

CHAPTER 10

URBAN ENVIRONMENTS AND SUSTAINABLE CITIES

The process of urbanization is a manifestation of national and regional development that generates both benefits and problems. Some people consider it a sign of economic growth, modernization, and social change, while others view it as a negative phenomenon. In reality, it depends upon the policies, plans, and decisions that seek to improve benefits and opportunities for all citizens rural and urban while taking steps to reduce the problems and negative consequences of rapid urbanization. The major factors contributing to rapid urban growth at both the national and the provincial level are a rapid increase in population and migration from rural to urban areas, largely due to rural poverty.

Rapid population growth is the result of high birth rates, declining mortality rates, and rural-to-urban migration. The latter is often due to the subsistence economy in rural areas, limited employment opportunities, decreasing size of landholdings, and the mechanization of agriculture. Other factors that directly or indirectly contribute to urbanization are the concentration of entrepreneurial capital, financial and commercial institutions, and the infrastructure required for trade and industry in a few cities and towns. The present policies and economic development plans reinforce the trend of inequitable economic and spatial growth by concentrating on projects in a few big urban centres and ignoring the potential of small and medium-sized towns in national and regional development. Therefore, whenever people from a rural area decide to leave their village for better prospects, they tend to move to the large urban centres rather than the small and medium-sized towns around their villages.

This chapter focuses on the main issues and elements that are causing the process of urban decay, deterioration of the living urban environment, and unsustainable growth and development of the cities and towns of the North West Frontier Province.

10.1 Urban Decay & Unrest

The cities of the NWFP were at one time considered safe and harmonious places to live in. Many rural families migrated largely in search of better living standards. However, the present trend of urbanization of most cities and towns in the NWFP is having a negative impact on the urban population. Cities have grown without an associated expansion in the services and facilities required for an adequate and healthy living environment.

To meet growing pressures and demands, urban development has usually occurred with little or no effective environmental controls and with forms of urban governance that do not match their responsibilities. Neither has much regard been given to the environmental and social implications of such rapid urban expansion, including availability of water resources, job opportunities, human hygiene, social integration, personal security, and safety of the residents. Rapid urban expansion without effective governance means that in virtually every urban centre a substantial proportion of the population is at risk from environmental, social, and economic threats.

For instance, in most urban areas a high proportion of the population lives in shelters

and neighbourhoods with little or no provision of basic services or facilities like clean drinking water or the safe disposal of solid and liquid wastes, and with poor-quality and over-crowded houses built on low-lying and marginal lands subject to periodic floods and other natural hazards. People are forced by their economic conditions to live in these service-deficient areas, as most of them have unsecured jobs and marginal incomes and cannot afford to live elsewhere. The urban economy in most areas has not diversified at a rate that matches the population increase. The limited job opportunities and marginal incomes put a large proportion of the residents on the edge of the poverty line. The outcome is increasing frustration among the low-income groups for social and economic mobility, rising discontent, and ultimately violent behavior, primarily against urban elites and the state. This is leading to increased crime, violence, and civil unrest in large cities and towns.

Recognizing that urbanization can be a positive phenomenon, future policies and programmes will be designed in a way to guide urbanization into suitable locations and acceptable forms and to distribute growth and development more evenly throughout towns and cities. The potential of medium-sized and small towns will be better acknowledged. Capacity-building programmes will be adopted to assist urban centres where there is a potential for economic growth. Integrated services provision should be initiated within settlements, according to their size and location in the hierarchy of urban centres. Local and municipal councils should be given more responsibilities and autonomy, and local NGOs and the private sector should be encouraged to undertake joint ventures with local councils to increase the capacity for physical and economic development of cities and towns.

10.2 Institutional Capacity & Coordination

The responsibility for urban development and environmental management is distributed amongst various Government organizations: local authorities, urban councils, cantonment boards, area offices of the Public Health Engineering Department, and the Communication and Works Department. Many of them are trying to cope with the deteriorating situation, but there is little coordination among them. There are ambiguities and overlaps in their roles and responsibilities, and areas of jurisdiction are often not specified very clearly. The duplication of efforts result in a waste of materials and time, putting pressure on scarce Government resources. Moreover, the provision of some of the urban services are the responsibility of Federal organizations like the Water and Power Development Authority, the Sui Northern Gas Pipeline, and the Pakistan Telecommunication Corporation, who have little coordination with the provincial agencies, and who do not feel accountable to the provincial Government.

