

## **CHAPTER 11**

### **SUSTAINABLE INDUSTRIAL DEVELOPMENT**

A viable industrial base is central for sound economic development, particularly in the North West Frontier Province, where employment opportunities are limited. But the development and growth of the industrial sector depends on the availability of natural resources, as every industrial process requires an input of raw material and energy, a large share of which is derived from the existing resource base. The conservation or wise use of these resources is therefore vital for existing as well as for future resource-based industries.

Furthermore, the growth of the industrial sector in an area can enhance or degrade the environment of that area, and usually does both. For the NWFP, it is necessary to encourage and accelerate the growth of industry as an important element for the economic development of the province. But this should not be achieved at the cost of degrading its natural and physical environment. Rather, it should be based on the concept of sustainable industrial development. To achieve this, three broad approaches need to be followed: careful siting of industries, compliance with regulatory measures (both forced and voluntary), and incentives.

#### **11.1 Industry in The NWFP**

Soon after the dissolution of One Unit in Pakistan, the Government of the NWFP established the Industries, Commerce, Labour, Mineral Development and Transport Department to promote industry, business, and mineral development in the province.

In 1972, the Ministry was strengthened by establishing the Directorate of Industries, Commerce and Mineral Development, the Sarhad Development Authority (SDA), and the Small Industries Development Board (SIDB) to promote large- and small-scale industrialization, trade, and business in the province. The Directorate performs promotional activities and helps the Government accelerate the pace of industrialization. The SDA provides technical advice on industrial programmes and is responsible for the development of mineral resources in the province.

Through SDA, three major industrial estates have been set up at Peshawar, Hat tar, and Gadoon Amazai to attract entrepreneurial investment in the province. These are in addition to the industrial area at Nowshera, which was developed during the One Unit period. SDA also manages several large-scale industrial undertakings, but with the shift in Government policy since 1990 towards deregulation, decentralization, and privatization, the agency has turned many industrial set-ups over to the private sector and intends to do more of the same in the future.

The SIDB is responsible for the promotion and development of cottage and small-scale industries and also looks after the development of indigenous skills in the province. The Board manages 10 Small Industries Estates scattered throughout the province, which mostly accommodate furniture, metal works, plastic, food products, and leather goods industries.

The NWFP has a small industrial base, but the last 10-15 years have seen new industries established, albeit at a slow pace. Beginning with only 11 industrial units in 1947, the NWFP today has nearly 1,500 industrial units employing some 60,000

people. Most of them are small industries producing consumer goods, but a few large-scale and heavy industries such as sugar, cement, paper, fertilizer, and textile mills also exist. The industrial sector in the NWFP really grew after the 1970s, mainly due to the establishment of the small and medium-scale industrial estates and the promotion of industrial ventures by SDA.

The industrial sector in the NWFP began with a focus on consumer goods, with a later transition to the production of more sophisticated products. Presently 25% of industrial units are in the food sector, with an equal share in textiles. Other sectors are chemical, petroleum, rubber, plastic, mineral products, and metal products; wood and wood products industries are increasing in number and more units are being established. The position of the various sectors of industry in the NWFP is given in Table.

Government incentives during the last decades have attracted some industries, but most industrial estates are not yet fully developed. The remote location of the NWFP from the Karachi port is the main constraint. The policy of virtually no regulation has resulted in establishment of industrial units on all types of sites with little consideration for the environment. Even in the industrial estates, there is no requirement or obligation for waste treatment, recycling, or safe disposal. Most equipment and machinery, purchased when environmental impacts were not considered important and when energy prices were low, is still in use and has not been upgraded or replaced since. Even today, the environmental soundness of technologies is rarely a concern when new facilities are opened.

For these reasons, the environmental impacts of industry in the NWFP are beginning to appear and have reached a level that concerns everyone. Consequently, whilst overall industrial pollution in the NWFP may not be great, severe pollution is observed locally around the industrial units and estates. And the use of technologies that damage the environment and involve high level of waste ultimately carries an economic price that in turn curtails further growth of industry in the province.

