**

Policy making and implementation is the constitutional responsibility of Pakistan Environmental Protection Agency (Pak-EPA) under the supervision of Pakistan Environmental Protection Council (PEPC) (Section 6, subsection 1 clause b and c of Pakistan Environmental Protection Act 1997).

#### **4.1.4 National drinking water policy [draft] (NDWP)**

National drinking water policy was developed by the Ministry of Environment in November, 2007.

NDWP addresses the following aspects of drinking water.

- To provide the safe drinking water by 2020 to all Pakistani population.
- To minimize water born disease water born diseases.
- To encourage the women participation in the sector.
- To construct drinking water systems for general public to ensure easy access to safe drinking water.
- To promote the involvement of private sector and communities in the water sector.
- To recognize the drinking water right with maximum priority.

According to NDWP the local government is responsible for the provision of drinking water in accordance with LGO. Policy will be reviewed and updated every five years to examine its implementation and efficiency.

#### **4.1.5 National Sanitation policy [Draft] (NSP)**

The NSP was approved by the federal government in 2006.

NSP addresses the;

- To maximize the use of latrines
- To stop the open defecation environment
- To dispose the liquid and solid waste safely
- Promotion of health and hygiene practices
- Effective institutional and financial framework for its implementation
- Linking of sanitation programs with other developmental activities
- Provisions of incentives by the federal governments to properly implement the NSP

The NSP accepts the roles and responsibilities of all the stakeholders including public sector institutions, (NGOs), Community Organizations, households and media.

Community-Led Total Sanitation (CLTS) and component sharing models are the important features of the policy.

#### **4.1.6 Clean Drinking Water for All Program**

Clean Drinking Water for All program and clean drinking water initiatives were planned for the over all improvement of drinking water.

Clean Drinking Water for All Program addresses the;

- Construction of water treatment facilities
- Delivery of one filtration plant to each union council of Pakistan
- According to Clean Drinking Water for all Program, 6035 purification plants with capacities of 500, 1,000 and 2,000 gallons per day will be established in the country

### **4.2 Energy efficiency and renewables**

#### **4.2.1 Policy guidelines**

National Environmental Policy of Pakistan provides the following guidelines to ensure the energy efficiency and renewable energy resources.

- To develop the energy policy at national levels.
- Formulation and enactment of laws for energy sector.
- Reactivation of Pakistan Energy Conservation Council.
- Formation of Building energy codes.

- To reinforce the proper fiscal structure, institutional structure and policies.
- Improvement of energy efficient imports.
- Introduction of Compressed Natural Gas (CNG) in public transport.
- To introduce the National award for Energy Conservation.
- Renewable energy resources development.
- To use the waste material for the production of energy.

#### **4.2.2 Existing institutions in energy sector of Pakistan**

At present Pakistan has following institutions dealing directly or indirectly with energy sector.

#### **4.2.3 National Energy Conservation Center (ENERCON)**

National Energy Conservation Center was established in 1987. It is an allied area of Ministry of Environment dealing with energy conservation activities in different sectors like industry, agriculture, transport, building and domestic.

ENERCON undertakes different energy conservation related activities like identification of energy conservation opportunities, demonstration of technology for energy conservation, undertaking different pilot projects, training and education, information and development of plans and policies to promote energy efficiency and conservation in the country.

ENERCON was established in 1987 under the Ministry of Planning and Development. It was transferred to Ministry of Water and Power in 1993 and in 1996 transferred to Ministry of Environment and in 1997 it became an attached department of Ministry of Environment.



#### **4.2.4 Energy Conservation Fund (ECF)**

Energy Conservation Fund (ECF) was incorporated in 2002 with Security and Exchange Commission of Pakistan (SECP).

ECF is a company limited and its head office is in the building of ENERCON Islamabad. The objective of ECF is to provide financial assistance for energy conservation activities.

#### **4.2.5 Pakistan Council of Renewable Energy Technologies (PCRET)**

It was established in 2001. National Institute of Silicon Technology (NIST) and Pakistan Council for Appropriate Technologies were merged in May, 2001 to form PCRET. It coordinates the activities related to research and development of renewable energy technologies.

The head office of PCRET is in Islamabad and it has four provincial offices in the four capital cities of Peshawar, Karachi, Quetta and Lahore.

The focus areas of PCRET are photovoltaic, solar thermal applications, biogas plants, wind energy and microhydel power plants.

#### **4.2.6 Alternative Energy Development Board (AEDB)**

Alternative Energy Development Board was established in 2007 under the Alternative Energy Development Board ordinance 2007 (President Order) of Government of Pakistan, Law, justice and human rights division promulgated by President of Pakistan on 3<sup>rd</sup> October 2007.

#### **4.2.6.1 Functions of AEDB**

- AEDB is responsible to develop strategies, policies and planes for utilization of alternative and renewable energy resources
- Evaluation, monitoring and certification of alternative and renewable energy projects
- Coordination for commercial application of alternative and renewable technology
- To facilitate power generation through alternative and renewable resources
- Setting up alternative and renewable energy power pilot projects on its own or through joint venture or through private sector
- Financial, technical and economic evaluation of alternative or renewable energy proposals
- To improve the harmonization with local (National) and international organizations and agencies
- Making legislative proposals to enforce use and installation of equipments using alternative energy

#### **4.2.7 Water and Power Development Authority (WAPDA)**

WAPDA deals with the electricity sub sector of Pakistan. WAPDA is the largest power utility having a costumer base of about ten million.

The distribution network of WAPDA is divided into eight Electric Supply Companies which are called Distribution Companies (DISCOs).

Thermal power generation facilities of WAPDA have three Generation Companies (GENCOs). For the transmission and dispatch functions WAPDA has a National Transmission and Dispatch Company (NTDC).

#### **4.2.8 Karachi Electric Supply Corporation (KESC)**

KESC supplies electricity to metropolitan areas of Karachi and some of surrounding areas.

#### **4.2.9 National Electric Power Regulatory Authority (NEPRA)**

NEPRA was established in 1997 under the NEPRA act 1997. The main function of NEPRA is to regulate the economic affairs of the electricity sub sector, to develop a competition environment in the power sector and to protect different stake holders in the sector.

#### **4.2.10 Pakistan Electric Power Company Private Limited (PEPCO)**

PEPCO is an agency within the WAPDA. It mainly deals with the privatization of different companies of power sector through privatization commission of Pakistan.

#### **4.2.11 Oil sector institutions**

Oil sector of Pakistan is regulated by the Ministry of Petroleum and Natural Resources. Oil and Gas Development Corporation Limited (OGDCL), Pakistan Petroleum Limited (PPL) and Pakistan State Oil (PSO) are the main sector institutions of Pakistan. Moreover oil products are controlled by the Pakistan Oil and Gas Regulatory Authority (OGRA). There are five oil refineries in the country which have the total capacity of 270,000 bbl/d.

#### **4.2.12 Natural Gas sector institutions**

PPL produces about 30% and OGDCL produces around 25% of the country's natural gas. Sui Southern and Sui Northern Gas Companies are responsible for the purification and supply of natural gas. Sui Southern distributes the gas in the southern areas of country and in the northern areas gas is distributed by Sui Northern gas company.

#### **4.2.13 Energy Conservation Council**

Formation of Energy Conservation Council was approved in a meeting on National Energy Conservation Strategy held on 24 January 2008 under the chairmanship of Prime Minister of Pakistan. Prime Minister of Pakistan will be the chairman of the council. An executive committee under deputy chairman planning commission will assist the chairman.

#### **4.2.14 Existing policies and legislations**

##### **4.2.14.1 National Energy Conservation Policy (NECP)**

National energy conservation policy was developed by the National Energy Conservation Center (ENERCON) in 2005. ENERCON is responsible to coordinate and facilitate the implementation and monitoring of the policy with the participation of all relevant stakeholders at national and regional level.

The goals of NECP are;

- Sustainable development
- Improvement of economic productivity and poverty alleviation
- Green house gas mitigation and climate control
- Gender mainstreaming (provision of energy to rural areas)

#### **4.2.14.1.1 Objectives of the policy**

- Promotion of the conservation of Energy by stimulating the resources and regularizing the total programs of energy management in all economic sectors
- Development of energy conservation market and to facilitate commercialization by creating awareness and launching nation-wide demonstration projects
- To improve the country energy resources to fulfill the demand of energy
- Reduction of energy concentration of different sectors of energy consumption by using suitable technologies and policies

NECP provides separate guidelines for different energy consumption sector like industries, transport, building, households, agriculture and renewable sources of energy and also addresses cross sectoral issues like Energy Conservation and Poverty Alleviation, Energy Conservation and Gender Mainstreaming, Energy Conservation and Sustainable Development, Energy Conservation and Environment, Energy Conservation and Better Health and Energy Conservation and Economic Self Reliance.

NECP suggests the following initiatives to be taken to achieve its goals;

- Drafting and enactment of Legislation and Regulatory Framework
- Awareness, guidance (training) and by educating the general public
- To integrate the conservation of energy in Government Energy Policies
- To strengthen the institutional capacity of energy sector institutions
- To introduce the monetary Incentives
- Joint venture of Government, public and private sector
- Creation and functioning of Energy Services Companies

#### **4.2.14.2 Renewable Energy Initiatives**

Under the Renewable energy Incentives different projects will be initiated in wind, solar, biogas, microhydal, fuel cell technologies and other Renewable Energy fields. Renewable energy Incentives program set the target of production of 2,500 MW of electricity by the year 2015. It stresses upon the involvement of private sector in the Renewable energy sector.

#### **4.2.14.3 Renewable Energy Development Sector Investment Program**

This program was initiated under Asian Development Bank (ADB). Renewable Energy Development Sector Investment Program aims to The program will increase the power supply especially in rural sides of the Pakistan. Under this program, about six lac connections will be provided to approximately 4.8 million people of Pakistan.

#### **4.2.14.4 Pakistan German Renewable Energy and Energy Efficiency (REEE) Program**

REEE program was a joint program initiated by the German and Pakistani governments to enhance industrial productivity through the promotion of Renewable Energy and Energy Efficiency (REEE) project in the industrial sector of Pakistan.