The lack of institutional capacity for the urban environment has emerged as a major issue in the present urban crisis. There is a quantitative and qualitative deficiency of personnel and equipment within all these Government organizations. Their work is often hampered by political interference, unnecessary delays, lack of legislative backing, and a lack of funds. Most of these urban development organizations also lack detailed records or a data bank of urban management practices.

The lack of coordination, cooperation, and communication within and amongst these organizations at the planning and implementation level further complicates urban development activities. This leads to unintegrated and complex development

activities, creating problems and complications for the organizations themselves and for the public as well. A common example is uncoordinated roadside digging and re-digging by various departments, causing inconvenience and dust pollution on roads and streets.

Institution-strengthening efforts should be focused on increasing the technical skills of the staff in urban environmental management, efficient delivery systems, and the maximum use, operation, and maintenance techniques for the available equipment. For greater accountability, the responsibilities and the mandate of organizations involved in the delivery of urban services should be clearly defined at the ministerial level, and the necessary legislative cover should be provided to them to avoid political interference and favoritism in their activities.

The urban councils should be revived immediately and should be given more autonomy to raise and manage their own finances by revising and amending the existing laws. This should discourage their dependence on Government grants. The concept of 'user pay' should be introduced and popularized on a mass scale to generate more financial resources for the operation, maintenance, and extension of existing services. To ensure the transparency and free flow of information for the organizations and the general public, an urban services data bank or archive should be created at each urban council level, and all the plans, records, and data collected in that urban area should be placed in it for easy access by various organizations and the general public.

There is a need to make all the development activities for various urban services consistent with one another, using master plans or an integrated planning system. A well-defined coordination mechanism and structure should be in place in each city to facilitate better monitoring of urban development and planning as well as implementation. Coordination, cooperation, and communication amongst various organizations at different tiers of city management should be improved by initiating a community-based integrated urban development programme.

These programmes will develop a long-term partnership and culture of collective action among organizations, city management, NGOs, and the general public, and they will enhance the organizational capacity for the efficient delivery of urban services. To coordinate urban development activities in more meaningful fashion at a policy level, the Planning, Environment, and Development Department and the Environmental Protection Agency (EPA) can play an important role by influencing urban development activities using the principles of sustainable development, environmental protection, and conservation.

10.3 Air Quality

Air pollution in the major urban centres has reached alarming levels, and the main contributor is vehicular traffic. The rapid growth of population in cities has increased the demand for more transport facilities, and this has led to an increase in the number of public and private vehicles within the city limits. Moreover, the cities are the markets and centres for most commercial, economic, and social activities, and a large number of visitors from the surrounding rural settlements and small towns visit the cities daily. There is an increase in the number of trips and traffic load on the road system of cities. Most of the cities of the NWFP lack traffic management plans,

and usually a single road or route serves the entire city, including slow-moving (animal-drawn) carts as well as light and heavy vehicles.

Poor quality fuel, large numbers of improperly tuned and maintained vehicles, and encroachments by commercial activity on road sides and at junctions are causing traffic jams and delays, thus contributing to the high levels of carbon monoxide, nitric oxides, sulphur dioxide, ammonia, and lead in the air. The inefficient and substandard public transportation service in cities of the NWFP encourages the public to have their own private vehicles. In Peshawar, more than half the vehicles registered and on roads are private cars and motor cycles, as Table indicates. Most vehicle owners and drivers are unaware of the long-term benefit of properly tuned engines, and those who are aware do not receive the proper level of service due to the old techniques of engine tuning used. The traffic police, in a drive to protect the environment, in only six months charged more than 8, 000 vehicles for emitting excess smoke in Peshawar during 1994; the details are given in Table. The concentration of various pollutants in the air in Peshawar and a few other cities in the NWFP are given in Tables.

The smoke from the exhausts of industrial units, brick kilns, commercial establishments, and the burning of solid waste in open dumps by municipal authorities, combined with dust from stone crushing and cotton ginning units within cities, have also reduced ambient air quality by releasing toxic gases and particulate matter into the air. In urban areas, air quality has further deteriorated because of air-blown dust particles and particulate matter from broken roads, unpaved road shoulders, roadside non-green open spaces, the daily sweeping of roads by municipal staff, and the dry excreta left on roads and streets by the uncontrolled movements of animals in city limits. The EPA and traffic police campaign against vehicular pollution will continue and be expanded to include other cities. Also, the EPA in partnership with NGOs will facilitate establishment of vehicular tuning stations in the private sector with the latest available equipment and technology to provide proper tuning facilities for vehicles.

