7. PAKISTAN

7.1 Energy Policies and Actions

In Pakistan, power generation is mainly in the public sector with two vertically integrated utilities. In view of the electricity demand patterns and lack of funds in the public sector, the Government of Pakistan (GOP) decided to mobilise private sector resources by inducting it into power generation. In November 1985, the GOP announced measures to encourage private sector participation in the power sector. These initiatives were followed by the Power Policy in Pakistan firstly turned up in 1994.[93] The power policy, currently in vogue in Pakistan, is the "Policy for Power Generation 2002".[94] The scope of the Policy covers private, public-private and public sector projects. The main objectives of the Policy are:

- To provide sufficient capacity for power generation at the least cost, and to avoid capacity shortfalls;
- To encourage and ensure exploitation of indigenous resources, which include renewable energy resources, human resources, participation of local engineering and manufacturing capabilities;
- To ensure that all stakeholders are looked after in the process, i.e. a win-win situation for all; and
- To be attuned to safeguarding the environment.[95]

In 2005, the Energy Security Action Plan (2005-2030)[96] was approved to meet the requirements of Pakistan's Vision 2030 for reliable and quality energy supplies. The main objective of the plan is to enhance energy supply through an optimal mix of all resources including hydropower, oil, gas, coal, nuclear and renewable energy such as wind and solar. It is planned to optimise the utilisation of the country's indigenous resource to reduce dependence on imported fuel. In view of the public sector resource constraints, an important focus is also creating an environment conducive to the participation of the private sector, both international and domestic.[97]

Energy Conservation

In 2005, the National Energy Conservation Centre (ENERCON) and the Ministry of Environment, Islamabad published a report called "National Energy Conservation Policy 2005". This report includes guidelines and possible actions that can enhance end-use efficiency for various energy-consuming sectors of the economy and also for addressing various cross-sectoral issues that continue to retard promotion of energy

[93] Extracted from the web site of Private Power and Infrastructure Board (PPIB), Ministry of Water & Power ,http://www.ppib.gov.pk/BackgroundPrivatePower.htm
[94] Extracted from the web site of Private Power and Infrastructure Board (PPIB), Ministry of Water & Power , http://www.ppib.gov.pk/PowerPolicy2002.htm
[95] Referenced to "Policy for Power Generation 2002", http://www.ppib.gov.pk/policy_text2002.pdf
[96] Other objectives of the Action Plan can be referred to http://www.pakistan.gov.pk/ministries/planninganddevelopment-ministry/prsentations/IMC%20on%20Energy(France)%2021-22%20March%20Revised.ppt#12
[97] Extracted from Annual Report 2006-2007, http://www.pakistan.gov.pk/ministries/planninganddevelopment-ministry/annual%20plans/2006-07/Chapter_6/Energy.pdf

conservation. The policy is trying to promote energy conservation practices and effective energy savings of observable magnitude at the national level. The four main objectives of National Energy Conservation Policy are as follows:

- To foster energy conservation through stimulation of resources and regularising total energy management programmes in all sectors of economy.
- To develop energy conservation market and facilitate commercialisation by creating awareness and launching nation-wide demonstration projects.
- To maximise the demand for energy from indigenous resources.
- To create an enabling environment to reduce energy intensity of different energy consuming sectors through appropriate technological and policy measures, so as to promote sustainable growth.[98]

Alternative and Renewable Energy

The Alternative Energy Development Board (AEDB) created by the Government of Pakistan acts as the central national body on the subject of Renewable Energy. In 2006, the "Policy for Development of Renewable Energy for Power Generation (Small Hydro, Wind and Solar Technologies) was published and aimed to:

- Increase the deployment of renewable energy technologies in Pakistan
- Provide additional power supplies to help meet increasing national demand
- Introduce investment-friendly incentives, and facilitate renewable energy markets to attract private sector interest in renewable energy projects
- Devise measures to support the private sector in mobilising, financing and enabling public sector investment in renewable energy projects[99]

Below shows some actions for renewable energy by the government:

- Assistance for hydropower projects – Due to anticipated growth in demand and of the fact that only about 20% of the available hydropower potential is being utilised, the government, under the 'Vision 2025' development plan, provides first and foremost for the vigorous, multi-stage assistance and development of hydroelectric power
- AEDB Programme of 100 Solar Homes per province – This solar energy demonstration project aims to change the current status quo by providing local communities with comforts of lighting, cooking and clean drinking water
- Commercialisation of Wind Power Potential in Pakistan – This project aims to identify the existing impediments to the use of renewable energy sources in Pakistan, probing suggestions on how to overcome them and conducting the requisite planning for an initial demonstration project[100]

[98] Extracted from the National Energy Conservation Policy 2005, by ENERCON and the Ministry of Environment, Islamabad, http://www.pakistan.gov.pk/divisions/environment-division/media/National_Energy_Conservation_Policy.pdf, page 2, 3

[99] Policy for Development of Renewable Energy for Power Generation, http://www.aedb.org/PakistanREDevelopmentPolicy_FinalFormatte.pdf