#### **4.2.14.5 Energy Conservation and Management Ordinance**

Promulgation of Energy Conservation and Management Ordinance is decided in a meeting on National Energy Conservation Strategy held on 24 January 2008. Provisions for codes, standards, energy reporting, labeling, testing, mandatory audits, fines and

incentives as well as inspection, monitoring and compliance mechanism at various levels shall be made in the proposed Ordinance.

### **4.3 Agriculture and livestock**

#### **4.3.1 Policy guidelines**

For the Agriculture and Livestock sector NEP provides the following guidelines and steps to be taken by the Government of Pakistan.

- Endorsement of the organic farming
- To introduce plan and projects to handle the soil deprivation and improvement of destructed soils
- To ensure the safe use of pesticides, weedicide, fungicide and herbicides and insecticides in the country
- To implement the National Action Program to Combat Desertification and Drought.
- Establishment of the National Desertification Control Fund
- To develop the modern scientific methods and technologies to increase the production of livestock
- To encourage the recycling of the agricultural and livestock products
- To promote the better varieties of livestock with high productivity

Agriculture is an important sector of the country from economic point of view. Agriculture sector has the major share in economy of Pakistan. There are different dimensions of agriculture to be important. It provides food and fiber for population, raw

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material for industry and export revenue for the country. About 27% of total land area is under agricultural use. Pakistan is blessed with valuable fertile land resources which have excellent potential of all types of crop growth.

For last few years Pakistan is facing multidimensional agricultural problems like land degradation, low yield of economically important crops, loss of soil fertility because of excessive cultivation of exhaustive crops, poor quality of agricultural products, non compliance with international trade and export market, lack of proper regulatory and institutional framework and poor governance structure of existing institutions.

Livestock is equally important for the economy of country and plays an important role to earn foreign exchange. More than 6.5 million rural people raise livestock and use it as net cash to meet their financial needs and contribute to national economic prosperity. Livestock contributes 11.4 % to the national GDP and 49.1 % to the agriculture GDP. (Ahmad and Iqbal, 1999)

Similar to agriculture livestock sector is also facing number of constraints which are mainly due to poor economic and administrative structure of the sector. Insufficient feed, infectious diseases, unavailability of good quality animal breeds. Poor market and institutional structure, less involvement of government and weak regulatory mechanism are some of the major problems faced by the sector. (Ahmad and Iqbal, 1999).

National Environmental Policy of Pakistan provides a number of guidelines to make agriculture and livestock a valuable sector with its due share in the country's economy keeping in view the environmental consequences of the sector.



### **4.3.2 Existing institutions in agriculture and livestock sector**

A number of institutions are engaged in agriculture sector of Pakistan to achieve the target of agricultural sustainability in the country.

#### **4.3.2.1 Pakistan Agricultural Research Council (PARC)**

PARC was set up in 1981 as an independent body to establish the research activities at federal and provincial levels. Different institutions are established at provincial level to manage the respective agricultural affairs. PARC is the only national organization with the aim to coordinate the activities of all provinces.

Federal minister for food, agriculture and livestock is the head (President) of the council president of council and chairman of Board of Governors (BOG). Board of Governors controls all the matters of council. The chairman of the council is its chief executive. The administrative body of the council is an Executive Committee comprising chairman and members of the council. PARC research programs are reviewed and managed by a Research Advisory Committee (RAC).

##### **4.3.2.1.1 The main functions of PARC are to**

- To conduct the research in agriculture.
- To utilize the research results quickly.
- To establish research on corrective measures for prevailing research activities in the field of agriculture.
- To produce the better agricultural scientists by providing the training facilities.
- To manage the agricultural information system.

- To develop a library for the agricultural research and reference.

#### **4.3.2.2 Agricultural Policy Institute (API)**

Formerly API was Agricultural Price Commission (APCom). It was established in 1981 under the Ministry of Food, Agriculture and livestock (MINFAL) Islamabad and in 2006 it was converted into an allied department of Ministry of Food, Agriculture and Livestock in 2006.

The main function of API is to provide the advisory services to the government on price policies of important crops. Often in the market, prices are fluctuating putting the farmers in economic crises. API aims to assist the government to take appropriate actions to avoid such conditions causing the farmers and in turn national economic prosperity.

#### **4.3.2.3 Zarai Taraqati Bank Limited (ZTBL) formerly Agricultural Development Bank of Pakistan (ADBP)**

ZTBL was built-in as Public Limited Company in December 2002 through the cancellation of ADB ordinance 1961.

ZTBL is the leading financial institution for the agricultural sector of Pakistan. The main function of ZTBL is to provide economic and technical services for agricultural and rural sector. ADBP is restructured to ZTBL mainly to increase the agricultural production, reorganization of institutional credits and increasing the income generation capacity of farmers. Now ZTBL is a public limited company registered under companies Ordinance 1984. It has its own Board of Directors. Total assets of ZTBL are Rs 84 billion with a

Agricultural Extension Department. This staff is properly trained by the organization officials to carry out their respective jobs.

#### **4.3.2.4.1 Functions of ACO**

- Sample design and Selection
- To prepare the schedules of census
- To lay out the census methodology
- To conduct the training of staff. Manual, Coding and Editing
- To manage the census data
- To control the Quality of census mechanism
- To prepare and publish the census reports

#### **4.3.2.5 Department of Plant Protection (DPP)**

DPP helps to protect crops from damage of insects, pests, diseases and weeds. For this purpose DPP provides appropriate facilities of pest survey, air control, monitor the import activities. Pesticides production and marketing is also controlled by the DPP.

#### **4.3.2.6 Pakistan Horticulture Development and Export Board (PHDEB)**

PHDEB manages and promotes the international market facilities for horticultural products. The main aim of PHDEB is the promotion of horticultural products in the country to improve the financial conditions of different stake holders involved in horticultural activities.

##### **4.3.2.6.1 Main functions of PHDEB**

- Encourage and facilitate the growers to “grow for exports”.

- Introduction of latest scientific techniques and technologies for horticultural stakeholders involved in growth and processing of horticultural products.
- To develop and implement new schemes to promote the export market of horticultural products.
- To introduce incentives for the promotion of export environment in the country.
- To launch schemes for the promotion of national and international investment in the horticulture sector.
- Improve the coordination in institutions related directly or indirectly with the horticulture.

#### **4.3.2.7 Pesticide Registration Cell (PRC)**

Main functions of PRC.

- To register the pesticides under the “Agricultural Pesticides Ordinance, 1971”.
- To regulate the different activities related to pesticides like manufacture, formulation, import, refilling and repacking and marketing.
- To coordinate with Agricultural Pesticides Technical Advisory Committee and Sub-committees by arranging their meetings.
- To coordinate with Federal and Provincial Governments, Private Sector and International NGOs.
- To manage the quality of pesticides through applying the quality checks for pesticides.

#### **4.3.2.8 Fisheries Development Board (FDB)**

The Fisheries Development Board was established in 2007 under Companies Ordinance 1984 to promote aquaculture and fisheries sector through public and private partnership.

##### **4.3.2.8.1 Functions of the FDB**

- To help the government to create an enabling environment, establish a regulatory framework, enforcement of total quality management and other related areas to streamline the fisheries sector
- To attract the national and international investment in the sector
- Capacity building and to develop the awareness by launching different programs
- Play an important role to develop the recent model market infrastructure and to improve the system of marketing
- To promote the coordination between Federal and Provincial activities

#### **4.3.2.9 Livestock and Dairy Development Board (LDDB) and Pakistan**

##### **Dairy Development Company (PDDC)**

Government has established two fully autonomous private sector-led companies under Section 42 of the Companies Act. LDDB and PDDC are the registered Government companies and are included at Security Exchange Commission of Pakistan. Most of the officials of these companies are from the private sector, involved in livestock sector.

#### **4.3.2.9.1 Functions of LDDB and PDDC**

LDDB deals with the development of whole sector of livestock including milk, meat, livestock by-products and poultry. PDDC primarily focus on the dairy sector. These companies facilitate and promote livestock development in the country including support for producer-owned and controlled organizations (mainly collective action type) dealing with milk and meat production. These companies are not-for-profit and make efforts to place dairy/meat developments in the hands of producers and professionals. These companies also act as expert technical bodies to guide and coordinate the dairy and meat development in the country including capacity building of all stakeholders and also provide technical and managerial service. Government ensures sustained financial resources for smooth running of these companies. (Afzal 2007)

#### **4.3.2.10 International Cooperation Wing(IC-Wing)**

International Cooperation Wing deals with all technical, agriculture cooperation program negotiated bilateral and multilateral level. It is focal point to all UN agencies like Food and Agriculture Organization (FAO) and World Food Program (WFP).This Wing also coordinates with all departments of ministry of Food, Agriculture and Livestock (MINFAL) for their input on various bilateral and multilateral issues regarding agriculture cooperation. This wing closely works with M/O Commerce, M/O Foreign Affairs and WTO issues. Deputy Secretary IC looks after the work of all the S.O's and Joint Secretary provide over all guidance to IC Wing as well as Plan Wing.

IC Wing is divided into different section according to their nature of jobs;

- i. IC-I section: All technical, budget and other matters pertaining to UN agencies

- ii. IC-II section: All matters concerning non-UN financial and technical institutions/multilateral agencies.
- iii. IC-III section: All bilateral cooperation relating to State Members of the Organization for Economic Cooperation and Development (OECD) etc.
- iv. IC-IV section: All bilateral cooperation relating to State Members of Non - Organization for Economic Cooperation and Development (non- OECD) group of countries including the Islamic group of countries etc.

### **4.3.3 Policies and legislative mechanism of Agriculture and Livestock sector.**

#### **4.3.3.1 Livestock Development Policy**

Livestock Development Policy was prepared by LDDDB, Ministry of Agricultur, Food and Livestock and approved by the Prime Minister of Pakistan on March 1, 2006 with the aim of promoting livestock sector of the country by focusing on market based instruments.