The EPA should develop a similar partnership with the industry department to move existing industrial units that are now located in residential areas out to industrial estates. The municipal authorities should be directed to ensure that water is sprayed on roads before sweeping them, should stop burning solid waste within city limits, and should introduce protective cloth bags for all animals who pull carts in the city limits

NUMBER & TYPE OF VEHICLES IN PESHAWAR, 1994		
TYPE OF VEHICLE	REGISTERED	ON-ROAD
Motor cycles/scooters	32,500	30,900
Motor cars	40,700	37,600
Jeeps	3,000	3,000
Station wagons	7,000	4,900
Tractors	5,500	4,700
Buses	6,100	5,100
Rickshaws	7,500	7,200

Mini cab taxis	9,500	9,400
Delivery vans	3,800	3,800
Trucks	15,600	12,800
Private carriers	300	10
Ambulances	600	600
Other motorized vehicles	11,300	10,100
Animal-driven carts	4,600	6,000
Total	148,000	136,110

Source: Records of the District Registration Office, Government of NWFP.

10.4 Municipal Solid Waste

The present solid waste management system in the cities and towns of the NWFP is not satisfactory and is frequently a source of complaints by the public. It is difficult to estimate the actual quantity of solid waste generated at various cities and settlements of the province, as the authorities involved have no system to monitor the quantities, the seasonal and regional variations, and the composition of the solid waste. However, approximately 50% of the total waste in urban areas is believed to be collected; the remaining accumulates in the streets and open spaces and in the drains of the cities. The collected solid waste is disposed off in open areas, without any proper treatment and protective measures.

POLICE ROLE IN ENVIRONMENTAL PROTECTION, 1994

PERIOD	SMOKE-EMITTING VEHICLES	VEHICLES CHALLANNED* BY THE TRAFFIC POLICE	VEHICLES WITH DEFECTIVE SILENCERS
		VEHICLES WITH PRESSURE HORNS	
March	513	339	201
April	315	422	193
May	1449	518	228
June	847	469	243
July	1583	600	385
August	1099	338	76
September	2404	691	276
Total	8210	3377	1602

Source: Records of the Traffic Police Department

* `Booked' by the police.

AVERAGE CONCENTRATION OF CARBON MONOXIDE, NITROGEN OXIDES &

NOISE LEVELS, PESHAWAR

LOCATION	CARBON MONOXIDE	NITROGEN OXIDES	NOISE
	(ppm)	(ppm)	(dB)
Safe Permissible Level	9.0	0.85	85.0
University Town	11.5	1.40	90.5
Sard Chah Gate	11.2	1.2	96.0
Arbab Road, Jamrud Road	9.0	1.5	90.1
Chowk Yadgar	28.0	1.6	101.5
Khyber Bazar	16.0	1.6	97.8
Kohati Gate	12.8	1.4	89.2
Yakatoot Chowk	14.2	1.5	96.2
Army Stadium Chowk, Shami Road	13.5	0.9	90.1
Khalid Bin Waleed Chowk	11.0	1.6	90.5
Central Jail Chowk	9.9	1.5	92.2
Firdos Cinema Chowk	12.1	1.8	97.3
Shama Cinema Chowk	14.1	1.5	97.8
Tehkal Payan Chowk	10.1	1.3	94.3
Cantt General Hospital	10.4	0.8	95.8
Fowara Chowk	12.4	0.8	78.5
Sar Asia Gate	13.5	1.4	97.2
New Bus Stand	14.8	1.4	100.4
Gul Bahar Chowk	13.7	1.4	91.5
Hashtnagri Chowk	14.1	1.6	98.6
Bacha Khan Chowk	12.1	1.2	90.4
Dabgari Chowk	10.5	1.9	92.6
Ramdas Chowk	14.5	1.0	94.8
St. Mary's Chowk, Warsak Road	13.8	1.5	94.0
Rahman Baba Square	13.9	2.0	86.8
Hayat Avenue, University Road	10.8	1.0	85.5
Gaji Chowk	12.8	1.2	98.2
Civil Quarters Chowk	7.5	1.4	99.0
Stadium Chowk	14.1	1.7	88.8
Bana Mari Chowk	11.0	1.3	98.5
Shuba Chowk	12.1	1.1	88.0
F.C. Chowk	12.5	1.5	92.5

