



Quetta

Integrated District Development Vision



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Abbreviations, Acronyms and Glossary

| | |
|-----------|---|
| ADB | Asian Development Bank |
| AIDS | Acquired Immune Deficiency Syndrome |
| ASL | Above Sea Level |
| BADP | Balochistan Area Development Programme |
| BCS | Balochistan Conservation Strategy |
| BDA | Balochistan Development Authority |
| BEMIS | Balochistan Education Management Information System |
| BF&WD | Balochistan Forest and Wildlife Department |
| BHU | Basic Health Unit |
| BLGO 2001 | Balochistan Local Government Ordinances, 2001 |
| CCB | Citizen Community Board |
| CDO | Community Development Office |
| CSO | Civil Society Organisation |
| DCO | District Coordination Officer |
| DCR | District Census Report |
| DPO | District Police Officer |
| DTCE | Devolution Trust for Community Empowerment |
| EDO | Executive District Officer |
| EIA | Environmental Impact Assessment |
| EMIS | Education Management Information System |
| F&WD | Forest and Wildlife Department |
| GIS | Geographic Information System |
| GoB | Government of Balochistan |
| GSP | Geological Survey of Pakistan |
| Ha | Hectare (S) |
| HIV | Human Immunodeficiency Virus |
| HMIS | Health Management Information System |
| IDDV | Integrated District Development Vision |
| IT | Information Technology |
| IUCN | International Union for Conservation of Nature |
| IWRM | Integrated Water Resources Management |
| Karez | Underground gravity irrigation channel devised to tap groundwater in arid regions. In Balochistan, karezat (plural of karez) are constructed on a communal basis. |

| | |
|--------|---|
| KP | Khyber Pakhtunkhwa |
| LEPA | Low Energy Precision Application |
| LEWS | Livestock Early Warning System |
| LG | Local Government |
| LGC | Local Government Commission |
| LGU | Local Government Units |
| LHV | Lady Health Visitor |
| LPG | Liquified Petroleum Gas |
| MAF | Million Acre Feet |
| MCM | Million Cubic Meters |
| MDGs | Millennium Development Goals |
| MEAs | Multilateral Environmental Agreements |
| MICS | Multiple Indicators Cluster Survey |
| MNA | Member National Assembly |
| MPA | Member Provincial Assembly |
| NCHD | National Commission for Human Development |
| NCS | National Conservation Strategy |
| NEP | National Environmental Policy |
| NGO | Non-Governmental Organisation |
| NHA | National Highway Authority |
| NIPS | National Institute of Population Studies |
| NRB | National Reconstruction Bureau |
| NRM | Natural Resource Management |
| NWFP | North West Frontier Province |
| P&DD | Planning and Development Department |
| PCRWR | Pakistan Council of Research in Water Resources |
| PFC | Provincial Finance Commission |
| PHED | Public Health Engineering Department |
| PRSP | Poverty Reduction Strategy Paper |
| PSDP | Public Sector Development Programme |
| QEMIS | Quetta Education Management Information System |
| QWSEIP | Quetta Water Supply and Environmental Improvement Project |
| RHC | Rural Health Centre |
| Rs | Pak Rupees |
| SC | Steering Committee |
| SEA | Strategic Environmental Assessment |
| SEP | School Enhancement Programme |

| | |
|--------|--|
| SMEDA | Small and Medium Enterprise Development Authority |
| SMEs | Small and Medium Enterprises |
| SPDC | Social Policy Development Centre |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| TMA | Tehsil Municipal Administration |
| UC | Union Council |
| UMB | Urea Molasses Blocks |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environmental Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNICEF | United Nations International Children's Fund |
| UPE | Universal Primary Education |
| USAID | United States Agency for International Development |
| WB | The World Bank |
| WCED | World Commission on Environment and Development |
| WCS | World Conservation Strategy |
| WEHAB | Water, Education, Health, Agriculture and Biodiversity Programme of WSSD |
| WHO | World Health Organisation |
| WSSD | World Summit for Sustainable Development |
| WTO | World Trade Organisation |
| ZC | <i>Zila</i> Council |

Executive Summary

The Integrated District Development Vision (IDDV) of Quetta District has been developed through a wide consultative process. The current situation, issues and challenges, measures, opportunities and constraints have been discussed sector-wise in the relevant chapters on governance, social sectors, natural resources, economic development and disaster management.

The goals and objectives of the IDDV are to achieve conservation and sustainable use of natural resources, sustainable development and environment protection in the district. The priority sectors for Quetta District are water and sanitation, population, health-care, education, housing and settlements, commerce and trade, industry, mining, energy, forests, wildlife and protected areas, poverty eradication and governance.

Quetta District is considered the jewel in the crown of Balochistan. Quetta City, the headquarters of the district, is an old historical settlement that has seen phenomenal growth in its area and population, especially after becoming the capital of the province.

The district is bordered by Pishin, Mastung and Sibi districts on its north, south and east respectively and also has common boundaries with Ziarat, Bolan and Nushki districts. Quetta shares on the western side an international border with Afghanistan. The geographical area of the district is 3,499¹ sq. km. In 1998, its population and population density were 759,941 and 286.4² per sq. km. respectively. The population of the district is projected³ to become 1,026, 000 and 1,241,000 in 2011 and 2021 respectively.

The Quetta District comprises three administrative units, namely, Quetta City (mainly an urban area, the largest in the province), Quetta Sadar (rural surroundings of Quetta City in its east, north and west) and Panjpai tehsil (a rural area sandwiched between Quetta City in the east, Mastung district in the south and Afghanistan in the west).

Quetta City covers almost the entire Quetta valley; which is surrounded by hills on three sides with a narrow opening in the north toward Kuchlak. The eastern part of the city comprises of the largest cantonment in the province. Quetta has limitations in terms of its expansion and flushing of the polluted air.

The district has many positive and negative resource attributes. The positive attributes are its people, natural resources (including agriculture, watersheds, forests, rangelands, protected areas, unique biodiversity and a range of economic mineral deposits, especially coal and gas) and its strategic location. The negative attributes include aridity, periodic droughts, fast depleting groundwater and biodiversity, overgrazed and degraded rangelands, low productivity of the livestock, rugged terrain in remote areas, to mention a few. The population density is very high both in urban and rural areas except Panjpai tehsil.

Quetta City, as the capital and the largest settlement and cantonment in the province, is the hub of tertiary education and health-care services as well as that of

1 According to map by Survey of Pakistan; according to the Quetta District Census Report (1998) the area was 2,653 sq. km.

2 Government of Pakistan. Population Census Organisation. District Census Report (1998) Quetta. Islamabad: PCO, Statistics Division, GoP, 2001.

3 Estimates by National Institute of Population Studies (NIPS), Islamabad.

commerce and trade, and, as such, is the biggest provider of jobs in the province.

The social indicators of Quetta District are the highest in the province. The district is better served than others in health-care, education, sports, market, transport, sanitation facilities and power, natural gas and other utility services. Quetta city is accessible from all parts of the province and other parts of Pakistan by national highways, other roads, railways and air. Most parts of the district are accessible despite the hilly terrain. The roads in the remote areas of Quetta Sadar are mainly used for transporting coal and other minerals from mines.

However, the district is facing serious multiple challenges. There are issues of availability, quality and cost of education and health-care services in the district. Access to these services in the rural areas is far inadequate, with Panjpai tehsil in particular lagging behind other parts of the district in this respect.

Urban development is fast-paced and unplanned. Quetta is an over-populated city with an acute shortage of drinking water and an abundance of slums. The city's physical and environmental limitations hinder its expansion. The existing infrastructure of water and sanitation, roads, parks and open spaces and playgrounds is inadequate as compared to the population which has grown rapidly due to increasing rural-to-urban migration. Building codes and regulations have not been earnestly observed. A master plan for the city was developed but was not implemented. Environmental issues, such as incomplete and unsafe disposal of solid waste and sewage as well as traffic congestion and air pollution, remain a big challenge. Vegetables are grown with untreated sewerage water and sold and consumed by the people of Quetta city.

Drinking water is scarce and groundwater is depleting fast due to over-exploitation by the population and by inefficient use in high-delta agriculture, the lack of watershed management in the catchment areas and housing schemes in active water recharge zones. Groundwater pollution is also a serious issue. The options for improvement include: increasing water recharge, rain-water harvesting, using efficient irrigation systems such as Bubbler irrigation, and controlling water pollution.

Quetta Sadar is rich in mineral deposits, including coal and natural gas, and most of these are being exploited from the rural areas, not very far from Quetta city. Quetta Sadar, mostly mountainous, is also the catchment area of Quetta and other

valleys, which drain through many seasonal streams and on which their groundwater resources depend. It is, however, not perceived or managed in this context.

Agriculture is the mainstay of people in the rural areas and instrumental in economic gains. There are orchards of many types of temperate fruits and significant area is under cultivation of vegetables but the agriculture is not sustainable due to excessive and inefficient use of groundwater and high use of agro-chemicals.

Livestock and rangelands are important for subsistence and poverty reduction of people in the rural areas, as it is necessary to meet the needs of the population of Quetta City and the remaining district for livestock products. The vast areas of rangelands used for livestock herding are generally overstocked and depleted, and have low productivity. Dairy-farming, open-air slaughtering of animals, poultry farming and production of animal feed are widespread in the Quetta city.

The Juniper forests in the Zarghoon hills are next to those in Ziarat district in terms of area and quality. Scrub forests also exist in the district. The forests constitute important watersheds for drinking and irrigation water supply to Hanna and Urak villages, Hanna lake, Spin Karez lake and Quetta cantonment. Mainly bushy Juniper trees and broad-leaved trees in streambeds and easier slopes are grown in Hazarganji-Chiltan National Park. Out of the two state forests in Panjpai tehsil, Koh-e-Murdar is almost deforested and de-vegetated due to over-exploitation and overgrazing.

There is a wide diversity of species of wild animals, plants, habitats and ecosystems in the district. The wildlife includes common leopard, endemic Chiltan goat commonly known as Chiltan Markhor, Urial, migratory and resident water-birds, reptiles, amphibians and invertebrates. Hazarganji-Chiltan National Park is one of the important protected areas (PAs) of Pakistan. It has wildlife and other biodiversity of global significance and is meant for conservation of biodiversity and all other resources, low-impact recreation, education and research. Duzadara and Koh-e-Surko are the Game (Wildlife) Sanctuaries for breeding wild animals and hunting and other exploitative uses are prohibited there. Karkhasa, now a part of the national park, Central Zarghoon, Southern Takatu, Southern Malachi, Hanna Lake, Spin Karez and Wail Tangi Dam are other wildlife areas in the district.

Climate change has affected the natural resources, people and economy of the area. The chilling

period required for producing quality temperate fruits, such as apples and cherries, is less than it used to be. Snowfall, rainfall and temperatures have also been affected, resulting in longer and more severe drought periods, far less availability of water, and low productivity of agriculture and rangelands, to mention a few.

The existing pillars of economic growth in the district are commerce and trade, industry, mining, agriculture livestock and service sectors. The natural and cultural heritage of the district is rich but the potential of eco-tourism and tourism has not been realised, due mainly to insecurity, permit policies for foreigners and lack of promotion of tourist destinations. Most places of archaeological significance in the district are buried under ammunition depots.

Governance is as weak as elsewhere in the province and the country. This is mainly due to inherent system that privileges the rich, the changing social values, influence of tribalism, political interference, weak institutions, incompetence of manpower, low-level use of information technology, and lack of objectivity, transparency and accountability.

The greater proportion of the issues and challenges faced by the district relate to Quetta city, which is grossly overpopulated due to in-migration from all other, less resourceful parts of the province; and also from other parts of Pakistan, mainly for business and labour.

The problems common to all sectors in the district include:

- Lack of awareness and motivation where direct and personal economic incentive is missing.
 - Preference for short-term measures and personal gain as compared to long-term policies and plans.
 - Weak governance, in particular lack of intra-agency, cross-agency and sectoral coordination, weak institutional capacities, and individual incompetence in the public sector agencies; inefficient use of human and financial resource; weak compliance and enforcement of law; and negative political interference.
 - Lack of proactive and integrated planning and management.
 - Discrimination against women and lack of gender mainstreaming.
 - Low-level use of new technology in traditional sectors and information technology, especially use of traditional, inefficient irrigation methods. The use of computers in the offices of the public sector agencies is very low.
 - Lack of adequate and reliable data; lack of database and information management systems at the district level, with the exception of education and health-care sectors, and lack of information dissemination.
 - Imbalanced budgetary allocation among different sectors, with very little share for natural resource sectors.
- A longer list of key issues in the district includes:
- Issues of coverage and quality of education and health-care.
 - Lack of urban planning and absence of a master plan.
 - Insecurity due to militancy and insurgency in the province against excesses and denial of rights, as well as growing distance between different ethnic groups.
 - Quetta city and district face food insecurity due to deficiency in food items like pulses, milk and chicken products, which are procured from other parts of the country.
 - A political culture of agitations and strikes prevails in Quetta city.
 - The ever-growing scarcity of drinking water in Quetta city is one of the most serious issues.
 - Incomplete coverage and low quality of municipal services including sanitation and solid waste disposal. Hospital waste, disorderly and polluting vehicle workshops and washing stations need to be taken care of. The traffic police and BEPA need to combat traffic congestion and air, water and noise pollution.
 - Throwing garbage in Habib Nala (drain) and other open drains.
 - Construction of residential and other structures on the best water recharge areas.
 - Dairy farms in residential areas and slaughtering of animals in the open.
 - Vegetables grown with untreated sewerage water.

- Issues of coverage and quality in education and health-care sectors. Although Quetta is better than all other districts in these sectors, there is a lot of room for improvement.
- The provincial capital is expected to establish, maintain and provide tertiary level health-care and education facilities not only to the population of Quetta District, including the increasing population of Quetta city, but also to the people in the northern and central parts of the province.
- The district is seismically sensitive. A devastating earthquake of 7.5 M_L (Richter scale) in 1935 caused 35,000 deaths⁴. Quetta is affected by earthquakes more often than any other district in the province. The district is also affected by cyclical droughts.
- The rural areas of the district, i.e. Quetta Sadar and Panjpai, have not been integrated as yet with Quetta City in regional planning, although they are part of the region which supports and is also dependent on Quetta City in various ways.
- Depletion and degradation of natural resources including groundwater, watersheds, forests, rangelands, wildlife and protected areas.
- Excessive agricultural tubewells (both sanctioned and unapproved) and subsidised power tariffs give rise to water mining issues and are a financial burden on the provincial and federal governments and WAPDA. They also create inequity since many users do not pay for the utilities consumed.
- Inefficient use of water, especially for irrigation of high-delta orchards, vegetables and other crops.
- Lack of integrated management of Pishin Lora, which is shared by the districts of Kalat, Mastung, Quetta, Pishin, Qila Abdullah and Noshki.
- Economic development is fast but lacks environmental considerations.
- Mining is one of the pillars of growth but there are issues of outdated methods, workers' safety, occupational health, social security and old-age benefits.

- The power crisis has deepened with frequent load-shedding and fluctuations in voltage, affecting the productivity of industries and SMEs, commerce and trade, human resources in general and agriculture in particular.

The 2010-2011 budget of the provincial government has been significantly enhanced as a result of a substantial increase in the federal share. This trend is likely to continue in the years to come and provides a good opportunity to address the most serious problems of the province. Quetta city with its large population is riddled with multiple serious problems. Because of depleting groundwater, sustaining water-supply is one of the most important issues that require urgent attention to avoid the looming crisis and a long-term solution.

The Integrated District Development Vision (IDDV) of Quetta has been developed, in this context, through a wide consultative process. The current situation, issues and challenges, measures, opportunities and constraints have been discussed sector-wise in the relevant chapters on governance, social sectors, natural resources, economic development and disaster management. Strengths, weaknesses, opportunities and threats (SWOT) have been assessed with regard to sustainable development in the district and the inferences drawn have been incorporated in this document.

The goals and objectives of the IDDV are to achieve conservation and sustainable use of natural resources, sustainable development and environment protection in the district. The priority sectors for Quetta District are water and sanitation, population, health-care, education, housing and settlements, commerce and trade, industry, mining, energy, forests, wildlife and protected areas, poverty eradication and governance. Millennium Development Goals and targets focus on eradicating poverty (MDG 1), achieving universal primary education and gender equality (MDGs 2 and 3), improving mother and child health, combating communicable diseases (MDGs 4, 5 and 6) and improving water and sanitation (MDG 7).

Water, agriculture, forests, rangelands, wildlife and protected areas are the most important renewable resources in the district. Fossil fuels and mineral deposits are also there. Social services, i.e. health-care, education and utilities, i.e. energy, transport, communication infrastructure are by far the best in the province. However, they still need to be improved.

4 Government of Balochistan. Balochistan Disaster Management Authority. Balochistan Disaster Risk Management Plan. Quetta: GoB, 2008.

The district, in particular Quetta City, is grossly over-populated. Water scarcity is the most serious concern as groundwater is depleting fast due to over-exploitation, inefficient use of water for orchards and agriculture; lack of watershed management in the catchment areas and housing on active water recharge zones. The forests, rangelands, other watershed have degraded and their productivity and environmental services have reduced very much. Wildlife has declined in the district; however, Hazarganji-Chiltan National Park is an exception in this regard.

Consequently, the first priority is to halt and reverse depletion and degradation of natural resources by arranging and promoting the use of alternatives, and development of existing resources. Further development is also important for meeting the future demands. The best achievement of the people and the government would be to improve the natural resources to their maximum potential for sustainable management and use by them and future generations.

The environmental conditions in the city have deteriorated due to air, water, land and noise pollution; incomplete and unsafe disposal of solid, hospital and industrial wastes and sewage. Other issues include traffic congestion, slaughtering of animals in the open, establishment of dairy farms in residential areas, removal of trees in the process of widening of roads and conversion of open and green spaces into built environment.

The priorities for development and implementation of programmes and projects for the future are as under:

Governance

- Improving security and addressing the issues that have led to political insurgency.
- Improving governance by strengthening policies, laws, institutions, competencies, planning, management and monitoring.
- Establishing rule of law and improving transparency and accountability.
- Developing and implementing district plans for all sectors.
- Developing computer-based and GIS-supported database of all sectors at the district level; developing information management and dissemination system; improving availability and reliability of data and information.
- Improving information flow, in particular horizontally, including all stakeholders.
- Setting up and implementing a mechanism to address people's grievances.
- Setting up a Steering Committee (of key stakeholders) mechanism at the district level to coordinate, disseminate, catalyse, support and monitor the implementation of the IDDV.

Social Sectors

- Improving cohesion and integration in society focusing on common social and economic development agenda.
- Improving education, health-care and water supply and sanitation sectors through strengthening institutions, developing competencies of staff, improving and adding facilities, increasing budgets, providing enabling environment, monitoring service delivery and impact.
- Mainstreaming equity and gender, and eliminating gender disparity.

Natural Resources

- Reconciliation of the district's geographical area with the Survey of Pakistan.
- Determining land-use and un-reported land-use with satellite images and ground-truthing for future land-use planning, notwithstanding the formal land-settlement exercise.
- Land-use mapping and planning, as well as assessment of natural resources in the district using modern technology and methods.
- Detailed delineation of sub-watersheds in the district and evaluation of their potential for forestry, agriculture, watershed management, range management and water development. (Surface water storage, hill torrent control, rainwater harvesting and spate irrigation.)
- Improving efficiency in the use of natural resources (renewable and non-renewable natural and energy resources) and reduction in and safe disposal of wastes.
- Rehabilitation of natural resources (water, forests, livestock and rangelands and wildlife and protected areas), enhancing their productivity and sustainable use; and

achieving sustainability of water for agriculture, industry, nature and other uses.

- Making agriculture sustainable and modern through the following:
 - Use of technology including the high efficiency irrigation systems (e.g., land levelling, on-farm water management and Bubbler irrigation/drip irrigation) and mechanisation appropriate to small land-holdings and hilly terrain.
 - Greenhouse (tunnel) and off-season vegetable production and organic farming.
 - Diversification of agriculture to include low-delta fruit orchards, vegetables and other agricultural crops in the valleys where groundwater is depleting.
 - Improvement in the marketing of livestock, fruits, vegetables, and medicinal and aromatic plants.
- Raising forest plantations, and encouraging and supporting agro-forestry of multiple-purpose trees for fodder, firewood, timber, soil conservation, watershed, biodiversity and carbon sequestration.
- Setting up, planning and managing forests and protected areas (wildlife areas) in the district on scientific lines for conservation, sustainable use and promotion of ecotourism.
- Economic investment for improving rangelands and livestock (improvement of breeds, feed and health of animals) and supporting livestock and poultry farming.
- Evaluating grazing potential of rangelands of the district and managing grazing accordingly.
- Harnessing the potential of groundwater recharge, rainwater harvesting.

Economic Development

- Economic development through improving and extending energy supply, commerce and trade, mining, industry, tourism and SMEs for poverty alleviation.
- Controlling the spiralling high inflation and cost of utilities.

- Human resource development for alternative sustainable livelihoods.
- Urban and regional planning and implementation to make Quetta city, its suburbs, neighbouring towns, and big villages sustainable.
- Upgradation of the existing towns and villages and development of new planned medium-level towns based on master plans.
- Controlling air, water, soil, land and noise pollution, and traffic congestion in Quetta city.
- Exploring and developing agriculture and livestock-based small and medium enterprises (SMEs) for sustainable livelihoods and poverty reduction (dairy development including animal fattening for beef and meat, poultry farming, bee-keeping, sericulture, preservation and preparation of fruit and vegetable products, wool based enterprises, large scale handicrafts, and trade and commerce etc.).
- Preservation and promotion of natural areas and cultural sites for tourism.
- Electrification of and energy development in remote rural areas through dispersed application of alternate energy sources including biogas, solar PV, wind and solar thermal; the latter would need wind data and feasibility study.
- Institutional strengthening of the Directorate General of Minerals and Mining.
- Exploration and promotion of mineral exploitation and development of mining.
- Improving power supply from the national grid.
- Enhancing revenue generation at the district level, especially through revival of octroi system.

Disasters

- Establishment of early-warning systems for drought by the federal government for the district and other arid areas of the country.
- Preparedness to reduce disaster risk, disaster management to reduce damage and rehabilitation for sustainability.
- Establishing fodder tree groves, for use only during drought periods.

- Facilitating the use of appropriate designs and construction materials for housing and other infrastructure including dams, bridges, and health-care, education and office buildings, keeping in view the seismic sensitivity; facilitating upgradation of existing houses as well.
- Keeping and maintaining enough open green spaces in Quetta City as green lungs of the city.

The balanced growth model is appropriate for Quetta District, despite the constraints of resources and capacities. A balance between society, economy and environment is crucial for sustainable development. The balance between population and resources is lacking and natural resources are depleting due to past and present unsustainable use. The real issue is of relative prioritisation and sharing of financial resources. For example, major investments in the public sector have been allocated primarily to roads and other infrastructure with very little or no investment on natural resources and social sectors. A reprioritisation needs to be made for future investment.

Improvement in both macroeconomic and microeconomic conditions is important for the sustainable development of the district. The former creates an enabling environment for appropriate economic growth (with participation and equity) and the latter helps in the trickle-down effect, which helps in equity and poverty-reduction. Another related issue in this respect is that of scale, e.g., corporate farming, which has the advantage of using technology, and reducing costs of production, transportation and marketing. The appropriate options for communities in the district are cooperative farming and shareholding in corporate farming.

The policy and legal framework, approved by the federal and provincial governments, create an enabling environment and provide positive or perverse economic incentives. An example of perverse incentive is the subsidised flat tariff on agricultural tubewells, a joint policy decision by the federal and provincial governments and WAPDA with short-term benefit to agriculturists but inequity and long-term repercussions on the availability of groundwater.

The implementing agencies will develop and implement their flexible five-year plan:

- Firstly, IDDV Action Plan to implement short-term measures, coinciding with the Five Year Plan 2010-2015 of the government.
- Secondly, IDDV Action Plan for implementing the medium-term measures and throw forward in the various sectors during 2015 – 2020.
- Thirdly, IDDV Action Plan to implement the long-term measures and the throw forward during 2020 – 2025

Implementation of the Action Plan will be monitored annually and major constraints in implementation will be identified and addressed. Its mid-term impact on sustainability of the district will be assessed in the third, eighth, and 13th year of implementation in order to see its effectiveness and impact, and course-correction. The IDDV may be revised in 2025, in case the situation, issues and options to address the issues have changed significantly and additional opportunities have been created by that time.

Implementation of this IDDV would require changes in the management approach from ad hocism and fire-fighting to pursuing the vision by providing committed and effective leadership, involving all stakeholders, enhancing capacities and coordination; creating enabling environment, motivating and providing economic incentives, and generating and investing financial resources based on clearly defined priorities. The district administration would take the lead, implement its agenda and coordinate, catalyse, support and monitor implementation by other actors under the guidance of the proposed IDDV Steering Committee.

Funds and institutional capacities will remain the main constraint in the implementation of the IDDV. The district generates significant revenue for continuity but the major share is needed for maintenance alone, apart from development budget, which creates additional assets, capacities and resources. The district has a great potential in this regard. It is, therefore, important that the district should get adequate allocations from the revenue budget and share from the General Sales Tax (GST) to avoid degeneration of its capacity to raise revenue and enough development-budget to maximise realisation of its development potential.

1. Integrated District Development Vision (IDDV)

1.1 District Quetta

From the tenth century to the middle of the nineteenth century Quetta was called by its ancient name “Shalkot”. The old Quetta settlements appear to have existed as far back as five millennia as was discovered from excavations in the village of Killi Gul Mohammad and Balaili.

Quetta Valley is part of Quetta Basin and consists of a tectonic depression, a buried valley and a karstic bedrock. Networks of minor valleys dissect the Quetta Valley and the surrounding outcrops and join into the main Quetta Valley. Quetta, like other parts of Balochistan, is an arid, largely mountainous district, with low rainfall (in the range of 100- 300 mm/year) and extreme variations in temperatures during summer and winter. It has endured frequent spells of drought, flash floods and earthquakes.

The three administrative units of Quetta District include (i) Quetta City (mainly urban area, largest in the province), Quetta Sadar (rural surround of Quetta City in its east, north and west), and



(iii) Panjpai tehsil (a rural area sandwiched between Quetta City in the east, Mastung District in the south and Afghanistan in the west). Pishin, Mastung and Sibi Districts are on its north, south and east respectively. Ziarat, Bolan and Nushki districts touch its boundaries on the north-east, south-east and south-west respectively. Its western boundary makes the international border with Afghanistan.

Quetta City spreads almost on the entire Quetta Valley which is surrounded by hills on its three sides with narrow opening in the north toward Kuchlak. The eastern part of the city comprises of the Cantonment, the largest in the province. The city has a limitation in terms of its expansion and flushing of the air pollution of the city.

Quetta City, being the provincial capital, is the centre of tertiary education and health-care services as well as the hub of commerce, trade and employment. Quetta City is among the largest centres of commerce and trade in the country and is the biggest in the province. Quetta is well-served by air, railways, highways and black roads. It is well-connected with the rest of the province and all parts of the country.

Quetta Sadar is rich in mineral deposits, with a large number of exploited coal mines in this unit, especially in the eastern part.