##### **4.3.3.1.1 Main features of the policy**

- Review & update existing legal framework
- To de regulate the prices of milk and meat
- To validate the taxes at local government level
- Sale of meat animals on live weight basis
- Easy access & affordability of credit availability
- To strengthen the MINFAL capacity to develop the policies and regulations.
- Promotion of local dairy industry

- To Establish the Livestock and Dairy Development Board and Pakistan Dairy Development Company
- To re strengthen the government Sector Institutions
- Promoting Livestock as a Source of Supplementary Income – Support for private sector
- To provide the support for small and medium ventures in livestock in private sector
- To provide Incentives for private sector for livestock business at large scale
- To introduce programs and plans for the poor

#### **4.3.4 Legislative arrangements**

Much legislation is available in different provinces of Pakistan. In Punjab Agricultural Produce Markets Ordinance (XXIII, 1978) is available which was amended in 2001. 132 markets are working in the Punjab under produce markets ordinance. There are three categories of the market comities named as A comprising 23 comities, B having 44 and C with 65 market comities. There is also an amended act for Sindh Government known as Agricultural Produces Marketing Act, 1939 and Rules, 1940. Similarly the Balochistan Government has also adopted the Act from the Punjab which is known as “The Balochistan Agricultural Produce Market General Rules, 1995”. The process of formation of agricultural law is under progress in NWFP. (Hanif 2004).



#### **4.3.2.9.1 Functions of LDDB and PDDC**

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IC Wing is divided into different section according to their nature of jobs;

- i. IC-I section: All technical, budget and other matters pertaining to UN agencies

## **4.4 Forestry and plantations**

### **4.4.1 Policy guidelines**

Recognizing the vital importance and role of forest in country's economy and prosperity, NEP has properly addresses the forest sector and provides following guidelines for forest sector;

- To develop the national policy for the forest sector
- To establish the institutions laws of forestry
- To introduce the farm and social forestry
- Riverine forest management
- To manage the mangrove forests
- To reduce the pressure on natural forests by introducing the alternative energy sources
- To improve the research in forest sector by developing training institutions having proper technical facilities.
- To prepare and implement the integrated range management programs for the management of rangelands and pastures

In Pakistan almost 39000 ha of forest is cleared annually. This is the alarming situation as if forest destruction continuous with this pace Pakistan will deprive off its forest resources almost completely within twenty to thirty years. Only 5 % area of Pakistan is covered by forest [Hassan (2008)]. This is very small area as compared to other developed and even developing countries as recommended forest area for developing countries is 26 % of total land area. It is difficult to fulfill even domestic needs of wood and wood products from limited forest resources. If proper management

of such scarce forest resources is not carried out, Pakistan will have to face serious consequences of deforestation and related environmental, social and economical problems.

According to Amjad and Khan (2005), Forest resources are under great stress of more than 160 million people of Pakistan. Forest department has weak institutional and technical capacity to manage the forest resources sustainably. Moreover political instability coupled with poor economy of Pakistan render forest sector to be neglected or poorly addressed.

#### **4.4.2 Existing institutional and legislative arrangements in Forest sector**

Forestry administration is decentralized to a large extent. Provinces are responsible for “planning and implementation of forest and range management programs” [GOP, 1992]. However Federal Government is responsible to develop long term policies. The sector comes under the jurisdiction of Ministry of Environment, Local Government and Rural Development at the federal level. Each province has its own minister for forestry. Each province has a forest department to administer the forest sector.

##### **4.4.2.1 Pakistan Forest Research Institute Peshawar (PFI)**

Pakistan Forest Research Institute was established in 1948. It is the leading institution of the country conducting research & training in forestry. Different training courses are conducted by PFI which leads B.Sc. and M.Sc. degrees. Short-term courses in watershed management, range management and forest engineering are also

conducted. It also undertakes projects related to Planning & Development of energy plantation.

### **4.4.3 Some past policies**

#### **4.4.3.1 Forest Policy 1894**

The Indian Forest Policy had following main objectives;

- To deal with the matters related to forest owner ships.
- Preservation of forest resources.

This policy was used as guidelines of forest sector of Pakistan till 1955.

#### **4.4.3.2 National Forest Policy 1956**

The main objective of this policy was to increase the forest area in Pakistan.

#### **4.4.3.3 National Forest Policy 1962**

The policy guidelines were as follows

- To shift the hilly area population.
- To manage the grazing from state forests.
- Encouraging farm forestry by the Agriculture Department through research.
- To impose the taxes on degraded lands due to erosions.
- To introduce the plant species having fast growth.

#### **4.4.3.4 National Policy on Forestry and Wildlife 1980**

This policy was a more refined version of 1980 policy with following guidelines;

- To plant species having the rapid growth
- To involve the public in forestry activities
- Creation of national parks

No suitable institutional and regulatory arrangements could be made to achieve the objectives of above mentioned policies and forest resources, continued to be degraded.

#### **4.4.4 Present Forest Policy**

##### **4.4.4.1 Pakistan Forest Policy 1991**

This policy was launched in 1991 as the part of agriculture policy of Pakistan.

Important objectives of the policy are;

- To increase the forest area from 5.4 percent to 10 percent in the next fifteen years
- Conservation of existing forests, watershed, rangeland and wildlife
- To promote social forestry programs
- Encourage planting of fast-growing multipurpose tree species in irrigated plantations, riverain forests and private farmlands to meet the industrial and domestic needs
- To control the desertification, water logging and salinity
- Awareness and education of general public

Moreover policy sets the targets to manage hill forests, watershed management, irrigated plantation, social forestry, rangelands and wildlife management and forestry extension services. Forestry education and training and environmental consequences are especially addressed in the policy. Moreover periodic surveys of forests, rangelands and wildlife and incentives for forestry practices are also addressed in the policy.

#### **4.4.4.2 National Forest policy 2002**

This policy was prepared by Ministry of Environment, local Government and Rural Development in 2002 to achieve the goal of sustainable development of Renewable Natural Resources (RNR) like forests, rangelands, wildlife, watersheds, biodiversity and their habitats and maintenance and rehabilitation of environment and improving the sustainable livings of rural people specially women, children and other deprived people.

Key elements of the policy are follows;

To minimize the impacts of social and economic causes.

- Population planning
- Substitutes provision.
- Poverty reduction.

To minimize the interference by politicians.

- defend the intervention

restoration of the institutions of RNR

- To make the Federal Forestry wing effective.

To support the Local Governments

Irrigated Plantations

Preservation of relict and unique forests

Wildlife management

Rangelands and desert eco-systems management

Planting of trees and foddors on farmlands

#### **4.4.5 The Master Plan for Forestry Development (MPFD)**

This is a 25 year master plan from 1993 to 2018 to solve the forest sector problems. According to the plan forest area will be increased to 10 % by 2018. Water shed protection and development has special consideration under the plan. Commercial plantations, fuel wood plantations on hillocks, watershed rehabilitation through reforestation, social forestry and NGOs participation are focus areas under the MPFD

#### **4.4.6 Social Forestry Program**

This is a ten year social forestry program in all the provinces of Pakistan. According to Director-General, Pakistan Forest Institute, farmers are willing for tree plantation if some incentives are provided to them in the form of cash awards or payment to grow seedlings. Moreover proper technical help is necessary for the farmers and also proper training through workshops and seminars is essential. Wood producers and users cooperation is necessary for the sustainable growth of the program.

#### **4.4.7 Forest ownership**

##### **4.4.7.1 Public Forests**

6.88 million ha forest under the government control. Public forest is further divided into following categories; [Amjad and Khan 1990]

- State Forests (1.27 million ha)
- Reserved Forests (0.64 million ha)
- Protected Forests (4.72 million ha)
- Unclassed Forest (0.15 million ha)

#### **4.4.7.2 Non-Public Forests**

These forests are partially under the government control and have following categories;

- Guzara forests (0.55 million ha), in NWFP (Hazara district) and Punjab (Murree-Kahuta)
- Communal forests (2, 98 million ha) in Northern Areas
- 0.09 Million ha private land voluntarily reserved for forests
- Privately Owned Forests and Plantations (0.2 million ha)

### **4.4.8 Forest Sector Legislations**

#### **4.4.8.1 The Forest Act, 1927 (Act No. XVI of 1927)**

The Indian Forest Act, 1927, was adopted by replacing the Indian Forest Act, 1879. Government of Pakistan adopted this act after independence. The Word "Indian" was omitted in 1949. The Act applies to the provinces of Balochistan, Sindh, and Punjab, most of NWFP and Northern Areas but not to AJK. This is the mother act of forest sector of Pakistan.

#### **4.4.8.2 Punjab Land Preservation Act, 1990**

The main purpose of this act was to stop the erosion which is resulted by misusing of private lands in the Punjab foothills.



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#### **4.4.8.3 The Forest Act, 1964 (Ammended 1927, act)**

This act was promulgated in all provinces of Pakistan (except Hazara district in NWFP and Tribal Areas). This act mainly deals with the effected land problems in protected areas.

#### **4.4.8.4 The West Pakistan Firewood and Charcoal (Restriction) Act, 1964**

Except Tribal Areas, all the provinces come under the jurisdiction of this act. It deals with the wood and charcoal burning in industries and kilns.

#### **4.4.9 Farm forestry program**

To satisfy the large scale timber needs Pakistan government is adopting Farm Forestry approach (Private tree planting with agricultural lands). Pakistan has initiated a project with the technical and financial assistance of United State Agency for International Development (USAID) to plant the trees on marginal private lands.