<b>INDUSTRIAL UNITS IN THE NWFP, BY SECTOR</b>						
<b>INDUSTRY</b>	<b>UNITS</b>		<b>EMPLOYMENT</b>		<b>INVESTMENT</b>	
	<b>(number)</b>	<b>(%)</b>	<b>(number)</b>	<b>(%)</b>	<b>(million rupees)</b>	<b>(%)</b>
Food beverage & tobacco	392	25.9	14.661	24.8	4872.567	22.0
Textile apparel & leather products	384	25.4	20.301	34.4	6331.391	28.6
Wood & wood products	72	4.8	1.052	1.8	479.595	2.2
Paper & paper products	37	2.4	2509	4.2	995.783	4.5
Chemical, petroleum.	224	16.1	6940	11.7	3893.750	17.6

rubber & plastic products						
Mineral products	198	13.1	5353	9.1	3562.734	16.1
Metal & metal products	164	10.8	7662	13.0	1865.049	8.4
Other manufacturing industries	22	1.5	575	1.0	127.714	0.6
Total	1513		59053		21128583	

Source: Industries, Commerce, Labour, Mineral Development & Transport Department. 1993. Directory of Industrial Establishment. Government of NWFP.

#### INDUSTRIAL PROJECTS, INVESTMENT & EMPLOYMENT IN THE NWFP

PERIOD	UNITS	EMPLOYMENT	INVESTMENT
	(number)	(number)	(million rupees)
Up to 1947	11	1063	81.621
1948- 1950	15	2218	277.362
1951-1955	36	11468	1709.948
1956-1960	46	12465	1969.329
1961-1965	74	19562	3609.369
1966-1970	153	22001	4040.451
1971-1975	217	24366	4668.659
1976-1980	360	28326	5700.701
1981-1985	632	35153	9961.691
1986-1990	1033	42411	12331.691
1991-1993	1513	59053	22128.869

Source: Industries, Commerce, Labour, Mineral Development & Transport Department. 1993. Directory of Industrial Establishment. Government of NWFP. p. 169

## 11.2 Environmental Pollution & Hazards

Historically, zoning policies and regulations for siting industries in Pakistan have not been clearly defined. In a number of cases, cities have grown up around industrial areas that were originally located well out-side city limits. The provincial Government has established a number of industrial estates and export processing zones. Environmental considerations are not accounted for in the planning of such new industrial developments.

Government agencies responsible for regulating the development of urban areas, such as the SDA, specify zones in which industries can be installed and also define the type of industrial activities allowed there. The Local Government Ordinance 1979 prohibits the installation of polluting industry within the urban limits of a municipal it. In addition, the Factories Act 1960 requires that pollution control measures be adopted within the premises of the factory to protect the inner and outer environment. Such regulations, however, are frequently violated, and in certain cases exceptions are all owed by the Government. One example of this is found in the Hattar industrial estate, where an explosives accessories manufacturing plant is located at the roadside and adjacent to a petrol filling station.

The present fabric of the cities is thus a mix of residential, commercial, and small- to medium-scale industrial establishments. Heavy industries are usually located at the periphery of cities, along main high-ways. All industries discharge their waste, without any primary treatment, into the air, soil, and water. Untreated waste not only pollutes soil and surface water, but also threatens groundwater sources. Similarly, untreated gaseous emissions from small-scale industries, particularly those still using chlorofluorocarbons in their processes, are damaging the upper layer of t he at morpheme. The emission of smoke from brick kilns on the peripheries of cities and towns often causes a thick black smoke cover, especially in the evening.

Few industry-specific data exist on the content of discharges. However, the SPCS Kabul River Study and recent investigations by the Environmental Protection Agency (EPA), the University of Peshawar, and SDA show that untreated industrial discharges are contributing to the deterioration of water quality in the Kabul River system. Besides raising the biological and chemical oxygen demand of the water, the effluents are adding a variety of toxic substances to the rivers that may bioaccumulate in fish. This has unknown implications for human health.