Source: EPA NWFP Survey, 1995

World Health Organisation levels

dB: decibels

ppm: parts per million

CONCENTRATIONS OF AIR POLLUTANTS

LOCATION	METEOROLOGICAL INFORMATION	POLLUTANT	AVERAGE VALUE (mg/m ³)	MAXIMUM VALUE (mg/m ³)	MINIMUM VALUE (mg/m ³)
		Sulphur dioxide	1	72	0
		Carbon monoxide	834	9280	0
		Ozone	30	103	12
	Sunny/overcast	Nitric oxide	19	235	0
Peshawar	NW wind, 4-6 m/s	Nitrogen dioxide	53	363	0
	23-26 °C	Nitrogen oxides	80	401	17
		Dust	1290	1890	789
		Sulphur dioxide	3	48	0
		Carbon monoxide	975	7192	0
	Sunny	Ozone	31	110	13
Kohat	Calm wind	Nitric oxide	10	153	1
	30-35 °C	Nitrogen dioxide	156	659	29
		Nitrogen oxides	167	684	31
		Dust	1640	2670	1150
		Sulphur dioxide	5	226	0
		Carbon monoxide	3340	5800	0
	Sunny	Ozone	15	100	3
Mingora,	Calm wind	Nitric oxide	10	199	0
Swat	26-30 °C	Nitrogen dioxide	38	392	4
		Nitrogen oxides	66	401	15

		Dust	1630	2720	1020
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Source: Government of NWFP. 1994. *Environmental Profile of North West Frontier Province of Pakistan*. PE&D Department, Peshawar. 1 mg/m³ : milligrams per cubic metre

QUANTITY OF SOLID WASTE COLLECTED

ORGANIZATION	QUANTITY (tonnes/day)	DUMPING PLACE
Municipal Corporation Peshawar	125.0	Near Warsak Road
Municipal Committee Karak	3.9	Outside the city
Municipal Committee Bannu	8.5	Open fields
Municipal Committee Laki Marwat	2.0	Open deserted area
Municipal Committee Kohat	6.0	Open fields
Municipal Committee D.I. Khan	30.0	Open fields
Municipal Committee Hoti Mardan	2.4	Open fields
Municipal Committee Mardan	19.0	Open fields
Municipal Committee Takht Bhai	12.0	Near Ganjai Hospital
Municipal Committee Utmanzai	1.5	Near cattle ground
Municipal Committee Charsadda	12.0	Near graveyard
Municipal Committee Shabqadar	3.0	Subhan Khawar
Municipal Committee Tangi	3.0	No permanent place
Municipal Committee (Dobandi) Jehangira	6.4	Near textile mills
Municipal Committee Swabi	0.3	No permanent place
Municipal Committee Akora Khattak	1.4	Open fields
Municipal Committee Batkhela	2.5	No permanent place
Municipal Committee Haripur	2.3	Near Pharala
Municipal Committee Khalabat	0.8	Open fields
Municipal Committee Havelian	2.5	Near Dhora River
Municipal Committee Abbotabad	7.8	Near Salhad
Municipal Committee Mansehra	1.7	Near Shalia village
Municipal Committee Mingora	16.8	Outside the city
Municipal Committee Timergrah	0.6	No specific area
Municipal Committee Thana	0.3	No permanent area
Municipal Committee Dagar	0.3	No permanent area
Town Committee Nawankali	1.5	No permanent place
Town Committee Nowshera	0.5	Near Bani Chowk
Town Committee Baffa	2.0	Kulhara
Cantonment Board Peshawar	5.4	Warsak Road
Cantonment Board Nowshera	0.4	Near Hakimabad
Cantonment Board Mardan	2.5	Outside the city

Cantonment Board D.I. Khan	2.0	Tank Road
Cantonment Board Bannu	2.8	Kachkot area
Cantonment Board Abbotabad	0.6	Salhad
Total	289.7	

Source: EPA NWFP Survey, 1992.