### **4.5 Biodiversity and protected areas**

#### **4.5.1 Policy guidelines**

Biodiversity conservation is necessary to achieve the sustainable economic development on one hand and environmental protection on other hand. With proper management and due consideration to biodiversity sector, Pakistan can enjoy lot of financial and social benefits related to biodiversity. National Environment Policy of Pakistan provides the following guidelines for biodiversity conservation and management of protected areas;

- To ensure the proper implementation of the Biodiversity Action Plan (BAP)

- Development of Biodiversity Action Plan
- To create new national parks and protected areas
- Development and implementation of systems of protected areas for conservation of biodiversity with public involvement
- To conserve and sustainable use of biological diversity by community participation
- To develop a national plan to stop the spread of persistent species
- To use the wetland's resources wisely
- Development of biosafety rules and guidelines
- Establishment of a National Institute of Biodiversity and Ecosystem Sciences
- Preparation of coastal zone management plans
- Development and implementation of national wetlands policy
- Regulatory framework to conserve and marketing of wild herbal species
- To control the mining activities for protection of protected hilly areas
- Sustainable fish harvesting
- To promote the aquaculture
- Development of area conservation strategies for urban centers
- Promotion of eco-tourism

As defined by CBD (1992), Biodiversity means different types of organisms from different types of resources i.e. land, marine and fresh water. Diversity includes within the species, among the species and in the ecosystems.

[CBD 1992]

Pakistan has a number of diverse ecosystems. Four major biomes of the country are the desert biome, temperate grassland biome, tropical seasonal forest biome, and mountain biome.

Pakistan fauna includes 668 birds (25 threatened), 198 freshwater fishes (29 endemic, 1 threatened), 177 reptiles (13 endemic, 6 threatened), and 174 mammals (6 endemic, 20 threatened). About 5,700 species of flowering plants have also been identified. The protected areas cover 12% of the total land surface area of the country. [Third national report, NBSAP].

Continuous loss of important species due to habitat destruction, fragmentation and degradation of natural forests, rangelands, fresh water and marine ecosystems is very common in Pakistan.

## **4.5.2 Institutional and Legislative arrangements for Biodiversity sector**

### **4.5.2.1 Wildlife Enquiry Committee (WEC)**

WEC was established in 1968. The main function of the committee is the management of protected areas, national parks, wildlife sanctuaries and game reserves etc.

### **4.5.2.2 National Council for Conservation of Wildlife (NCCW)**

NCCW was established in 1974 under the Ministry of Food, Agriculture and Livestock. Main functions of NCCW are to formulate and implement biodiversity policies and to coordinate with international agencies for promotion of biodiversity.

#### **4.5.2.3 Biodiversity Directorate**

Biodiversity directorate was established in 2005 to achieve the targets of biodiversity conservation and other related issues as set by the CBD.

#### **4.5.2.4 Plant Breeder's Rights Ordinance 2000**

This ordinance provides the legal boundaries for the persons to be a plant breeder's e.g. a plant breeder person or institution will have to acquire license to carry on practices etc.

#### **4.5.2.5 Legislation on access to biological resources and community rights**

##### **[draft]**

The main objectives of this legislation are

- To ensure the rights of local communities over biological resources
- To ensure the easy access to biological resources
- Capacity building for the conservation of bio diversity
- To ensure an appropriate institutional mechanisms

#### **4.5.3 Programs, projects and policies of biodiversity sector**

##### **4.5.3.1 Establishment of Protected Areas (P.As)**

190 protected areas (P.As) are established including 15 national parks, 83 wildlife sanctuaries, 85 game reserves and 14 unclassified areas. About 71649 kilometer square area is protected which is 9 % of the country area.

#### **4.5.3.2 Some projects to conserve different eco-systems of the country**

##### Protected areas management project (1997)

This project was launched for the management of three major protected areas, Hingol, Machiara and Chitra Gol National Parks

##### Mountain Areas Conservancy Project (MACP)

The purpose of this project is to conserve the biodiversity in Krakoram-Hindu Kush in the western Himalayan Mountains in northern Pakistan.

##### Conservation of habitats and species of global significance in arid and semi-arid ecosystems in Balochistan

The objective of the project is conservation of habitats and species of global significance in Torghar and Chagai Conservancies in Balochistan.

##### The conservation of agricultural ecosystems and street seminars and programs for the creation of conservation awareness

##### Biodiversity conservation in Mankial Valley by local communities

##### Conservation and Habitat Improvement of Sindh Ibex and Urial through Community

##### Participation in Tobatti, Kalat

##### Natural resource management for conservation of biodiversity

##### Survey of pheasants in Pakistan

#### **4.5.3.3 Biodiversity Action Plan (BAP)**

BAP was prepared to achieve the planning requirements of Convention on Biological Diversity (CBD). It was prepared under an agreement between Government of Pakistan and World Bank under the Global Environment Facility Trust Fund. The leading agency was IUCN-Pakistan in collaboration with World Wide Fund for Nature Pakistan (WWF-P

The main aims of the plan are;

- To develop the appropriate policies for the sustainable use of the biological diversity
- To promote the National Biodiversity Conservation Programs
- To introduce the incentives for biodiversity conservation
- To improve the knowledge and capacity of human to conserve biological diversity

#### **4.5.3.4 Pakistan Wetlands Program (PWP)**

PWP was established to conserve the freshwater and marine wetlands of Pakistan

#### **4.5.3.5 National Conservation Strategy (NCS)**

NCS addresses the biodiversity conservation along with other areas. The NCS criticizes the existing protected areas to be not representatives of all the ecosystems, plants and animals.

NCS addresses the management and development of national parks and protected areas.

## CHAPTER 5

### RESULTS AND ANALYSIS

#### 5.1 Water supply and sanitation sector

Water supply and Sanitation is almost mistreated sector in Pakistan. Especially the rural side is badly neglected or having inadequate service facilities. Still there are number of households which do not have right to use the safe drinking water and lack toilets and ample sanitation systems. Service quality of water supply is very poor in Pakistan with low pressure and leaky pipes. This causes the leakage of waste into the water and results in many water born diseases. (ADB,2007).

According to estimation more than three million Pakistanis become infected with water borne diseases annually. The level of arsenic, nitrates and fluorides is increasing in many areas. (GOP, 2004).

According to a report of Ministry of Water and Power (2002) only 1% of the domestic and industrial water is treated. According to Pakistan water situational analysis there are three wastewater treatment plants in Islamabad of which only one is functional. In Karachi there are two trickling filters where effluents get screening and sedimentation only. Lahore also has some screening and grit removing plants but they are almost non



functional. Faisalabad also has a wastewater treatment plant where only primary treatment is given to wastewater. In the rural areas wastewater treatment is nonexistent.

Above situations is an indication of weak institutional and structural arrangements in the sector. Administrative structure is not well organized moreover coordination among different segments of the sector is poor.

In Pakistan since 1947 national water policies were addressed in government's five years plans which were replaced by ten years plane in 2001. Due to more economic considerations of agricultural sector, the main focus of these plans was irrigation instead of urban and rural water supply. First and second five years planes mainly addressed the increasing application of water for increasing productivity and control of water logging and salinity. Third and fourth plane also addressed the water conservation along with the increasing productivity and control of water logging and salinity.(GOP,2002)

As discussed by Ahmad (2005), present water supply and sanitation facilities are not properly designed by the Public Health Engineering Departments (PHEDs). Most of these policies are unaffordable by the common people. Until 1992, When Government launched a Social Action Plan (SAP), there was poor hygiene education and little participation of users. SAP described different policy reforms in water supply and sanitation (Ahmad, 2005)

As mentioned above according to Local Government Ordinance (LGO,2001), powers are devolved to TMAs for water supply and sanitation in rural areas and public sector water boards and water and sanitation agencies in urban areas, but this decentralization has not been implemented in all areas. In 2008 it was reported that PHEDs were still active in many water supply schemes in many areas of the country. PHEDs mostly

formulate the schemes which are supply based and TMAs have little contribution in these schemes. Also the devolution was not equal in all provinces. According to a 2003 document, the PHEDs are fully active in Balochistan and Punjab. (GOP, 2004)

These poor situations are mainly because there is no independent "National Water and Sanitation regulatory Agency" and no independent law in the sector. Moreover there is little participation of private sectors and Non Government Organizations (NGOs) due to low cost recovery in the sector. In Pakistan Environmental Protection Act 1997 there are no special provisions relating to Water Supply and Sanitation. Ministry of Health generally sets Water Quality Standards and monitors drinking water quality in the country. Poor coordination between the ministry and other authorities is a common feature. The Health Services Academy under the Ministry of Health published the Drinking Water Quality Standards for Pakistan in May 2007, whereas publishing and implementation of Drinking Water Quality Standards is the constitutional responsibility of Pak-EPA by the approval of Pakistan Environmental Protection Council (PEPC) (section 6, subsection 1 and clause e, f and g of PEPA 1997). Until 2008, Drinking Water Quality Standards were not officially implemented.

Non Revenue Water (NRW) is another major problem faced by the WATSAN sector. NRW is which is produced but not billed due to many reasons like leakage and illegal connections. NRW is estimated 35% in urban areas of Pakistan. According to the ADB report share of NRW in Karachi and Rawalpindi is 30% and in Lahore it is 42%, while the recommended limit of NRW is 23% for developing countries.

Because of low tariffs, poor collection efficiency and overstaffing, many urban WATSAN facilities are unable to cover the costs of Operation and Maintenance (O&M).

In these situations sector heavily depends on internal and external financing. According to a report of Ministry of Water and Power, 49% of total investment in the sector was financed by external loans in 2002 and 43% by the government of Pakistan.(GOP, 2007) Pakistan invests 0.25% of its total GDP in the WATSAN sector. According to Medium Term Development Framework (MTDF) this is an insufficient amount and MTDF recommend an amount of US\$2 billion (120 billion rupees) per year from 2005 to 2010, half of which is to be paid by the federal and provincial governments and other half by the private sector. Major external donors in the sector are World Bank, Asian Development Bank (ADB) and Japan Bank for international cooperation (JBIC) [Pakistan water sector profile, 2002].

## **5.2 Energy efficiency and renewable sector**

During the last two years power load shedding has broken almost all the previous records of the country. Major industrial and commercial cities of Pakistan like Lahore, Karachi, and Faisal Abad which contribute to 85% of total export revenue, faced worst power load shedding. Almost 60% industries were closed only in Faisal Abad and 250,000 laborers are now jobless.