Quetta District has the second largest area of Juniper forest cover in the province (the largest being in Ziarat District), water yield from the hilly watersheds, wildlife and protected areas including the famous Hazarganji-Chiltan National Park, orchards of almost all types of temperate fruits, significant area under cultivation of vegetables, and vast areas of rangelands for livestock herding. Most parts of the district are accessible despite its hilly terrain, thanks to the construction of roads that are mainly meant for transporting coal and other minerals from mines, especially in Quetta Sadar. The social indicators⁵ of Quetta City are the highest in the province. Quetta Sadar and Panjpai tehsil both have a good network of streams.

After the Soviet invasion of Afghanistan, there used to be a heavy concentration of Afghan refugees in five camps located in Panjpai

tehsil. The road network in this tehsil is limited. There are two state forests and a very large number of seasonal streams in Panjpai tehsil.

The district has unique characteristics in terms of its geography, location, soils, climate, people and natural resources, and an enormous potential for economic and social development. However, there are also challenges that impede the harnessing of its potential.

1.2 Background

Ideally, a vision, in the context of the process of development, is an expression of a desirable future condition or situation which a nation or a region envisages to attain and the plausible course of action to be taken for its achievements. It is the vision that works to mobilise people and their resources - physical, environmental and political - to achieve the common goals. A true vision development needs to be shared by a majority of stakeholders. The shared vision imparts courage and determination to achieve the development goals. Thus, such a vision provides hope, inspiration and motivation to the people for working harder for its realisation.

Planning proactively helps in achieving development goals and objectives in a timely and cost-effective way. It reduces problems, because they are generally addressed in a proactive mode. It helps in prioritisation of issues, goals, objectives and investments. It is, therefore, crucial that a vision is developed for sustainable development of the district and a destination, along with a route to approach it, is decided and agreed upon through a wide consultative process. In this regard, there is a need for a short, medium and a long-term plan, which is integrated and is developed jointly by the citizens and other stakeholders. This is the only way to harness local and collective thinking, and to create a spirit of collective responsibility and action.

It needs an exercise such as this one to sufficiently clarify the roles and responsibilities of various players in the process of planned development of a district. The stakeholders include the citizens of the district, all three

levels of government, i.e. local, provincial and federal, private sector, civil society organisations, educational institutions, research organisations, media and donors.

The present document was prepared as the Balochistan Local Government Ordinance (BLGO) 2001 had called for development and approval of integrated development vision (IDD) and various plans for each district. Implementation and enforcement of the Fourth and Sixth Schedules of the BLGO also required a good understanding of the situation, issues and the way forward. Although the BLGO now stands repealed (since January 2010) as a part of a change in the system of local government, and things seem to be in a flux, the utility and necessity of the integrated development vision still remains.

A district is not managed in isolation. Its management is impacted by external factors and dependence on the provincial and federal governments as well as support from the donors. In this age of globalisation, the district has to have links with global regimes of commerce and trade and has to comply with and benefit from the various international treaties and frameworks including the multilateral environmental agreements (MEAs), WTO and ISOs. Understanding and integration of these frameworks is important for sustainable management of the district.

Box 1: Millennium Development Goals (MDGs)

| | |
|---------|--|
| Goal 1: | Eradicate extreme poverty and hunger |
| Goal 2: | Achieve universal primary education |
| Goal 3: | Promote gender equality and empower women |
| Goal 4: | Reduce child mortality |
| Goal 5: | Improve maternal health |
| Goal 6: | Combat HIV/AIDS, malaria and other diseases |
| Goal 7: | Ensure environmental sustainability |
| Goal 8: | Develop a global partnership for development |

1.2.1. Global relevant initiatives

International concern about non-sustainable use of resources, and desire for combating environmental degradation, and consequently paving the way for sustainable development, emerged from the appreciation of the World Conservation Strategy (WCS) developed in 1980 by the IUCN and its partner agencies.

Meeting the Millennium Development Goals (MDGs)

The Millennium Declaration signed by 189 countries has identified 8 Millennium Development Goals or MDGs (Box 1) and 18 quantitative; time-bound targets to measure achievement of these goals (Annex I) for all nations of the world. These are more relevant to the developing countries. Pakistan has agreed to make efforts in order to meet these goals in the specified time. These efforts are to be made at the local level. Thus, these are very relevant for the present IDDV as well.

Federal and provincial governments have incorporated these goals and targets in their policies and programmes - such as Mid-Term Development Framework (MTDF) 2005-2010 - and are trying to implement these through the projects being or to be implemented in the districts. The Poverty Reduction Strategy Paper (PRSP) provides policy framework for poverty reduction and achievement of the targets of the MDGs in this regard. The PRSP and the MDGs have provided the long-term perspective for MTDF. All these efforts are necessary to improve the well-being of people.

Agenda 21

According to Agenda 21 - one of the important outputs of practical use of the UNCED⁶ - integrated planning and management is an eminently practical way to meet future human requirements in a sustainable manner. The essence of the integrated approach finds expression in the coordination of the sectoral planning and management activities concerned with various aspects of land-use and land resources.

1.2.2. National, provincial and district level initiatives

Accepting the recommendations of the World Conservation Strategy (WCS), Government of

6 United Nations Conference on Environment and Development held in 1992 at Rio de Janeiro.

Pakistan (GOP) developed and approved, at the federal cabinet level, the Pakistan National Conservation Strategy (NCS) that had three primary objectives: (i) conservation of natural resources, (ii) sustainable development, and (iii) improved efficiency in the use and management of resource.

Seeing the usefulness of the consultative process of development, and that of the NCS itself, the Government of Balochistan (GOB) developed the Balochistan Conservation Strategy (BCS), with the technical assistance of IUCN, and approved the same in 2000 for implementation. The BCS aims at the well-being of the people and ecosystems in Balochistan. It provides a framework and a strategic plan for the protection of environment, conservation and sustainable use of the natural resources and sustainable development in the province of Balochistan.

Pakistan in the 21st century: National Vision 2030

The emphasis of the National Vision 2030 is on:

- **Economic Growth:** To build a nation whose development is measured by economic growth as well as the quality of life enjoyed by its people.
- **Society:** To evolve into a tolerant and productive society which is at peace with itself and the outside world within a framework of sovereignty and security.
- **Law:** To establish rule of law as a bedrock principle encompassing all spheres of life.
- **Role of the State:** To encourage freedom of enterprise and innovation in the marketplace together with the state's responsibility for the provision of basic services to all citizens, including education, health-care, water-supply and sanitation, shelter, and security under law.
- **Employment with special emphasis on women's rights:** To make employment and employability a central theme in economic and social policies, with special emphasis on the economic rights of women.
- **Poverty Reduction:** To eliminate abject poverty and ensure social protection for the weak and the vulnerable in society.
- **Education:** To generate and absorb knowledge and utilise technology for the good of all while promoting social sciences/humanities as an essential branch of knowledge.
- **Economic Stability:** To sustain an average growth of 7 to 8 % in the long term through effective investment and saving strategies while maintaining macroeconomic stability.
- **Economy:** To take advantage of globalisation through enhanced competitiveness in a global economy relating to commerce, manufacturing and services, with increased diversity and quality of content.
- **Brand Pakistan:** To facilitate the emergence of "Brand Pakistan", which will result in several large conglomerates becoming global players, and many more regional hubs and centres established in Pakistan.
- **Governance:** To re-design the structures of the state and instruments of government in terms of citizens' participation, improved delivery of services and good governance.
- **Demographic Transitions:** To maximise dividends from the demographic transition in the coming years, while avoiding its pitfalls.
- **Energy⁷:** To manage the anticipated growing competition for access and ownership of resources and energy, both regionally and globally.
- **Climate Change:** To prepare for climate change and its likely un-favourable implications.
- **Natural Resources:** To minimise wastage of natural resources as an important tool for preserving inter-generational equity.
- **Urban Growth:** To prepare for the dynamics and imperatives of growth of large cities,

7 Current per capita energy consumption is low (14 million BTUs as against 92 million BTUs for Malaysia). A target of 162,000 MW of power generation by 2030 is projected in the Energy Security Plan (2005) against the current supply of less than 18,000 MW.



Decreasing apple production in Hanna valley

urban concentrations and expected internal and international migration.

- **Education and Employment:** To achieve significant breakthroughs in the sectors of education, employment and energy while consolidating and expanding and gathering momentum in infrastructure and service sectors.

As the arena of action is mostly district, it is important that the IDDVs contribute in assessing the situation regarding these high objectives and in planning implementation of the national vision at the district level.

1.3 Rationale

Section 18 of the BLGO required the *Zila Nazim* to provide vision for wise development, leadership and direction for efficient functioning of the district government, and to develop, with the assistance of the district administration, strategies and timeframe for accomplishment of the relevant goals approved by the *Zila Council*. This provision was made due to usefulness of

comprehensive and integrated planning and management for a district. The Ordinance also mandated establishment of a District Mushavirat Committee “to crystallise vision for integrated development of the district.”⁸

Although the “Devolution System”, as embodied in the BLGO, has now stands reversed, yet the need for such a framework remains as the district is still the key administrative unit of governance and continues to be the main area of action and implementation. The usefulness of development and implementation of sustainable development strategies or visions was realised in some districts, e.g., Chitral and Abbottabad, even before the “Devolution System” was introduced in 2001.

Integrated district development visions (IDDVs) were prepared by the district governments of Dera Ismail Khan, Qila Saifullah, Gwadar and Badin districts during the period of “Devolution”, with the technical support of IUCN. In the latest initiative, IUCN has helped develop the IDDVs of four districts, namely Lasbela, Mastung, Pishin and Ziarat, besides Quetta.

8 Government of Balochistan. Balochistan Local Government Ordinance 2001. Quetta: GoB, 2001. Section 140 (4) a.

The development of IDDV is an important planning initiative at the district level to chart out a roadmap of sustainable development to be shared with the people of the district, to be a part of the socio-economic development of the province and to contribute to the achievement of the MDGs and the PRSP for the country at this critical juncture. The IDDV will also help in implementing the BCS at the district level.

The IDDV is founded on the assessment of the physical, human and financial resources in the district, an overview of the current situation, changes, trends, issues, and the emerging scenarios. It provides sectoral and cross-sectoral thematic strategies, recommendations, implementing mechanism and the need for action plan for sustainable development in the district. The Action Plan comprises of the short-term, medium-term and long-term measures. A monitoring and assessment program is also included to monitor implementation and assess its progress in achieving the objectives.

1.4 The Process

The important features of the process of developing the IDDV of Quetta District include a broad-based consultative process undertaken with all the stakeholders. The initiative was launched in a Consultative Workshop at Quetta. An in-depth search of published and non-published materials as well as internet browsing was undertaken. The search was selective but hectic. However, the most important information and direction has come from the visionary people including politicians, religious leaders, tribal elders, *Nazims*, DCOs, secretaries and senior officials of the provincial and federal government agencies, civil society organisations and representatives of academia and media in and outside the district.

1.5 Contents and Organisation

A glance at the contents and their organisation would help the readers to know the salient features of the IDDV and to look for what they seek. After a brief introduction at the beginning of each chapter, sector or theme, the status is summarised and the

prioritised issues and challenges are listed and discussed. They are followed by the strategy and measures, identified by the stakeholders to address the same.

The IDDV is a framework of current status, issues, priorities, approaches and guidelines regarding the socio-economic, NRM, environmental and economic sectors that need to be pursued in the context of multiple and complex issues and options. The IDDV charts a path of sustainable development in the district. The basic ingredients are identification of ground realities and aspirations of the people, especially the poor, deprived, vulnerable, voiceless and marginalised, and the potential of the district's development as well as practical measures to achieve it.

1.6 Concept of Sustainable Development

The World Commission on Environment and Development (WCED) has defined sustainable development in "Our Common Future" as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It has two key concepts, which are:

The concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given.

The idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.

A common view of sustainable development is that the three domains of nature, economy and society including culture must all develop together, and not at the expense of each other. That is why issues, prescriptions and tools in regard to sustainable development always cut across the three domains.

According to *Caring for the Earth* (IUCN) the guiding rules are that people must share with each other and care for the Earth. Humanity must take no more from nature than nature can replenish. This in turn means adopting lifestyles and development paths that respect and work within nature's limits. It can be done

without rejecting the many benefits that modern technology has brought, if technology also works within those limits.

Three basic principles that govern sustainable development are economic, environmental and social. Economically a system is sustainable if it produces goods and services on a continuous basis, and is capable of setting aside imbalances. An environmentally sustainable system must maintain a stable resource base, avoid over-exploitation of renewable resource systems and deplete non-renewable resources only to the extent that investment is made in adequate substitutes, especially of renewable resources. A socially sustainable system must achieve distributional equity, gender equity, adequate provision of social services including drinking water, health-care and education, political accountability and people's participation in decision-making.

1. The strategy for sustainable development should aim to promote harmony among human beings and between humanity and nature. The pursuit of sustainable development requires:
2. A political system that secures citizens' participation in decision-making.
3. An economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis.
4. A social system that provides for solutions for the tensions arising from disharmonious development.
5. A production system that respects the obligation to preserve the ecological base for development.
6. A technological system that can search continuously for new solutions.
7. An international system that fosters sustainable patterns of trade and finance.

An administrative system that is flexible and has the capacity for self-correction.

1.7 Vision of the District

The vision of the district should not only be in line with the National Vision 2030 but it

should aim at contributing to the attainment of the latter. As a result of the process of consultations with citizens and public sector representatives in Quetta District, and other stakeholders, has been used to formulate the following integrated development vision for the district:

"Quetta would be a district of aware, informed, educated, peaceful, culturally alive, gender-conscious, democratic, progressive, skilful, honest, clean, healthy, hardworking, capable, efficient, reliable and responsible citizens who would enjoy justice, equity, social services, basic facilities, sustainable livelihoods, development opportunities, healthy environment, security and enabling conditions to contribute to their district's development and prosperity, and better quality of life; and where cultural and natural heritage as well as religious values would be preserved, conservation and sustainable use of natural resources would be practiced, and poverty and illiteracy would become history".

The vision is further elaborated by defining its various elements below:

- Adequate and efficient social services and basic facilities, including safe drinking water, sanitation, health-care, education, and energy for lighting, cooking and heating, for all citizens of the district.
- Planned, clean and sustainable housing, settlements and other communication infrastructure.
- Sustainable agriculture, incorporating:
 - Low-delta fruit orchards, vegetables and other ecologically suitable crops.
 - Water development and its efficient use for the expansion of agriculture.
- Improved rangelands, managed sustainably and supporting healthy livestock.
- Conservation and sustainable use of natural forests and raising of farmland planting for meeting the needs of people for wood and non-wood forest products as well as for environmental services.

- Sustainable livelihoods based on improved agriculture, livestock and range management on commercial lines, expanded and value-added mining including upgrading chromite and marble products, commerce, trade and transport.
- Mini, small and medium enterprises (related to fruits and vegetables, poultry, animal-fattening, milk-production, wool-processing and products, bee-keeping, sericulture, handicrafts, workshops of automobiles and agricultural machinery, sale and repair of communication equipment and reusable waste.
- Efficient and effective institutions with competent and service-oriented manpower.

1.8 Objectives

The objectives of the IDDV are to promote:

1. Planning, catalysing, promoting, supporting and monitoring sustainable development of Quetta District.
2. Conservation and sustainable use of natural resources.
3. Environmental sustainability.
4. Poverty-reduction through sustainable livelihoods and equity.
5. Human resource development.
6. Strengthening of institutional framework.
7. Improving the quality of life of citizens of the district.
8. Filling in gender gaps and gender-mainstreaming.
9. Improving access to information.
10. Bringing the district at par with and taking it even ahead of other developed districts of the province and country.

The attainment of the objectives would be made possible by:

1. Government creating an enabling environment for the institutions, communities, private sector, civil society organisations, academia and media for playing their full role since it is essential for the district to flourish socially, economically, politically and culturally.
2. Making the natural resource-base robust with halting and reversing degradation, and further development.
3. Discovering and promoting alternative sustainable livelihoods aimed at poverty-reduction and reducing degradation of natural resources.
4. Benefiting from the experiences of community based initiatives in Gilgit-Baltistan (GB), Chitral District and Torgar (Qila Saifullah) which have been supported by the civil society organisations working there.
5. Taking advantage of training and educational facilities at the provincial and national level in developing the human resource.

1.9 Principles

Following principles have been used in developing the IDDV and they will be useful during its implementation as well:

1. Consultation with and participation of people, communities and all other stakeholders in planning.
2. Joint responsibility and preference for the betterment of present and future generations of citizens.
3. People-friendly and environment-friendly development.
4. Preference to long-term sustainable development over short- and medium-term gains only.
5. Integrated planning and management.
6. Gender-mainstreaming.

2. Governance and Institutions

2.1 Governance⁹

Governance covers the different aspects of relations between the state and civil society. It is the process through which societies or organisations make important decisions, determine whom they involve and how they make them accountable. Good governance is about both achieving desired results and achieving them in the right way. According to CIDA, governance means the manner in which power is exercised by governments in the management of social and economic resources. “Good” governance is the exercise of power by various levels of government that is effective, honest, equitable, transparent and accountable.

Generally, governance includes development and working of policy, legal and institutional frameworks. Good governance leads to positive consequences, including trust, clear direction, positive inputs from stakeholders, good decisions, ability to withstand crises and financial stability.



9 Institute on Governance. Governance. Canada. Available <http://iog.ca/en/about-us/governance>.

good decisions, ability to withstand crises and financial stability. The concept and practice of governance of natural resource management (NRM) is emerging as a popular debate in many countries. This debate enshrines many aspects including people, processes and structures in a range of circumstances. Hence, wider participation of all civil society segments is crucial.

Some key characteristics of good governance are given at Box 2:

UNDP Principles of Good Governance are given at Box 3.

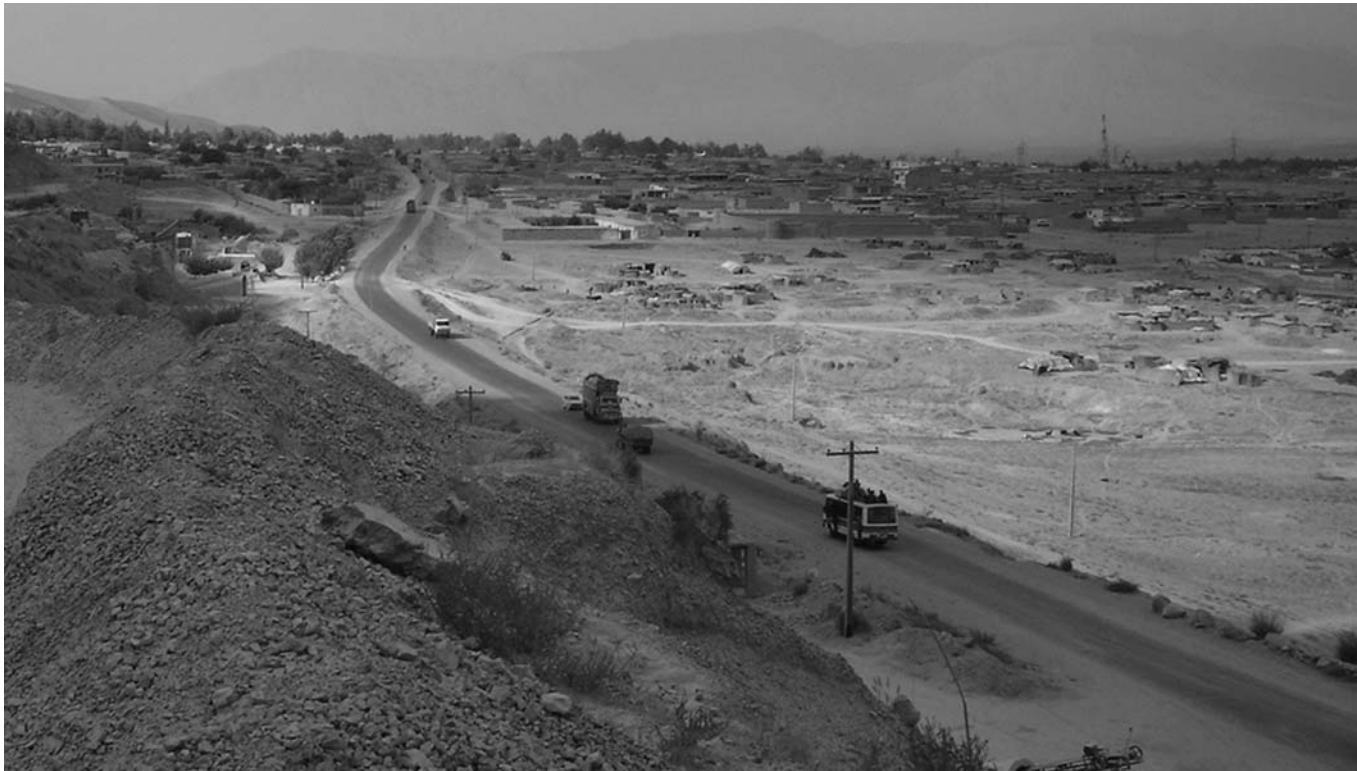
The progress in sustainable development depends on flawless governance. The global principles, for successful application, may need some prioritisation for improvement in governance keeping in view the local conditions. The role of the Judiciary and media is critical to monitor weaknesses in governance. Civil societies can also play a vital role in identifying the weaknesses and helping in improving transparency and accountability.

The government's ability to ensure law and order and provide services such as education

Participation – all men and women should have a voice in decision-making; either directly or through legitimate intermediate institutions that present their intention. Such broad participation is built on freedom of association and speech, as well as capacities to participate constructively.

and health-care is vital for winning the hearts and minds of the public, and restoring links between the citizens and the state. However, it is admitted that decades of mismanagement, political manipulation and corruption have rendered Pakistan's civil service incapable of providing effective governance and basic public services. The situation needs to be improved, and this forms a part of the IDDV.

Transforming the civil service into an effective, more flexible and responsive institution is required. There is also need for modernising bureaucratic rules, procedures and structures and arranging training programmes for inculcating a spirit of public service in the civil servants. Accountability of officials must be effective, impartial and transparent. Incentives for corruption could be reduced significantly with higher salaries and benefits, and better conditions of employment.



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Western Bypass, Quetta

2.2 Devolution

It is critical to increase community's involvement in activities that contribute to the social capital and provide a forum for all residents to participate in establishing and achieving the objectives of sustainable development of the district. The Devolution was the most significant change in the governance system towards achieving community participation. GOB enacted the Balochistan Local Government Ordinance (BLGO) 2001 and transferred some of the functions and powers of the provincial

Box 2: Characteristics of good governance

- Efficiency, discipline and accountability.
- Continuous monitoring and public grievances' address system. District Criminal Justice Coordination Committee to handle the system of dispensation of justice and ensure rule of law in the police and allied institutions' working to execute the national judicial policy; Like overseeing bodies at district and provincial level to handle complaints and allied issues.
- Democratic control for police accountability.
- Manned by elected MNAs/MPAs and eminent persons from civil society, in addition to government officers; Provide policy guidance and redress complaints against them; the democratic control also protecting the police from extraneous pressures. Such systems of over viewing have been evolved elsewhere in the world like the UK, India, Japan and Malaysia and are successfully protecting public interests.
- *Suo moto* actions by the superior judiciary, writ jurisdiction of courts and checks of trial courts.
- Continuous accountability, under an independent media regime.
- Change in the mind-set of public servants towards performing their duties and serving the public.
- Evolving institutional cooperation and coordination.

Box 3: The UNDP Principles of good governance

Participation – all men and women should have a voice in decision-making; either directly or through legitimate intermediate institutions that represent their intention. Such broad participation is built on freedom of association and speech, as well as capacities to participate constructively.

Consensus orientation – good governance mediates differing interests to reach a broad consensus on what is in the best interest of the group and, where possible, on policies and procedures.

Strategic vision – leaders and the public have a broad and long-term perspective on good governance and human development, along with a sense of what is needed for such development. There is also an understanding of the historical, cultural and social complexities in which that perspective is grounded.

government to the local governments at district, tehsil / town and union council levels.

The devolved system of local government created under the BLGO had five main objectives; (i) devolution of political power, (ii) decentralisation of administrative authority, (iii) distribution of resources to the districts, (iv) de-concentration of management functions, and (v) diffusion of power and authority. The aim of the BLGO was to create a fully participatory, responsible and accountable local government system. This called for a rather fundamental change in the governance with redistribution of economic resources and consequently social power.

The devolved system was supposed to use proactive approach to involve people in development through CCBs as participatory development institutions for undertaking local community development initiatives. These could not be, however, formed or registered during the first term of the district government. Similarly, village and neighbourhood councils, as grassroots participatory planning institutions, could not be formed in any district of the country¹⁰.

Under the devolved system of local governments, the district government used to be headed by the District *Nazim* and supported by the District Coordination Officer

10 Asian Development Bank, Department for International Development and World Bank. *Devolution in Pakistan: An Assessment and Recommendation for Action*. Islamabad: ADB, DFID & WB, 2004, Page 24.

(DCO). The DCO's job was to coordinate the district level officers for coherent planning, synergistic development, and effective and efficient functioning of the district administration. His other function was to ensure that the official business in the district was managed in accordance with the laws and defined procedures. District Police Officer, EDOs of Revenue, C&W, PHE, Education, Health, Agriculture, Forests, Livestock and Community Development led their respective departments.

Tehsil Officer, Infrastructure and Services (TO I&S) was responsible for water, sewerage, drainage, sanitation, LG roads, streets and street-lighting; fire-fighting and park services. The PHED was devolved partially, the provincial tier's responsibility being for projects of Rs. 5 million or more and of its district office for projects of lower amounts. The coordination between the two PHED parts and theirs with the Tehsil Officer, Planning (TOP) remained weak. The latter was responsible for spatial planning and land-use control; building control; and coordination of development plans and projects with Union Council Administrations, Village Councils and other local governments.

The local government is a provincial subject under the Constitution but it was included in the Sixth Schedule of the Constitution forbidding the provinces from making any changes in the law without prior approval of the President of Pakistan. The status stands reversed after 31 December 2009 when the subject stood transferred to the provinces under the Constitution. The provinces are now free to devise their own policies on their local bodies. However, the federal government wishes to develop consensus among the provinces for a uniform system.

The devolved system could survive, against odds, for less than eight years. Major development projects in Quetta, even during devolution, were implemented by the federal and provincial governments' agencies without the involvement of the district government. The district government departments were engaged in their routine activities and were sidelined in major developments taking place in the district.

International Crisis Group (ICG)¹¹ (2010) analysed the structure and functioning of Pakistan's civil bureaucracy, identified critical flaws and suggested measures to make it more accountable and able to provide essential public services. According to ICG, "Devolution" of power led to an increase in administrative confusion and the breakdown of service delivery at the district level. It led to greater collusion between unscrupulous district officials and corrupt police. Low salaries, insecure tenure, and obsolete accountability mechanisms spawned widespread corruption and impunity. Recruitments, postings and promotions were increasingly made through other channels instead of being based on merit. It identified for Pakistan (though not specific to but equally applicable to Quetta District) the issues of mismatched skills, undue political interference and lack of objectives or priorities during the period of devolution.

Prior to Devolution, projects were identified, selected and developed by the line departments at the provincial level. The local communities were neither consulted in planning nor involved in implementation. Participation of local community in planning was the main purpose of Devolution. People suggested projects to their councillors, who approached the line departments and the district government for their funding.

The change in the governance system was very slow as the majority of stakeholders tried to maintain the status quo. The failure of the Devolution system had several reasons. It was not supported; rather impediments were created in devolution of administrative and financial powers, devolving the function-and-activities related budgets, and providing technical guidance and supervision to the devolved staff.