HOSPITAL SOLID WASTES

HOSPITAL	QUANTITY (tonnes/day)	DUMPING SITE
Hayat Shaheed Hospital, Peshawar	2	Near Malakander
Cantt General Hospital, Peshawar		Near Sunehri Masjid Road
Fauji Foundation Hospital, Peshawar	0.025	Outside the hospital
Lady Reading Hospital, Peshawar	2	Near main hospital gate
C.M.H. Peshawar	0.1	Islamia road
Police Hospital, Peshawar	0.04	Nearest water canal
Mission Hospital, Peshawar	0.05	Near main gate
General Hospital, Nowshera	1	Near main gate
C.M.H. Nowshera	0.7	Near Hakimabad
C.M.H. Risalpur	0.2	Near the hospital
District Headquarter Hospital, Charsadda	1	Near the river
Mardan General Hospital	0.4	Near the hospita
C.M.H. Mardan	0.2	Near the hospita
District Headquarter Hospital, Swabi	0.07	Near the hospita
Civil Hospital, Dargai	0.06	On roadside
District Headquarter Hospital, Batkhela	0.1	On roadside
District Headquarter Hospital, Kohat	0.3	Near main gate
Children & Women Hospital, Abbotabad	0.1	On roadside
C.M.H. Abbotabad	0.6	Near Salhad
District Headquarter Hospital, Abbotabad	0.25	Near main gate
Christian Hospital Hazara, Abbotabad	0.08	Near main gate
istrict Headquarter Hospital, Mansehra	0.14	Near main gate
Total	10.915	

Source: EPA NWFP Survey, 1992.

The prevailing practice of disposal of the collected solid waste by the urban authorities just shifts the waste from cities and towns to outside areas. In some cases, it involves open dumping, without any primary treatment or protective measures, regardless of the negative environmental impacts on the ecology and human health. A survey by the EPA indicates that approximately 300 tonnes of solid waste is dumped in open areas every day by authorities. Details of the survey are provided in Table 10.5. About 10-15% of the total generated solid waste in cities and towns is collected by scavengers as reusable, resalable, and recyclable items. This contributes a valuable service for both residents and authorities but still needs to be practised in a more organized manner.

Unfortunately, no classification system of waste exists in cities and towns, and the hazardous waste is mixed with normal municipal or household waste. Both the collection authorities and the management of these businesses are ignoring the dangers posed to humans and to the natural environment. Although not much is known about toxic waste from other sources, several tonnes a day of biomedical waste is produced from various hospitals of the NWFP. The details are given in Table 10.6. The handling of such special wastes is now a major concern amongst the public in the cities and even in small towns. The generation rate and quantities of special wastes, especially clinical and biomedical, are increasing because improving health service has been one of the priorities of the Government over the last few decades.

The Second Urban Development Project (SUDP) of the NWFP Government aims at improving the situation of solid waste management and disposal practices in seven major towns. With the completion of SUDP, about 60% of the population in these seven towns will be served with new services. The disposal practices will also be improved, replacing open dumping with sanitary landfills. Still, 40% of the population in these seven towns and the remaining population in other urban areas will continue to have a problem. To improve the capacity and efficiency for collection and disposal of solid waste, a community awareness and participation plan needs to be made an integral part of all programmes and projects. The management of a solid waste system for a city or town could be given to a single body for better service delivery, monitoring, and accountability.

The private sector and NGOs will be encouraged to come forward and share the responsibility for collection and disposal of solid waste for both urban and rural areas in the province. The potential use of the biodegradable waste, along with organized scavenging for recovery of saleable and recyclable items at disposal sites, should be initiated to generate revenue to meet the cost of maintenance and operation from the system itself, thus reducing the burden on the development budget and sustaining the system in the long run. To reduce public health hazards, strict environmental checks should be put in place. Staff training programmes in solid waste management need to be initiated for solid waste managers in the respective organizations. Linkages with universities and research institutes should be strengthened to benefit from new research and innovations in solid waste management.

Incinerators must be provided in each hospital or group of hospitals, and special care should be given to the location of the incinerator. The existing clinics and clinical

laboratories need to be encouraged to bring their waste to common places so that treatment for liquid waste can be provided, and so that the collection and disposal of solid waste can be made simpler.

Existing commercial and industrial activities that involve chemical processing within residential areas need to be shifted to industrial estates and should be grouped together for treatment of both solid and liquid wastes. For new activities, environmental impact assessments must be made mandatory to prevent possible environmental hazards and to allow for remedial measures and strict monitoring of the results.