According to the Federation of Pakistan Chambers of Commerce and Industries (FPCCI) about 600 industrial units in Faisalabad, 440 in Lahore, 213 in Peshawar and 700 units in Multan, Gujranwala, Sialkot and Sheikhupura were closed by the end of January 2009 because of acute power shortages. (CRSS, 2009)

According to experts the demand of electricity would be 22,000 MW by the mid 2009 while the total installed capacity of Pakistan is 19,505 MW but the actual generation is 16000 to 17000. So there is the shortfall of approximately 3000 MW. (CRSS, 2009)

There is a poor coordination in WAPDA and many independent Power Producers (IPPs) which causes even a conflicting situation resulting to badly impact the power sector.(CRSS, 2009)

Poor governance is a major cause of most of energy sector problems. Both WAPDA and KESC have complex structure where it is difficult to calculate the exact amount of electricity theft, the electricity stolen (used but not paid for) [Marshak 2002].

There are many institutional and organizational weaknesses in the sector due to which there is a lack of proper decisions and most of decision on investment, tariff determination, and appointment of senior staff are under the political influence. Due to shortage of economic resources, the process of accountability is not transparent and decision making process related to deal with IPPs, has slow pace. Institutional depression was most obvious in the recent abrupt decline in financial performance, blackouts and high levels of losses and stolen electricity. In such circumstances, WAPDA and KESC have lost assurance of customers, investors and even the Government. [Marshak 2002]

In the beginning of 2009 total circular debt of different companies (firms) in power sector was approximately 400 billion Rupees. Due to which many Independent Private Producers (IPPs) slowed down their production. Main reason for the financial crises of the energy sector is due these poor business practices by different stakeholders in the sector.

Similar to electricity there is also a big gap in supply and demand of natural gas in Pakistan. Sui Northern Gas Pipelines Limited (SNGPL) disconnected the gas supply to 200 industrial units only in Lahore in the last week of December 2008.

The main reason for the energy sector problems is lack of financial resources and poor governance. Due to weak governance arrangements, departmental and provincial rival groups badly affect the proper planning and implementation of different energy projects and policies. [Bashir 2008].

ENERCON was transferred to Ministry of Environment in 1997 and became an attached department of the Ministry. Before this it was an independent regulatory authority in the energy sector. By this attachment it has lost its own capacity and authority.

The ministry is managed by globe-trotting generalist- bureaucrats, who sit as heads of a large number of small donor-funded projects in almost every field of environment. Their initial incompetence allowed these projects to be donor-driven. Now the donors, led by UNDP as the manager of Global Environment Facility, are so used to leading that any semblance of local ownership by experts is subverted in league with the generalist bureaucrats. They like to sit on all committees and enjoy veto power in all decisions. [Pervez, 2006]. In a ministry like this, one cannot expect much for an attached department like ENERCON. The action plan sent by ENERCON for the approval of the minister did the rounds of all manner of desks for months and was returned by a section officer with a one -line remark that it should be on the pattern of the National Environment Action Plan (NEAP). No comment on what was wrong with it and no reason why NEAP is such a superior document? [Pervez 2006].

There are no or only few energy economists in the sector, therefore tariff calculation is difficult to perform. [Bari 2006].

Regarding Renewable Energy Sources (RES) Pakistan has some institutional framework in the form of Alternative Energy Development Board (AEDB) and Pakistan Council of Renewable Energy Technologies (PCRET). These institutions are facing a number of regulatory and governance problems. Lack of sufficient financial and technical resources further put these institutions in fall back. In spite of having sufficient renewable energy resources, Pakistan is facing severe energy crises. Only 0.1% of all RES are being used for energy generation.

Only few steps have been taken to explore the wind energy but with little capacity of 500 W per micro turbine with total number of 140 turbines in Sindh and Balochistan. AEDB is willing to increase the power capacity up to 7000 MW by 2010 and 9700 MW by 2030. This announcement seems to be traditional as AEDB has no proper financial resources and technical capacity to achieve the target.

Pakistan has approximately 3,362 million short tons (Mmst) of recoverable reserves of coal but coal plays very little role in the energy economy of country. Pakistan produces small amounts of coal and imports additional amounts, to satisfy demand. Recently, in the Tharparkar (Thar) Desert in Sindh province, low-ash, low-sulfur lignite coal reserves have been discovered up to an amount of 1,929 Mmst. This discovery has increased the interest of both national and international investment in the sector. [Langdon 2008]

Consumption of low-quality fuel, in major cities of Pakistan and an increased number of vehicles has resulted to pollution problems. Lead and carbon have become major

pollution problems. There are little or no energy efficiency standards due to which intensity of carbon dioxide is increasing at an alarming rate. Now the use of CNG has become common in almost all parts of the country which is a positive change in energy sector. The use of CNG has increased recently in the public transport facilities. [Langdon, 2008]

55,000 tons of waste is produced daily by the urban areas of Pakistan. It can be used to produce electricity with minimum costs. In Pakistan currently there is no waste energy facility launched or managed by the Government. Few efforts have been made regionally in some areas of the country but these facilities have poor performance capacity and face number of financial and technical problems.

Regarding energy efficient imports Pakistan has made a little progress. Only textile industry has taken few steps to introduce energy efficient practices and imports. The Small and Medium Enterprise Development Authority (SMEDA) as well as the National Productivity Organization (NPO) have been supported by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH to introduce Energy Efficiency in the Textile Industry. This initiative helps the textile sector address energy losses and related productivity, quality losses.

As a first exercise, detailed energy efficiency audits were conducted by national consultants under supervision of international energy efficiency experts in six textile units, two spinning units, two processing units and two integrated units. [Renewable Energy & Energy Efficiency Program (REEE)]

### **5.3 Agriculture and Livestock sector**

Agriculture sector of Pakistan is facing various institutional, legislative, financial and policy problems. As discussed above a number of institutions are working in Agriculture and livestock sector. Almost all these institutions are developed to satisfy the urgent and transient needs without having long term planning and weak aspiration to achieve immense targets of economic well being and sustainable development. The governance structure of institutions is not stable having poor capacity and ill managed human resources. Moreover inadequate financial and technical resources hinder the smooth working and efficiency of institutions.

Most of the agriculture sector policies are target oriented within a specified timeframe without providing a suitable line of action to the institutions and authorities responsible for implementation of policies. Actually most of policy making institutions take it just their constitutional or administrative obligation to develop a policy without keeping in view the policy outcomes and conditions necessary to implement or to achieve the policy goals. Moreover policies are not periodically reviewed to make them up-to-date and meet the current needs of the country.

Due to poor administration and lack of interest of government farmers have to face many problems e.g. last year was the year of fertilizer crises in the country. Poor quality seed and other inputs are the major cause of low yield of important crops like cotton, wheat, rice and sugarcane. In spite of presence of PRC and Plant Protection Department low quality pesticides are frequently sold and marketed in the country.

Farmers often do not get the due prices of their agricultural commodities because of delay of government to fix the prices and laziness of Trading Corporation of Pakistan (TCP).



Water shortage and increased irrigation costs is one of the major reasons of less productivity.

These problems are mainly because of poor administration of water resources by the irrigation and water management departments.

Agricultural Censuses Organization (ACO) do not have its own technical and trained staff necessary to conduct proper and timely censuses of agriculture and other related departments. Moreover reliable and periodic agricultural statistics are not available to policy makers and regulatory institutions resulting to make weak policies with no or little concern of actual needs and priorities of the sector.

As suggested by Shakeel (2004), Pakistan has a weak export policy. Hence Pakistan's export revenue has decreased sharply. For example the Kinno of Pakistan has excellent quality but it is not properly accepted in international markets. international market [shakeel 2004].

- Pakistan has in appropriate and in sufficient agricultural extension services which are unable to identify the current problems faced by the agriculture sector but also fail to fulfill the needs of the farmers.

As analyzed by Hanif, Shakeel and Fayyaz ( 2004), Livestock sector of Pakistan is also in facing variety of problems like

- Inferior quality of germplasm
- Less availability of foods
- Little treatment of diseases
- Poor financial conditions of the people involved in sector due to none or less availability of credits

## 5.4 Forestry and plantations sector

The main reason of deforestation is the weak ownership rights. There is an improper enforcement of Property rights. In these situations landless farmers and others have to use forest resources as free resource.

Land tenure systems in Pakistan are highly complex especially in the mountains areas where most of the natural forests are located. Many tribal communities are living in these areas for centuries, but occupancy rights are not clearly defined and listed in government records. In privately owned guzara forests, the owners often have to contend with the needs of untitled holders or occupants. Because of these vague property rights landless and wandering grazing communities are discouraged to protect the forest and land resources. Many forest areas are managed as common property and are openly accessible. In Dir, Swat and Chitral, former princedoms, which merged with the NWFP in 1970, forest concessionaires (a term still undefined in the Forest Act) demanded a share of the sale proceeds (royalty) from natural forests. This demand was accepted by the government and a royalty of 60 percent is now paid to the forest concessionaires based on complex tribal traditions. [Wani (undated)]. It is necessary to clearly define the roles and rights of all stakeholders for the sustainable management of forests.

Law enforcement for forest protection is weak and penalties devised by various legal instruments such as the Pakistan Forest Act (1927), the Hazara Forest Act (1936), provincial wildlife ordinances and related acts are ineffective. PFDs have been unable to cope with forest encroachment, theft and illegal logging. These infractions are transboundary in nature and not covered effectively by the existing laws. [Wani (undated)].

According to Atje and Roesad (2004), one of the major causes of deforestation is the weak and less efficient institutes

Institutions related to forests and biodiversity conservation has hardly changed since their establishment. Institutional reforms of provincial forestry and wildlife departments; the Federal Forestry Wing, the Pakistan Forest Institute (PFI), the Zoological Survey Department (ZSD) and the National Council for Conservation of Wildlife (NCCW) are crucial to meet emerging challenges. [Wani (undated)]

There is a poor coordination among forest sector and other closely related sectors like agricultur, food, water management etc. Forest policy of Pakistan does not clearly addresses this issue of linkage of different inter related sectors.