Management skills and professional or technical skills are of different nature. Generally, professionals were assigned to managerial positions, e.g., posting of teachers and doctors, who had no previous experience in managing personnel, and allocating or utilising budgets, as EDOs or district officers of education and health, respectively. Management structure and functions were

11 International Crisis Group. Reforming Pakistan's Civil Service. Asia Report # 185, February 2010. Islamabad: ICG, 2010. Available <http://www.crisisgroup.org/~media/Files/asia/south-asia/pakistan/185%20Reforming%20Pakistans%20Civil%20Service.ashx>.

often mismatched. The government managers were not responding to the concerns of the representatives of the people.

The government managers faced the interference of politicians in district affairs constantly. Local government's allocation of budget to the social and natural resource sectors was very low and actually precluded the delivery of quality services and results respectively.

Few local governments had clearly stated objectives and priorities, which meant that the resource allocation process lacked direction, as did policy priorities of the provincial government. Fund allocation was conceived as a tool for political purposes for winning votes and not to promote health-care and education sectors or to sustain natural resources sectors such as agriculture, forest and wildlife, and livestock and rangelands. No attempts were made to ensure that current budget allocations were sustainable as defined in the ADP. Financial management and procurement systems within district governments were bureaucratic and not transparent.

The councillors and *Nazims* were elected on a non-party basis but with active, behind the scene support from political parties, which created confusion in the minds of voters. A lack of basic qualification and necessary experience did not allow the elected representatives to perform as expected.

The *Nazims* and councillors prioritised the short-term developments, e.g., street lights, pavement of streets, stormwater and sewer drains, water-supply, roads etc. even at the expense of the programmes and activities of the natural resources sectors. As a result, the budgets of agriculture, livestock, forest and wildlife departments were affected negatively and even their regular functions came to a standstill. They survived on the budget meant for projects funded by provincial or federal government or donors during the Devolution period, even for their regular maintenance works.

Although efforts were made to develop capacities of *Nazims* and councillors to run the business of the devolved local governments but the system lacked continued patronage and support of the provincial government. Even otherwise, any new system takes much longer, especially against odds, to



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Suraj Ganj Bazaar

show its usefulness and results. The devolved system changed the established system of authority and decision-making in the provincial and district governments. Obviously, ready acceptance could not be expected. Adoption and acceptance of the new system required continuous support, monitoring, adjustment and institutional strengthening, but this did not happen.

The tenure of local councils in the devolved system expired in October 2009, but there was no legal and constitutional recourse available with the provincial government to dissolve the then existing local councils. Therefore, the Provincial Assembly passed a bill on January 5, 2010 for the enabling powers to do so, which became a law on signing by the Governor. Through an Amendment Bill, a new Section 179-B was inserted in the Local Government Ordinance, 2001. This section empowers the provincial government to dissolve district, tehsil and union councils. As a result, all *Nazims*, *Naib Nazims* and other members of district, tehsil, town and union councils ceased to hold their respective offices and the Administrators replaced *Nazims* to look after the local governments at the various levels pending the elections, which may be held on political-party basis during 2011.

According to the amended law, the government may from time to time issue

directions to Administrators for performance of their functions or exercise of powers. The amendment drew criticism from *Nazims* and councillors and one-day strike was observed in mid-January 2010 in Quetta and some other areas in Balochistan. Local governments were dissolved by the GoB on 19 March 2010 and Administrators replaced the *Nazims*.

However, now that the GLBO has been repealed, the district should aim for improving the governance and delivery of services to people with their participation under the new system of provincial cum local government administration.

2.2.1. Best practices resulting from devolution

The devolved governments in various districts, where the leadership was dynamic, developed best practices. Spatial planning, both rural and urban, comes under the purview of the tehsil administration. The experiences of some TMAs in the country are positive with regard to the use of GIS facility and information management¹² in this regard. The replication and introduction of such practices in other districts is possible. Most of these are included as measures.

2.2.2. Status of key elements of governance and devolution

Policies and laws

The federal government makes policies and laws regarding the subjects on the Federal List, and the Concurrent List until the 18th Amendment of the Constitution of Pakistan. The provinces can make policies and laws of the subjects on the provincial and recently devolved Concurrent List. However, the provincial governments have been reluctant to make policies, even for the subjects in their jurisdiction.

There are a few exceptions, e.g., the Forest Policy (1999) and Forest Law (2002) of Khyber Pakhtunkhwa and the Forest Statement (1997) of Punjab. The provincial governments have, however, been legislating on the subjects in their jurisdiction and have been making operational policies on specific issues, e.g., installation of tubewells to guard against

overexploitation of groundwater. The districts implement the policies, whatever they may be, but do not contribute at all in the making of policies and provincial laws, although they are meant for implementation at the district level. It is crucial that the district-specific guidelines are developed for effective implementation of federal and provincial policies in the district.

The NCS and BCS are policy and strategy documents regarding sustainable development for Pakistan and Balochistan respectively. These cover protection of environment, conservation of natural resources, and socio-economic well-being of the people. Similarly, the IDDV fills in the policy and strategy gap at the district level and is credible, having been developed through the consultative process. Policy formulation, law enactments, IDDV developments are major feat but their implementation remains a real challenge.

Legislative cover, in most aspects, is comprehensive in the country but its enforcement is generally very weak. The effective enforcement will help in implementation of the law-related aspects of the IDDV, e.g., pollution control; sustainable use of groundwater; environment-friendly mining, water, infrastructure and other developments; sustainable use of natural resources, workers' safety and occupational health in the mining sector.

Need for coordination

Coordination is defined as "working cooperatively to more effectively apply the resources of several organisations for achieving targets of common interest". Coordination among various levels of the government, between line agencies and with other stakeholders including civil society organisations, private sector, academia and media is very weak at present. The government departments do not usually share resources and information with others. The vertical links are strong in the current hierarchical structure and horizontal links are missing. The coordination mechanisms instituted for specific purposes also fail to meet the objectives.

Need for planning at the district level

Planning in Pakistan is centralised at the national and provincial levels. Medium-term



A newly-built commercial building at Jinnah Road

Development Framework (MTDF) is a five-year plan for 2005 - 2010 prepared by the federal government. The provincial public sector programme is prepared by the line departments and is consolidated and approved by the provincial Planning and Development Department (P&DD). The MNAs and MPAs also play an important role in defining priorities for the federal and provincial public sector development programmes regarding their respective districts. However, the District Development Working Party (DDWP) was the approval forum for PC-1s of the projects implemented with the funds allocated to the districts.

The planning did not devolve to the district level in the true sense even during the Devolution period which lasted from 2001 to 2009. Planning at the district level is at present very weak and for short-term, often limited to one year period. As a result, medium-term and long-term priorities are lost as the horizon of thinking and planning is narrow. Generally, the sort of planning done at the district level is in a responsive way to utilise the allocated budget. The concepts of long-term vision and sustainable development need to be introduced at the district level.

The current 5-Year Plan of the federal government was developed with input from the provincial governments and other stakeholders. However, it appears that the district governments were not able to participate in and provide input to this exercise traditionally as well as due to uncertainty of the system of local bodies.

Need to improve transparency and accountability

Good governance and public accountability are vital for effectiveness of any management system but both are generally weak in the public sector, including at the district level. These aspects of governance improved to certain extent during the Devolution period regarding the development works carried out through their elected councillors.

Good governance and public accountability need to move beyond rhetoric in the country, the province and the district. One of the objectives of the devolved local government system was to bring transparency and accountability. The BCS had emphasised devolution of power for accountability and this was enshrined in the devolved system of local governments. Providing information to the masses about development plans,

programmes, projects, funding, implementation methodology, process, schedules, monitoring mechanism and how they can participate or contribute can be an important step forward to bring transparency and public accountability.

The provision of non-intrusive monitoring of government departments in the BLGO by the peoples' representatives-led monitoring committees was a useful instrument for accountability but it was not used. The office of District Ombudsman provided in the BLGO was another measure in the same direction but it was not set up in Quetta District, like other districts. The district government needs to take steps to ensure accountability and transparency in the functioning of line departments, TMAs etc.

The BLGO made provision for several house committees responsible for ensuring good governance and accountability of the district government. The functioning of these legally mandated committees, especially the *Mushavirat* Committee and Monitoring Committees, was necessary to ensure transparency and accountability of the district government. The District Council formed these committees but these remained dormant.

Need for information management

Information Management for the district administration refers to the effective collection, storage, access, use and dissemination of information to support government functions of policy-making, planning and meeting the information needs of the public, stakeholders and other users. Information management is weak in the public sector at all levels generally and at the district and lower levels in particular. Inconsistencies in the available data are common as well as in the data and situation on the ground, partly due to lack of updating of data. There are wide gaps in district related information needed for planning and management for their own needs and for sharing with the other departments and stakeholders.

There is need for a system for information-need identification, collection, classification, documentation and its presentation on annual basis in the sector departments or centrally in the province or any district. Management Information Systems were, however, established in the Education and Health

Departments at the provincial and district levels and are functioning well. Information is used generally as a tool for holding power and is not shared readily.

Poor information management is the greatest hurdle in situation analysis and development planning. There is need for capacity-building of line departments in collection and management, use and presentation of reliable data about their assets, services and sectors.

Need for improved research and development

Innovative approaches and research are required to catch up with the contemporary global society of the 21st century. Organisations and researchers around the world are known to have been creative working with communities living in situations of fragility and remoteness to find solutions to ensure delivery of basic services, improve governance and create opportunities of livelihoods.

Innovation that utilise cutting-edge technologies and communication tools can help in improving service delivery or improving citizen-government relationships through enhanced transparency and accountability. The delivery of basic social services (e.g., in the health and education sectors) and governance and accountability (e.g., budget oversight and expenditure tracking) can be improved with the use of communication tools. Innovative research and practical approaches for preventing violence and reducing incentives for crime are also required.

It is important to identify high-impact approaches, and innovative solutions and models that were tested and have potential for scale up, and experiences of other places for benefitting, establish collaboration, and forge longer-term partnerships. Researchers in universities and research organisations within and outside Balochistan and Pakistan should be encouraged to conduct research to provide effective responses to the local situations in Quetta District and Balochistan. Proposals should present practical solutions in the short run to address the root causes of issues and long-term development needs, which is a lasting route to achieving welfare of people, and peace and security for them.



Meezan Chowk, Quetta

Revenue generation at the district level

The relevant federal, provincial and local government agencies generate revenue in the district. The Municipal Corporation Quetta generated about Rs. 350 million annually from octroi charge before capping it in 1990s. The corporation and municipal committees in the district collect sanitation fee, property tax and business licence tax. The municipal committee and the PHED, both of which are supplying water in the urban and rural areas respectively, collect water charges. The concerned provincial departments collect livestock cess, agriculture cess, land revenue, property tax in towns, vehicle registration tax, and mining royalties. The federal agencies collect income tax and customs duty. The revenue units are tehsils for land revenue. The revenue resources of Quetta District are high but depend mainly on provincial allocations from the revenue and development budgets as the district establishes and maintains services for requirement of the provincial capital.

2.3 Political and Administrative Setup

In 1883, Quetta was formed into a separate single administrative unit (Quetta-Pishin

district). In March 1883, the Khan of Kalat leased Quetta to the British authorities. Due to its geo-strategic importance, the British built Quetta as a garrison town. It became a part of Pakistan in 1947. Under One-Unit System from 1955 to 1970, Quetta and Kalat were the administrative units in West Pakistan. Quetta became capital of Balochistan province in 1970. Until 1975, Quetta and Pishin were a single administrative unit when Pishin was separated.

Quetta District is divided into 3 National Assembly and 10 Provincial Assembly constituencies, and 4 Senate seats are earmarked for the District. People elect their representatives to local bodies. Religious and tribal affiliations play a crucial role in electing public representatives. The political parties in Quetta District are Pakistan Peoples' Party Parliamentarian (PPPP), Jamiat Ulema-i Islam (JUI), Pakistan Muslim League (Q), Pakistan Muslim League (N), Jamhoori Watan Party (JWP), Pakhtunkhwa Milli Awami Party (PMAP), Balochistan National Party (Mengal Group), Balochistan National Party (Awami), Balochistan National Movement (BNM), Pakistan Workers Party (PWP), Pakistan Tahreek-i-Insaaf (PTI), Balochistan National Party (Bizenjo), Awami National Party (ANP), Hazara Democratic Party (HDP), Kakar

Jamhoori Party (KJP), Muttahida Qaumi Movement (MQM), Jamiat Ulema-i Pakistan,

Tahreek Jafria Pakistan, Jamaat-i-Islami and Jamiat Ahl-e-Hadees.

Table 1: Union Councils in District Quetta

| Town / Tehsil Council Zarghoon | | | |
|--------------------------------------|----------------------|--------|-------------------------|
| S. No. | Name of UC | S. No. | Name of UC |
| 1. | Shahre Iqbal | 2. | Ghafoor Durrani |
| 3. | M. A Jinnah | 4. | Barech |
| 5. | Liaqat Bazar | 6. | Haji Ghabi |
| 7. | Baldia Dispensary | 8. | Haji Kudus |
| 9. | Patel | 10. | Afghan |
| 11. | Malik Akhtar | 12. | Chaman Pathak |
| 13. | Faqir Muhammad | 14. | Imdad |
| 15. | Sardar Essa Khan | 16. | Tareen |
| 17. | Muhammad Ali Shaheed | 18. | Kakar |
| 19. | Zulfiqar Shaheed | 20. | Sirki |
| 21. | Sadiq Shaheed | 22. | Gol Masjid |
| 23. | Ghalzai | 24. | Mula Salam Road |
| 25. | Alamdar | 26. | Labour Colony |
| 27. | Saidabad | 28. | Industrial |
| 29. | Marriabad | 30. | Saraghargi |
| 31. | Nasirabad | 32. | Nawa Kili |
| 33. | Kila Kansi | 34. | Hanna |
| 35. | Balochi Street | 36. | Kotwal |
| 37. | Samander Khan. | | |
| Town / Tehsil Council (Chiltan Town) | | | |
| S. No. | Name of UC | S. No. | Name of UC |
| 1. | Jaffar Khan Jamali | 2. | Qambarani |
| 3. | Forest Nursery | 4. | Lore Karaz |
| 5. | Hudda | 6. | Satellite Town |
| 7. | Manoo Jan | 8. | Kuchlak |
| 9. | Almoo | 10. | Kachhi Baig |
| 11. | Shahbo | 12. | Shadinzai |
| 13. | Ismail | 14. | Baleli |
| 15. | Rajab | 16. | Aghberg |
| 17. | Arbab Karam Khan | 18. | Railway Housing Society |
| 19. | Raisani Road | 20. | Zarkhoo |
| 21. | Deba | 22. | Panjpai |
| 23. | Tirkha | 24. | Wahdat Colony |
| 25. | Sheikh Manda | 26. | Sabzal |
| 27. | Pushtoon Bagh | 28. | Poodgali |
| 29. | Chashma Jeo | 30. | Ahmad Khan Zai |

The members of local bodies were nominated and administrated by the Deputy Commissioner during the British regime. After independence of the country in 1947, the local bodies remained inactive in Quetta District, as elsewhere in the province, until the Basic Democracies (BDs) Order of 1959. This system created four tiers: (1) Union council, (2) Tehsil council, (3) District council, and (4) Divisional council. In urban areas, Town Committees and Municipal Committees were set up in place as the first two tiers.

The Quetta Municipal Corporation is responsible for all municipal functions in Quetta City. Quetta District consists of Zarghoon Town and Chiltan Town (in Quetta city), Quetta Sadr and Panjpai tehsil inclusive of 67 union councils. The union councils in district Quetta are given in Table 1. The BDs system was replaced with the Balochistan Local Government Ordinance, 1980. It comprised of Union Councils and District Councils for rural areas and replaced the former with Town or Municipal Committees for urban areas.

The traditional decision-making was done by the 'Jirga' (informal council of elders) which enjoyed the patronage of the government and exercised semi-judicial powers in the past but has now gradually weakened. Although decision-making now is generally through statutory law, the Jirga is still involved in decision-making in rural areas.

On the initiative of the federal government the Balochistan Local Government Ordinance, 2001 introduced the system of "Devolution" transferring many functions and powers of the provincial government to the local governments at three levels, i.e., union council, tehsil or town level, and municipal or district level. The civil divisions were abolished and public representatives were made the administrative heads at all tiers of local governments.

The Balochistan judiciary in Quetta comprises of Balochistan High Court, Quetta Bench of Supreme Court, Quetta Bench of Federal Shariat, Balochistan Service Tribunal, Balochistan Labour Appellate Court, 2 District and Sessions Judges, Special Judge Banking, Special Judge Anti-Corruption, Presiding Officer Labour Court, 5 Additional District and Sessions Judges, 2 Accountability Courts, 2 Anti-Terrorist Courts, Member National

Industrial Relations Commission, 2 Senior Civil Judges, 5 Civil Judges and 5 Judicial Magistrates.

The district head during the devolved system was *Zila Nazim*, supported by the District Coordination Officer (DCO). After reversal of the system to pre-Devolution status in January 2010, DCO heads the district administration and more recently the title, powers and status of the Deputy Commissioner have been revived and the administrators will head the local bodies until such time the elections are held. His roles include that of District Magistrate, Collector Revenue and coordinator of the functions of all nation-building departments at the district level for administration and effectiveness purposes. The DC is generally the ex-officio head of the various committees and forums in the district. Generally, the departments are headed by the district level officers and are based at Quetta.

The district is divided into the areas with urban and rural characters for maintenance of law and order. The former are managed by the Police and latter by the Levies under the supervision of *Tehsildars*. The law and order was managed by the Superintendent of Police (SP), with minimal role of the *Zila Nazim* in the devolved system and of the DCO in the revived system. The number of police stations in Quetta was 20 in 2007.

The security situation in the district has remained unsatisfactory due to militancy in the country and insurgency in the province for rights. The crime rate is believed to have increased, added to by the presence of Afghan refugees in five Panjpai refugee camps and other places in the district since 1979 and the fact that despite strict security conditions movement across the Pak-Afghan border for locals of both sides is easy.

Prior to Devolution the District Council's domain was rural areas. Its income was mainly from tax on real estate and license fees on stone crushers, brick kilns and shop, which was mainly used on supporting its set up and looking after maintenance of shingle roads. In the overall framework of regular activities and development the role of the district council was quite limited and is likely to remain restricted in the future as well. However, the role of the Quetta Municipal Corporation was fairly wide and strong.

In Quetta District, there is a large number of registered Non-Government Organisations (NGOs), which are involved in various socio-economic, NRM-related and cultural activities, such as social organisation, awareness raising, capacity building, introduction of technology, education, health-care, poverty alleviation, gender development and environment protection, women and child welfare including credit facilities for industrial home activities, sports and drug abuse control. The key ones include Balochistan Rural Support Programme (BRSP), National Commission for Human Development (NCHD), Strengthening Participatory Organisation (SPO), Society for Community Support for Primary Education in Balochistan (SCSPEB), World Wide Fund for Nature (WWF), OXFAM, Taraqqi Foundation, BEEJ, APWA, MEHAK, Society for Protection of Environment, Balochistan Environmental Protection Foundation etc. There is a large number of CCBs, which were prepared during the devolution period.

2.4 Key Issues

The key issues regarding governance and devolution that need to be addressed are summarised here:

- Insecurity due to militancy and provincial level insurgency against excesses and denial of rights by the federal government as well as eroded harmony between different ethnic groups.
- Weak governance, weak compliance and enforcement of law and political interference.
- Need for an effective and efficient system of local governments.
- Need to find ways to ensure participation of people in the planning, implementation and activities of local bodies under the envisioned law, as well as in the subject areas that have reverted to the domain of the provincial government is a big challenge,
- To improve the governance of natural resources, in particular the state-owned ones, build capacities (human and financial resources, technical capacity for planning, management and monitoring, service delivery), bring transparency, accountability, ensure participation of communities, enforcement of laws, rules, regulations and procedures, enforce discipline among the staff of public sector agencies, especially in remote rural areas.
- To build institutional capacities and service delivery in education and health-care sectors. Improve the morale and efficiency of the workers. Improve record-keeping and optimum use of the existing information to bolster performance of individuals and institutions and improve their service delivery.
- To give women in rural areas a role in decision-making in household, societal affairs and politics.
- To improve intra- and inter-departmental and inter-agency coordination, by solving problems of insufficient professional staff, political interference and financial constraints.
- To simplify bureaucratic procedures to avoid delays in service delivery, decision-making, implementation of development schemes and discourage graft and illegal personal gains.
- To solve the problem of frequent transfers of heads of departments and other staff which adversely affects the working of the departments and implementation of development schemes.
- To strengthen the institutional capacity of local governments by decentralised decision-making and removal of constraints in terms of financial, technical and human resources.
- The period of governance of local governments through administrators is likely to be long, pending decision and law-making on the new system. Uncertainty will prevail during this period and the progress in regular work and development is likely to remain slow.
- Accountability of officials must be effective, impartial and transparent. Incentives for corruption could be reduced significantly with higher salaries and benefits, and better conditions of employment.

2.5 Measures to be taken

The measures to improve governance in the district, using the UNDP Principles of Good Governance (Box 2) and the Guidelines for Good Governance (Box 3) include:

- Developing the new local government system in the light of experiences of devolved system, including best practices, and the devolution of authority from the federal government to provincial governments through the 18th Amendment of the Constitution of Pakistan.
- Benefiting from the thinking presented in “The New Governance Regime” paper regarding the new system of local governance.
- Providing support of the people, parliament, provincial assemblies and governments to the judicial system.
- Improving transparency, accountability and efficiency by improving information management and access; issuing hand-outs regularly, launching programmes and projects transparently and setting up public grievance address system.
- Establishing a central information system with nodes to the departments and monitoring system at the district level.
- Improving intra- and inter-agency as well as agencies’ coordination with other stakeholders including communities, NGOs and the private sector for optimal and effective delivery of services to the people.
- Changing the mindset, aptitude and attitude of government employees in favour of public service and inculcating professionalism in them.
- Encouraging and responding positively and actively to *suo moto* actions by the superior judiciary and exercising checks on trial courts.
- Sustaining an independent media regime for continuous accountability of public sector organisations but also helping the media in investigative journalism to eliminate harassment.
- Encouraging and supporting participation of people at the grass roots in deciding and implementing the development agenda.
- Improving information dissemination and consultation on programme / project activities by CSOs with the communities, religious and political leadership of the public sector agencies. CSOs are to exercise cultural sensitivity in this regard.
- Addressing marginalisation of females, especially in rural areas, in decision-making.
- Encouraging and supporting the activities of the CSOs as their partners in development for delivery of social services and basic facilities. Briefing the CSOs periodically about the local government’s programmes, projects and seek their advice and participation.
- Persuading the CSOs to change the self-prioritised working and to adjust and contribute to the plans, programmes and projects of the local and provincial governments. It does not mean, however, that they should not develop and implement on their own innovative programmes and projects for long term progress, impact and change.
- Encouraging the CSOs to coordinate amongst themselves to avoid duplication of efforts and resolution of turf and credit issues.
- Setting up a feedback system and corrective measures to ensure good governance.
- Improving salaries and service conditions of public servants and civil servants.
- Encouraging public servants to work with missionary zeal for the welfare of the district and its citizens.
- Establishing a Citizens’ Committee at the district level for providing support to, and undertaking accountability of, Police, on the pattern of Karachi. Such a system of citizens-Police coordination is practised in the UK, India, Japan, Malaysia and many other countries successfully for protecting public interest.

- Eradicating corruption from public sector including Police, Revenue, Administration, Judiciary and all other public sector agencies .
- Strengthening policies, laws, planning, management and monitoring at the provincial level.
- Promoting cohesion and integration of society and focusing on common development agenda.
- Enhancing revenue generation for the district for performing its functions effectively. The additional revenue sources should include revival of octroi system, receipt of share of Quetta District from federal and provincial revenues including GST or VAT; enhancement of charges for services rendered to public and private sectors, e.g., land acquisition and aim at enhanced provincial, federal and donor funds for development projects.
- Introducing, promoting and ensuring objectivity, transparency and accountability.
- Promoting justice and merit in all aspects of life.
- Encouraging the representation and effective participation of women in local bodies and provincial and national assemblies.

3. Social Development and Urban Environment

The social sectors discussed in this chapter include education, health-care, environment, human resource development, provision of safe drinking water, sanitation, population, gender mainstreaming, housing and settlements, poverty-reduction and sustainable livelihoods and culture.

The district is ranked the highest amongst the 30 districts in Balochistan¹³ in terms of social indicators, meaning that the provision of services and civic facilities in the districts is relatively the best in the province. However, there is a need to further improve all areas of social services and human resource development.

3.1 Education

The budget for education in the country has never exceeded 2 percent of GNP and even this meagre amount does not get properly utilised for education. Often, the leftover funds have to be transferred to other sectors. It has hardly suprising, then, that the literacy ratio in the country is roughly 36 percentat present and even



13 Government of Balochistan. Planning and Development Department. Multiple Indicator Cluster Survey, Quetta (2004). Quetta: P&DD, GoB, 2004.
Social Policy and Development Centre. Social Development in Pakistan: Growth, Inequality and Poverty. Karachi: SPDC, 2001.

less in Balochistan. However, the status of education in Quetta District is better than in all other districts of the province.

The situation in the remote rural areas of the district is still precarious. There is a high dropout rate because of widespread poverty. Parents engage their children in subsistence or income-earning activities and even the children who are enrolled are generally admitted to schools late. Educating girl children is generally not considered a priority. Dropout rate is higher among girls as they have to assist their mothers in household work or due to societal restrictions. Lack of parental attention during study also has an adverse impact. Teachers in the rural areas are generally untrained, indulge in absenteeism and have little interest in motivating students.

The provincial education department has the main responsibility for the education system. Private sector's involvement is comparatively low and more or less limited to urban areas of the district. International donors have been helping, through local NGOs, in creating an enabling environment, especially for primary education and girls' education in the rural areas.

In 2004, literacy rate for people of age 10 years and above was 59 percent for Quetta Zarghoon and 49 percent for Quetta Chiltan. Male literacy rate was 42 percent but that of females was only 18 percent (MICS, 2004). Thirty-three percent children aged 5-9 years were enrolled in primary schools excluding pre-class one (Kachhi). Ninety-three percent students had access to village schools in Quetta-Zarghoon and 90 percent in Quetta-Chiltan, while 97 percent had access to schools within two kilometres for Quetta-Zarghoon and 96 percent for Quetta Chiltan.

The comparative ranking of Quetta-Zarghoon and Quetta-Chiltan was 1st and 2nd in the province respectively (SDPC, 2001 and MICS, 2004). Confidence Intervals for literacy rates of age 10 years were 50 for Quetta-Zarghoon and 41 for Quetta Chiltan.

Literacy rate¹⁴ for 10 years and above for Quetta-Zarghoon was 59 percent (male 70 percent and female 46 percent) and 49 percent (male 63 percent, female 33 percent)

for Quetta-Chiltan. Literacy rate for 15 years and above was 59 percent (male 70 percent, female 46 percent) for Quetta-Zarghoon, and 50 percent (71 percent male, 43 percent female) for Quetta-Chiltan. Literacy rate for 15-24 years was 68 percent (male 79 percent, female 54 percent) for Quetta-Zarghoon and 63 percent (73 percent male, 50 percent female) for Quetta-Chiltan.