10.5 Sewerage & Drainage

Proper sewage networks, drainage systems, and waste water treatment facilities are completely lacking in the cities of the NWFP. The new township schemes developed in a few cities of the province have a net work of sewers and drains, but no sewage treatment facilities exist except in Hayatabad Township in Peshawar. The SUDP is addressing these issues in seven major urban centres of the province, and is going to provide 35% drainage coverage in these cities; the remaining 65% will have a workable drainage system under the same programme. Trunk sewer systems and sewage treatment facilities will be provided to 60% of the population of Peshawar, Bannu, Kohat, and Mardan by the end of this decade, while secondary and tertiary sewer systems will be provided to 40% of the population of these four cities and towns. Connecting the trunk sewers to the remaining 60% of system will be carried out in a phased programme by respective municipal authorities.

In most urban areas, waste water is disposed of in an open drain, in a shallow pit to be emitted later, into a septic tank connected to an open drain, or into municipal sewers. The first three methods are most commonly employed in urban areas.

The waste water and sewage run together in the open drains, most of which are unlined and have no primary treatment network or safe outfalls. The hospitals, clinics and clinical laboratories, and commercial and industrial units also discharge untreated liquid waste into the existing drainage network, where it mixes with municipal liquid waste and eventually finds its way into nearby water bodies. The waste water from the large number of leaking sewer lines, unlined drainage lines, septic tanks, or open ponds percolates into the soil and contaminates the shallow water aquifers from which most people draw their drinking water. The lack of treatment of waste water and disposal into waterways not only affects the groundwater quality, it also disturbs aquatic ecosystems, depletes aquatic resources, affects agriculture uses of the surface water, and pollutes the natural drainage system of the province. The localized contamination of groundwater sources is mainly due to the seepage from the improper sanitation facilities in urban areas. Current initiatives for sewerage and drainage treatment will only cater to a small portion of the population in the few large cities of the province, so the problem requires the immediate attention of all concerned departments.

Future programmes for improving this situation must concentrate on lining the existing drains, linking them with a primary drainage network, and providing

treatment facilities at the outfalls of the drains. More programmes for sewerage and sewage treatment in the cities must be prepared and approved, and funds need to be arranged for implementation. A critical review of existing programmes should be carried out to identify gaps and introduce changes to bring efficiency in implementation.

The community should be actively involved in the planning, design, and implementation of new programmes as well as in the execution of existing programmes, to achieve wider support and acceptance of the community for operation and maintenance of these systems. For all existing hospitals and industrial units inside residential areas, the treatment of liquid waste must be provided and strict monitoring measures should be adopted to treat effluent before it is discharged into the drainage network of the cities. Common treatment facilities should be made available for industrial estates to treat liquid waste before it is discharged or recycled into any water body or open area. Liquid waste treatment should be made mandatory for all new industrial estates to safeguard water resources from being polluted.

10.6 Drinking Water Supply

In the NWFP more than 80% of the urban population has access to relatively clean drinking water. The sources for drinking water are both surface and underground. In the southern part of the province, surface water resources are limited, while groundwater is brackish or only available in limited quantities at greater depths. The central part of the province has greater groundwater potential and the water is pumped from tube-wells with house connections. The systems in the northern parts of the NWFP are generally based on springs or surface water.

The quality of drinking water in the NWFP, however, is often low due to the aging distribution systems, lack of local treatment facilities, and contaminated water sources in some parts of urban centres. A study on water quality of groundwater sources carried out in six districts of the province by the Pakistan Council of Scientific and Industrial Research Laboratories Peshawar and the Chemistry Department of Islamia College Peshawar found that drinking water is polluted due to the presence of nitrites, and in some saline areas in Peshawar, Nowshera, Kohat, and D.I.Khan districts, it is unfit for drinking. The general water quality in most urban areas is within safe limits, but some localized water source contamination is present.

To ensure safe drinking water in the cities, the existing distribution network must be improved and replaced with a safer system where necessary. Primary treatment facilities at both source and storage places should be provided, and strict and frequent monitoring of water quality at the source and distribution points should be carried out. The existing system should be rehabilitated to remove occasional cross-connections with sewage systems and effluents. In most parts of the cities, the distribution network runs within the drains, and this increases the chance for contamination of the piped water. The distribution network must be separated from the drains to avoid this. The concerned organizations should be equipped with proper laboratory and trained personnel in potable water management, to ensure the supply of required quantities and quality to the people. Laboratories in the province should be linked together and made available to all organizations for monitoring and testing water quality, to best share the experience of various organizations.

Efforts should also be made to examine the available water resources of each city, the current extraction rate, and the potential needs of a growing population in each city. All future drinking water supply programmes should consider the possible negative impacts of water extraction to avoid any serious problems of soil settling in the urban areas.