## **5.5 Biodiversity and protected areas**

Most of the biodiversity legislations and policies address only animal species with little or no focus on endangered and threatened plant species. Moreover it is difficult to impose laws because of their controversial nature. For example the developments activities outside the protected areas are not properly addressed. Most of the rules developed from laws address only some selected and not all or important species.

Existing wildlife laws are not comprehensive and do not address all important issues. Under the law provincial governments have authority to manage the protected areas but not adjacent areas.

Management planes and policies related to biodiversity are weak and addressing mostly forests, wildlife, agriculture and fisheries. Moreover most of the policies just provide a framework or some strategies without suggesting implementation tools and conditions. Biodiversity issues are not properly addressed in five year planes of Pakistan.

As discussed by [Zoo Outreach Organization (2005)]; In Pakistan, wildlife is controlled and managed at provincial level with the little or no influence of the Federal Government. Each province of Pakistan has its own wildlife department and own minister. Most of the habitats of wildlife are under the control of the forest departments. Laws related to biodiversity are mostly out dated as most of laws were developed in the middle of year 1970. Only one law out of six was amended in 1990. CITES and legislations have weak linkage. In spite of being a provincial matter, all the certificates of CITES related to import and export are issued by the Federal Government. Generally NCCW issues such certificates under the Ministry of Environment.

Separate zoo legislations are not available in the sector. Some general regulations are framed which do not cover all the matters of the sector. For example to start a zoo in any province, permission of Provincial Wildlife Department has to be taken with a license fee of two thousand per animal. Keeping wild animals illegally imposes some penalties and fines which have never been charged due to political interference.

Animals can be captured from the wild in Pakistan to use in zoos , but it can only be done for the research purposes. Exhibition and inspection standards are non existent. There is no

specific act for zoo in Pakistan and policies are also not available but wild life sector has some legislation which is not properly implemented. Basic things in almost all the laws are same with little difference province wise.

## CHAPTER 6

### DISCUSSION AND SUGGESTIONS

#### 6.1 Water supply and sanitation sector

Regarding implementation of NEP guidelines for Water supply and Sanitation sector, apparently the WATSAN sector has made sufficient arrangements in the form of NDWP, NSP and clean drinking water for all programs but in spite of this, safe drinking water is un available to 38.5 million people in Pakistan and about 50.7 million people do not have proper sanitation facilities. According to ADB( 2002), it is an alarming situation as keeping on this trend will deprive 52.8 million people of safe drinking water and 43.2 million people will be deprived of proper sanitation. Most of the WATSAN sector policies and programs have their focus on coverage figures with little consideration of service quality of WATSAN facilities.

Some possible suggestions are given here to improve the existing conditions of the WATSAN sector

### **6.1.1 Establishment of National Water Supply and Sanitation Agency**

It is highly desirable for Pakistan to establish a National Water Supply and Sanitation Agency (National WATSAN agency). It should be an independent regulatory and administrative authority. At present the only regulatory Body in the environmental sector is Pakistan Environmental Protection Agency (Pak-EPA) and its four provincial offices are responsible for policy setting and its implementation under the supervision of Pakistan Environmental Protection Council (PEPC). The proposed National Water Supply and Sanitation Agency (National WATSAN agency) should work in coordination with Pak-EPA to implement Water and Sanitation Policies, to monitor and direct the existing rural and urban Water Supply and Sanitation facilities like Tehsil Municipal Administrations (TMAs), City District Governments, Water Boards and Water and Sanitation Agencies (WASAs).

### **6.1.2 Independent Act for the Sector (Pakistan WATSAN Act)**

Keeping in view the extreme importance of water and sanitation for life, WATSAN sector should have an independent Pakistan Water Supply and Sanitation Act. The proposed act will address all possible institutional and regulatory arrangements of the sector.

### **6.1.3 Institutional Capacity Building**

As suggested by Ahmad (2005), institutional capacity of existing WATSAN institutions should be strengthened by adopting following measures.

i) Roles and responsibilities of all the institutions should be clear and a financial transfer system should be there in accordance with Local Government Ordinance (LGO). Actually the devolved government system is still rudimentary and facing many problems. These problems are present since the time of devolution of power to the local governments because of too little experience of National Reconstruction Bureau(NRB) that designed the devolution system, lack of proper consultation before launching it, financial and human resource constraint, lack of understanding of respective roles by different tiers of local government, lack of experience of the local politicians and officials and discrimination in the devolution of powers from federal government to the provincial governments and downwards.

ii) Suitable technical standards should be set for WATSAN design and quality.

iii) There should be strategic planning of water resources and planning of Water Supply and Sanitation at district level particularly and TMAs level generally.

iv) At the tehsil/town level there should be the management of the existing resources, different levels of service delivery should be set, need based development procedures should be developed with full community participation in identification of different schemes, construction of WATSAN facilities and even in Operations and maintenance (O&M).

v) Tehsil Officials should help to form Community Based Organizations (CBOs) or work through existing CBOs.

vii) Members of the Provincial Assembly (MPAs) and other legislative bodies should take keen interest in the development of their respective constituencies.



- viii) An effective data collection and management information system (MIS) should be launched at different levels of WATSAN service facilities.
- ix) There should be strong institutional relationship among different tiers of government (Federal, Provincial, District and Tehsil).
- x) Water supply and Sanitation should be integrated with hygiene promotion.
- xi) Women participation in the sector should be strongly encouraged.

## **6.2 Energy efficiency and renewable**

Energy sector of Pakistan demands urgent structural reforms to be taken by the Government with the participation of all key stakeholders.

A latest regulatory framework for autonomous energy institutions and other related institutions is required. Every institution in the sector should be clear about its authorities and should work accordingly. A strict periodic accountability and audit system should be introduced in all sections of the sector.

There is a need for relevant expertise of the regulatory staff to define regulatory missions clearly and carry out the functions effectively. In the developing countries (including Pakistan) it is really difficult to find skills to staff regulatory institutions, to run new companies, and to provide for a policy capacity in the relevant ministries (Afia, 2007).

There should be an independent institution, having proper legislative arrangements.

Financial structure of the sector needs to be strengthened and restructuring. A competitive and efficient energy market is necessary for Pakistan. This may be done by

Privatization of major energy sector institutions like WAPDA and KESC, Sui Northern and Sui Southern Gas Pipelines Corporations etc.

There should be a long term and permanent resolution of conflicts and contact problems among WAPDA, IPPs and other institutions of the sector.

Tariff structure of natural gas and petroleum sub sectors needs to be re adjusted. Prices should be re adjusted in accordance with the latest international market.

Unless a strong coordination in regulatory Governance (institutional and legal design of regulatory system) and regulatory substances (Setting of prices, quality of service etc) the sector can not achieve its financial and customer satisfaction goals.

If there are proper regulatory institutions with an excellent framework of governance, then there are fewer chances of mistakes. Moreover such institutions can easily identify and can correct them. According to Afia(2007), The main reason for dramatic success of other Asian countries like Malaysia and South Korea and China is mainly due to excellent institutional and legislative arrangements in the energy sector.

It is an urgent demand of the sector to have an independent and centrally controlled agency. A proper coordination of proposed agency with industrial sector and the current market should be ensured.

Pakistan has wide spectrum of high potential of renewable energy sources, conventional and non-conventional as well, which have not been adequately explored, exploited or developed. Current energy supplies are unable to fulfill the needs of country. A very large area of the rural side of Pakistan does not have the electrification facilities. At present Pakistan is facing severe energy shortage. The development of the renewable energy

sources (wind, solar, waste, biomass, waves, geothermal etc) can play an important role in meeting this challenge.

All the planes and policies should be urgently put in place otherwise the existing problems will destroy economic structure of the sector and hence the Pakistan.

### **6.3 Agriculture and livestock sector**

Most of the problems of Agriculture sector are the result of Poor governance structure and little attention by the Government.

Poor institutional infrastructure and outdated regulatory framework is one the major causes of the poor development in agriculture and livestock sector. Livestock sector demands due attention to be an important economic sector of the country. Livestock market infrastructure should be strengthened by regulating the trade of livestock commodities like milk, meat and eggs etc. Government should realize the importance of livestock sector because of its more than 9 % share in GDP. Long term comprehensive planes and policies should be framed to improve the sector. Livestock institutional capacity should be strengthened and regulations are needed to be periodically reviewed to keep them up-to-date.

There is growing realization in Pakistan that we should now come up with an export led production system and should initiate to grow for export program, meeting requirements and consumer tastes overseas. .

The weaknesses both in structure as well as methodology for transfer of technology for the farmers must be addressed on priority if the entire system of extension service to be strengthened and revitalized. This will entail substantial increase in resources for the

sector. The weaknesses of the present extension system in each province of Pakistan as discussed by Hanif, Shakeel and Fayyaz ,2004 include;

#### **6.4 Forestry and plantations sector**

Babar Shahbaz, Tanvir Ali and Abid Qaiyum Suleri, give the following suggestions regarding forest sector policy for sustainable forest management and livelihood security of forest dependent people;

A comprehensive policy research is an important condition to formulate the effective forest policies. These research studies will ensure the involvement of important people in the forest sector and also the community participation will be ensured.

It is a collective effort to achieve the targets so all stake holders should be involved in all forestry activities. The forest policies should be revised to ensure poverty reduction especially of the people of forest dwelling.

Forestry activities are managed and controlled at provincial level and provincial forest department is responsible to launch programs of forest and range management, but the formation of policy is the responsibility of Federal Government in Pakistan. There is no proper coordination between provincial and Federal Governments due to which forest sector is fragmented. The provincial Governments have full authority in Forestry issues and matters. Overall there is the weak consistency and poor trend of collective or joint efforts by Federal and Provincial Governments. With out such joint efforts it will be rather impossible to achieve the goals of sustainable forest management.

Frequent changes should not be there in the forest policies. The policy formation process is needs to be revised. In almost all the policies of forest sector local people have least or no participation. It is suggested that a proper survey should be conducted before formation of a policy to identify the actual needs of people at all levels because a sustainable policy can result a sustainable management of forest resources of the country.