The status of education is better in Quetta District compared with all other districts but still there is a lot of room for improvement, especially in regard of quality of education. Students from all parts of the province use tertiary education and professional education facilities at Quetta. There is low disparity between male and female literacy rate in the urban areas but high disparity in the rural areas of the district. In district Quetta, government-run primary, middle and high schools are Urdu medium.

There are professional colleges, for example agriculture college, law college, medical college, college of dentistry, veterinary college; technical schools, polytechnic institutes, technical training institutes, technical training centres, and vocational training centres in the district. There are three universities in the public sector: University of Balochistan, Balochistan Women's University and the University of Information Technology.

Private sector is participating actively in providing education in the district through schools, colleges and even a university, but it is obviously driven by the profit motive. The open market and competition determine their fees. The number of private primary schools is 78. The total number of private primary school teachers is 1,215 (90.3 percent females) and the number of middle school teachers was 1,347 (452 females and 895 males). Private schools are generally English medium. There is a private university called Preston University. Madrasas for religious education are common in both rural and urban areas.

The Balochistan Educational Management Information System (BEMIS) with its node in Quetta for the district (QMEIS) is functioning but the latter is hardly used for decision-making. Education statistics of Quetta District for 2008-09 are given in Table 2.

14 Government of Balochistan. Planning and Development Department. Multiple Indicator Cluster Survey, Quetta (2004). Quetta: P&DD, GoB, 2004.

Table 2: Education statistics of Quetta District (2008-09)

| Level | Gender | Education Institutions (2008-09) No. | Enrolment (2008-09) No. | Teaching Staff (2007-08) No. |
|---|-------------|--------------------------------------|-------------------------|------------------------------|
| Primary | Boys | 269 | 28,454 | 1,044 |
| | Girls | 148 | 16,933 | 690 |
| | Total | 417 | 45,387 | 1,734 |
| Middle | Boys | 35 | 11,405 | 559 |
| | Girls | 35 | 11,101 | 642 |
| | Total | 70 | 22,506 | 1,201 |
| High | Boys | 32 | 26,990 | 1,105 |
| | Girls | 28 | 34,638 | 1,440 |
| | Total | 60 | 61,628 | 2,545 |
| Total | Boys | 336 | 66,849 | 2,708 |
| | Girls | 211 | 62,672 | 2,772 |
| | Total | 547 | 129,521 | 5,480 |
| Private Schools | Male | - | 2,097 | 76 |
| | Female | - | 2,777 | 147 |
| | Total | 54 | 4,874 | 223 |
| Intermediate Colleges (2007-08) | Male | 3 | 6,035 | 64 |
| | Female | 5 | 9,483 | 75 |
| | Total | 8 | 15,518 | 139 |
| Degree Colleges (2007-08) | Male | 2 | 2,388 | 256 |
| | Female | 2 | 4,009 | 146 |
| | Total | 4 | 6,397 | 402 |
| Professional Colleges (2008-09) ¹⁵ | - | 9 | - | - |
| Universities | Coeducation | 1 | - | - |
| | Female | 1 | - | - |
| | Total | 2 | - | - |

Sources: BEMIS (2008-09) Quetta; Directorate of Education, Quetta; Development Statistics of Balochistan (2008); and Balochistan Education Foundation (2007-08)

Regarding primary enrolment and attendance (for 5-9 years age group), in Quetta-Zarghoon net enrolment was 47 percent (boys 52 percent, girls 41 percent), gross enrolment was 79 percent (boys 89 percent, girls 66 percent), while in Quetta-Chiltan, net enrolment was 47 percent (boys 56 percent, girls 39 percent), gross enrolment was 92 percent (boys 112 percent, girls 70 percent). Hundred percent of primary enrolled students attended government schools. In Quetta-

Zarghoon, 24 percent among 10 to 14-year-olds (boys 16 percent, girls 35 percent) never got enrolled in school and in Quetta-Chiltan the figure for this age group is 28 percent (boys 18 percent, girls 39 percent).

Abnormalities in enrolment, especially in the case of girls, have some deep-rooted causes like:

- Parents' negative attitude toward girls' enrolment in schools.

15 Two law colleges, Bolan Medical & Dental College, Agriculture College, Commerce College, Teachers Training College, Polytechnic College for Female, Government College of Technology for Male.

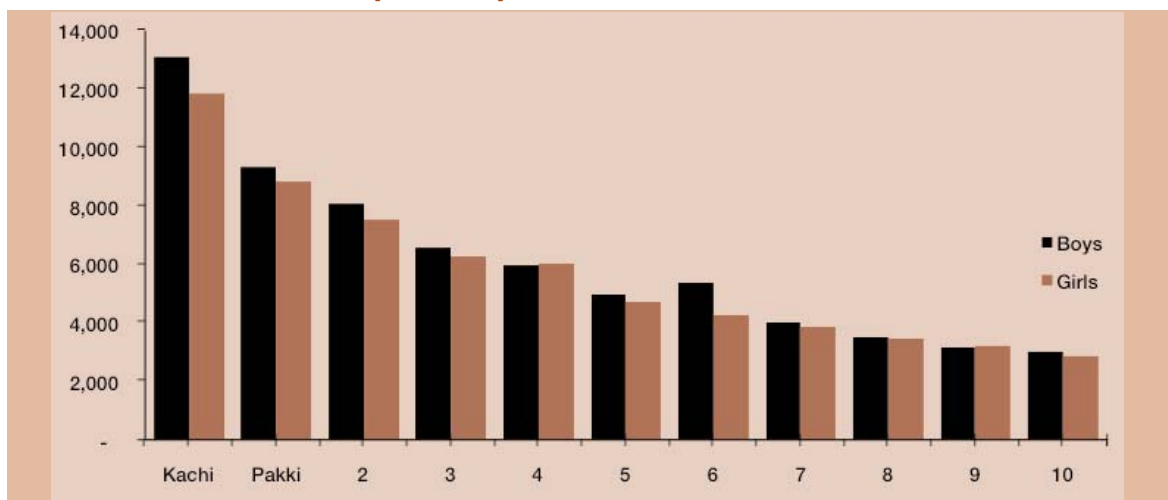
- Shortage of female teachers and girls schools.
- Social, cultural and economic constraints.
- Rural girls have to assist their mothers in household work.
- Enrolment in primary schools was 65,252, out of which the number of girls was 23,403, i.e. less than 36 percent. The enrolment in private primary schools was 37,656, i.e. only 28.6 percent for girls. The schools in the private sector are profit-oriented, most of these charging very high fees and paying low salaries to their teachers; however, the quality of education in private schools is generally considered better. These schools are believed to be filling many gaps in the public sector education facilities and making good contribution in promoting education.
- Enrolment of boys and girls in different grades in government schools in the district during 2008-09 is shown in Figure 1.

In 2008-09, enrolment of boys up to grade 7 was slightly higher than that of girls. Thereafter, it has been about the same up to grade 10. In 2002-08, there was a marginal increase in overall enrolment but later the girls' enrolment increased significantly, i.e., 6.9 percent, whereas enrolment of boys declined by 5.58 percent during this period.

3.1.1 Key issues

- Quetta District offers a range of educational facilities, from primary to university education but the main issue in education is that of quality. The quality of education in higher educational institutions is also deteriorating due supposedly to excessive involvement of students in politics and insecurity which create hostile work conditions and environment for teachers.
- Low quality of education and higher dropout rate, due to the following reasons:
 - Poverty which forces people to depend on public sector schools.
 - Deficiency of trained staff, especially female teachers, in the rural areas.
 - Absence of incentives for hardworking teachers.
 - Recruitment of untrained teachers, mainly for providing employment.
 - Many single-teacher schools in some villages
 - Absenteeism among teachers.
 - Poor state of buildings and non-provision of teaching materials.

Figure 1: Enrolment of boys and girls in different grades in government schools in Quetta District (2008-09)



Source: BEMIS (2008-09), Quetta



University of Balochistan, Quetta

- Lack of or weak monitoring.
- Very low level of funding
- Wide disparity between male and female education in rural areas due to:
 - Social constraints and traditional resistance to female education.
 - Work-sharing with mothers.
 - Non-availability of female teaching staff.
 - Relatively fewer girls schools and female teachers.
 - Lack of separate middle, high schools for females in the rural areas.
- Political interference in the matters of opening of schools (which in many cases is not based on the need of the area), and appointments, postings and transfers of teachers is common. As a result, merit (qualifications, experience and talent) and performance get disregarded in matters of assessment and reward. Many posts remain vacant for long and many teachers, especially those posted in remote areas and in particular female teachers, do not attend their duties regularly. There are single-teacher primary schools as well in the remote rural areas of the district. Such schools remain dysfunctional in case of absenteeism of the lone teacher.
- The learning and teaching environment, particularly in the rural schools, is poor. Teachers, especially female teachers, are not willing to work in the rural areas due to cultural constraints, lack of accommodation and transport facilities and incentives, and high cost and time involved in travelling to and from work. As they are unable to get their transfers reversed, and do not face any risk of losing their jobs, they normally indulge in absenteeism. School buildings are not properly maintained and desks and chairs are either missing or broken. The situation is aggravated by meagre maintenance budgets, and it becomes very difficult for the schools to operate. There is little professional support from line managers and there is severe lack of operational funding.
- Generally, teachers lack appropriate skills to perform their jobs. Very small funds are

allocated for acquiring resource and teaching materials for teachers. They are rarely supplied with textbooks, much less with teaching guides, copies of the curriculum, or other resource materials for teaching (UNESCO, 2003). Opportunities for service training for teachers are rare, and whatever little training is conducted, often does not match the requirements.

- Funds under the Education Sector Reform Programme were allocated during devolution period by the federal government to the district governments without any input from the provincial or district governments for specific activities. There was no flexibility with regard to spending in terms of budget heads.
- The culture of absenteeism pervades in government schools, especially in the rural areas, the reasons for which have been mentioned earlier. Low salary is probably not among them as the government school teachers are better paid than those working in private schools.
- Girls' schools are even fewer than boys' schools in the rural areas, although the latter are insufficient too. A large number of children do not have access to education at all. This rate is even higher for girls. The dropout rate is high, especially for girls, after primary and middle classes. Hostels are not available in the middle and high schools for non-local students. Many schools are shelterless, i.e. they do not have buildings, and the buildings of some other schools are in dilapidated condition. The lack of water or toilet facilities (or both) and boundary wall is also a serious issue, in particular for girls' schools. Equipment and furniture in educational institutions is lacking or insufficient, which demotivates both teachers and students.
- There is need for support and facilitation from senior managers. There is little adherence to regulations and procedures, and monitoring is weak. The District Education Plan needs to be developed which has not been developed so far. There are issues of both quantity and quality in education sector in the district. BEMIS is a good facility and the staff handling it at the district level are

considered competent and efficient, but its full potential is not being utilised in planning and management. The data regarding private educational institutions is inconsistent in the district. The contribution of the Balochistan Environmental Foundation (BEF), in improving the weak position of education in the district, is not yet clearly visible.

- There is need to tackle the problem of political influence in opening government schools without assessing the needs.
- Although NCHD, NEF, Muslim Hands, UNICEF, BEF are working in the field of education; the coverage and quality of education has not enhanced much; for example no school exists in Killi Kambrani or in many other areas.
- Education has been declared as the priority agenda of the provincial government for achieving the targets of the National Vision 2030 for the education sector as well as MDG-2 and MDG-3 (discussed earlier). A study on "Educational Governance" is underway. The provincial government is trying to "increasing net primary enrolment ratio, net secondary enrolment ratio and increasing youth literacy rate of 15-24 year-aged and public expenditure on education as percentage of GDP".
- The targets are relevant to the district and need implementation with enhanced funding. Increasing access to education for all children of school-going age and improving the standard of education are vital for the development of human capital in the district.

3.1.2. Measures to be taken

The measures for implementing the national vision and improving education quantitatively and qualitatively in the district would include:

- Creating incentives and motivation for parents, teachers and students in order to improve the enrolment and quality of education.
- Providing training and refresher courses to teachers at provincial and national levels on a regular basis; arranging training/ refresher courses for the local-literacy-

enhancement-personnel at the provincial headquarters on a regular basis; and arranging intensive local and provincial level training for the female teachers.

- Establishing parent-teacher associations (PTAs) in rural areas and involving them in the management, improvement and development of the physical and human environment at the educational institutions. The aim is to improve the literacy rate and quality of education; to make the utilisation of the allocated funds transparent by involving PTAs and CCBs, CBOs, NGOs.
- Consolidating several single-teacher schools in an area into one multi-teacher school in a village.
- Making attendance of teachers obligatory and showing zero tolerance for absenteeism. All tiers of local bodies and CSOs, CCBs, CBOs should try to raise awareness among the communities, through campaigns, about the need for education and enrolling all boys and girls of school-going age. Enrolment of girls in boys' primary level schools must be encouraged where there are no girls' schools.
- Developing a district education plan for regular and technical education, identifying the major areas of focus, for both short and medium term, and seeking the support of provincial and federal governments' as well as private sector in implementing the same.
- Creating enabling environment and incentives for the private sector for providing relevant technical education in the district for skill development and producing skilled work force for meeting the requirements of Quetta District.
- Discouraging negative political interference and seeking positive support of the politicians in improving education in the district for the young generation and posterity.
- Undertaking monitoring of all primary, middle and secondary schools on a regular basis. Bi-annual school inspections, if carried out properly by assistant education officers (AEOs), would

provide valuable information on the quality of teaching in individual schools and will improve delivery. The data supplied by the educational units to EMIS should be verified to assess the quality of education.

- Staff monitoring and targeting absenteeism as an initial focus of monitoring service. Performance-based guidelines should be developed in consultation with teachers and these should be used in assessing the school and staff as well as technical support provided by the senior line managers.
- Institutional strengthening and capacity building in order to improve the education system and enhance its efficacy.
- Encouraging the teachers to compete for courses offered by the Pakistan Science Foundation, Higher Education Commission and other national organisations.
- Collection of accurate and reliable education-related data during the District Population Census, 2011.
- Starting a crash programme for achieving the targets of MDG-2 and MDG-3 and implementing the resolve of improving the quality of education.
- Providing environmental education at all levels, i.e., from basic to higher levels.
- Encouraging *ulema* to raise environmental awareness, and incorporating environmental education in the courses of *Deeni Madaris* (religious schools).
- Strengthening primary and secondary school sections by improving the selection criteria of teachers and upgrading their status.
- Arranging residential accommodation and community support for teachers, specifically for female teachers, since good functioning of any school in the village depends on teachers from outside.
- Providing extra financial benefits to primary and secondary school teachers posted in remote areas.

- Teachers' trainings, guidance, supervision and monitoring for improving the quality of education.
- Ensuring meritocracy in selection and appointment of teachers in public sector schools.
- Implementing the District Education Plan.
- Making the monitoring system effective by providing budget, transport facility and travel allowance to the monitoring staff of the education department; undertaking monitoring of all primary, middle and secondary schools to verify the data supplied by them for EMIS in order to assess the quality of education.
- Introducing regular courses in *Deeni Madaras* for their mainstreaming.
- Providing incentives and motivation to students, parents and teachers; providing cash incentives to poor parents and promote and support incentives such as free education, books, uniforms, hygiene kits and even payment of stipend to students as incentive for enrolment and reducing dropout cases.
- Freeing the education sector from political influence at all levels.
- Encouraging private sector to invest in tertiary education, i.e., colleges and universities; also, monitoring the appropriateness of faculty, facilities, fees and quality of education and results.
- Strengthening QEMIS to enable it to perform its role as decision support system providing accurate, reliable and current information and statistics.
- Using QEMIS extensively for management and improvement of education in the district.
- Providing additional schools and teachers, especially for primary sections or girls' schools; discouraging negative political interference and encouraging positive support.
- Monitoring and evaluating the work, contribution and impact of the education institutions in private sector on improving the quality of education and extending the coverage of education.
- Constructing boarding houses for students' and teachers' accommodation in high schools and intermediate colleges in rural areas.
- Helping boys and girls with interest and aptitude in getting higher education; offering scholarships to outstanding students, both male and female, who have performed well in the secondary, higher secondary and college education, for higher residential education in reputed institutions in other provinces; offering honorarium to best teachers.
- Encouraging the trend of higher enrolment and low dropout of girls by:
 - Improving infrastructure with focus on schools for girls; opening more female schools in rural areas; constructing boundary walls and toilets in all female schools and separate toilets for females in all colleges, if lacking.
 - Ensuring adequate number of trained teachers.
 - Providing security, accommodation and transport to non-local female teachers posted in remote rural areas.
 - Resolving the issue of non-availability of female teachers to work in the remote areas by hiring retired local veteran teachers or from the neighbouring villages and Quetta City.
 - Relaxing the criteria of qualification and age for female teachers for appointment in the rural areas.
 - Combatting the social stigma attached to female education and employment of the educated females; encouraging respect for female students, working women and their families.
 - Providing career incentives to teachers for their attendance and performance based on the performance of the students in the examinations; providing incentives for in-service higher education or



Administering health-care to people

improving qualification; also, encouraging teachers to compete for courses offered by the Higher Education Commission.

3.2 Health-care

Health is critical for making full use of the mental and physical faculties by any individual. Ill health reduces the efficiency, potential, productivity, income and happiness, rather puts financial burden and adds to poverty of the poor. Therefore, it is the joint responsibility of the state, employers, families and individuals that they live a healthy life. Similar to education, health-care is another parameter of judging the development status of nation.

“Some years ago, issues like air pollution, exposure to hazardous chemicals and heavy metals, contaminated food and water, sustainable urban transport, road safety, and the contribution of the environment to changing lifestyles were considered luxury items on the political agendas of developing countries. Not any more,” said Dr Margaret

Chan, WHO Director General at the launch in 2010 of WHO/UNDP first global project on public health adaptation to climate change. The status of health-care facilities is better in Quetta District compared with all other districts of the province but still there is lot of scope for improvement. The provincial capital is expected to establish, maintain and provide tertiary level health-care and education facilities not only for the population of the entire district including Quetta District, Generally, people from northern and central parts of the province prefer to use these facilities. People from southern districts, especially Lasbela, Gwadar, Turbat and Kech, prefer to use tertiary level health-care facilities located in Karachi due to convenience, although the costs are higher.

According to Multi Indicator Cluster Survey in 2004, 73 percent¹⁶ mothers received antenatal care from a skilled health worker in Quetta-Zarghoon Town and 77 percent in Quetta-Chiltan Town. Fifty-five percent received birth care from a skilled health worker in Quetta-Zarghoon and 74 percent in Quetta-Chiltan. Forty-eight percent married women had heard about HIV/AIDS in Quetta-Zarghoon and 46

16 Government of Balochistan. Planning and Development Department. Multiple Indicator Cluster Survey, Quetta (2004). Quetta: P&DD, GoB, 2004.

percent in Quetta-Chiltan. Thirty-five percent married women and their husbands were using modern methods of contraception in Quetta-Zarghoon and 60 percent in Quetta-Chiltan. Thirty-one percent children of under five years age were reported as underweight for their age in Quetta-Zarghoon and 36 percent in Quetta-Chiltan

In Quetta-Zarghoon during 2001-2004, no woman with a child consulted LHV, 17.2 percent visited government hospital/clinic, 35 percent private hospital/clinic, 1.8 percent family welfare centre, 0.8 percent health centre, 1.3 percent trained TBA, 18.1 percent local dai (midwife) and 73.4 percent consulted skilled worker for antenatal care. Only 0.6 percent women, with a child, consulted LHV, 24.4 percent visited government hospital/clinic, 18.8 percent private hospital/clinic, 4.5 percent family welfare centre, 0.9 percent health centre, 1.7 percent reported to trained TBA, 42.4 percent to local dai, 2.8 percent to LHW, and 77.4 percent consulted skilled worker for antenatal care in Quetta-Chiltan.

In Quetta-Zarghoon, no woman with a child born during 2001-2004 consulted LHV, 21.6 percent visited government hospital/clinic, 33.5 percent private hospital/clinic; 5.5 percent consulted trained TBA, 33.4 percent local dai, 4.5 percent non-health person and 55.4 percent skilled worker for birth care. 0.2 percent women, with a child born during

2001-2004 consulted LHV, 24.8 percent visited government hospital/clinic, 19.2 percent private hospital/clinic, 4.2 percent family welfare centre, 1.2 percent health centres, 1.8 percent reported to trained TBA, 45 percent to the local dai, (midwife) 2.1 percent to LHW, 1.2 percent to non-health persons and 73.6 percent consulted with skilled workers for birth care in Quetta-Chiltan

For postnatal care, no woman with a child born during 2001-2004, consulted LHV, 15.4 percent visited government hospital/clinic, 35.4 percent private hospital/clinic, 3.9 percent consulted trained TBA, 26.3 percent local dai, 0.5 percent LHW, 13.5 percent non-health person and 51.7 percent consulted a skilled worker in Quetta-Zarghoon. 0.2 percent women, with a child born during 2001-2004, consulted LHV, 23.5 percent visited government hospital/clinic, 18.4 percent private hospital/clinic, 3.8 percent family welfare centre, 1.9 percent consulted trained TBA, 47.6 percent local dai (midwife), 1.8 percent LHW, 1.4 percent non-health person and 66.4 percent consulted skilled worker in Quetta-Chiltan.

Regarding contraceptive prevalence 35 percent married women used modern contraceptives while 38 percent used other methods. Ninety-four percent married women knew how to avoid pregnancy while 43 percent had never used any method to avoid pregnancy. Indirect total fertility rate was 7.13



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Table 3: Health programmes operating in Quetta District

| Programme | Focus of the Programme | Facilities/Infrastructure/Results |
|--|---|---|
| EPI | Routine immunization against seven vaccine prevented disease viz. BCG, Polio, Diphtheria, Pertussis, Tetanus, Hepatitis and Measles. | <ul style="list-style-type: none"> ● Supported by WHO. ● Target - 51,000. ● Achievement - 81 percent. |
| TB Control Programme | Diagnosis and treatment of TB patients free of cost. | <ul style="list-style-type: none"> ● Four health centres. ● The Basic Health Units (BHUs) are at Marriabad, Pushtoonabad, Kechi Baig and Rural Health Centre (RHC) Kuchlak. |
| National Programme for Family Planning and Primary Health Care for District Quetta | Training in health, education, family planning services and minor treatment to members of communities at their door steps. | <ul style="list-style-type: none"> ● Supported by federal government. ● 40 Lady Health Supervisor and 900 Lady Health Workers have been trained. |
| Malaria Control Programme | To collect blood samples for diagnosis and treatment. | <ul style="list-style-type: none"> ● Supported by Provincial Health Department. |
| HMIS Programme | Information collection system regarding Health facilities, at district, provincial and national levels regarding health problems, common and un-common diseases. | |
| leishmaniasis (Saldana) | Diagnosis and treatment of leishmaniasis also called as <i>sand fly disease</i> , <i>Dum-Dum fever</i> , <i>espundia</i> , and <i>kala azar</i> , which is Hindi for “black fever.” | <ul style="list-style-type: none"> ● Supported by WHO. ● Ten Centres are established. |

Source: Directorate of Health, Quetta

percent in Quetta-Zarghoon. In Quetta-Chiltan, 60 percent married women used modern contraceptives while 79 percent used other methods. Ninety-six percent married women knew how to avoid pregnancy while 74 percent had ever used any method to avoid pregnancy. Indirect total fertility rate was 7.13 percent.

Only one percent of all women using modern methods of contraception used female sterilisation, 3 percent used pills, 1 percent injections and 3 percent used condoms. Overall, 10 percent used some kind of contraceptives in the Quetta-Zarghoon and in Quetta-Chiltan Towns

Of the average of children born, 0.52 were born to women of age group 15-19 years, 2.32 to 20-24 years, 3.08 to 25-29 years, 4.6

to 30-34 years, 1.63 to 35-39 years, 6.52 to 40-44 years while for the age group of 45-49 mean children ever born was 7.07 in Quetta-Zarghoon. In Quetta-Chiltan Town, 0.81 were born to women of age 15-19 years, 1.82 to 20-24 years, 3.28 to 25-29 years, 4.77 to 30-34 years, 7.4 to 35-39 years, 6.92 to 40-44 years while for the age group of 45-49 mean children ever born was 7.05.

Underweight prevalence in the less than 5 years age group was 31 percent, the population covered by LHWs was 26 percent and the level of care seeking knowledge of mothers was 90 percent in Quetta-Zarghoon. In Quetta-Chiltan, underweight prevalence was 36 percent, population covered by LHWs was 23 percent and level of care seeking knowledge of mother was 97 percent. Ninety-two percent of children born were breast-fed

in Quetta-Zarghoon and 97 percent in Quetta-Chiltan. Fifty-two percent children were reported ill with some disease within two weeks of birth, 27 percent had diarrhoea, 35 percent cough with difficult breathing, 13 percent with high fever, 33 percent were given ORS/ORT. Eighty-nine percent consulted any health provider, 10 percent visited government facility and only 10 percent admitted to hospital in Quetta-Zarghoon. Thirty-five percent children were reported ill with some disease, 21 percent had diarrhoea, 20 percent cough with difficult breathing, 6 percent high fever and 59 percent were given ORS/ORT. Ninety percent consulted any health provider, 23 percent visited government facility and only 7 percent were admitted to hospital in Quetta-Chiltan.

Regarding preventive health-care and child protection, the level of user knowledge of iodised salt was 75 percent while 17 percent used any iodised salt, 67 percent were immunised fully (12-23 months), nine percent partially and 24 percent not immunised. The BCG scar for children of age under 5 years was 50 percent. Regarding protective health-care of children, 0.2 percent of the registered cases were of children of less than five years of age in Quetta-Zarghoon. In Quetta-Chiltan, the level of user knowledge of iodised salt was 68 percent while 12 percent used iodised salt; BCG scar for children of age under five years was 52 percent. Regarding protective health-care for children, 0.3 percent of the registered cases were of children of less than five years of age. 2.4 percent had cough in a period of three weeks, 106 were diagnosed for TB in one

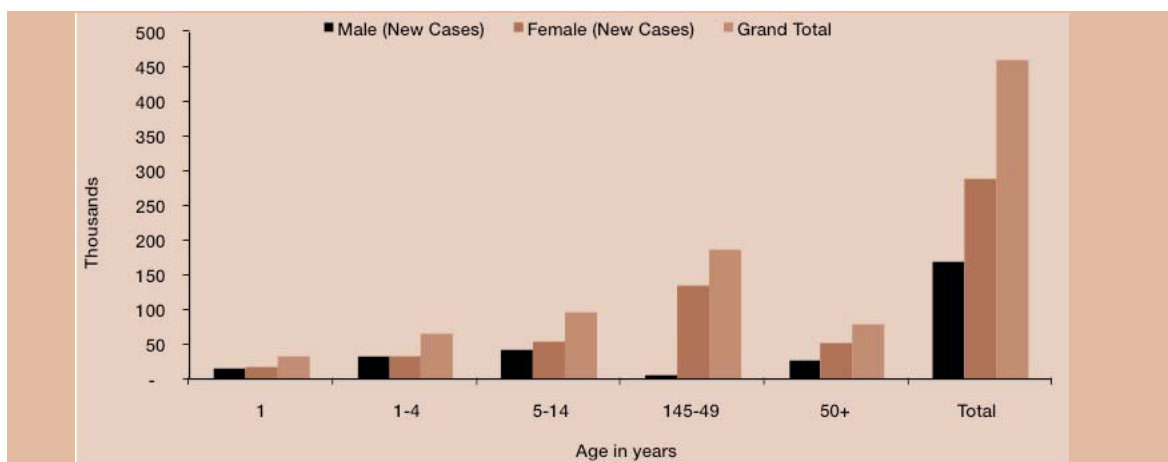
year (per 100,000) in Quetta-Zarghoon. In Quetta-Chiltan, 0.5 percent had cough in a period of three weeks and 37 were diagnosed for TB in one year (per 100,000)

The index of malicious communicable disease is not known. Unhealthy lifestyles and prevailing poverty, coupled with a lack of awareness, has led to a rise in communicable disease, which directly affects economic and social development of society. Control of communicable diseases has been suffering due to an overall weak system, deficient training of human resource, and non-availability of the right persons. The objective of reforms in this important area of health-care is to take measures to control the spread of communicable diseases and address the constraints faced in disease control including transforming existing resources as a part of an efficient system of controlling communicable disease and preventing wastage and under-utilisation of resources.