10.7 Noise Levels

The increasing level of noise in urban areas is becoming a matter of concern for residents, as it is considerably higher in many locations than the World Health Organization says is safe. High noise levels are observed on major roads, at intersections, near main shopping/commercial areas, and even in some cases in residential neighbourhoods. The intensity of the problem is greater in older parts of cities, where the population density is high and the lack of planning results in non-compatible land uses in one location. The haphazard growth of urban centres along main traffic corridors has created a situation where housing, commercial, and light-scale industries are grouped in one location and the noise produced from traffic and different activities are a matter of growing concern for the residents.

The main causes of noise pollution in urban areas are the growing number of vehicles, especially rickshaws, the pressure horns on public transport, and faulty silencers on vehicles. Other causes are use of high-output speakers by music stores, roadside open-air restaurants, the presence of light industrial units, auto repair workshops in residential areas, and other noisy commercial establishments.

To reduce noise levels, efforts should focus on a mass awareness campaign highlighting the ill effects of noise on human health; enforcement of the provisions of the Environmental Protection Ordinance 1983 and the Motor Vehicles Act with regard to noise; the introduction of development planning controls and building controls legislation in all urban areas to check noise; reduction of the haphazard and unplanned growth of cities; and refusal to establish non-compatible uses in the same location.

URBAN WATER SUPPLY COVERAGE IN THE NWFP, 1993

DISTRICT	PROJECTED POPULATION (thousand)	POPULATION SERVED (thousand)	SCHEMES (number)	EXPENDITURE (million rupees)	COVERAGE (%)
Peshawar	807.525	725.896	58	80.788	89.89
Nowshera	237.267	171.023	9	9.953	72.08
Charsadda	189.041	149.321	17	16.096	78.99
Mardan	240.809	180.930	9	24.783	75.13
Swabi	175.386	155.221	9	15.908	88.50
Kohat	219.043	172.056	11	23.142	78.55
Karak	29.864	26.092	2	3.175	87.37
Abbotabad	138.407	138.160	13	19.060	99.82

Haripur	72.429	71.726	6	7.124	99.10
Mansehra	56.142	53.944	7	14.998	96.08
Bannu	61.604	56.108	3	7.040	91.08
Lakki	41.728	36.306	4	2.047	87.01
D.I. Khan	130.400	121.552	8	21.270	93.21
Tank	35.648	28.007	5	18.681	78.56
Total	2435293	2086342	161	264065	85.91

Source: Public Health Engineering Department, Government of NWFP.

10.8 URBAN LAND & LAND USES

As the population in urban areas increases, the demand for land rises, which further escalates urban land prices. It also reduces land supply and the ability of urban development and management institutions to implement change. On the other hand, the rapidly mounting demand to develop land for housing, amenities, recreation, commercial, and other purposes is central to the issue of developing urban areas. The present unprecedented growth of towns and cities indicates the pressure on scarce urban land and substantiates public concern and the importance of supply problems, price, and allocation of urban land. The quality of life of urban residents largely depends on the systems used for acquisition, allocation, and servicing of urban land.

The fast pace of urbanization and sprawl of cities and towns has resulted in competition among various land uses such as agricultural, residential, commercial, industrial, and infrastructure with no regard to environmental concerns and the importance of other uses. The result has been the non-compatible siting of different uses and maximum space use of land by consumers, causing congestion in many areas and making people more vulnerable to environmental and public health problems. The high level of air and noise pollution in many congested parts of Peshawar is an example of this.

This improper distribution of land among various uses has also resulted in a rapid increase in land values both within and around the city, including the rural and urban fringes, and good agricultural land within and around towns is being sold in order to expand urban areas. The high urban land prices seriously constrain the introduction of new infrastructure projects, as the cost of land affects project preparation and implementation. This is particularly relevant in the case of provision of services and amenities, and is one reason that our towns and cities lack many facilities, especially green open spaces, parks, playgrounds, gymnasiums, stadiums, public halls, art galleries, and other recreational facilities. Due to the high land values, these civic amenities are considered too luxurious in the NWFP, even though they play a very important role in human development and the strengthening of civil society.

With well-defined, effective, community-based land development control measures, many land-related issues can be addressed and the required space for basic services can be achieved. This will improve the quality of life of the people in urban areas and reduce the negative impacts on the natural environment and on human health.