Flexible forest policies can be adopted easily at all levels especially at local levels. Decentralization of forest management at district level can solve the problem of forest management at local levels.

## **6.5 biodiversity and protected areas**

For an effective legal framework for the implementation of CBD and related conventions, almost all the present laws and policies need to be reviewed and revised to fulfill all the gaps and deficiencies. All the law enforcement agencies should be clear about their jurisdiction an authorities in Pakistan. Laws and regulations prevailing at local levels urgently need to be reviewed and revised to ensure the maximum participation of local communities. The laws which are related to community ownerships and right to use to biological resources should be redefined in this way natural resource management system can be protected and managed sustainably.

## 6.6 Final conclusion

There is an age difference of almost eight years among Pakistan Environmental Protection Act (PEPA 1997) and National Environmental Policy of Pakistan (NEP 2005). First and for most constraint for the implementation of NEP is this age gap in Law and Policy. Of course during the process of formulation of environmental law, environmental policy had no consideration. Moreover laws are developed for ensuring the equity and justice for all being more general. Policies are made to achieve some specific goals for a particular institution or organization. In this context it can not be expected from PEPA 1997 to provide all the necessary legislative requirements for the implementation of NEP 2005. There is a need that environmental policy should be analyzed to check its adequacy to address the current environmental situations in the country. Similarly PEPA 1997 is also needed to be analyzed on the bases of existing environmental situations.

Functions assigned to PEPC and EPAs by PEPA 1997 are mostly related to deal with department of environment with little considerations of other departments like agriculture and livestock and water supply and sanitation etc. Therefore for the implementation NEP successfully, all the environmental sectors are needed to be coordinated with environmental department of Pakistan.

At present administrative and legislative framework of almost all the sectors (agriculture and livestock, water supply and sanitation and forestry and plantation etc) have no or little environmental considerations which are clearly reflected from different sectoral policies and legislations. The main focus of each sector is to achieve the targets set by its own administration which may be generally the

economic prosperity and adequacy of services or simply the development. The concept of sustainable development has no or little influence on the administration and authorities of these sectors. To achieve the targets as set by NEP for each sector it is necessary that policies and legislative mechanism should be revised in accordance with the guidelines provided by the NEP without affecting their own administrative infrastructure.

Most of the policies and legislations are developed to meet some occasional needs with the narrow focus on actual requirements of the country. Unless a transparent and actual need based policy and legislation formulation process is exercised in different sectors, it will be rather impossible to achieve the target of not only the sustainable development but even simply the development. Also the policy formulation and its implementation should go side by side even better practice will be to consider all the conditions and requirements necessary for the implementation of a policy. A comprehensive research based evaluation of existing arrangements in a relevant sector or other related sectors and analysis of appropriate implementation instruments of a policy will lead to perfect implementation of a policy.

Institutional capacity of most of the institutions is too weak to face the challenges of modern trends of development and economic well being. A fair capacity development process is necessary for almost all the sectors of the country related directly or indirectly with the environment. A fair capacity development process does not mean only to conduct some formal training workshops for the staff but it should be based upon actual needs without any external influence.

Most of the facts and figures of almost all the sectors agriculture, energy, forestry, water supply etc are based upon rough surveys not representative of actual needs of the country. Only a small sample area or limited arrangements are studied and rest of the job is done by applying some estimation or in some cases simple statistical operations help to solve a big problem. A better survey will help the decision makers to take the initiatives actually required. The process of survey needs to be fair and honest which can be practically possible by conducting need based research by respective departments and by coordinating with the institutions related to providing survey relating facilities i.e. Statistical department and other institutions developed to fulfill the needs of specific departments e.g. Soil Survey Of Pakistan, Zoological survey etc.

Mostly the arrangements made by different sector institutions poorly address the rural areas of the country. For example clean drinking water supply schemes are almost non existent in the rural areas. More over rural communities are least consulted in the policy formulation and other decision making processes.

Most of the programs, policies and decisions made by a particular sector are under the influence of some donor agencies which are in most cases external e.g. Asian Development Bank (ADB), World Bank (WB) and Japan Bank for International Cooperation (JBIC). In most cases these donor driven arrangements and decisions are not representative of actual needs a particular sector and decisions thus made or initiatives taken lead a department or institutions towards somewhat undesired path and are least fit under the existing socio economic conditions of Pakistan. Though in most cases donor agencies claim their instructions and



suggestions to be on the bases of wise analysis and represent the actual needs of the country but unfortunately they are far behind from actual facts and figures and conditions prevailing in the country. Just some economic considerations of a sector become the source of decision making processes. Again the wise and honest surveys and research based analysis representing the whole sectoral needs will help to solve the problem.

Not all but most of the programs and policies of particular sectors have their focus on coverage figure with least considering the quality of services. Many WATSAN policies and programs, and energy sector initiatives discuss mostly the coverage measures without considering the adequacy of services provided. Beside coverage quality assurance is also necessary for all programs and developmental policies and plans.

## **6.7 Policy implications**

Proper coordination of environmental institutions with other sectors (Agriculture, energy, forestry, biodiversity, pollutioncontrole and waste management etc) institutions is an urgent need to achieve the targets of not only respective sector but also the environmental protection and conservation and thus the sustainable development.

National Environmental Policy of Pakistan demands that institutional structure of different sectors related to environment should be revised to make it in line with the policy guidelines.

Existing policies of different sectors related to environment are needed to be revised to make them in accordance with targets set by the NEP for respective sector.

Legislative framework of different sectors though fulfilling the specific sectoral needs up to some extent, needed to be revised in line with environmental obligations of each sector set by the NEP.

An environmental awareness campaign should be there at all levels in each sector.

An environmental expert should be necessary part of all the institutions beside health and safety experts to initiate environmental awareness and obligations of the different sectors towards environmental protection and conservation.

Finally environmental studies should be included in curriculum of studies at all levels of formal education. At present some basic introduction of environment with particular focus on ecology, is included in our curriculum of studies. Along with ecology, arrangements should be made to introduce the students with current environmental problems of the country and needs and arrangements to solve them as a part and parcel of their formal education. Idea of launching environmental science faculty at intermediate level may also be evaluated. It will improve the overall environmental awareness and trend will be set to consider environment for each developmental activity and also in daily life.

## References

Ahmad, E. and Sattar, A. (2007). Awareness and the Demand of Safe Drinking Water Practices. Working Paper No, 21, Pakistan Institute of Development Economics, Islamabad.

A.I.D, (1993). Farm forestry in Pakistan: an evaluation of USAID assistance. A.I.D. evaluation highlights no. 21

Adlan, D. (1999). Governance Indicators for African Smart States of the 21st Century. Paper presented in the workshop on the theme "Indicators for Monitoring Progress towards Good Governance in Africa. Addis Ababa, Ethiopia, p. 9.

Afia, M. (2007). Effectiveness of Regulatory Structure in the Power Sector of Pakistan. Working Paper No, 25, Pakistan Institute of Development Economics, Islamabad.

Afzal, M. (2007). Livestock development policy. Livestock and Dairy Development Board Ministry of Food, Agriculture and Livestock, Government of Pakistan, Islamabad.

Ahmad, R. (2006). Legal and Institutional Framework for the Protection of Environment in Pakistan. Paper written by Chief Justice of Pakistan. Available at, [www.unep.org/Law/Symposium/Documents](http://www.unep.org/Law/Symposium/Documents).

Ahmad M. Z. (2005). Pakistan – Water and sanitation services in a devolved government system. 31st WEDC international conference, Kampala, Uganda.

Ahmad, M. (2007). Pakistan's Energy Strategy and its Role in South Asia. A presentation on February, 19. 2007.

Ahmad, M and Iqbal, M. (1999). An Assessment of Livestock Production Potential in Pakistan: Implications for Livestock Sector Policy. Pakistan Development Review, 38 : 4 Part II (Winter 1999) pp. 615–628, Pakistan Institute of Development Economics, Islamabad, Pakistan.

Akhtar, S. (2005). Environmental Law- An Overview. Presented in a capacity building training program for young lawyers, organized by M.C. Mehta Environment Foundation from 15th November to 27th December at Eco-Ashram.

Ali, M. (2003). Transformation of Public Sector Entities. Speech by. Mr. M. Ali Shah Country Director, ADB Pakistan Resident Mission. 19 June 2003. Karachi, Pakistan ...

ADB, (2000). Energy Sector Infrastructure. Asian Development Bank, country assistant plan-Pakistan, 2000.

ADB, (2008). Country Environment analysis. A report of Asian Development Bank, country strategy for Pakistan, 2008.

Akhtar, S. (2005). Environmental concern Pakistan scenario. Ministry of Environment, Government of Pakistan, Islamabad.

Amjad and Khan, (2005). National Forest products Statistics, Pakistan. An overview of forest products statistics in South and Southeast Asia. FAO corporate document repository, 2005.

Atje, R. and Roesad, K. (2004). Decentralization and the Forestry Sector: Opportunities and Challenges. Paper published in Research Gate, Scientific Network.

Bari, (2006). Pakistan's energy sector needs long-term sustainable policy. The Nation, August 28, 2006.

Bashir, M. (2008). Power shortage or poor governance in Pakistan. Daily Dawn, 9/6/2008.

Conca, K. (2006). Environmental Governance after Johannesburg: From Stalled Legalization to Environmental Human Rights. Journal of International Law & International Relations. Vol, 1,p, 1-2

CRSS. (2009). Pakistan's Energy Crisis and the Possible Silver-lining for Foreign Investment. A report published by Center for Research and Security Studies, Islamabad.

David, W. and Khan, A. (2007). Scoping study on capacity development for service delivery in Pakistan: Summary Report of Scoping Study Workshop, 2007. ADB Conference Room, Islamabad

Dejik, V. and Hussein (1994).

ECO. (2007). Report of The First Experts Group Meeting on Developing A Work Plan on Biodiversity, Islamabad. 24-25 April 2007.

Francis B. (2000). Management and Governance Issues in Pakistan. Asian Development Bank. Prepared Under Regional Technical Assistance (RETA) 5877: Strengthening Financial Management and Governance in Selected Developing Member Countries.