[100] Referenced to the report called "Power sector Situation in Pakistan" by AEDM in 2005, http://www.rural-electrification.com/cms/upload/pdf/Pakistan-GTZ-power-sector-overview.pdf

7.2 Environmental Evaluation/SEA in Pakistan

In Pakistan, SEA is still in its formative stage. In 1970, the first set of legal and policy precedents for SEA were developed under EIA framework, however, formal implementation did not take place until late 1990s. At a global stage, SEA is on the threshold of widespread adoption and further consolidation. The most significant policy framework in Pakistan which incorporates SEA as a significant tool for addressing the environmental concerns is the Government's Mid Term Development Framework (MTDF) (2005-2010), which is mandatory to implement under the National Environmental Policy.[101] Besides, in the National Environmental Policy 2005, it states that SEA would be promoted as a tool for integrating environment into decision-making.[102]

The World Conservation Union (IUCN-Pakistan) established its Environment Assessment Services (EAS) Unit in 1994, which aims at, implementing Pakistan National Conservation Strategy through strengthening and supporting institutions involved in prevention and abatement of pollution and control of environmental degradation. Since its creation, EAS has undertaken a wide range of activities, including SEA of key policies, plans and programmes; and conducting training workshops on various environmental issues.[103]

In a workshop held in December 2004, it was recommended that SEA process should be integrated in the planning process of the country, particularly for urban development, industrial clusters, and mega projects. It should also be made part of the overall policy making process. The workshop focused on SEA as a tool for integrated policy-planning concept, which evaluates the environmental impacts of a policy, plan or programme and its alternatives. The workshop quoted the United Nations Environment Programme (UNEP) guidelines that SEA procedures includes screening, scoping, information collection, identification and comparison of alternatives and impact analysis, determination of impact significance, identification of mitigation measures, reporting, review of quality, decision making and monitoring. Such SEA procedure was being followed to review the MTDF (2005-2010).[104]

One of the goals of MTDF is to ensure environmental sustainability to span the green environment (i.e. forestry and watershed management, biodiversity, range management, desertification and marine pollution and brown environment (i.e. water, air pollution, solid wastes, hazardous wastes and noise pollution)). To achieve this, the MTDF strategy for environmental conservation, management and use is based on a

[101] Referenced to the "State of Environmental Report 2005 (Draft)" under Part 2 Overview of Major Environmental Developments and Trends, http://www.environment.gov.pk/pub-pdf/StateER2005/part2.pdf, page 38, published in the web site of Pakistan Environmental Protection Agency

[102] Extracted from "National Environmental Policy 2005" by Government of Pakistan, Ministry of Environment, http://www.environment.gov.pk/nep/policy.pdf, page 18

[103] Referenced to the web site of the World Conservation Union (IUCN-Pakistan), http://www.iucn.org/places/pakistan/eas.htm

[104] Referenced to the "Workshop Proceedings – Capacity Building Workshop on Environmental Impact Assessment – Tool to achieve sustainability" organized by Sub-programme 'Pollution Control' Unit NEAP Support Programme in collaboration with Pakistan Environmental Programme (Pak-EPA Component), 2004, http://www.environment.gov.pk/WorkShop/Report-%20Capacity%20Building%20Workshop-Rev01.pdf, pages v, 22, 27

three-pronged approach:

- Equitable sharing of benefits of environmental management
- Increase community management of national resources
- Integration of environmental issues into socio-economic development planning to achieve sustainable development

Accordingly, an Action Plan covering the brown environment (water, air pollution, solid wastes, hazardous wastes and noise pollution) and the green environment (forestry and watershed management, biodiversity, range management, desertification and marine pollution) will be implemented during the MTDF. For sustainable development, environmental assessments and accounting and information management tools would be incorporated in the decision-making processes. Public sector will lead the way in application of environmental criteria. A particular focus would be energy conservation and increasing energy generation through renewable forms of energy. Emphasis would also be placed on human resource development for incorporating environmental dimensions in development planning, environmental education and awareness and environmental research.[105]

Kohinoor Energy Power Project [106]

Habibullah Coastal Power Project[107]

[105] Extracted from the "MTDF 2005-2010 – An overview", http://www.pakistan.gov.pk/ministries/planninganddevelopment-ministry/mtdf/Foreword,%20Preface%20and%20President%20Message/Overview.pdf, pages 15-16

[106] Source: http://www.ppib.gov.pk/PhotoGallery.htm

[107] Source: http://www.ppib.gov.pk/PhotoGallery.htm

7.3 Environmental Evaluation/SEA on Energy Policies and Actions in Pakistan

SEA is in formative stage in Pakistan. The concept of SEA is on the threshold of adoption for the overall policy making process, which evaluates the environmental impacts of a policy, plan or programme and its alternatives. In the National Environmental Policy 2005, it states that SEA would be promoted as a tool for integrating environment into decision-making.