The common communicable diseases affecting and disrupting livelihood activities in Balochistan include malaria, acute respiratory infections (ARI), ringworm, chickenpox, rubella, scabies, measles, tuberculosis, leishmaniasis disease. The drought of 1999 – 2001 contributed to the incidence of Crimean Congo haemorrhagic fever (CCHF). The latter disease was noticed first in September 2000 in Loralai district of the province where several people succumbed to it.

The main hospitals in the district are Sandeman Civil Hospital, Fatima Jinnah

Figure 2: Patients treated in government health facilities in Quetta District



Source: Aggregated PHC facility monthly report, District Health Information System, Quetta

Table 4: Patients attending OPD in government health facilities in Quetta District (2008) (cases from OPD Abstract Form)

| Respiratory Diseases | | Cardiovascular Diseases | |
|--|---------|--|-------|
| Acute (Upper) Respiratory Infections | 100,374 | Ischemic Heart Disease | 39 |
| Pneumonia < 5 years | 3,973 | Hypertension | 16875 |
| Pneumonia > 5 years | 3,687 | Skin Diseases | |
| TB Suspects | 2,887 | Scabies | 7197 |
| Chronic Obstructive Pulmonary Diseases | 594 | Dermatitis | 4157 |
| Asthma | 5,280 | Coetaneous leishmaniasis | 1248 |
| Gastro Intestinal Disease | | Neuropsychiatric Diseases | |
| Diarrhoea/Dysentery in <5 yrs. | 34,108 | Depression | 687 |
| Diarrhoea/Dysentery in > 5 yrs. | 29,344 | Drug Dependence | 235 |
| Enteric/Typhoid Fever | 4,170 | Epilepsy | 112 |
| Worm Infestations | 1,859 | Eye and ENT | |
| Peptic Ulcer Diseases | 1,634 | Cataract | 480 |
| Cirrhosis of Liver | 53 | Trachoma | 338 |
| Urinary Tract Diseases | | Glaucoma | 106 |
| Urinary Tract Infections | 11,909 | Otitis Media | 724 |
| Nephritis/Nephrosis | 159 | Oral Diseases | |
| Sexually Transmitted Infections | 485 | Dental Caries | 5,349 |
| Benign Enlargement of Prostrate | 4 | Injuries/Poisoning | |
| Other Communicable Diseases | | Road traffic accidents | 2,820 |
| Suspected Malaria | 13,607 | Fractures | 366 |
| Suspected Meningitis | 371 | Burns | 168 |
| Fever due to other causes | 42,832 | Dog bite | 27 |
| Vaccine Preventable Diseases | | Snake bites (with signs/symptoms of poisoning) | 93 |
| Suspected Measles | 145 | Miscellaneous Diseases (Surveillance Importance) | |
| Suspected Viral Hepatitis | 761 | Acute Flaccid Paralysis | 1,372 |
| Suspected Neo Natal Tetanus | 2 | Suspected HIV/AIDS | 10 |
| | | Any Other Usual Diseases (Specify) | 5,072 |

Source: Aggregated PHC facility monthly report, District Health Information System, Quetta (2008)

General and Chest Hospital, Helper Eye Hospital, Police Line Hospital, Railway Hospital and Leprosy Hospital.

The various health programmes operating in the district include EPI, TB Control Programme, National Programme for Family Planning and Primary Health Care, Malaria Control Programme, HMIS Programme and leishmaniasis (Saldana) Programme. Some additional information about these is given in Table 3.

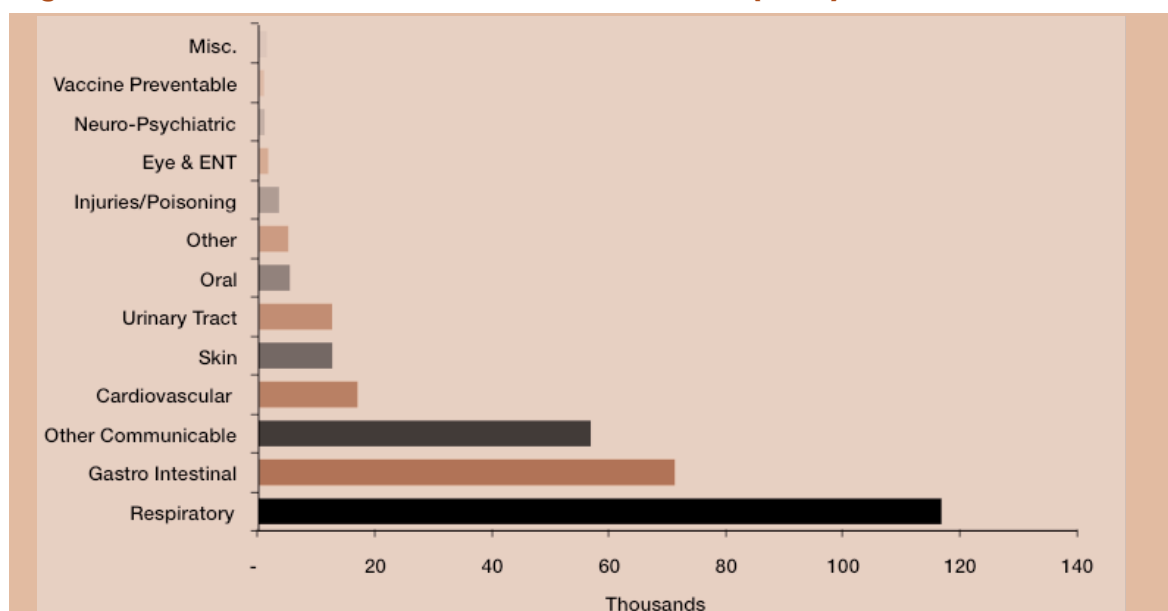
Data for PHC-Quetta regarding aggregated Facility Report (out patients' attendance A-Form OPD Register), human resources and indoor attended cases are listed in Figure 2, Table 4 and Figure 3.

8,705 follow-up cases¹⁷, 3,597 referred, 290 homeopathy and 1,008 cases of malnutrition (children <5 years) were reported.

Total outdoor patient cases in Quetta District in 2008 were 305,713.

17 Outpatient Attendance B-Form of OPD Register.

Figure 3: Incidence of diseases in Quetta District¹⁸ (2008)



Source: From OPD Abstract Form of Quetta District (2008)

Regarding immunisation of children¹⁹ of less than 12 months, 8,504 received third penta-valent vaccine, 7,695 received first measles vaccine, 6,711 were fully immunised and 4,071 pregnant women received TT-2 vaccine.

Miscellaneous Health Services provided from Government Health Facilities in Quetta District (2008) are given in Table 5.

Health Sector Staff in the various health facilities in the district (2008) is reported in Table 6.

Health facilities and medical staff in Quetta District during 2006-07, 2007-08 and 2008-09 are given in Table 7 and Table 8.



Scavenging child exposed to health risk

¹⁸ Based on OPD attendance in government health facilities.

¹⁹ EPI Register of Quetta District (2010)

Table 5: Miscellaneous health services provided in Quetta District (2008)

| Family Planning Services/ Commodities provided (From FP Register) | | | | | |
|---|--------|--|--------|----------------------------------|-------|
| Total FP Visits | 3,227 | Condom Pieces | 66,333 | IUCD | 1,526 |
| COC cycles | 5,018 | DMPA injection | 1,999 | Tubal Ligation | 2,318 |
| POP cycles | 3,965 | Net-En Injection | 1,555 | Implants | 1 |
| Maternal and New-born Health (From Mother Health and Obstetric Registers) | | | | | |
| First Antenatal Care visits (ANC-1) in the facility | 12,865 | First Postnatal Care visit (PNC-1) in the facility | 3,806 | Live births in the facility | 1,002 |
| ANC-1 women with Bb. < 10 g/dl | 1,017 | Normal vaginal deliveries in facility | 1,128 | Live births with LBW (<2.5 kg) | 199 |
| Antenatal Care Revisit in the facility | 7,782 | Vacuum/Forceps deliveries in facility | 78 | Stillbirths in the facility | 63 |
| | | | | Neonatal deaths | 81 |
| Community Based data (From LHW Report) | | | | | |
| Pregnant women newly registered by LHW | 2,857 | Infant deaths reported | 33 | <5 year diarrhoea cases reported | 4,190 |
| Delivery by skilled persons reported | 1,226 | No. of modern FP method users | 40,568 | > 5 year ARI cases reported | 5,107 |
| Community Meetings (From Community Meetings Register) | | | | | |
| No. of community meetings | 639 | No. of Participants Male | 2,612 | No. of Participants Female | 3,311 |
| Laboratory Investigation for Communicable Diseases | | | | | |
| Malaria | | TB | | Viral Hepatitis and HIV | |
| Slides examined | 1,400 | Slides for AFB Diagnosis | 4,078 | Patients screened | 952 |
| Slides MP +ive | 110 | Diagnosis slides with AFB +ive | 547 | Hepatitis B +ive | 100 |
| Slides P. Falciparum +ive | 39 | Follow-up slides for AFB | 704 | Hepatitis C +ive | 29 |
| | | Follow-up slides with AFB +ive | 10 | | |

Source: Aggregated PHC facility monthly report, District Health Information System, Quetta

There were 105 Pharmacists, 14 Drug Inspectors, 3 Health Education Officers, LHV and Mid Wives in Quetta District during 2008-09²⁰.

There are private hospitals, clinics, local medical practitioners, homeopathic clinics, *hakeems* and quack. Health is on the agenda of many NGOs but their involvement is mostly in raising awareness, facilitating vaccination and running of EPI centres, TB centres and family welfare clinics. The international donors have been supporting health-care services in

hospitals, basic health units, rural health centres, MCH centres, EPI centres and family planning clinics.

The number of outdoor patients treated in Quetta District²¹ in 2007-08 were 429,493 new cases (211,936 male and 217,557 female); in 2008-09 there were 502,210 new cases (275,030 male and 227,180 female) and 67,094 old cases (243,469 male and 253,118 female) in 2007-08, and 68,682 old cases (33,415 male and 35,267 female) in 2008-09. Thus, the total number of new and old cases

20 Government of Balochistan. Planning and Development Department. Bureau of Statistics. *Development Statistics of Balochistan 2009*. Quetta: GoB, 2009.

21 Government of Balochistan. Planning and Development Department. Bureau of Statistics. *Development Statistics of Balochistan 2009*. Quetta: GoB, 2009.

Government of Balochistan. Planning and Development Department. Bureau of Statistics. *Development Statistics of Balochistan 2008*. Quetta: GoB, 2008.

Table 6: Health Sector staff in Quetta District (2008)

| Posts | Sanctioned | Vacant | Contract | General Duty in HF | General Duty Out HF |
|---------------------------------------|------------|--------|----------|--------------------|---------------------|
| Senior Medical Officer | 133 | 8 | 352 | - | |
| Medical Officer | 234 | 4 | 8104 | | |
| Women/Lady Medical Officer | 270 | 12 | 9117 | 2 | |
| Dental Surgeon | 24 | 1 | - 11 | - | |
| Head Nurse | | | - | - | |
| Staff Nurse/Charge Nurse | 7 | - | - 5 | - | |
| Medical Assistant | 1 | - | -- | - | |
| Sanitary Inspector | 1 | - | -- | - | |
| Lab Assistants | 15 | - | 36 | - | |
| Dental Assistant | 7 | - | 9 | - | |
| X-Ray Assistant | 4 | - | 13 | - | |
| Lady Health Visitor | 232 | 18 | 14 | 154 | - |
| Health Technician /Medical Technician | 272 | 13 | 1124 | 1 | |
| Dispenser | 147 | 3 | 55 | - | |
| EPI Vaccinator | 502 | 28 | 6151 | 58 | |
| CDC Supervisor | 31 | 1 | - 15 | - | |
| Midwife | 233 | 35 | 2125 | - | |
| LHW | 3333 | 136 | 664 | 387 | 167 |
| Others | 866 | 34 | 17 | 383 | - |

Source: Aggregated PHC facility monthly reports, District Health Information System, Quetta

Table 7: Health facilities in Quetta District during 2006-07, 2007-08 and 2008-09

| Facility | 2006-07 | | 2007-08 | | 2008-09 | |
|------------|---------|------|---------|------|---------|------|
| | No. | Beds | No. | Beds | No. | Beds |
| Government | | | | | | |
| Hospital | 4 | 1910 | 4 | 1910 | 6 | 2230 |
| Dispensary | 9 | - | 9 | - | 9 | - |
| RHC | 3 | 30 | 3 | 30 | 3 | 30 |
| BHU | 35 | - | 35 | - | 35 | - |
| MCH | 13 | - | 16 | - | 16 | - |
| TB Clinic | 1 | - | 1 | - | 1 | - |
| Private | | | | | | |
| Hospital | 36 | 906 | 46 | 1728 | 48 | 1579 |
| Dispensary | - | - | 8 | 28 | 8 | 28 |

Source: Development Statistics of Balochistan (2009)

Table 8: Health facilities in Quetta District during 2006-07, 2007-08 and 2008-09

| Facility | 2006-07 | | | 2007-08 | | | 2008-09 | | |
|----------|---------|--------|-------|---------|--------|-------|---------|--------|-------|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| Doctors | 270 | 176 | 446 | 520 | 296 | 816 | 575 | 296 | 871 |
| Nurses | 61 | 367 | 428 | 42 | 298 | 340 | 42 | 305 | 347 |

Source: Development Statistics of Balochistan (2009)

was 496,587 (243,469 male and 253,118 female) in 2007-08 and 570,892 (308,445 male and 262,447 female) in 2008-09. Number of indoor patients treated in 2008-09 was 173,926 (87,263 male and 86,663 female) while number of deaths was 84 (45 male and 39 female). Regarding malaria control activities in 2007-08, 160,740 blood-slides examined and 186 malaria cases treated out of 186 diagnosed while in 2008-09, 14,303 slides were examined, diagnosing 230 cases and all were treated. Immunisation coverage in Quetta District during January-December 2009 is given in Table 9.

Mother and child health are very important. New-borns are most vulnerable members of any society. According to a recent research, a new-born could be saved for less than \$1 per child by interventions such as tetanus immunisation, clean deliveries, exclusive (clean) breast-feeding and some antibiotics.

Quetta District has the best health infrastructure in the province. There are six government hospitals in Quetta District for an estimated population of around 1.2 million²². In addition, the Quetta hospitals serve a large population of other districts in the province as these hospitals are on the top of the referral system. The health care system in the city has a catchment area that crosses the Pak-Afghan border. Focus is needed on improving quality of services.

3.2.1 Key issues

- The health-care coverage in the district is robust. However, the facilities are concentrated in Quetta City and its suburbs. There is a marked difference in health-care facilities in the rural areas.
- Importance of mothers' nutrition is well understood all over the world. It goes beyond pregnancy or breast feeding period to include the entire life of females, but females are not treated at par with males of the family in this male dominated society. However, gender disparity in health-care of females is less in urban areas compared with the rural areas of the district and urban areas of other districts.
- A large part of hospital waste is not disposed of safely and is a source of infectious and communicable diseases.
- The district has a porous border with Afghanistan and a large number of Afghan refugees and their livestock have lived in Quetta City, Kuchlak and other areas for a long time. They are residing in at least five refugee camps in Panjpai tehsil of Quetta. The refugees have frequently visited Afghanistan during this period and had their relatives from there visit them in Pakistan. They are an additional source of infectious and communicable diseases.
- The government-employed doctors also practice privately to increase their income, which affects their efficiency and effectiveness in their government posts.
- Residential facilities for doctors, particularly for female health-care staff, are lacking or are inadequate in rural areas; and consequently female staff is, unwilling to work there.
- A monitoring and evaluation system is lacking or at best very weak.
- The staff of health-care facilities in remote rural areas is generally absent from duty since there are no good schools for their children, no private practice, no possibilities for professional growth and

Table 9: Immunisation coverage in Quetta District during January-December 2009

| | BCG | Panta1 | Panta2 | Panta3 | OPV0 | OPV1 | OPV2 | OPV3 | Measles |
|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Children 0-11 months | 39,842 | 35,299 | 30,275 | 26,100 | 17,128 | 35,299 | 30,275 | 26,100 | 21,247 |
| | TT1 | TT2 | TT3 | TT4 | TT5 | TT2+ | | | |
| Pregnant Women | 17,971 | 12,346 | 4,355 | 0 | 0 | 16,701 | | | |

Source: Development Statistics of Balochistan (2009)

low likelihood of being discharged from duty.

- Medical staff working at government health-care facilities has little or no say in the allocation of funds for medicines and other essential expenses. Supply of drugs is, generally, irregular due to delays in procurement.
- Public representatives at the provincial and national level have little interest in health issues.
- Lack of appropriate water and sanitation facilities at the health-care facilities
- Lack of awareness of the causes, symptoms and gravity of hepatitis and HIV-AIDS, such cases remaining non-reported.
- Lack of or inadequate preventive health measures due to low priority and low focus.
- Inappropriate solid waste management and partial coverage of sewage in Quetta City, and lack of sewer or drains in parts of the city as well as rural areas contaminate water and spread water borne diseases.
- Use of water from dead storages, e.g., ponds, and recharge and storage dams for drinking without treatment is unsafe and is a cause of infectious diseases.
- Many health-care facilities are in a state of disrepair and need maintenance.
- Health data is inadequate and less credible.
- Lack of awareness or training of the hospital paramedical staff often results in unsafe practices resulting in spread of diseases.
- Low level of inter sectoral coordination among government institutions in health and health related sectors, e.g., education, water and sanitation.
- Low level of community involvement in health schemes.
- Low budgets in non-salary heads.

- Ambulances, other vehicles and equipment remain out of order for long periods due to lack of or delays in major repair.

3.2.2 Measures to be taken

Vision

A healthy population in the district; provision of necessary health-care (preventive and curative) for all; people from other parts of the province benefitting from the tertiary health-care facilities in the capital city; and achieving the targets of MDG-5 “Improve maternal health and reduce maternal mortality ratio by three quarters between 1990 and 2015”; and achieving targets of MDG-6 “Reverse the spread of diseases, especially HIV/AIDS and malaria”.

Measures

- Emphasising primary and preventive health-care including vaccination, preventive medicines, safe drinking water and sanitation.
- Launching awareness campaign for creating an understanding of the preventive health care links between a healthy environment and a healthy population and raising awareness of mothers’ nutrition beyond pregnancy or breast feeding period to entire life span.
- Undertaking urgent minor and major repairs of buildings, equipment and vehicles with provision of funds in preference to constructing and procuring new ones.
- Encouraging and supporting education and training of local women in health-care services at various levels through motivation at the community level; involving elders and NGOs in convincing the parents to allow their daughters to be trained in health-care services and providing economic incentives to individuals.
- Encouraging society to respect and protect the female staff and their families for providing health-care service to the community; and devising a mechanism in consultation with the community for recognition and appreciation of the services of female health-care staff, and their parents for allowing their daughters to work for the community.

- Appointment of health-care staff on all vacant posts of professionals including specialists
- Improving coordination among departments and agencies dealing with various aspects of health; promote close and effective coordination between the district and provincial level health department to take maximum advantage of the guidance, cooperation, funds and other inputs for the district.
- Developing and exercising a zero tolerance culture against absenteeism of health staff.
- Approaching public representatives at various levels through civil society organisations to pay greater attention to health issues and efficient delivery of health services.
- Providing safe drinking water, separate and clean toilets for males and females in health-care facilities; and ensuring cleanliness of all health-care facilities.
- Eliminating quackery in health-care sector from the district.
- Discouraging negative political influence in health-care sector at all levels.
- Development and implementation of a workable methodology for enhancing professionalism in the health staff of all categories in the public and private sectors.
- Increasing the working hours and compensation offered for the same of the health staff.
- Expanding family planning services in the district.
- Providing more ambulances to cover emergencies and epidemics.
- Provision of accommodation for EPI cold chain and medicine store.
- Supporting and promoting homoeopathic and herbal systems of medicine on a sound and scientific basis, especially in the rural areas of the district.
- Controlling human-related communicable diseases from across the Pakistan-Afghanistan border.
- Creating an enabling environment, motivating and providing incentives to the medical and paramedical staff to work in the rural areas; these may include economic incentives, additional allowance or salary, security and facilities in terms of transport and accommodation, especially for the female staff.
- Creating an enabling environment and providing incentives to the private sector for providing affordable health-care services, especially at tertiary level. It is, however, important to ensure that the private sector health-care facilities remain within the financial reach of larger number of citizens.
- Consolidating health-care facilities at BHU level in rural areas and dispersed communities with complete facilities of buildings, equipment, medicine, staff and transport.
- Promoting health insurance schemes in public and private sectors with reputable insurance companies by motivating them to offer appropriate health insurance plans and gradually expanding this concept to other sections of the society.
- Providing residential accommodation to the doctors, paramedical and support staff, both in remote areas as well as urban areas or sufficient allowance in urban areas to defray full expense on rent without incurring personal financial loss. Salaries and status of public sector health-care staff is required to be at par with that of such staff in private sector.
- Ensuring safe disposal of solid waste and industrial waste, and incineration of hospital waste.
- Increasing the non-salary budget in accordance with the requirement of District Health Department.
- Not allowing any new hospital without ensuring proper arrangement for disposal of hospital waste.

3.3 Environment

Environmental sustainability is critical for quality of people's life, poverty-reduction and sustainable development. Environmental parameters, i.e., air pollution, water pollution, land and soil pollution, noise pollution, solid waste, hospital waste, industrial waste, sewerage, hazardous substances, and environmental issues relating to social, natural resources and economic sectors have been discussed in the respective sectors. The discussion in this section focuses on the overall environmental health in the district, its impact on the people and the broader approach to deal with environmental issues. Balochistan Environmental Protection Agency (BEPA) is mainly responsible for protecting environment in the District. Its functions are listed in Box 4.

In Balochistan, urban areas, Quetta city being on top of the list, are a magnet to rural immigrants who seek improved socio-economic opportunities and access to facilities and utilities. The percentage of the population living in urban areas increased from about 16 percent to 23 percent between 1951 and 1998 – a rate of 4.8 percent per annum as compared to an overall population growth rate of 2.42 percent. Trends indicate that the population of the province will reach 14 million by 2030, with 50 percent living in urban areas.²³ Many of these people will be attracted to Quetta City, if opportunities are not created in other urban areas.

The environmental problems in Quetta City are serious. Significant decline in environmental conditions over the past quarter of a century is highly visible. The town from being one of the cleanest and attractive in the subcontinent has turned into a very congested and polluted city. Amongst the key reasons is rapid growth of population from a town of thousands in 1947 to a congested city in 2010.

Excessive Population

The process of urbanisation can be slowed down or halted (at least in theory) but cannot be reversed. Alleviating some of the factors that motivate people to leave rural areas is one option. It would mean providing jobs and delivering services such as education, health-care, communications, water and sanitation

Box 4: Functions of BEPA

- To seek compliance of and enforce NEQS.
- To ensure, guide and assist the proponents of new projects in submission of Initial Environmental Examination (IEE)/ Environmental Impact Assessment (EIA) to the Director General, EPA for approval.
- To ensure implementation of environmental protection and preservation measures in all development projects and to sensitise government agencies on environmental issues.
- To identify the needs for legislation in various sectors of the environmental matters.
- To provide information and guidance to the public on environment.
- To regulate motor vehicle emissions subject to the provisions of the Pakistan Environmental Protection Act, 1997 and the rules and regulations made there-under.
- To encourage the formation and working of non-governmental organizations, to prevent and combat pollution and promote sustainable development.
- To undertake regular monitoring of environmental parameters, and publish Annual Reports.

and energy etc. in the rural areas to halt or slow down out-migration. Measures, if taken, in this direction will have a profound impact. Dealing with population growth is a long-term process, particularly in an area where the culture-bound tradition of large families is prevalent. The direct and indirect impacts of overpopulation in Quetta City are visible in air, water and noise pollution, scarcity of drinking water, inadequacy of sanitation and incomplete and unsafe disposal of solid, hospital and industrial wastes.

Air pollution

Air pollution is a serious problem in Quetta City. The atmosphere in the city is so polluted that thick layers of the lethal substances like carbon dioxide, lead particles, and unburned hydrocarbons always exist in the environment. Air pollution in and around Quetta City is caused mainly by the rapidly increasing number of vehicles, especially the smoke emitting from rickshaw exhausts. The other factors that are directly responsible for this situation are a defective traffic management

Table 10: NO_x concentration (in ppb) at different locations in Quetta City (Feb 2007)

| Period | Meezan Chowk | | | Gawal Mandi | | | Satellite Town | | |
|----------------|--------------|----|----|-------------|----|----|----------------|----|----|
| 18-20 Feb 2004 | 12 | 28 | 20 | 11 | 24 | 18 | 18 | 42 | 27 |
| 13-15 May 2004 | 16 | 38 | 27 | 16 | 37 | 27 | 14 | 32 | 24 |

Source: Report on Ambient Air and Water Quality Investigation in Quetta City, 2007

system and declining road spaces in the wake of flood of rapidly increasing vehicles. The Quetta town and the urban facilities in it were developed for a population of about 50,000–75,000 persons.