GOP, (1992). Forest Sector Master Plan. Ministry of Food, Agriculture and Cooperatives, government of Pakistan, Islamabad.

Faruqee, R. and C. Kevin. (1995). Reforming the government's role in Pakistan's agriculture sector. Pakistan Development Review 34(3): 225-262.

GOP, (2006). Pakistan Millennium Development Goals Report. Planning Commission, Govt. of Pakistan, Islamabad.

GOP, (2006). National Sanitation Policy of Pakistan, 2006. Ministry of Environment. Govt. of Pakistan, Islamabad.

GOP, (2002) National Forest Policy of Pakistan 2002: Ministry of Environment, local government & rural development, Govt. of Pakistan, Islamabad.

GOP, (2005) Third National Report on implementation of Convention on Biological Diversity (CBD) in Pakistan: Directorate of Biodiversity Ministry of Environment Government of Pakistan, Islamabad.

GOP, (1993). Forest Sector Master Plan, Vol,1: Ministry of Food, Agriculture and Cooperatives, government of Pakistan, Islamabad.

GOP, (1993) Institutional Framework: Forest Sector Master Plan, Vol,1. Ministry of Food, Agriculture and Cooperatives, government of Pakistan, Islamabad.

GOP, (2008) Strategic Policy Directives of Government of Pakistan: A follow-up meeting on National Energy Conservation Strategy: National Energy Conservation Council Ministry of Environment, Government of Pakistan, Islamabad.

GOP, (2007). Environmental Wing. Ministry of Environment, Government of Pakistan, Islamabad.

GOP, (2007) Energy year book: Hydro carbon Development Institute of Pakistan, Ministry of Petroleum, Government of Pakistan, Islamabad.

GOP, (2008) Environmental profile of Pakistan: Ministry of Environment, Government of Pakistan Islamabad.

GOP, (2006) Renewable and energy efficiency program: Small and Medium Enterprise Development Authority, Ministry of Industries and Production

GOP,(2005) National Energy conservation Policy 2005: National Energy Conservation Council, Ministry of Environment, government of Pakistan Islamabad.

Mehnen, N. Mose, I. and Strijker, J. (2009) Governance in protected areas: Current stat of research and existing research gaps.1st International Conference on Landscape Economics European Consortium for Landscape Economics, Vienna, Austria.

GOP, (2005) National environment policy of Pakistan 2005: Ministry of Environment, Government of Pakistan, Islamabad.

Hassan, J. (2008) Role of Pakistan Law Association in strengthening the Environmental Laws in Pakistan. Hassan & Hassan Advocates, Lahore.

Hassan, P. (2007) Environmental Protection, Rule of Law and the Judicial Crisis in Pakistan: Paper presented at the International Congress on Environmental Law held in Rio de Janeiro, Brazil.

Lubna, H. (2008) An Anatomy of State Failures in the Forest Management in Pakistan: Pakistan Institute of Development Economics, Munich Personal RePEc Archive (MPRA) Paper No. 6513.

Hanif, M. Shakeel, D. and Fayyaz, N. (2004) Agricultural perspective and policy. Ministry of Food, Agriculture and Livestock, Government of Pakistan, Islamabad.

Hayat, A. (2008) The 3rd Trade Policy review of Pakistan. Published at Sustainable Development Policy Institute (SDPI)

Iqbal, M. and Ahmad, M. An Assessment of Livestock Production Potential in Pakistan. Implications for Livestock Sector Policy. The Pakistan Development Review 38: 4 Part II (Winter 1999) pp. 615–628

Irshad, R. (2008) Biodiversity of Pakistan. Status trends and threats Fourth National Report to CBD: Ministry of Environment, Government of Pakistan, Islamabad.

Khan, A. Institutionalization of environmental assessment in the public sector: A strategic approach. Case study no 5. United Nation Environment program. EIA Training Resource Manual. Case studies from developing countries.

Khan, I. Governmental Structural Adjustments for Better Governance Towards Environmental Protection and Pollution Control in South Asia. SDPI Research and News Bulletin. SDC Special Bulletin Vol. 11, No. 6 (November – December)

Kerrete, D. (2008). ISO-14001 as an environmental capacity building tool. Environ. Sci.Technol, 42(8), 2773-2779

Jehangir, S. (2005). Bio diversity action plan for Pakistan: Status of implementation review & revision. Regional Workshop for South, SE and East Asia on Capacity Building for NBSAP& Mainstreaming of Biodiversity.

Joseph, N. and Quddus, G. (1998). The Pakistan Agricultural Research System: present status and future agenda. Pakistan Development Review(Report), Pakistan Institute of Development Economics, Islamabad.

Khalid, D. (2005) Water Management in Pakistan, issues, constraints and options: Presented in a training workshop at University of Arid Agriculture Rawalpindi.

Khatoon, A. (2007). Obstacles in the way of sustained growth: Paper published in Pakistan Defence Forum. Available at; <http://www.defence.pk/forums>

Khan, F. and J. Yasar. (2007). Delivering Access to Safe Drinking Water and Adequate Sanitation in Pakistan. Working Paper No.30. Pakistan institute of development economics, Islamabad.

Khan, I.Environmental Pollution Abatement Through Good Governanc LEAD-Pakistan Occasional Paper No.15 Governance Seriese.

Khan, Z. (2003) Protected areas in Pakistan management and issues. J. Natn. Sci. Foundation Sri Lanka, 31(1&2): 239-248

Khan, S. and N. Pervaiz. (2001). the integration of economic measures into the national biodiversity strategy and action plan of Pakistan.Report prepared by Sustainable Development Policy Institute, Islamabad, Pakistan

Langdon. (2008). Energy Information Administration, Energy and Geography.: Article published in The Encyclopedia of the world. Available at <http://www.eoearth.org/article/Energy>

Lubna, H. (2001). Analyzing Institutional Set-up of Forest Management in Pakistan. research report no.182 Pakistan Institute of Development Economics, Islamabad.

Malik, M. Tameez, A. and Thowai, Z. (2008) Formulation of Watson policies in Pakistan. 33rd WEDC International Conference, Accra, Ghana, 2008.

Marshak, A. (2002). Private Sector Investment in the Energy Sector: Case of Pakistan. Presented at the theme Pakistan Energy sector reforms in Pakistan. Pakistan Resident Mission Asian Development Bank.

Moritz, T. (2002) Building the Biodiversity Commons. Published at D-Lib Magazine, Volume 8 Number 6.

Mock, J. and Neil, K. (2005) Mountain Protected Areas in Pakistan: The Case of the National Parks. Available at, <http://www.mockandoneil.com/paknp-tc.htm>.

Nadvi, K. and Robenson, M. (2004) Pakistan drivers of change synthesis and policy implications. Institute of Development Studies, University of Sussex, Falmer, Brighton BN1 9RE, United Kingdom.

Najam, A. (2001). Why we don't need a new International Environmental Organization?. Center for Energy and Environmental Studies, Working Paper no 0104.

Naseem (2003) legal and regulatory frame work of Pakistan for the implementation of NEP

Nayyer, A.H. (2005) Liberalization and De/regulation of Power sector in Pakistan. Report of Sustainable Development Policy Institute (SDPI) under the Renewable Energy/Clean Fuels research program.

GOP, (2000) Plant breeders' rights ordinance of 2000.government of Pakistan, Islamabad.

GOP, (2005) Year Book 2005 of Pakistan Environmental Protection Agency, Ministry of environment, government of Pakistan, Islamabad.

Pervez, T. (2006) The neglect of energy conservation: Paper prepared for a workshop at G.C University Lahore.

Qayyum, A. (2001) Regional study on forest policy and institutional reforms: Asian Development Bank (RETA 5900). Pakistan country case study inception workshop Peshawar.

Rome, S. (2008). Forest Governance in Transition. From the Princely State of Swat, and Kalam to the State of Pakistan. WP2/IP6 Working Paper No. 9

Saif, K. (2007). Water and Sanitation Sector: Pakistan needs to increase investments. Paper available at News Channel, Pakistan.com.

Shahbaz, B. (2008).Analysis of Institutional changes in Forest management and their impacts on rural livelihood strategies in NWWP, Pakistan: Thesis submitted for the Degree of Ph.D. Department of Agricultural Extension, University of Agriculture Faisal Abad.

Shahbaz, B. Ali,T and sluri, Q. (2004). a critical analysis of forest policies of Pakistan: implications for sustainable livelihoods. Springer,2006. DOI: 10.1007/s11027-006-9050-9



Salman, A. and P. Roger. (2000). Agricultural Policy Analysis in Pakistan, Illustrations in the use of the Policy Analysis Matrix: Working Paper No. 00-27, Working Paper Series Centre for Management and Economic Research.

Sattar, N. (2004) Integrated Coastal zone management: Regional Emerging Programs, IUCN, Asia.

Saeed, A. Capacity Building in Biodiversity and Impact Assessment,: Global Change, IUCN Pakistan Asia.

Stephen. B, 2002. Economic Governance and Institutional Dynamics, 1. Oxford University Press, Melbourne, Australia.).

Soguel and Jaccard, P. (2007) Governance and Performance of Education Systems. 2008 Springer. 1-10, Springer Netherlands

Thomas and Robert, J. (2002) Getting serious about sustainability. Environ. Sci.Technol, 36(4), 523-529

Thomas, S. David, H. and Violeta, C. (2004) Electricity privatization and restructuring in Asia Pacific: Public Services International Research Unit (PSIRU), University of Greenwich, London, UK

W.B, (2009) Pakistan Early Warning Update: World Bank Pipeline Projects: Volume 8, February 2009.

Watson, D. and Adnan, Q. (2007) Overview of Capacity Development in the Context of the International Development Effectiveness Discussion: Scoping study on capacity development for service delivery in Pakistan, asian Development Bank

Zaghim, A.(2005) Prospects of Renewable Energy Sources in Pakistan. Proceedings of COMSATS Conference2004 on Renewable Energy Technologies & Sustainable Development, 2005.