In the action plan covering the environment implemented during the MTDF (2005-2010) under the National Environmental Policy, environmental assessments and accounting, and information management tools would be incorporated in the decision-making processes for sustainable development. Public sector will lead the way in application of environmental criteria. A particular focus would be energy conservation and increasing energy generation through renewable forms of energy.

A summary table for the energy policies and actions and SEA status in Pakistan is presented in **Exhibit PK-1**.

Exhibit PK-1 Summary of Energy Policies and Actions and SEA status in Pakistan	
(a) Energy Policies and Actions	
Energy Policies and Actions	Policies: ● Policy for Power Generation 2002 ● National Energy Conservation Policy ● Policy for Development of Renewable Energy for Power Generation (Small Hydro, Wind and Solar Technologies) Actions: ● Energy Security Action Plan (2005-2030) ● Assistance for hydropower projects ● AEDB Programme of 100 Solar Homes per province ● Commercialisation of Wind Power Potential in Pakistan
Guidance/Legislations in Energy	N/A
(b) Environmental Evaluations / SEA Status in Energy Policies and Actions	
Type of Assessment	SEA
Requirement Mechanisms	Administrative
Legislation for Environmental Evaluation / SEA	National Environmental Policy 2005
Applications	Policies, Plans and Programmes

7.4 Analysis and Conclusions

In Pakistan, "Policy for Power Generation 2002" is the major power policy that aims to provide sufficient capacity for power generation at the least cost, to encourage and ensure exploitation of indigenous resources, and to ensure that all stakeholders are looked after in the process. The Energy Security Action Plan was approved to meet the requirements of Pakistan's Vision 2030 for reliable and quality energy supplies. It enhances energy supply through an optimal mix of all resources including hydropower, oil, gas, coal, nuclear and renewable energy such as wind and solar. The government also participated in energy conservation by promoting energy conservation practices and effective energy savings of observable magnitude at the national level.

When comparing with Hong Kong, the city has no indigenous energy resources. The government considers the private sector best placed to supply our energy requirements in response to market demands. The government is also committed to the development of renewable energy with a view to further improving the air quality. Examples of renewable energy in Hong Kong include solar energy, wind energy and energy from waste.

SEA in Pakistan is still in its formative stage. The concept of SEA is on the threshold of adoption for the overall policy making process, which evaluates the environmental impacts of a policy, plan or programme and its alternatives. Also, for the Government's Mid Term Development Framework (MTDF) (2005-2010) under the National Environmental Policy, it is the most significant policy framework in Pakistan which incorporates the concept of SEA as a significant tool for addressing the environmental concerns.

While Pakistan has no formal SEA requirement, Hong Kong has already two systems for SEA in Hong Kong, including an administrative requirement and a statutory requirement under Schedule 3 of the EIA Ordinance. The statutory requirements govern primarily large scale development projects (i.e. over 20 ha of area or population over 100,000), the administrative counterpart has been applied to land use planning, transportation and sectoral PPP. It may be a logical next step to consider:

- Combining the administrative requirements into the statutory system; and
- Providing further specific SEA requirements under the category of energy.

7.5 Examples of Energy Policies /Actions or their Environmental Evaluation/SEA

Example PK-1	**Ghazi-Barotha Hydropower Project Environmental Assessment[108]**
Type of Study	Environmental Assessment
Description of Study	The Ghazi Barotha Hydropower Project was set up in the public sector by the Water and Power Development Authority of Pakistan. It is a major hydropower project designed to meet the acute power shortage in Pakistan. The main project elements include a barrage located on the Indus River, a power channel, which is designed to divert water from the barrage, and a power complex, with a 1,450 MW generating capacity. The main objectives of the project were to meet the demand for electric power in Pakistan by generating hydropower in an environmentally sustainable and socially acceptable manner, with minimal environmental and resettlement impacts. The power generated by the project was also to help moderate the impact of higher costs of thermal generation in the private sector.
Summary of Alternatives	The alternatives considered in the study include: ● Five barrage sites were assessed initially resulted in two options being selected for detailed evaluation ● Five power complex sites were initially studied, and three options remained for detailed evaluation
Scope of Assessment/ Study	The scopes of assessment include: ● Technical constraints ● Economic Impacts ● Environmental Impacts ● Social Impacts
Environmental Measures	The mitigation measures for the adverse impacts were not available in the report.
Outcome of Study	The final site of the barrage is across the Indus River, located near Ghazi, downstream from Tarbela. Although this chosen option had less storage capacity than the main alternative, it was preferable in terms of environmental impacts. The final site of the power complex is located near the confluence of the Indus and Haro rivers, at Barotha. As the environmental implications were similar in each case, the decision made was mainly determined by the topographical factors. Sub-elements of the power complex, such as access roads, head pond capacity and embankments, were chosen based on environmental and technical considerations.

[108] Referenced to the website of Environmental Impact Assessment, http://eia.unu.edu/wiki/index.php/Ghazi-Barotha_Hydropower_Project
Extracted from "Ghazi Barotha Hydropower Project (Loan 1424-PAK) in Pakistan", http://www.adb.org/Documents/PCRs/PAK/pcr-pak-26409.pdf, pages 13-14