Across Quetta, PM₁₀, and PM_{2.5} accounts for approximately 33 percent and 10 percent of TSP on an average without including PM_{2.5} concentration in the residential areas. Consequently, the average ratio of PM_{2.5}/

Table 11: NO₂ at different localities in Quetta City (Feb 2007)

| Location | Absorbance Sample (A) | Absorbance Sample (A ^o) | Exposure Time (Hrs.) | Distance from Main Road (M) | NO ₂ Concentration | |
|--|-----------------------|-------------------------------------|----------------------|-----------------------------|-------------------------------|-------------------|
| | | | | | ppb | µg/m ³ |
| Coal Phatak near Fire Brigade Station | 0.386 | 0.196 | 25 | 5 | 31.24 | 29.07 |
| Jinnah Town | 0.506 | 0.196 | 24 | 500 | 53.39 | 100.38 |
| EPA Balochistan | 0.252 | 0.196 | 26 | 70 | 8.9 | 16.74 |
| PAF junction chowk (Western Bypass) | 0.418 | 0.196 | 26 | 3 | 35.3 | 66.36 |
| WASA Laboratory (Western Bypass) | 0.423 | 0.196 | 26 | 15 | 36.09 | 67.85 |
| New Sabzi Mandi (Bus Stand) Hazargangi | 0.251 | 0.196 | 25 | 20 | 9.09 | 17.1 |
| Ghay Khan Chowk (Sariab Road) | 0.4422 | 0.196 | 25 | 10 | 37.37 | 70.26 |
| Balochistan University | 0.334 | 0.196 | 25 | 700 | 22.82 | 42.9 |
| Karachi Bus Stand | 0.554 | 0.196 | 25 | 5 | 59.2 | 111.29 |
| Manan Chowk, Jinnah Road | 0.573 | 0.196 | 24 | 0 | 64.94 | 122.08 |
| Regal Chowk, Jinnah Road | 0.455 | 0.196 | 25 | 0 | 42.83 | 80.51 |
| Junction Chowk, Prince Road | 0.506 | 0.196 | 25 | 5 | 51.26 | 96.37 |
| Gawal Mandi Chowk, Sirki Road | 0.387 | 0.196 | 26 | 10 | 30.37 | 57.09 |
| Sirki Road, Industrial Area | 0.403 | 0.196 | 24 | 80 | 35.65 | 67.03 |
| Kasi Qila Chowk | 0.28 | 0.196 | 24 | 3 | 31.69 | 59.58 |
| Soraj Ganj Bazar (Old Bus Stand) | 0.533 | 0.196 | 25 | 3 | 55.72 | 104.76 |
| Balochistan Assembly Building | 0.329 | 0.196 | 24 | 20 | 22.91 | 43.07 |

Source: Report on Ambient Air and Water Quality Investigation in Quetta February 2007

PM₁₀ is about 36 percent. There is considerable variation in these ratios²⁴ among cities. Brown pollution is non-existent due to absence of polluting big industries. However, a thick layer of black smoke (smog) is visible in the Quetta Valley during winter. After rising significantly, it has since reduced to some extent following the closure of a coal-fired power station and shifting of brick kilns from the city to the surrounding areas of Yaro on the border of Quetta-Pishin district following the judgement of the Balochistan High Court. NO_x concentration (in ppb) at different locations in the district during Feb 2007 is given in Table 10.

NO₂ in different localities in Quetta City is given in Table 11.

PM₁₀ concentration²⁵ in different localities in Quetta City is given in Table 12.

Grey pollution is generated as people are still using fuel wood in the areas where gas connections have not yet been provided.

Municipal and industrial solid waste

Households in municipal areas collect their solid waste at street level and throw it in dustbins provided by the Municipal Corporation and located on roads about one km apart. From there, the permanent labour force of the Corporation transports it by trucks and tractors to a dumping site situated 16 km

outside Quetta City. The Corporation auctions off solid waste to middlemen or directly to farmers three months after dumping. Problems faced are a lack of landfills and huge volume of used non-degradable polythene bags in solid waste, the latter being a great nuisance for drainage and sewerage systems, cleanliness in the city and in agricultural fields, where solid waste is used as manure.

Shortage of safe drinking water

Bacterial contamination is the major problem with drinking water in Quetta. Water scarcity is another major problem in the district. According to the Balochistan Conservation Strategy (2000) and WHO estimates, Quetta will run out of water in the near future if water supplies from outside the district are not arranged. The ongoing development of Mangi Dam and Halak Dam will somewhat ease the situation but will not solve the problem for long. The overpopulation and mismanagement of water have resulted in shortage and pollution of water.

Inadequate sanitation

The sewerage and drainage system is inadequate in Quetta City and lacking in the settlements in the rural areas. There are no sewer drains in the *Kachhi abadis* in and around the city and villages in the rural areas. The organic contamination in wastewater from Quetta City is

Table 12: PM₁₀ concentration in different localities in Quetta City

| Location | TSP (mg) | Total Sucked Volume (M3) | Average Concentration | | |
|--|----------|--------------------------|-----------------------|---------------------|-------------------------|
| | | | mg/m3 | µg/m3 | Air Quality |
| Meezan Chowk | 111.5 | 361.8 | 0.3082 | 308.2 ²⁶ | Unhealthy ²⁷ |
| Imdad Chowk | 111.1 | 156.6 | 0.7094 | 709.45 | Hazardous ²⁸ |
| Sirki Road | 95.8 | 304 | 0.3151 | 315.13 | Unhealthy |
| Government Officers Colony, Airport Road | 26.3 | 207.6 | 0.1267 | 126.7 | Unhealthy |

Source: Report on Ambient Air and Water Quality Investigation in Quetta February 2007.

24 Report on Ambient Air and Water Quality Investigation in Quetta, February 2007.

25 The notation PM₁₀ is used to describe respirable particulates of 10 micrometers or less. National Environmental Quality Standards (NEQS) for ambient air quality for respirable particulate matters PM10 concentration (effective from Jan 2012) is 120 (µg/m3) for annual average and 150 (µg/m3) for 24 Hours.

26 It was as high as 334.93 µg/m3 of a sample taken on 25 Feb 2004 by the Environmental Monitoring Laboratory, Balochistan Environmental Protection Agency, Samungli Road, Quetta.

27 Increased respiratory symptoms and aggravation of lung disease, such as asthma, are possible respiratory effects in general population (Pm₁₀ range 255-354).

28 Serious risk of respiratory symptoms and aggravation of lung disease, such as asthma, and respiratory effect are likely in general population. (Pm₁₀ range 425-604).

very high as compared with the inorganic contamination. The BOD and COD loading in the wastewater of Quetta City are about 0.27:1 accompanied with very low concentration of metals. This indicates that the major part of the sewage is of domestic wastewater²⁹.

3.3.1 Key issues

Deteriorating environment is a major problem in Quetta District, in particular in Quetta City

and other urban areas. Following water supply, the next largest challenge faced by Quetta District is pollution due to urbanisation. The issues faced in the district, especially Quetta City include:

- Emissions from motorised transport, industries, dairy farms and human population polluting the air and impacting on the health of the people.

Table 13: Environmental related issues, policies and strategies of water sector

| Issues | Policy | Strategy |
|---|---|--|
| Water Quality | | |
| Deterioration in water quality due to salts contamination from agrochemicals, municipal and industrial effluents. | All users of water, public or private, shall have the right to receive water of specified quality at their premises of use; and they shall concurrently have the obligation not to degrade water quality beyond the acceptable limits. | Implementation of monitoring programme which will: |
| | Maintenance of water quality in rivers, reservoirs, lakes, canals, water bodies and coastal areas including groundwater shall be a national priority. | Establish water quality standards for water for different uses and for surface and groundwater. |
| | Strengthen, promote and support public and private research organizations and universities to undertake studies and carry out research to develop appropriate technologies for issues related to saline water agriculture, hydraulic performance of channels, salinity modelling etc. | Develop standards and regulations. |
| | | Develop and implement comprehensive programme of water quality monitoring. |
| | | Standards of NEQS be reviewed, updated and enforced for agricultural drainage, municipal, rural and industrial wastewater treatment and safe effluent disposal |
| | | Undertake, encourage and support Research and Development (R&D) in improving water management. |

Source: Draft National Water Policy (2006)

- Noise pollution from vehicles and development activities.
- Untreated industrial effluents and sewerage.
- Incomplete and unsafe disposal of solid waste including used polythene bags, industrial waste and hospital waste.
- The issues of occupational health and workers' safety in industries, SMEs, and mines are affecting the safety and health of the workers.
- Spray of pesticides on vegetables and orchards, polluting the soils, air and water.
- Lack of or uncoordinated development planning and implementation.
- Inadequate housing and development of slums (*kachi abadis*).
- Weak compliance and enforcement of laws.
- Scarcity of water due to mismanagement of freshwater resources and groundwater recharge problems.
- Contamination of water supplies due to mixing of sewage with drinking water because of leakage of sewer lines, and broken conveyance and distribution pipes of drinking water.
- Growing of vegetables with untreated sewage.
- Vehicular air and noise pollution due to lack of engine tuning, use of old vehicles and traffic congestion.
- Deforestation and devegetation in Quetta City (reducing the green lungs of the city) and in the wider district

The environment related water issue, policies and strategies are given in Table 13.

3.3.2 Measures to be taken

The goals of improvement in environmental conditions in the district include reduction in air, land, soil, noise and water pollution and healthy environment for the people for

enjoying life and contributing optimum productivity. The objectives of the air quality management would be to minimise the risk to public health from air pollution, improve visibility and minimise the district's contribution to climate change.

- Raising awareness of the environmental issues among teachers, students, policy makers, planners and masses.
- Participatory planning, management and implementation for addressing the environmental issues, ensuring environment-friendly development and achieving environmental sustainability.
- BEPA to monitor air and water pollution in Quetta City and other urban areas, and monitor water quality throughout the district.
- BEPA to seek compliance of and enforce the National Environmental Quality Standards (NEQS) for air, water and other environmental parameters in case of municipal effluents, industrial discharges and development projects.
- BEPA to issue environmental orders for all violations of Pakistan Environmental Protection Act (1997) and pursue cases in the Environmental Tribunal.
- Making the public sector and private sector projects compliant with the requirements of IEE and EIA under the EIA Guidelines of the Pakistan Environmental Protection Agency. BEPA should review these through a wide consultation process. There should not be any exception, whatever the emergency or priority; BEPA, however, should speed up the review process.
- Periodic checking of vehicles jointly by BEPA and the traffic Police staff for emissions and smoke.
- Stringent annual/ biannual checking for renewal of vehicles for safety and emissions by the Motor Vehicle Examiner.
- Cleaning and disinfecting overhead water tanks used for public water supply.
- Correcting leakage of sewer and drinking water lines to avoid their mixing.

- Periodically checking silencers of rickshaws, motorcycles and other vehicles and get the same corrected to reduce the high noise levels in many parts of Quetta City.
- Designating hospitals, courts, educational institutions, government offices and public parks as silence zones (by banning the blowing of horns) and enforcing this provision strictly.
- BEPA to periodically survey new sources of pollution.
- Expediting the completion of the remaining two sewerage treatment plants.
- Supporting private sector and community-led environmental improvement initiatives as facilitator.
- Extending the coverage of water and sanitation to the remaining areas in Quetta City and other settlements in the district.
- Switching of the remaining autorickshaws to CNG or phasing them out to reduce air pollution.
- Undertaking urban development planning, e.g. de-novo master planning, of Quetta City and its implementation.

- Landfill site development for the proper management and safe disposal of domestic solid waste.
- Enforcing safe collection, transportation and incineration of all hospital waste produced in the district.

3.4 Population

Population growth accompanied by change in people's lifestyles impact on the per capita share of benefits from natural resources, food, social services, basic facilities and resources for development etc. There are close links between population and Millennium Development Goals (MGDs). It is important to maintain a balance between the population at any given time and the available resources and requirement of labour force.

The area of Quetta District was 2,653 sq. km. with population³⁰ of 759,941 (412,064 males, 347,877 females), sex ratio 118.5, population density 286.4 per sq. km., urban population 74.4 percent, average household size 8.5 persons, population growth rate 4.13 percent and population in 1981 was 381,566. Forty-two percent population was below 15 years of age, 56 percent between 15-64 years, 2 percent above 65 years, and 3.5 percent population was above 60 years. An informal

Table 14: Distribution of population in Quetta District (1998)

| Admin - Unit | Quetta District | Quetta City Sub-Division (Urban) | Quetta Sadar Sub-Division (Rural) |
|--|-----------------|----------------------------------|-----------------------------------|
| Area (km ²) | 2,653 | - | - |
| Both Sexes (No.) | 759,941 | 638,896 | 121,045 |
| Male (No.) | 412,064 | 346,527 | 65,537 |
| Female (No.) | 347,877 | 292,369 | 55,508 |
| Sex Ratio | 118.5 | 118.5 | 118.1 |
| Population Density per km ² | 286.4 persons | - | - |
| Urban Proportion | 74.4% | 88.5% | - |
| Average Household Size | 8.5 | 8.4 | 8.7 |
| Population 1981 | | 321,592 | 59,974 |
| 1981- 98 Average Annual Growth Rate | 4.13% | 4.12% | 4.21% |

Source: District Census Reports, Quetta – 1961, 1972, 1981 and 1998

33 Government of Pakistan. Population Census Organization. District Census Report (1998) Quetta. Islamabad: PCO, Statistics Division, GoP, 2001.

Table 15: Distribution of population in Quetta District by localities (1998)

| Settlement size | No. of localities | Population in Rural Localities by Settlement Size | | |
|-----------------|-------------------|---|--------|--------|
| | | Population by Sex | | |
| | | Both Sexes | Male | Female |
| Total | 45 | | | |
| 5,000 and above | 11 | 132,608 | 71,574 | 61,034 |
| 2,000 - 4,999 | 12 | 37,694 | 19,902 | 17,792 |
| 1,000 - 1,999 | 12 | 18,103 | 9,481 | 8,622 |
| 500 - 999 | 7 | 5,772 | 3,038 | 2,734 |
| 200 - 499 | 2 | 591 | 288 | 303 |
| Less than 200 | 1 | 36 | 22 | 14 |

Source: District Census Reports, Quetta (1998)

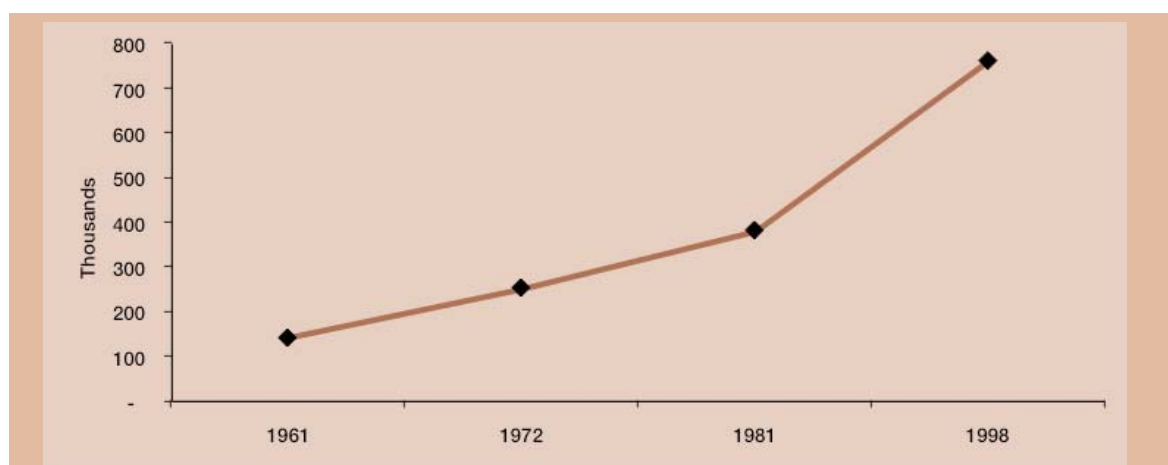
estimate of the population of Quetta City alone is 2.5 million³¹. Additional information on population is contained in Table 14 and 15.

Quetta is the provincial capital and the biggest city of Balochistan. The natural increase in population and continuous heavy influx of the Afghan population after 1979 has caused unplanned and rapid growth and expansion³² of the city on all sides and in surrounding villages.

The Census 1998 record for Quetta District indicates a population of 759,941. Population growth projections for Quetta are fluctuating because of the uncertainty of people staying in Quetta for a limited period of the year as

non-residents, refugees, seasonal workers and tourists. For practical purposes, an estimated population of about one million³³ for the year 2011 was noted owing to large influx of Afghan and other in-migration in Quetta. Moreover, some larger settlements in the Pushtoon areas remained unaccounted for due to boycott of 1998 Census. Taking an average annual growth rate of 3 percent (although it is much higher at present), the expected population by the year 2025 will be 2,439,353.

Quetta District is mainly urban (nearly 74.4 percent of the population is urban and only 25.6 percent is rural)³⁴. This is the highest

Figure 4: Population increase in Quetta District

Source: District Census Reports, Quetta – 1961, 1972, 1981 and 1998

31 Personal communication with Mr. Ghulam Qadir Lehri, Chief Coordinator, City District Government Quetta.

32 Quetta Water Supply and Environmental Improvement Project (QWSEIP).

33 Population of Quetta District has been projected as 1,026, 000 and 1,241,000 for 2011 and 2021 respectively by NIPS but many knowledgeable persons consider it a very conservative estimate based on 1998 population data. They pitch it twice the projected figure.

34 Government of Pakistan. Population Census Organization. *District Census Report (1998) Quetta*. Islamabad: PCO, Statistics Division, GoP, 2001.

ratio of urban population in a district in the province.

The average household size in 1998 was 8.5 with 3 persons per room, and 14.2 percent of the population had only one room. As many as 79.8 percent of households had access to piped water, 5.5 percent were without latrine, 94.1 percent had electricity, 37.3 percent had exposure to radio, 54.3 percent to TV and 32.6 percent to newspapers.

The total fertility rate in Quetta District³⁵ in 2004 was 4.7, child-woman ratio 64.2, women's mean age at marriage 22.7 years; 22.4 percent females between ages 15-49 years or 66.4 percent of all females were married while contraceptive prevalence rate was 33.2 percent (25.6 percent urban and 7.6 percent rural).

Out of the total population of age 10 years and above, 57.1 percent (male 67.3 percent, female 44.5 percent) were literate; 33.0 percent (male 57.6 percent, female 2.7 percent) comprised labour force in the total population with age 10 years and above. 7.0 percent of employed labour force was engaged in agriculture. One and half percent of the population was disabled while 74.7 percent of children under age 10 were immunised.

3.4.1 Key issues

Quetta District, especially Quetta City, is overpopulated and there is a great pressure on all social services and utilities, and challenges to District Administration and Quetta Municipal Corporation to manage it.

The federal and provincial governments, politicians, planners and masses do not seem to take the population census seriously. The census due in 2008 was delayed in the country. The population data of Quetta District are inconsistent, like other districts in Balochistan There is more inconsistency in the data of female population.

Unplanned growth in housing and commercial infrastructure is taking place rapidly due to immigration; the trend of urbanisation is likely to further accelerate in the district. Many rural areas will acquire urban status without proper

planning or upgradation, resulting in congestion, slum development and lack of social services and basic facilities.

The full potential of population planning programme in reducing the growth rate has not been realised.

The population in rural areas still suffers from lack or inadequate level of basic facilities and lack of employment opportunities.

A comprehensive survey of drug addicts has not been carried out in the district but it is estimated that there are at least 6,500 drug addicts in Quetta City. *Charas* is the most commonly used drug. The use of drugs in the district, in particular Quetta City, has increased manifold. Habib Nala is the largest den for drug-peddlers who display and use heavy firearms to subdue those daring to stop drugs and cleanse the Nala (drain) of this menace. The security situation is extremely bad due to militancy, targeted killing, ethnic divides and insurgency.

3.4.2 Measures to be taken

- Creating social harmony in society by addressing the genuine grievances of the aggrieved population or ethnic groups.
- Raising awareness regarding the importance of timely, complete, and accurate census and for preparing the masses to participate actively in the 2011 Census.
- Seeking support of communities, elders, politicians in the forthcoming population census to make it complete and comprehensive, including numeration of female members; and providing full and timely information to citizens about launching, process and the procedures of the census.
- Making census data credible by associating credible CSOs including their female representatives in the enumeration process.
- Encouraging employment of female enumerators, especially in the rural areas for collecting female-related information during census.

35 Government of Balochistan. Planning and Development Department. Multiple Indicator Cluster Survey, Quetta (2004). Quetta: P&DD, GoB, 2004.

- Arranging exposure visits for the progressive *ulema* and tribal elders regarding family planning practices and programmes in the predominantly Muslim countries such as Malaysia, Turkey, Egypt and Indonesia.
- Improving equity and transparency in the Benazir Income Support Programme and other safety net programmes for the poor.
- Encouraging adaptations and adjustments in the current form of tribalism and traditions by involving credible, experienced and learned outsiders.
- Creating work for people for using their time gainfully in economic activities that will also reduce poverty.
- Convincing *ulema* to incorporate in their sermons current affairs related to real life situations and progressive ideas. They may invite learned speakers from outside to speak on topics of which they do not have a complete understanding or grasp.
- Promoting and safeguarding inter- and intra-ethnic harmony.
- Adapting and readjusting the Jirga system to meet the needs of present times and society.
- Briefing the local influential persons through formal and informal sessions on trends and experiences in the Muslim world and encouraging them to play their positive role in taking the learning to their spheres of influence for making the right kind of transition.
- Developing, printing and disseminating literature; using the print and electronic media for raising awareness and providing information in Urdu and other local languages; and using easily understandable graphics/ pictorials for the illiterate.
- Discouraging revenge killing, promoting legal options.

important as that of males. Treating them equally, integrating and involving them in decision-making and helping them in performing their potential roles, especially in social sectors, is critical for problem solving and sustainable development.

Generally, the current societal structure gives a dominant role to men. The role of women among the major ethnic groups of the district is very limited. Women are obliged to live within the traditional social and cultural values. The practice of *purdah* (veil) is prevalent. A woman's role in society is determined by the number of male children she bears as well as the social and economic status of her husband. The status of women as compared to men is very low. Their social and economic interaction is negligible. Generally, women's rights in matters of property and inheritance are not recognised. The people attach low importance to education, especially that of females and more commonly in the remote areas. Many discriminatory and illegal practices take place, which are wrongly attributed to religion and Islam.

Women's roles are, however, changing gradually. The number of women working in the social sectors (education and health-care in particular), NGOs and banks is increasing. People's attitude towards female education is becoming favourable. The government has institutionalised gender development. Donor agencies now focus on gender equity. A large number of women are taking part in social welfare activities. Women are involved in politics and becoming members of various committees to mainstream women's development. Due to favourable working environment, women choose mainly the education and health-care sector for employment. Few women working in the government departments, conditions are discouraging due to slow promotions and a male-dominated environment. Education among females is spreading very rapidly and more and more girls, even from very traditional households, are stepping out for employment. However, women still perform all the activities inside the house while men perform all outside activities.

3.5 Gender Mainstreaming

Females are about half of the population of the district. Their work productivity is as

The President of Pakistan signed the law "Protection against Harassment of Women at Workplace Bill 2009" on 29 January 2010. The bill envisages enhanced punishment



Class in progress at a public school

increasing it to three years in prison and a fine of up to Rs. 500,000. It also proposes penalties, including demotion, compulsory retirement and dismissal from service. This law was a major step to protect women from harassment and make them feel more secure.

According to the President, the government had also decided to distribute state-owned agricultural land in command areas of new dams among poor women free of cost. The Benazir Income Support Programme and the Smart Card launched by the government were aimed at empowering women and eradicating poverty.

Quetta District ranks average amongst the districts in the country in terms of most development indicators and achievement of MDGs, especially in human development and quality of life, and ranks higher among the districts in the province. However, strong and concerted efforts are required to improve its ranking and achieving the targets of MDG 2 (universal primary education), MDG 3 (elimination of gender disparity in primary and secondary education and literacy especially in enrolment of girls in schools) and MDGs 4, 5 and 6 (female related health goals).

3.5.1 Key issues

- Gender disparity and discrimination are common in this male-dominated society and these are entrenched in all walks of life including the development programmes and projects.
- Inconsistent ownership and usufruct rights of natural resources and unequal right of development between the genders.
- Male babies, children and adults get preference over females throughout their life. As a result, female babies, girls and women suffer from malnutrition in poor families.

Difficulties in filling-in gender gap and gender mainstreaming due to strong local traditions.

The vision of gender is that the relevant MDGs targets are achieved, especially those relating to universal primary education, reducing gender discrimination, empowering women and improving female health. Gender mainstreaming is another goal.

3.5.2 Measures to be taken

- Identifying, assessing and acknowledging the contribution of women in the overall improvement of socio-economic conditions of the family and the area.
- Launching awareness campaign through *ulema* (religious leaders), tribal elders, CSOs and media against undesirable practices such as male dominance, bias against working women, marriage to mediate rivalry, marriage only within close families and discrimination against female children and adults.
- Raising awareness of youth to shun the customs and traditions of gender disparity that are against the tenets of Islam.
- Ensuring that the laws of the land and societal and religious values get precedence over tribal customs, if later are contradictory; imparting Islamic education in its true spirit and right perspective to the adults and minors in order to eradicate unlawful practices.
- Providing support to women in performing their existing roles and encouraging them to learn, through training, to take up new roles in socio-economic development, micro, small and medium enterprises.
- Prohibiting forced marriages for settlement of rivalries and disputes, and retaining property within the family.
- Discouraging local custom of *wulvar*.
- Mainstreaming of gender and changing the un-Islamic gender-biased practices.
- Considering the role of women in the management of natural resources and environmental protection programmes and ensuring sustainable development.
- Encouraging women's participation and even their employment, especially in the education and health-care sectors.

3.6 Human Resource Development

Human capital is more important than financial capital and other inputs in the process of production and development. In Quetta, industrial and mining sectors absorb 3.4 percent of labour force. The important component of the resource-base development of an industrial sector is the managerial and skilled workers.

Many graduates from universities and colleges lack the fundamentals to practice their subject or trade. Such graduates have not been professionally successful in high value-added industrial enterprises. They are unable to meet the staffing needs of industrial units or public sector organisations at the district level without getting the requisite skills. Those who do not receive adequate education enter into low-wage employment in small industrial and service units, such as trade, transportation and auto and engineering workshops. The Balochistan government has made it mandatory for local organisations to employ 75 percent of local labour in industrial units,

The people in the district are hard-working but a large number of them lack skills for their useful engagement in self or other employment. This is an important area in many respects, including poverty-reduction and sustainable livelihoods, development of SMEs, and for using their full potential in sustainable development of the district.

In Quetta-Zarghoon Town, 77 percent of population³⁶ (85 percent male, 67 percent female) had National Identity Cards (NICs), 16 percent (10+ years) were unemployed (16 percent male, 16 percent female), 12 percent (15+ years) were unemployed (12 percent male, 7 percent female), 62 percent (10-17 years) were unemployed (60 percent male, 79 percent female), and 28 percent (15-24 years) were employed (22 percent male, 27 percent female). The ratio of women non-agricultural labour was 0.07. In Quetta-Chiltan, 71 percent of population (82 percent male, 57 percent female) had NICs, 23 percent (10+ years) were unemployed (23 percent male, 29 percent female), 27 percent (15+ years) were unemployed (26 percent male, 49 percent

36 Government of Balochistan. Planning and Development Department. Multiple Indicator Cluster Survey, Quetta (2004). Quetta: P&DD, GoB, 2004.

female), 54 percent (10-17 years) were unemployed (53 percent male, 100 female), 54 percent (15-24 years) were employed (74 percent male, 55 percent female). The ratio of women non-agricultural labour was 0.02.

Vision for HRM is that all persons of working age in the district are appropriately skilled for the envisaged futuristic sustainable management and development of the district's resources and exploiting the potential; the surplus labour force gains employment in the province as well as in other development centres in the country and abroad; local skilled labour force prefers to stay in the district to meet the requirement of all jobs (skilled, technical and professional); and their dependence on the existing dwindling natural resources in the district is reduced to a level of no concern by providing alternative sustainable livelihoods.

The establishment of new industrial units will require strengthening or even setting up new professional colleges, universities, technical training institutes and centres, vocational centres, staffed by experienced professionals, supported with teaching materials, equipment and other facilities. This will also improve opportunities for employment for the graduates of technical training centres.