No uniform policy at the provincial level can suit all circumstances, since the socio-

economic context varies from one region to another in the province. Nevertheless, an effort should be made to develop an urban land policy for the NWFP based on new initiatives such as charges for services, land improvement taxes, and public-sector participation in land acquisition and development. The urban development institutions should prepare long-term development plans based on rational land use patterns and the introduction of development planning controls in urban areas.

ANALYSIS OF WATER QUALITY IN THE NWFP

PARAMETER	PESHAWAR	NOWSHERA	MARDAN	ABBOTABAD	KOHAT	D.I. KHAN
pH	8.5	8.4	8.2	8.3	6.5	7.0
Total Dissolved Solids	350	1.143	305	720	1152	1521
Total hardness	267	212	200	154	548	880
Hardness 1	115	130	96	106	112	472
Hardness 2	154	82	101	48	436	406
Alkalinity 1	0.00	16	0.00	8	40	0.00
Alkalinity 2	200	262	372	68	520	272
Chloride	14	282	54	15	210	160
Sulphate	49	147	191	54	207	219
Nitrate	10	17.8	1.9	3.0	4.80	8.70
Nitrite	0.00	8.5	0.00	0.00	15	15.80
Sodium	20	350	350	91	142	106
Potassium	5	14	3	65	1	15

Source: PCSIR & Chemistry Department, Islamia College, Peshawar, 1994.

1 Total hardness as calcium carbonate.	2 Calcium hardness as calcium carbonate.
3 Magnesium hardness as calcium carbonate.	4 Phenolphthalein alkalinity as calcium carbonate.
5 Methyl orange alkalinity as calcium carbonate	

10.9 Commitments

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

- . clearly define roles and responsibilities and areas of jurisdiction of various departments for urban environmental management;
- . establish urban environment committees in each city, including representatives of all concerned organizations and of citizens;
- . create an urban archive to keep better land records;
- . do management reviews of city administrations and organizations dealing with urban environment and undertake an institution-strengthening programme;
- . subject all development projects approvals to an environmental impact assessment;
- . revive and support local Government institutions to raise funds to address environmental problems, especially solid waste disposal, sewerage, and the supply of clean drinking water;
- . enforce existing available laws regarding environment protection, with deterrent penalties; technology for vehicles;
- . train staff of various urban institutions, with the help of educational institutions, in urban environmental management;
- . review/amend Urban Planning Ordinance, 1978 to provide more legal power to urban authorities;
- . approve and implement the already prepared development plans for seven cities by the respective urban Institutions;
- . prepare and implement more infrastructure improvement programmes for service-deficient areas in cities and towns;
- . prepare infrastructure improvement and economic development programmes for secondary and small towns;
- . include land use planning and zoning regulations in the proposed new

- environmental legislation;
- . facilitate the development of vehicular tuning stations in the private sector;
- . assess the feasibility of a mass transport system for Peshawar, including the option of reactivating the Peshawar-Hayatatabad railway;
- . introduce lead-free fuel and catalytic converters technology for vehicles.
- . develop and implement transport plans in each city;
- . ban pressure horns and the misuse of loud speakers in public places;
- . initiate programmes for the greening of open spaces and for urban forestry;
- . promote cleaner brick kiln technology introduced under a German development agency (GTZ) support project;
- . consider shifting the Peshawar Airport outside the residential area;
- . complete implementation of the SUDP;
- . put the World Bank Community Infrastructure Project (CIP) into operation;
- . increase the availability of clean and waste water treatment in the urban areas;
- . based on experience with the SUDP action plan for Peshawar, undertake similar programmes for waste disposal in other towns;
- . protect water bodies such as the Kabul River from pollutants;
- . carry out studies on water quality and quantity, and on the solid waste generation rate;
- . initiate programmes for handling special waste;
- . assess the feasibility of dividing Peshawar into two or more municipal administrative units;
- . implement the GTZ project for improvement of the urban environment in Peshawar;
- . implement an action plan for solid waste management for Peshawar;
- . arrange to improve the potable water quality and distribution network in urban

areas; and

- . approve and implement the development planning control system already prepared for Peshawar.

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

- . study and privatize the solid waste collection and disposal systems for Peshawar;
- . review the implementation of the SUDP and the CIP;
- . conceive and implement a third urban project, and continue implementation of the CIP;
- . implement the action plan for relocation of industries located in residential areas;
- . improve implementation of traffic management and transport plans;
- . implement the programme for a mass transport system for Peshawar;
- . continue the institution-strengthening programmes; and
- . implement urban improvement and economic development programmes in smaller cities.