One pollution problem related to the benefits of modernization stems from plastic shopping bags, which are durable, light, and very cost-efficient. This has encouraged their use throughout the country and they have, to a great extent, replaced paper sacks. But the non-biodegradable nature of the bags makes safe disposal almost impossible. Another problem is related to the leather industry. The waste chemicals and dyes used in the processing of leather are for the most part washed into streams and rivers without any preliminary treatment.

The drainage practices in industry vary greatly. The most common practice is to drain effluent into natural surface drainage channels. The industrial units located on industrial estates also have no effluent treatment plants, and they dump their untreated and toxic wastes into surface drainage channels. These channels feed into irrigation canals. The irrigation water is also used for drinking purpose. The passage

of toxic industrial effluents through unlined open channels not only causes surface erosion but also penetrates into the soil and contaminates the ground. Once the groundwater becomes polluted, it is extremely difficult to rectify the problem. Even if the source of pollution is eliminated, a long time is required for the concentrations of contaminants to decrease to acceptable levels.

With a comparatively lower level of industrialization, air quality issues associated with industries have not yet reached alarming levels in the NWFP, and are of relatively less significance compared with the impact of vehicle emissions. Nevertheless, there are special situations in which air emissions can cause serious health problems and endanger human life and property: the impacts of air emissions from clusters of industries located near urban centres, and the risks associated with the accidental release of hazardous substances from factories. Ambient air quality standards have to be introduced and the monitoring of ambient air quality has to be initiated to assess the impact of industrial emissions. Hazard assessment has to be made mandatory for the siting of industrial operations involving storage and handling of flammable and toxic chemicals. These steps are necessary to prevent the worsening of urban air quality in the future, and to avoid disasters.

### **11.3 Current Policy & Control Measures**

The Government of the NWFP, due to its weak economic and industrial base, has always encouraged entrepreneurs to start up new industries. To provide maximum benefit to the investor, they adopted a policy of letting any industry be established at any place except for a few industries that are regulated federally and for which they had to receive a No Objection Certificate from the Federal Government. To attract industrial investments, the Government disregarded all sorts of regulatory measures that could prevent adverse impacts on natural resources as well as safeguard the inhabitants of the province.

But soon after its creation in 1989, the NWFP EPA started receiving complaints regarding industrial pollution and tried to enforce the available environmental protection rules through voluntary compliance by the public and private industrial sector. So far, the EPA's efforts have not proved promising, though the imposition of National Environmental Quality Standards (NEQS) in August 1993 has provided a solid base to EPA to regulate industrial pollution in the province.

The EPA continues to emphasize voluntary compliance, due to lack of resources and gaps in the legislation. It has successfully established a dialogue between the Government and industries through a Business-Industry Round Table initiated under the SPCS with IUCN's assistance. As a result of this round table, the industrial sector is now aware and recognizes the importance of environmental protection and has shown its interest in converting to environment-friendly, clean technology. For this purpose, the Sarhad Chamber of Commerce and Industries has agreed to establish an environment protection cell in order to have a way to work with the EPA, the industry department, and other research institutes and to advise the industrial sector on how to change over to low-cost, clean technology.

## 11.4 Need For Clean Business Practices

Global corporate culture is changing. Competition, global trade, and the move towards sustainable development are all forces that will affect present industrial practices in the NWFP and Pakistan. The province does not have the resources to invest in developing new ways to control industrial pollution or to monitor the impact of new products on the environment. With the new World Trade Organization rules taking effect, Pakistan's domestic industry, if it is an environment polluting one, may lose a competitive edge over other countries' products. To find a place for Pakistani industrial products in the world market, industrial processes need to be clean, and current polluting technologies need to be replaced by environment-friendly ones. Transfer to clean technology, mechanisms for recycling, good housekeeping inside industry, relying on local resources, and the creation of new environment-friendly industries are the only way Pakistani industry will stay competitive in world markets in the future. In the Pakistani market, power generation is a growth area.

The encouragement of power-generating units in the private sector is bringing a tremendous response from domestic as well as foreign companies. Unexplored coal mines and hydel power are very attractive resources for companies interested in power generation. These untapped resources provide tremendous opportunities for the power generation that is so essential for the industrial growth. But this exploitation of natural resources can greatly harm the environment if care is not taken at the extraction and closure stages. (See also Chapter 12). The Government has already adopted a policy of encouraging industry in remote areas, but this decision is largely based on economic criteria, with little consideration of environmental impacts and costs.