3.6.1 Key issues

- Majority of work force is untrained and not entrepreneurial.
- Weak institutions and lack of competence among the individuals.
- Too many trainings funded, organised and conducted by public sector institutions and civil society organisations have not helped to improve the quality of performance and efficiency of the staff, since either these were not work-related or could not be used in the work environment, which is not conducive.
- Low exposure, especially of tribal leaders and *ulema*, to job markets and the skills required for self-employment.
- Employment exchanges were a good institutional source of matching the skills required and available, thus helping the unemployed persons and employees.

- The vocational training centres and technical training centres have not caught up with the changing job markets for adjusting their training areas or focus of the existing ones for adjusting to the present requirements of the market.
- Agriculture and livestock need modernisation but the skilled labour is not available, especially in the livestock and rangeland sectors.
- Aptitude of the local labour force for working in mines and industry is lacking.

3.6.2 Measures to be taken

- Targeting human resource development at three levels, i.e., for public sector agencies, CSOs and CCBs, specific livelihoods and specific SMEs for the work force in the district including men and women.
- Training needs assessment (TNA) at the provincial level for the district, province and external markets for the present and foreseeable future.
- Assessment of ongoing training programmes run by technical training institutes/centres and vocational training centres at the provincial level, and exploring the possibility of meeting the training needs with reorganisation, restructuring or reform or setting up of new ones for meeting the assessed needs.
- Developing technical/ vocational training plan in the light of information obtained through TNA.
- Developing a broader, wide-range, large-scale and need-based, government-/ donor-/ private sector-funded crash programme for human resource development in the district.
- Restructuring, reorganising and reforming the existing technical training institutes/ centres and vocational training centres.
- Implementing technical/vocational training plan and crash programme earnestly in collaboration with the potential employers and with their partial funding and technical contribution.

- Developing skilled labour force at various levels for modernising agriculture and livestock, preferably within the district, in technical training centres, vocational training centres and agriculture and animal husbandry colleges.
- Linking trained persons with potential employers.
- Establishing new technical training centres or vocational training centres, i.e., if the existing ones cannot be reformed or restructured.
- Equipping the new need-based vocational training centres with state-of-the-art technology, expertise, management and resources and relevant training programmes.

3.7 Housing and Settlements

Housing and settlements is one of the most basic human requirements. There are a small number of urban areas³⁷ and large number of rural areas in Balochistan compared to the other provinces in the country. Quetta City is a large metropolis whereas most of the other settlements in the district, i.e., Quetta Sadar and Panjpai tehsil are rural in character. In Quetta, Cantonment lies in the north, on the eastern side the Murdar Range has limited the city's expansion, while to the west Sariab Lora and Chiltan Range are physical barriers. Physical development outside the city has proceeded along the Sariab Road and the railway track. Small settlements (*killis*) are scattered all over Quetta Valley.

The British paid special attention to develop Quetta as a small and clean garrison town for a population of about 50,000. The city expanded to cover about 830 ha between 1951 and 1980, and its expansion continued thereafter. Its population grew due to migration from within and outside the province and influx of Afghan refugees during 1980s.

New settlements in the form of housing schemes emerged at Satellite Town, Jinnah Town, Samungli Town, Model Town and Shahbaz Town. Many *Kachhi abadis* (slums) have also developed. In-migration continues and Quetta City is now a grossly overpopulated city of around one million³⁸ people of different ethnic backgrounds. However, many people believe that the population of Quetta is over 2.5 million. Financial, human and technical resources have not been able to keep pace with the rapid growth of the city and its population.

In accordance with Devolution Plan 2001, the Quetta Municipal Corporation was abolished and the whole Quetta District was administratively divided into two towns, the Zarghoon Town and Chiltan Town. Data for housing units by tenure, material used in outer walls and roofs and rural/urban in the district is in Table 16.

In 2004³⁹, 68.9 percent people owned houses. The mean value of an owned house was Rs. 680,000 in Quetta-Zarghoon Town. A total of 85.5 percent people owned houses in Quetta-Chiltan Town the mean value of owned house there was Rs. 200,000.

Ninety-eight percent housing units had electricity, 95.3 percent gas connections, 94.6 percent water connections, 34.6 percent telephones, 17.2 percent cable TV and 3.1 percent internet, while 0.3 percent had none of these in Quetta-Zarghoon Town⁴⁰; in Quetta-Chiltan Town, 92.3 percent had electricity, 77 percent had gas connections, 69.4 percent water connections, 20.1 percent telephones, 8 percent cable TV, 0.5 percent internet and 4.3 percent had none of these⁴¹.

Only 2.2 percent households possessed airconditioners, 85.5 percent air coolers or fans, 13.4 percent cooking ranges or microwaves, 32.9 percent refrigerators or freezers, 59 percent washing machines or dryers, 44.9 percent sewing or knitting machines, 24.5 percent radios, 46.8 percent television sets, 39.2 percent bicycles, 17.9

37 The definition of urban area has been changing. See Balochistan Conservation Strategy (2000) for more details.

38 National Institute of Population Studies, 2010. Available <http://www.nips.org.pk/>.

39 Government of Balochistan. Planning and Development Department. Multiple Indicator Cluster Survey, Quetta (2004). Quetta: P&DD, GoB, 2004.

43 Also includes a large number of union councils in the rural areas.

44 Also includes a large number of union councils in the rural areas.

Table 16: Housing Units by Tenure, Material used in Outer Walls, Roofs

| Construction Material Used in Outer Walls | Housing Units By Tenure | | | Housing Units | |
|---|-------------------------|--------|-----------|---------------|---------|
| | Owned | Rented | Rent-Free | Total | Percent |
| Baked Bricks / Blocks / Stones | 22,090 | 17,386 | 5,622 | 45,098 | 51.78 |
| Unbaked Bricks / Earth Bound | 27,728 | 8,445 | 3,500 | 39,673 | 45.55 |
| Wood / Bamboo | 644 | 765 | 209 | 1,618 | 1.86 |
| Others | 339 | 139 | 224 | 702 | 0.81 |
| RCC / RBC | 14,210 | 11,785 | 3,678 | 29,673 | 34.07 |
| Cement / Iron Sheets | 11,821 | 8,194 | 2,367 | 22,382 | 25.7 |
| Wood / Bamboo | 23,171 | 6,048 | 3,016 | 32,235 | 37.01 |
| Others | 1,599 | 708 | 494 | 2,801 | 3.22 |
| Total | 50,801 | 26,735 | 9,555 | 87,091 | 100 |
| Percent | 58.33 | 30.7 | 10.97 | 100 | |

Source: District Census Report, 1998

percent motor cycles, 12.8 percent cars or other vehicles, 4.9 percent computers, 7.3 percent mobile phones, 7.8 percent water pumps and 15.1 percent did not possess any of these in Quetta-Zarghoon Town.

Only 2.5 percent possessed airconditioners, 75.3 percent air coolers or fans, 41.7 percent cooking ranges or microwaves, 26.8 percent refrigerators or freezers, 56.7 percent washing machines or dryers, 57.8 percent sewing or knitting machines, 22.7 percent radios, 42.3 percent television sets, 48.6 percent bicycles, 17.7 percent motor cycles, 17.3 percent cars or other vehicles, 2.4 percent computers, 4 percent mobile phones, 16.5 percent water pumps and 6.6 percent did not possess any of these in Quetta-Chiltan Town.

Solid Waste

Solid waste management is a system for handling and collection, transportation, processing, recycling and disposal of solid waste material to reduce its effect on health, environment and aesthetics and recover resource from it. A study⁴² on solid waste management in Quetta District was carried out in 2009.

The huge population of Quetta is spread over 6 sq. km. The management of solid waste in Quetta has become a gigantic problem for the Municipal Administration. On an average, about 950 metric tonnes of solid waste is

produced in Quetta daily. The lifting capacity of both towns is 50-60 percent. The leftover waste is removed partly during special campaigns. Some of it, however, accumulates here and there and small particles pollute the air.

The total population of Zarghoon Town is more than one million and its area is about 40 sq. km. The town is comprised of 37 union councils including the ones in the rural areas. The total solid waste generated in the Zarghoon Town is about 600 tonnes and composition of the solid waste is paper, plastic and rubber, organic and vegetable, glass and ceramics, ferrous metals, aluminium, wood, fabrics, plants, grass and garden waste. There are 30 Union Councils in Chiltan Town Quetta, spread over 1,595 sq.km, stretching from Kuchlak to Zarghoon and Panjpai. Most of the area of this municipality is rural.

The status of solid waste management in Chiltan Town Quetta from the study is summarised below:

- There is one Tehsil Municipal Officer (TMO), under whom there are Tehsil Officers (TOs). The available machinery and staff with Chiltan Town is only sufficient to cater the needs of 12 Union Councils. Presently, municipal administration of Chiltan Town is not able

42 Khetran, Muhammad Bashir, Athar Ali Shah, Shah Irfan Ahmed and Saira Atta. Solid Waste Management. Quetta: National Institute of Management, 2009.

to provide the basic services to the inhabitants of remaining 18 Union Councils. Some of the Union Councils are large and in every Union Council there are several villages where there is no sewerage and disposal of garbage system available.

- The number of housing units in 1998⁴³ was 65,677, while there had been 37,731 in 1981. The increase in housing units is 74.07 percent. Out of 65,677 housing units, 13.03 percent are in the Cantonment and 86.97 percent in the municipal area.
- The total solid waste generated in the Chiltan Town is 450 tonnes, with a requirement of raising it to 700-800 tonnes.
- Available manpower in Chiltan Town is a TMO, seven sanitary inspectors and 356 sweepers. The Town solid waste disposal department has 23 vehicles and 210 containers
- The sources of Income of municipalities are meagre and restricted to grants from

federal government and donor agencies, grants and GST share from provincial government, their own resources generated from rent of properties, *khoka* fees, fine and forfeiture, map fee, enlistment of contractors, parking fee, hawker fee, road cutting fee and fee for birth and death certificates etc. Octroi was the major source of income in the past, which was abolished in the late 1990s by a decision of the federal government. The solid waste issues in Chiltan Town, equally applicable to Zarghoon Town are acute shortage of funds and staff (sanitary inspectors and workers). Continuous wheel-jam and shutter-down strikes are aggravating the situation, heavy traffic hinders in the lifting of garbage after 7 a.m., and capacity of TMAs to lift solid waste even once in 24 hours is very low.

According to the above study, the operational human resources include 20 sanitary inspectors, 24 supervisors, 450 sweepers, 50 coolies, 80 beldars and 27 drivers. Mechanical support available and required for solid waste management in the district is given in Table 17.



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Quetta valley

43 Government of Pakistan. Population Census Organization. *District Census Report (1998) Quetta*. Islamabad: PCO, Statistics Division, GoP, 2001.

Table 17: Mechanical Support for Solid Waste Management in Quetta District

| Mechanical Support Required | Available | Additional Requirement |
|-----------------------------|-----------|------------------------|
| Containers | 210 | 40 |
| Dust Bin | 42 | 200 |
| Container Holding Vehicles | 15 | 15 |
| Manual Vehicles | 15 | 15 |
| Loader | 02 | 12 |
| Excavator | 02 | 04 |

Source: Khetran et al. (2009).

3.7.1 Key issues

- Quetta City and its population are expanding, which is putting great pressure on the municipal services, resources and staff.
- Population has increased manifold but the budget for municipal services has not increased proportionately. As a result, money being spent presently is only Rs. 15 per person while in past it was Rs. 155.
- Adequate and safe supply of drinking water and incomplete and weak sanitation services are major issues of the sector in the district.
- Vegetables are grown in Quetta City with untreated sewage.
- Lack of land-use planning, urban and regional planning, development planning control and lack of their implementation has resulted in excessive expansion of the city and irregular and unplanned housing and settlements.
- Lack of planning and coordination in physical developments in urban areas and the region.
- Commercial areas are increasing and expanding.
- Green belts around the city and inside the neighbourhoods are required but lacking.
- The green and open spaces and greenery are reducing and the remaining are threatened with allotment or encroachment.
- Water recharge of Quetta City aquifer has reduced significantly due to housing on active water recharge areas, as the housing and other types of constructions are taking place on best water recharge areas.
- The two rural tehsils of the district, i.e., Quetta Sadar and Panjpai, are treated as a part of the region which supports Quetta City in various ways.
- Generally, the construction of houses in rural areas takes place without planning. There is an acute shortage of houses in Quetta that is evident from the number of housing schemes mushrooming in Quetta Valley.
- Development of slums continues, e.g., Killi Kamran and Killi Mir Muhammad.
- There is almost no planned development particularly for low-income groups. This factor alone has resulted in an enormous growth of spontaneous settlements of extra-local tenure such as Shaladra, Pushtoonabad, Murriabad and Brewery etc. In this particular area, infrastructure is lacking and can only be provided properly at the cost of high investment (WAPDA Report 1990).
- The data about the houses, hospitals and clinics, offices and institutions, hotels and restaurants, commercial places in the jurisdiction of Zarghoon Town and many areas of Chiltan Town are lacking.
- There is a lack of political will, commitment, credibility and community participation.

- Limited resources of income and revenue generation, especially after abolishing octroi and other taxes collected by local municipal authorities and high dependence on federal and provincial government for releasing funds and revenue collection; and inappropriate priorities regarding expenditure.
- There is lack of coordination with different government departments, donor agencies and stakeholders.
- There is weak compliance and enforcement of laws and regulations. The polluter or violator is either not booked or not at all or inadequately convicted and there is very little role of the community in remedying the problem.
- Violations of house building code are common.
- The design of and material used in the construction of houses in rural areas are not of appropriate quality since these are vulnerable in case of earthquakes, as happened in the earthquake of 1935.
- Hospital waste produced currently is manifolds of the quantity that is incinerated. Only two incinerators are functional with incineration capacity of 100 kg/hour and other only 18 kg/hour in Quetta City at present.
- Prevalence of pollution (air, water, land, soil, noise).
- Traffic congestion due to existing roads being inadequate for a very large number of vehicles and difficulty in traffic control.
- A large number of buses and rickshaws are very old, but the fitness certificates of vehicles are issued regardless of their unfit condition.
- A large number of un-registered rickshaws, and rickshaws not operating on CNG.
- Old buses and rickshaws in the city create air and noise pollution.
- Noise pollution is a serious problem in Quetta City, Kuchlak and other towns in the district, but it is not taken seriously by the public and officials.
- Overloading, standing passengers, rapidly increasing fares, disgraceful travelling conditions in public transport in urban areas and for small distances.
- Inadequate sanitation, unsafe disposal of solid waste, hospital and industrial waste, traffic congestion.
- Vehicle workshops and washing stations are creating pollution.
- Dairy farms located in residential areas.
- Slaughtering of animals in the open.
- The key issues regarding solid waste management are:
 - TMAs lack conceptual, planning and management capacity to handle solid waste, and vision and future strategy using modern ways of efficient collection, transportation, disposal, reusing and recycling the municipal solid waste.
 - TMAs have been unable to collect and transport the total generated solid waste to the dumping site. The daily solid waste production in Quetta is Quetta City while the capacity for disposal limited to 450-500 tonnes only; the remainder is left undisposed. Some of it, including solid waste from educational institutions, is thrown into drains, e.g., Habib Nala, which chokes the drains. Dust particles remain suspended in the air.
 - The number of containers and dustbins installed is low.
 - The solid waste is removed once a day from 7-00 to 8-00 a.m. It is stored in open containers and transported in an inappropriate manner to a dumping site, which is spread on 65 acres and located 16 km away from Quetta City. The solid waste is dumped into open trenches instead of proper landfill sites, which provides breeding grounds for insects and flies. It is ultimately disposed of by burning, which contributes to water contamination and air pollution.

- The waste from vehicle workshops is both solid and liquid and difficult to dispose of safely.
- Solid waste management is a low priority; budget allocations are very low and quite inadequate. There is a shortage of human resources, machinery, vehicles and equipment as well and there has been a reduction in the number of street sanitation workers (sweepers) from 1,100 to 550.
- Low levels of priority and awareness among solid waste managers, generators, producers regarding its impact on health, environment, aesthetics, tourism and economic investment; and low use of print and electronic media.
- Hospital waste is thrown into open dustbins; and used syringes, dressings, bottles etc. collected by scavenging boys are reused, spreading infectious and communicable diseases.
- ADB was willing to fund construction of one slaughterhouse but issues of liability for repayment and a conflict between the Livestock Department and Municipal Cooperation regarding operational issues could not be resolved. Kuchlak and Almo Chowk were proposed for the site of the new slaughterhouse. Pakistan Air Force has objected to these sites for development of new slaughterhouse since these would fall in the flying zone. One slaughterhouse is functional and the other is not⁴⁴.
- The number of beggars and child labourers has increased manifold.

An affordable housing strategy for the district should increase the supply and diversity of modest-cost housing; eliminate homelessness and respond to the needs of low-income families. A layout of housing and settlement strategy is given in Figure 5. The goals of the land-use planning and transportations should be to create compact urban areas, support a sustainable economy, develop and protect the green zone, develop complete and resilient communities, and support sustainable

transportation choices that are environment- and user-friendly, convenient and affordable.

The sustainability of a district's economy could be evaluated from its ability to provide desirable quality of life to the people and for attracting and retaining the labour force required in the district, for commerce and trade, industry, mining, orchards, vegetable growing and poultry farming; maintain a positive business environment; and ensure continued investment in productive sectors and urban infrastructure that support economic productivity.

The goals of the solid waste management are to minimise waste generation and maximise reuse, recycling, material recovery (e.g., compost) and energy production, as the quantity of solid waste is significant.

In terms of ecological health, the district will be more sustainable if important ecological areas are secured, protected and managed, pollution and use of energy are reduced, and green lungs of settlements are restored or created and maintained.

3.7.2 Measures to be taken

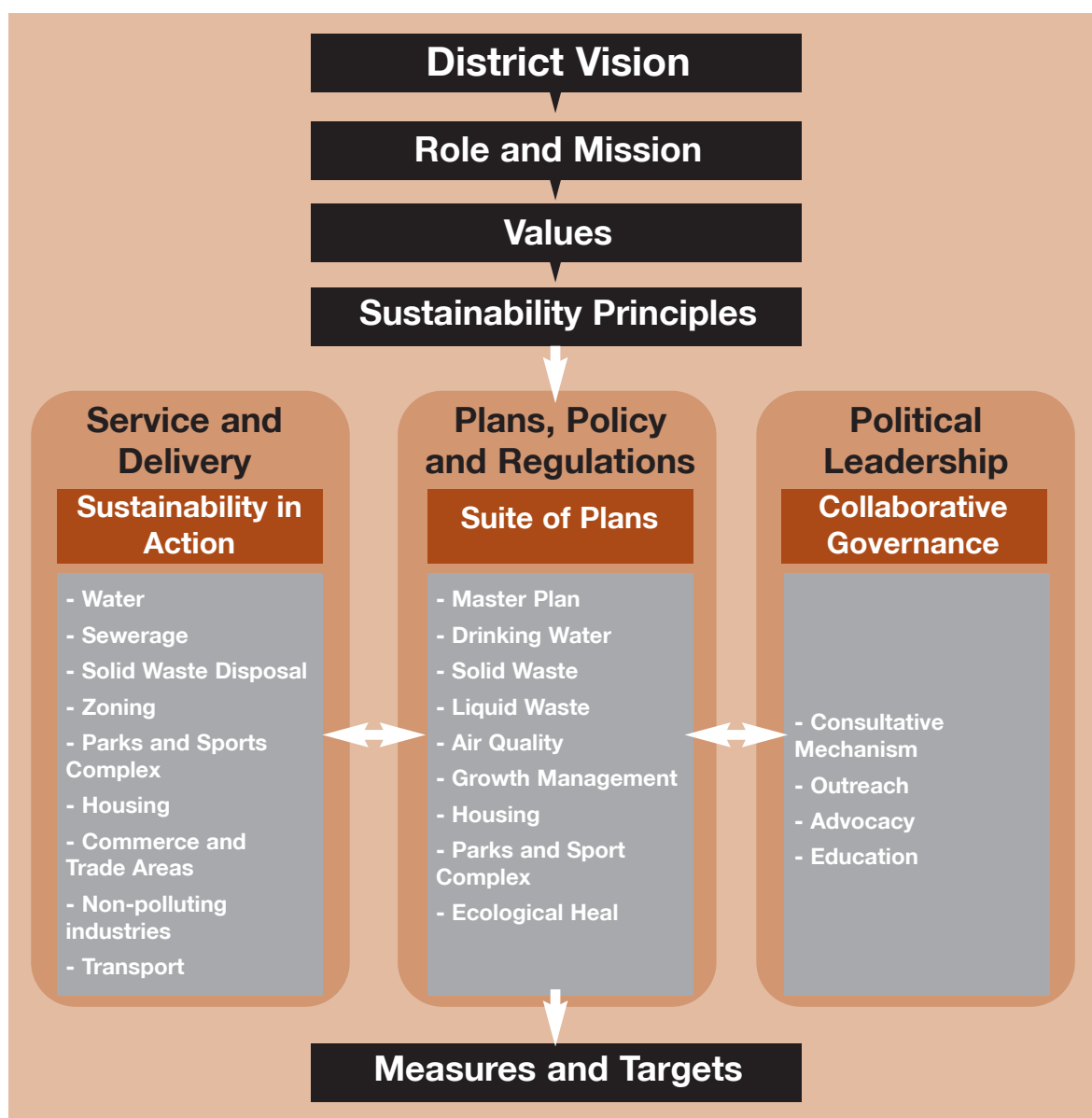
Proper solid waste management (SWM) in Quetta City is generally hampered by technical, administrative and financial barriers; in order to tackle the growing problem of incomplete and inappropriate solid waste management following measures would be taken:

- Adopting modern management approaches and collecting complete information and data about the sources of generation of solid waste, its composition, and ratio of generation per person and per house.
- Promoting the 3-R approach, i.e., reduce, reuse and recycle waste.
- Developing of accurate and reliable database on solid waste generation, location and composition in the municipalities.
- Providing the needed machinery, equipment, personnel, training and funds.

44 Personal communication with Mr. Ghulam Qadir Lehri, Chief Coordinator, City District Government Quetta.

- Facilitating private sector participation and stewardship in SWM activities and investments.
- Developing and using proper landfills.
- Fostering pilot demonstration projects in solid waste management, reducing, reusing, and recycling and composting schemes.
- Exploring the possibility of composting and energy generation from bio-wastes.
- Encouragement and support for collection and segregation of solid waste by the households and disposal of waste to a collection point, from where the responsible agency would collect, transport and dump it in proper landfills.
- Involving CCBs and CSOs in collection of solid waste, hospital waste and industrial waste.
- Garbage collection and recycling by the private sector, a recycling plant of solid waste is being established in the private sector. It would be useful to monitor, evaluate and document its performance and disseminate the information for replication and scaling up, if successful.

Figure 5: Housing and settlements strategy



- Approaching the shopkeepers to decrease the use of polythene bags.
- Prioritising and investing in safe drinking water as one of the basic human needs.
- Raising awareness about the need for safe drinking water and sanitation to control infectious diseases. Work with media to disseminate messages regarding the consequences of drinking unsafe water and the options to address this issue.
- Persuading *Ulema* and media to raise awareness through sermons, radio programmes (essential tool for farmers and pastoralists), newspaper (as means of communication of information through colourful graphics and cartoons) and TV channels.
- Awareness-raising of people against defecating in the open.
- Creating love for one's street, ward, village, town or city and care for their maintenance and beautification.
- Encouraging healthy activities for youth and social activities for the inhabitants.
- Levying and recovery of user charges, imposing or enhancing user charges for various municipal services to generate income of the corporation and municipal committees.
- Promoting cloth bags to replace polythene bags; creating livelihoods for the poor by helping them to make and sell cheap cloth bags and develop market for the same. Phasing out polythene bags gradually.
- Developing and providing:
 - Designs of affordable but safe houses (against damage by earthquake).
 - Sample plans of mohallas/ wards.
 - Sample plans of small and big villages and towns.
 - Street pavement and street lights, manhole covers and strengthening civil defence.
- Ensuring strict compliance of the rules regarding manufacturing, storing, using and transporting explosive materials and hazardous substances.
- Composting of bio-degradable waste and recycling of usable waste (metallic articles, glass, wood, paper etc.).
- Shifting one of the existing slaughterhouses to an appropriate place away from the flying zone of aircrafts, and building more slaughterhouses within easy reach of users to control open slaughtering.
- Sorting out issues regarding slaughterhouses between the two agencies at the level of the Chief Secretary.
- Using the Traffic Bureau and services of engineers experienced in solving the issues of traffic congestion and control.
- Reducing the size of roundabouts to free more space for movement of vehicles.
- Developing and implementing an efficient, speedy and effective fire prevention and control system with strengthened capacities.
- Enhanced care in proper checking, supervision and vigilance is required in issuing vehicle fitness certificates. Checking-stickers of green, yellow and red colours are to be used that are generated through a computerised system indicating the level of fitness of the vehicle, requirements of improvement and interval of rechecking with date. It will help the traffic police to exercise better control on old and unfit vehicles. Sticker issuance to be backed up by proper computer database.
- Registration of all unregistered rickshaws and phasing out of petrol and mobile oil operated rickshaws.
- Maintaining green and open areas in and establishing green belts around Quetta City and other urban centres.
- Searching for additional resources and enhancing revenue.

- Improving sanitation, solid waste and hospital waste disposal, traffic arrangement, by-passes, vegetable and livestock markets, bus stands and truck stands; phasing out animal-driven carriages.
- Reducing risks; improving fire fighting, disaster risk management.
- Improving neighbourhood harmony and security among the various ethnic groups.
- Improving social security networks.
- Ensuring environment-friendly development (use of IEE, EIA, SEA, consultation and coordination).
- Ensuring availability of credit for house-building.
- Providing additional labour, vehicles and incinerators for safe disposal of hospital waste.
- Involvement of private sector in complete and safe disposal of solid waste.
- Increasing the motor vehicle tax with the age of the vehicle, as a disincentive, which will encourage phasing out of old vehicles.
- The companies and small enterprises that make polythene bags need targeting for banning the use of such bags.
- Building and maintaining farm-to-market and other access roads in rural areas.
- Clustering and readjusting small villages for providing infrastructure facilities and utilities.
- Improving livelihoods and introducing alternative sustainable livelihoods.
- Enhancing rural employment opportunities both in farm and non-farm sectors. Constructing and improving physical and social infrastructure facilities (roads, schools, health-care facilities). This is essential to prevent further unplanned growth of Quetta City and its suburbs.
- Developing alternative sources of energy including solar PV, solar thermal, wind and biogas, especially for dispersed application, i.e., scattered, small settlements and houses that are more than 20 km away from the national grid and where electricity from the national grid is not planned for the next 20 years.
- Exploring the possibility of energy-production from solid waste for Quetta City.
- Introducing some other safeguards in settlements and housing, including:
 - Planning settlements for the next 50 years.
 - Avoiding conversion of fertile agricultural land into housing and settlements.
 - Planning and developing green belts around settlements to contain their abnormal growth.
 - Practicing zoning in settlements.
 - Planning for communal facilities, roads, streets, utility services etc.
 - Providing guidelines for the use of construction material and designing of houses.
- De-novo master planning of Quetta City and its implementation, taking advantage of the enhanced budget of the provincial government due to significant increase in the federal share.
- Development and implementation of master plans of the existing bigger villages as new mid-level towns and villages located within a reasonable distance on all corners of Quetta City and having potential for growth, and upgrading the existing towns for planned growth; the plans would include zoning into residential, commercial, institutional, and industrial areas.
- Banning further expansion of housing and settlements in Quetta City.
- Managing all sewerage and industrial wastewater (preferably treated) through covered RCC pipes or galleries of appropriate sizes with shafts or chambers



Water scarcity - a big issue in Quetta

at suitable distances for maintenance and inspection. Open drains would be used only for stormwater and non-toilet domestic liquid wastes etc. Each house should connect its toilets' wastewater discharge pipe and the discharge pipe for non-toilet wastewater and stormwater with the respective sewerage and storm water drains of WASA.