The policy of letting any industry be established anywhere will be revised. Industrial development in some rural areas is desirable both to provide jobs locally and to halt rural-urban migration, but it must not be oblivious of environmental considerations and must comply with approved NEQS. Multinational companies, especially from the West, who must meet standards and environmental laws in their home countries often do not apply those standards here. They need to be encouraged to lead the way for the adoption of at least the minimum international environmental laws and to help educate domestic industries in this regard. This can be best done by providing incentives, such as exemptions from tariffs and duties for the import of environment-friendly technology. Also there is a need to strengthen the Business-Industry Round Table to open up a dialogue among the stakeholders for compliance with NEQS. The goal of environmental protection should not conflict with economic development, as it is the basis of prosperity in the region.

A balance must be sought. In particular, business opportunities in terms of products and services used for environmental protection must be explored and encouraged. Initiatives on the part of the industrial sector are required to introduce such items in the market. Environmental business opportunities need to be explored and links between environmental protection and creation of new businesses developed in the areas of conservation, recycling, pollution control, waste minimization, good housekeeping, and waste management and reclamation. Research is needed on the concept of sustainable economic development and low-cost clean technologies to discover new tools to achieve efficient, effective, and productive integration of environment and development. Awareness in this regard needs to be promoted so that businesses are ready to face the challenges ahead.

## **11.5 Industrial Ecology**

Current industrial practices are based on traditional models of industrial activity, in which individual manufacturing processes take in raw materials and generate products to sell; leftover wastes are to be dumped either in public places or in open nullahs. Until recently, waste has been viewed as just waste with no value, but the perception of the waste in sustainable industrial development has changed, and it is now considered as 'gold'. Waste can be used as an input in another industry and at a much cheaper cost.

The new model of industrial activity has been transformed into a more integrated one called an industrial ecosystem. In such a system, the consumption of energy and materials is optimized, waste generation is minimized, and effluents of one process serve as the raw material for another process. This new concept of 'industrial ecology' is a foundation for creating sustainable industry so that a fully functional industrial ecosystem would mimic a natural ecosystem by minimizing waste material and energy and complete recycling. Further, it provides a set of a guiding principles that encourage a new systematic approach to the design and management of industrial systems in the context of local ecosystems and the global biosphere.

The concept of industrial ecology extends pollution prevention principles to entire industrial communities and also presents a broader base of business opportunities. Moreover, pollution prevention also means improved efficiency, full material utilization, energy efficiency, and conservation of resources. It is clear that recycling and other forms of resource recovery are economically beneficial interventions. These factors influence costs positively and improve competitiveness. This is, in fact, a management tool for industries for cost control and quality management, and it can be adopted for a single operation as well as for groups of industries.

The industrial sector in the NWFP is not well developed and faces many difficulties, due to a variety of geopolitical reasons. Any additional requirements for conversion to clean technologies and compliance with standards imposed from inside or outside the country will further strain their limited resources and reduce competitiveness. Helping the industrial sector and the economic development of the province requires the efficient use of raw materials, cost control, energy conservation, and a healthy competitive market both inside and outside the country. All these conditions are fulfilled in the concept of industrial ecology or industrial 'eco-parks'. This concept can easily be applied to small- and medium-scale industrial estates in the NWFP, as most of the industries are located in groups. This will not only encourage recycling of waste but at same time will open new avenues for environmental business opportunities and employment in the Government and the private sector.

## **11.6 Incentives & Partnership**

A total reliance on environmental law, particularly where laws are frequently ignored or disregarded, is not likely to be an effective policy. The provincial environmental legislation needs to be designed with this in mind to allow for incentive programmes for business and industry in particular, to encourage positive environmental behaviour. Partnerships and voluntary compliance with standards will be encouraged. This will reduce enforcement costs; once it is involved, the private sector becomes one of the most effective vehicles for promoting environmental awareness.

To date these basic objectives have been achieved, partially through the Business Industry Round Table, which has included labour representatives. Although the round table has met infrequently, there has been a meeting of minds on many issues including improved working conditions, compliance with the NEQS, and environmental health in general. This has generated the idea of round tables in other sectors, plus the idea of a province-wide council for sustainable development (described later in the SPCS).

There is, however, a need to make the Business-Industry Round Table more effective and functional by shifting it from Government to the private sector, and placing it in Sarhad Chamber of Commerce and Industries. To ensure involvement of the business and industrial community in the round table and to create ownership of the process among the industrial and trade community, meetings of the round table will be held in different industrial premises and industrial estates of the NWFP. The advice and suggestions of the round table will be incorporated into the Government industrial policy and decision making. In meetings of the current round table, concerns have been expressed about the ability of industry to meet the NEQS and the costs involved. But there has been no fundamental objection to the overall objective of environmental protection. Requests for some leniency have been received and these can be dealt with on a case-by-case basis.

The EPA will continue to assist the management and administration of the polluting industries to carry out environmental audits and will advise them on cost-effective, clean technology options, designing an incentive package for those who voluntarily convert to environment-friendly technology. It is also possible for Government and donors to assist in technology transfer information, in the procurement of best available environmental technology, and in demonstration projects that allow participating companies, the Government, and researchers to form a partnership where innovative new structures and technologies can be applied in a systemic way.

## **11.7 Commitments**

In the next three years, a commitment is made to:

- ?? harness the Asian Development Bank's Technical Assistance for the Kabul River Clean-up, Study II;
- ?? begin implementation of the action plan that would result from the Kabul River Study II;
- ?? initiate the German development agency, GTZ's, Technical Assistance Project for the Improvement of Urban Environment in Peshawar;
- ?? continue implementing the Pak-Holland Metal Project and consolidate its achievements, especially the substitution of Butan-paper technology for chlorofluorocarbons;
- ?? carry out an inventory of the industrial processes used in different industries, and assess their technological needs for pollution control;
- ?? develop two pilot case studies of waste minimization and waste recycling in different industries;
- ?? provide the EPA with the human, financial, and technical capacity to establish individual industry profiles and to monitor industry compliance with NEQS;
- ?? implement pollution control measures in two public sector industries to set examples for the private sector;

- ?? set up combined waste treatment facilities in at least one of the three major industrial estates;
- ?? provide combined waste and disposal treatment facilities in four small industrial estates;
- ?? institute environmental impact assessment procedures and subject all new industries to them before site selection;
- ?? prepare a land use and zoning plan for the NWFP and legislate it, stopping the policy of 'any industry anywhere';
- ?? continue to activate and strengthen the Business-Industry Round Table;
- ?? use the Business-Industry Round Table to encourage industry to comply with NEQS, developing an incentive package for industries and exploring the possibility of voluntary agreements under the framework of the law;
- ?? provide an annual award for industries that are particularly environment-friendly;
- ?? sponsor an environmental trade fair in the NWFP to introduce entrepreneurs to new technologies;
- ?? explore and assess the feasibility of relocating small industries operating inside cities;
- ?? undertake a public awareness campaign on environmental impact assessments;
- ?? produce an explanatory guide to the NWFP Environment Act;
- ?? introduce codes of practice for industry;
- ?? review the present industrial development policy for its environmental implication and modify it to suit sustainable development;
- ?? look into the feasibility of a pilot 'eco-park' in one of the industrial estates of Peshawar; and
- ?? use the GTZ Technical Assistance Project to improve the urban environment and to evaluate and recommend options for pollution abatement in important industries of the NWFP, beginning with Peshawar.

Over the long-term, a commitment is made to:

- ?? continue implementation of the Kabul River Action Plan, reviewing and modifying it as needed, and monitoring water quality over time;
- ?? identify sites for industrial development based on land use planning, and confine industries to those sites;
- ?? relocate the small industrial units operating in the cities to the identified industrial sites;
- ?? ensure industry compliance with NEQS; and
- ?? establish 'eco-parks', if the pilot project proved them to be feasible, in different industrial estates of the NWFP.