- The 2010-2011 budget of the provincial government has been enhanced significantly due to significant increase in the federal share. This is an opportunity to undertake some of the long-term measures as well. The heavy flood of August 2010 that devastated the eastern districts has been a major setback as well.

3.8 Water and Sanitation

Growing scarcity of drinking water in Quetta City is one of the serious issues. Sanitation system has also failed to cope with growth in population and city. Old sewer lines have outlived and a large number of these are irreparable.

Ninety-eight percent households had improved drinking water facility in Quetta-

Zarghoon in 2004 and 78 percent in Quetta-Chiltan. Ninety-seven percent of households were with adequate sanitary facilities in Quetta-Zarghoon and 70 percent in Quetta-Chiltan. A total of 77.7 percent of households were with proper disposal of wastewater in Quetta-Zarghoon and 33.7 in Quetta-Chiltan.

Data regarding availability and use of sanitary means of excreta disposal reveals that 64.7 percent housing units were connected to public sewer, 2.6 percent had septic system, 0.5 percent had pour flush toilet, 29.6 percent had traditional pit (closed) latrine, 0.1 percent had service of bucket latrine. The residents of 2.4 percent housing units used open places for defecation and of 12.4 percent units gave no response or were not available for response in Quetta-Zarghoon.

In Quetta-Chiltan, 29.4 percent housing units were connected to public sewer, 7.8 percent had septic system, 0.2 percent had ventilated improved pit latrine, 8 percent had pour flush toilet, 24.2 percent had traditional pit latrine and 0.6 percent had service of bucket latrine. The residents of 29.9 percent housing units used open places for defecation and 3.4 percent gave no response or were not available for response.

3.8.1 Safe drinking water

The aquifers in Quetta Valley are located near the foothills of the Murdar and Mian Ghundai regions. In the north-west, there is the Samungli-Baleli water gap, about 10 km wide, which connects the Quetta Basin with Bostan-Pishin plain. The drainage of the Quetta Basin finds its way out through this gap and joins the Pishin Lora River. To the north-west of Quetta there is gap which connects Quetta to Kach Basin. Rock formations range from Jurassic to modern deposits with rocks types consisting mostly of limestone and shale. It is believed that there are possibilities of groundwater entrapment in these fractured systems⁴⁵ due to the extensive faulting and jointing in the area.

In December 1994, government of Balochistan transferred the water supply system of Quetta Municipal Corporation (QMC) to B-WASA along with the staff and assets. After the unification of two water supplies, WASA was made responsible for the operation and maintenance of 81 tubewells, reservoirs and a huge undefined and unspecified water supply

network. The tubewells and distribution network transferred to B-WASA from QMC were in dilapidated and deteriorated condition. Since 1995-96, WASA through various development programmes has considerably improved the condition of water supply network.

During 1998-2004, the province of Balochistan faced worst drought. Quetta, the capital of the province, was greatly affected by it. People of Quetta faced an acute shortage of water. In 2002, a huge water supply project was launched for the people of Quetta District. An interim PC-1, costing around Rs. 7,965 million, was approved by ECNEC which envisages water supply (Rs. 3,286 million), sewerage/drainage (Rs. 2,093 million), 2 storage dams (Rs. 1,744 million), sanitation programme through NGOs (Rs. 238 million), stormwater drainage (Rs 205 million) and water recharge measures (Rs 300 million).

Before starting the project activities, the existing water supply was inadequate in water production and distribution through pumping and storage for the rapidly expanding city of Quetta. The supply in the year 2002 was



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Drying Hanna Lake

45 Murray, K., Sagintayev, Z., Sultan, M., Khan, S. D., Becker, D. B., Becker, R., and Milewski, A. "An integrated approach for the assessment and development of renewable groundwater resources in the Quetta valley, Pakistan." *Geological Society of America Abstracts with Programs*, 39(6), 154, 2008.

about 10 MGD @ 15 gallons per capita per day. The shallow tubewells, drilled about 25-30 years back, had lost the productivity and needed replacement by deep-drilling to meet the immediate requirement. The WASA water supply network was mainly composed of old, deteriorated, rusted, broken and under-strength, asbestos cement, galvanised iron and cast iron pipes. These pipes had outlived their utility and were the main cause of heavy leakage, wastage and contamination of drinking water. The then storage capacity was 3.8 million gallons, which was inadequate and needed enhancement. The system was deficient in equipment, essential for the control and management of water distribution. Non-existence of water meters at the transmission mains and delivery section was also resulting in ineffective maintenance and management programme.

The main water source for Quetta Valley is groundwater pumped by karezat located mainly in alluvial fans, but over-pumping by tubewells has caused the water table to drop, and has also caused salinity in certain areas. Water scarcity for domestic use has been forcing the government to address the urgent need for development of groundwater resources and over-exploiting them. We will need to look for other options. Potential resources are groundwater in unconsolidated alluvial deposits, in fractured bedrock, and from surface water sources outside the district.

Drinking water is supplied from different sources in the district: tubewells, handpumps, wells, karezat and springs. Tubewells by far have become the major source of water supply, using PVC pipes that have an advantage over iron pipes. The Public Health Engineering Department (PHED) is using them for distribution of water in rural areas of district Quetta. PHED claims that 75-80 percent of the rural population has been provided with drinking water through piped or tank schemes. The beneficiaries are 72 densely populated settlements in the district.

Water demand projection

The population/demand projection has been worked out based on national growth rate (3 percent). In the year 2025, the requirement of water supply will reach 49 MGD. In order to cater to this projected requirement of water supply, an additional quantity of 39 MGD is required to be added to the existing

resources. Due to the non-availability of water resources in and around Quetta, 20 gallons per capita per day supply is considered as the bare minimum sustainable demand, excluding the extravagant use of water for gardening, airconditioning etc., although this supply is extremely meagre as compared to the water supply ratios in other cities of Pakistan, which varies from 55-150 gallons per capita per day. However, the water demand of industrial estate is to be catered to using independent and separate water supply sources.

Similarly, along with the augmentation of water resources, there is an essential need of safe wastewater disposal system and its further use for agriculture after treatment, in order to add contribution to strategy of groundwater balance and further to provide water for agricultural and gardening use very cheaply. Area, population growth and domestic water demand for Quetta urban is given in Table 18.

Water supply in Quetta City (2008) is given in Table 19.

According to PHED, 75-80 percent of the total population in the rural area of the district has access to potable water supplied by PHED, while 20-25 percent of the population is getting water from other sources for which information is not available. Out of the 72 PHED water schemes, 18 schemes handed over to the communities, seven are non-functional while 33 managed by PHED.

Despite achievements by the sector during the years to meet these basic needs, there remains a tremendous backlog in terms of 60 percent unserved people, mostly poor and marginalised citizens living in squalid, unhealthy environments in the peri-urban areas. Access to adequate safe water supply and sanitation is not only a fundamental need and human right; it also has considerable health and economic benefits to households and communities. However, the lack of access to safe water contributes to deaths and illnesses, especially among children. Thus, improving access to water is a crucial element in reducing under-five mortality and morbidity, particularly for the most vulnerable groups.

Making water accessible also means that the considerable time women and children, mostly girls, spend fetching water throughout the

province can be used more effectively on other tasks like children attending schools, better household care practices and improving economic productivity, key components in alleviating poverty. Expanding agriculture and manufacturing businesses use more water and contribute to the pollution of valuable sources of surface and groundwater. The over-extraction of groundwater has lowered water tables in all parts of the province apart from contaminating water supply.

Some of the lessons⁴⁶ that are emerging through a focus on fresh water relate to technology choices and support to technology development, promotion of catchment protection, small checkdams, storage reservoirs, and rainwater harvesting in addition to boring of wells.

Scarcity and misuse of fresh water pose a serious and growing threat to sustainable development and protection of the

Table 18: Quetta urban population growth and domestic water demand

| Year | Growth Rate (percent) | Population (million) | Per Capita Demand (gpd) | Total Water Demand (mcm/year) |
|------|-----------------------|----------------------|-------------------------|-------------------------------|
| 1951 | - | 0.08 | - | - |
| 1961 | 3.24 | 0.11 | - | - |
| 1972 | 3.46 | 0.16 | - | - |
| 1981 | 6.83 | 0.29 | - | - |
| 1998 | 3.95 | 0.56 | - | - |
| 2005 | 3.00 | 0.69 | 30.00 | 34.35 |
| 2010 | 2.70 | 0.79 | 35.00 | 45.88 |
| 2020 | 2.40 | 1.00 | 40.00 | 66.37 |
| 2030 | 2.10 | 1.23 | 40.00 | 81.64 |
| 2040 | 1.80 | 1.47 | 40.00 | 97.57 |
| 2050 | 1.80 | 1.76 | 40.00 | 116.84 |

Source: Murray et al, 2008.

Table 19: Water Supply in Quetta City (2008)

| Organization | Functional Tube wells | Non-Functional Tube wells | Supply |
|-------------------------------|-----------------------|---------------------------|--|
| BWASA | 80/88 | 7 | 43,500 connections, 90 percent of population |
| QDA | 8 | | 700 connections Samungli, Chaman and Chiltan Housing Schemes |
| Military Engineering Services | 17 | 5 | Cantonment, Water is received from Urak |
| Cantonment Board | 7 | | 689 connections, Civilians Residents in Cantonment, Housing schemes include Jinnah, Tophi, Shahbaz Towns |
| Pakistan Railways | 12 | 8 | Railway Colonies |
| PTCL | 1 | | 250 connections, Postal colony |
| C&W | 2 | | C&W Colony, Wahdat Colony |
| Total | 125/135 | 150 | |

Source: Murray et al, 2008.

environment. Human health and welfare, food security, industrial development and the ecosystem on which they depend, are all at a risk, unless water and land resources are managed more effectively in the present decade and beyond compared to the situation in the past.

Quetta is under the adverse impact of climatic change. The rapid rate of urbanisation towards the piedmont plains has drastically reduced the recharge capacity of underground water reservoirs. The long drought spell of 1998-2004 over the region, high effect of evaporation and scarcity of water devastated the agriculture and livestock in the district.

Quetta is mainly dependent on the underground water reservoirs except for about 3 MGD water supplies from Wali Tangi Dam, Spin Karez for Cantonment area, water is recharged primarily in the mountains and nallas, alluvial fans and plains. The geological condition of the valley favours the formation of underground water reservoirs. The availability of surface water in Quetta is very limited and directly dependent on the precipitation and surface run-off of the catchment area. The over-extraction of water from the shallow tubewells of alluvium both for agriculture and domestic use has resulted in a negative water balance with extraction of over 70 cusecs and recharge of around 30 cusecs. The continued dry spell for the last 45 years has further aggravated the situation.

The outcome of several studies for improvement of water supply resources in Quetta are summarised as under:

- Water loss reduction and leakage control through the process of replacement of damaged/broken.
- Unspecified pipelines for saving of about 30-35 percent potable drinking water.
- Complete ban on agriculture tubewells and provision of recycled wastewater to farmers.
- Construction of drinking water supply dams and recharge measures.
- Development of water resources in newly identified hard rock/limestone aquifer.

The provincial government launched Quetta Water Supply and Environmental Improvement Project (QWSEIP) in December 2004 for improving the supply of drinking water and sanitation in Quetta City with a revised cost of Rs. 17,092.60 million. Area of responsibility increased from 370 sq km to 3,070 sq km (from Quetta Town to Quetta District including Army, PAF and Cantonment) due to revision of PC-1 as per decision of the Provincial Government.

The present availability⁴⁷ of water is 20 MGD against the demand of 30 MGD. The supply would enhance to 36 MGD after completion of QWSEIP. The objectives⁴⁸ of QWSEIP are:

- Rehabilitation and expansion of distribution network to new areas.
- Establishment of effective monitoring and metering of the system.
- Increasing reservoir capacity by 8 MGD and providing equitable distribution.
- Increasing B-WASA revenue.
- Rehabilitate existing sewerage network and increasing sewerage system coverage from 12.5 percent to 60 percent of population.
- Construction of storage dams.
- Construction of wastewater recycling plants to irrigate 1500 hectares of land.
- Rehabilitation of drainage system.
- Procurement of sewerage / drainage maintenance equipment.

Actual date of commencement of QWSEIP project was December 2004 while dates of completion as per original PC-1 and revised PC-1 are December 2009 and June 2015 respectively. During the investigation phase, it was concluded that there exists a potential in hard rock and alluvial aquifers, potable water quality is available with control mining in hard rock and alluvial aquifers and that there exists a hydraulic connectivity between hard rock and alluvium. Keeping in view these findings of investigation, 12 hard rock and 54 alluvium tubewells were drilled.

47 Availability of water is calculated of 16 hours per day running of tubewells

48 Lt. Col (Rtd.) Hafeez-Ullah Awan TI(M), Project Director/EDO QWSEIP/WASA Quetta.

Based on the current availability of water resources, it can be presumed that if the additional resources are not developed, the availability of water will reduce further, which will aggravate the situation with the passage of time. The negative water balance due to continuous over-mining of alluvium tubewells has underlined the need to develop new water resources.

Hard rock tubewells: Eighty-five test bores were drilled, out of which 57 bores were found successful and developed as tubewells (Takhtani nallah area, Spezand, Darawaza area and other potential sites). Because of these test holes, the long-term yield of this basin is about 13.68 MGD from the hard rock aquifer, which can be extracted from 57 productive wells.

Table 20: Implementation status of emergency works, QWSEIP (july 2009)

| Sr. No. | Work Done | | Availability of Water (MGD) | No. of Tube wells/Pipeline length | Remarks |
|---------|--|--------------------|-----------------------------|-----------------------------------|--|
| 1 | Energisation of Hard Rock Well Field | Karkhasa | 1.1 | 4 No. | During investigation phase |
| 2 | | Mian Ghundai | 1.4 | 4 No. | During investigation phase |
| 3 | | Dara Manda | 1.15 | 4 No. | During investigation phase |
| 4 | Replacement of rusted pipeline | | | 26 km | |
| 5 | Energisation of Alluvium Tube Wells | | 3.3 | 54 No. | |
| 6 | Installation of Tube wells | | 0.4 | 6 No. | Army-4, Killi Kotwal-1, Crises Management Cell-1 |
| 7 | Expansion of water supply distribution network | Killi Jaded Sariab | | 7.81 km | |

Source: Presentation to Chief Minister by QWSEIP (2009)

Table 21: Completd Works handed over to WASA by July 2009 (QWSEIP)

| Sr. No. | Work Nature | | | No/km | Remarks |
|---------|---|-----------|--|----------|---|
| 1 | Pipe line laid for Rehabilitation and Expansion works | | | 1152 km | |
| 2 | Total Successful Tube wells | Hard Rock | 56 Nos. | 256 Nos. | |
| | | Alluvium | 200 Nos. | | |
| 3 | Tube wells Drilled and Energised | Hard Rock | Handed over to WASA | 27 Nos. | 8 US MGD |
| | | | Handed over to Army | 9 Nos. | 2 US MGD |
| | | | Dasht Well Field to be energised (Disputed) | 9 Nos. | 3 US MGD (Expected Quantum of water) |
| | | | Quetta Valley Well Field to be Energised | 11 Nos. | 4 US MGD (Expected Quantum of water) |
| | | Alluvium | Handed over to WASA | 122 Nos. | 8.5 US MGD |
| | | | Quetta Valley Tube Wells to be Energised | 41 Nos. | 3.8 US MGD (Expected Quantum of water) |
| | | | Handed over to Army, CBQ, Health, and Education. | 30 Nos. | 1.5 US MGD |
| | | | To be Energised Army, CBQ, Health, Education. | 7 Nos. | 0.67 US MGD (Expected Quantum of water) |

Source: Presentation to Chief Minister by QWSEIP (2009)

Table 22: The Storage Dam Specific Information

| | Mangi Dam | Halak Dam |
|----------------|--|--|
| Location | 67°29.8' East 30°21.6' North (60 km East of Quetta) | 67°24.20' East 30°11.29' North (72 km East of Quetta) |
| Catchment Area | 1217 Sq. KM (470 Sq. Miles) | 134 Sq. KM (470 Sq. Miles) |
| Dam Type | Concrete Gravity Dam | Concrete Gravity Dam |
| Maximum Height | 61 m (200 ft.) | 47.5 m |
| Gross Storage | 36.43 MCM (29550 Ac ft.) | 6.57 MCM (5330 Ac ft.) |
| Live Storage | 31.74 MCM (25740 Ac ft.) | 5.91 MCM (4790 Ac ft.) |
| Gross Storage | 4.69 MCM (3800 Ac ft.) | 0.50 MCM (535 Ac ft.) |
| Pumping Main | 8 million Gallon per day | |

Source: Presentation to Chief Minister by QWSEIP (2009)

Surface water: Halak and Mangi dams are proposed in phase-2 of this project to augment the water supply. The additional 10.7 MGD surface water will be added to give relief to the groundwater potential which is under severe strain. It will further remain as an alternative source of water to cater for the demand of water for Quetta until the year 2025.

Refurbishment of existing tubewells of alluvium: The present water supply system comprised of 48 very old shallow tubewells (QMC system) transferred to B-WASA in December 1994. Since then, several measures for the improvement of the system have been taken, including replacement of shallow bores with deep bores. The existing water supply system of PHED is also in a frail condition and needs refurbishment. Under the revised project, 268 tubewells are proposed to be installed in alluvium aquifer. The expected yield from these 268 tubewells is 14.62 MGD.

The works under Package-A (water supply, sewerage, stormwater, delay action and check-dams carried out by the project) are given in Table 20.

Completed works handed over to WASA in 2009 and before are given in Table 21.

After the completion of the rehabilitation of rusted/damaged water supply pipelines and laying of sewerage system, the quality of supplied water will further improve.

A sewerage treatment plant was installed at Sabzal Road near the end of 2009 and is functional. The work on the other two treatment plants is going on. The works

relating to stormwater drainage were almost completed. Recharge measures for Akhtarabad delay action dam are in progress. Forest Department has not been involved in improving the management of watersheds.

The package-B for construction of Mangi and Halak dams costing Rs. 1,744 million is under implementation. The storage dam specific information is in Table 22.

Detailed designing of Mangi and Halak Dams was complete and work was expected to start by Frontier Works Organisation (FWO) in late 2009.

Progress of Major works of Package-A and B of QWSEIP (PC-1) up to July 2009 is in Table 23.

The construction of three sewerage treatment plants of 11.2 MGD capacity in Quetta City was envisaged under the QWSEIP. The one at Sabzal Road (1.8 MGD capacity) was completed in 2009 and is operational after initial set back. The work on the other two, i.e., at University of Balochistan (2.4 MGD capacity) and Samungli Road (7 MGD capacity) is going on.

Water quality

In order to determine the acceptable water quality for domestic use, 80 samples from both alluvial and hard rock wells were collected and tested chemically and physically in the laboratories of WASA and Pakistan Institute of Nuclear Science and Technology (PINSTECH), Nilore, Islamabad. The analysis was carried out separately for alluvial wells and for each range of hard rock wells. Based on these studies, it can be concluded that in

Table 23: Progress of Major works of Package-A and B up to July 2009

| Description/Component | Unit | Quantity | Progress |
|--|--|------------------|-----------------------------|
| Package-A: water (resource + supply) | | | |
| (a) Rehabilitation work | | | |
| Replacement of damaged rusted pipe | km | 370 | 365 completed |
| Rehabilitation of existing tubewells in Quetta city | No. | 60 | 206 ⁴⁹ (drilled) |
| (b) expansion works | | | |
| Laying of pipe line | km. | 349 | 825 |
| Reservoir | No. | 52 ⁵⁰ | 3 ⁵¹ |
| Energisation of hard rock tubewell | | 40 | 56 ⁵² |
| Sewerage | | | |
| Laying of sewer lines | km | 251 | 5.82 ⁵³ |
| Conversion of drains into PCC sewers | km | 510 | |
| Construction of waste water recycling plants | No. | 4 | 01 |
| Storm water drainage component (details in following table) | Schemes | Lump sum (27000) | 12,500 ⁵⁴ m |
| Miscellaneous works enhancement of water recharge measures | Work on Akhtarabad check dam is in progress and other five schemes were deleted from revised pc-i as per decision of pre-CDWP | | |
| Mass awareness for water conservation and low cost sanitation for kachi abadis | Pilot project on mass awareness completed. Pilot project on sanitation 80 percent completed. Remaining balance has been reallocated for water supply component | | |
| Package-B | | | |
| Construction of storage dams at Mangi and Halak | No. | 2 ⁵⁵ | |

Source: Presentation to Chief Minister by QWSEIP (2009)

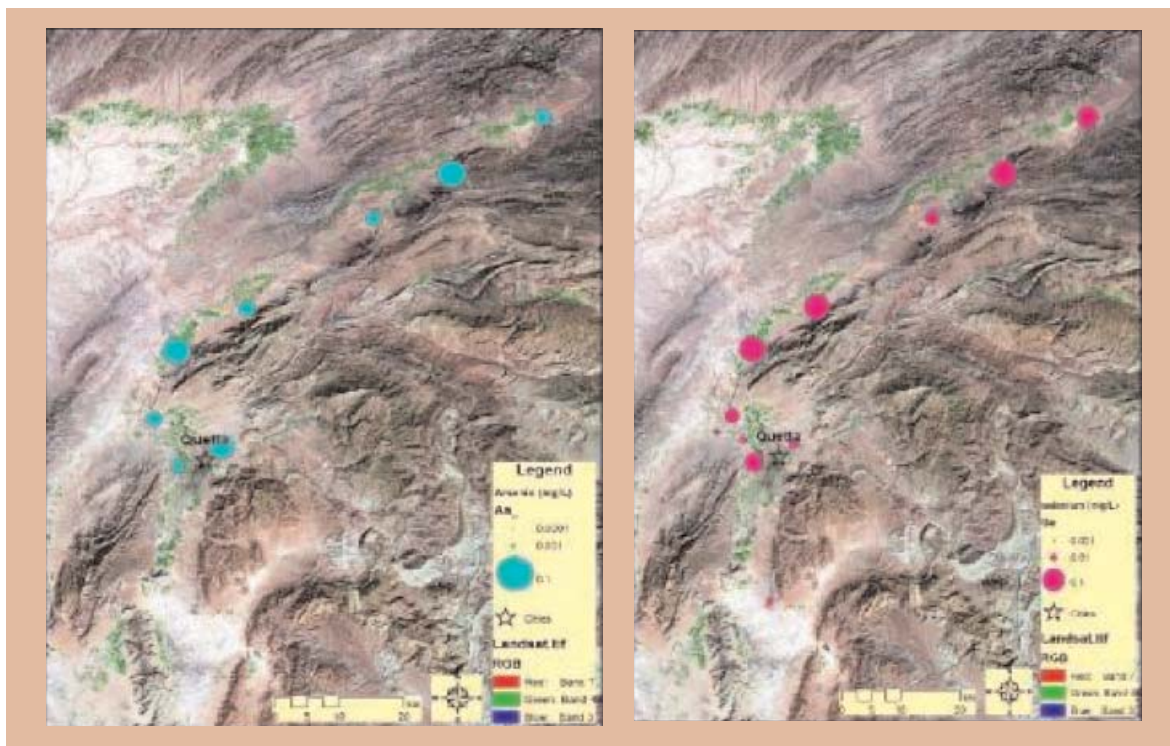
- 49 Successful 200, Failure 6, For WASA 163, for MES, CBQ, Health and Education Department etc. 37 No.; energised and links up with WASA/Cant. System 153 (WASA 122 and Cant. 30) and to be energised (47)
- 50 17 overhead hot pressed steel tanks to be imported from England 32 ground reservoirs to be constructed of RCC type/ work on four sites started
- 51 one each at Mehmood Mina, Marriabad (Mominabad) and Killi Badazai
- 52 27 tubewells handed over to WASA and 9 tubewells handed over to army to be energised 20 tubewells including 9 of Dasht well-field.
- 53 Further detail design is awaited from NESPAK which it failed to provide due to their poor performance, insufficient staff and equipment.
- 54 Completed schemes include Saraghurgai flood protection works, Construction of gabion wall at Madrassa Achozai. Construction of protection wall around four tubewells at Karkhasa, Storm water drain of Usmanabad, Noorzai Colony on left and right banks of Kasi Nullah in Pushtoonabad, Storm water drain at killi Mehrabzai. Raga Baliozai and Jamali in Kuchlak, Flood drain from Jaffar Khan Jamali Road to Pishin stop. Storm water drains in Circuit House to Habib nalluh Zarghoon Road, Storm water channel for killi Siddique in Kuchlak, Flood protection of Hanna Urak Valley, Lining of Durrani Nullah.
- In-progress schemes include Storm water drains killi Bangulzai, Mustafaabad, Sariab Road Quetta, Construction of storm water channel on Badini nullah for protection of killi kechi baig, Sariab road., Storm water drains from Science college to secretariat chowk, Storm water drains from Imdad Chowk to Secretariat Chowk and Pishin Stop (Left side)
- 55 The design completed in March 2007. Construction work not yet started for want of approval of Revised Cost Rs. 8,279 million

general quality of the groundwater of Quetta Valley is acceptable for drinking purposes.

The analysis of groundwater samples taken from 21 sites in Quetta Valley in December 2007 was undertaken for their contents of major, minor and trace elements⁵⁶ (Fig. 7). These sites included wells, tubewells and spring. A Land-Sat image showing concentration of Arsenic (As) and Selenium (Se) in the drinking water in the Quetta Valley in 2007 proportionate to size of the circles revealed elevated levels of some trace elements⁵⁷, i.e., Nitrate, Cr, Ni, As, Se and Ti. The high concentration of arsenic is poisonous and low-level, long-term exposure to arsenic may lead to increased risk of cancer. Satellite images showing circles of concentration of Arsenic (As) and Selenium (Se) proportionate to the size of the circle are shown in Figure 6.

Source: WASA and Pakistan Institute of Nuclear Science and Technology (PINSTECH), NILORE, Islamabad Clean Drinking Water Programme: The federal government's scheme of Water Filtration Plants⁵⁸ consists of three phases. The first phase, which was planned for the tehsil level, started in 2005, and had been completed in 2006. The second phase is under execution at the Union Council level and will be completed by the end of current year. So far, 390 plants have been installed in the different part of the province. The third phase is on village level, for villages having population of one thousand or more. The scheme is in its conceptual stage and will be initiated after completion of the second phase. The locations of filtration plants installed in Quetta District in the first phase (Tehsil Level) and second phase (UC level) are listed in Table 24.

Figure 6: Satellite images showing concentration of Arsenic (As) and Selenium (Se)



Source: WASA and Pakistan Institute of Nuclear Science and Technology (PINSTECH), NILORE, Islamabad (2007)

- 56 Using ICP (AES) and ICP (MS) for the determination of major (Ca, K, Mg, Na, Si, Cl- and SO₄), and minor and trace elements (Fe, Mn, B, Ba, Li, Sr, Li, Be, B, V, Cr, Mn, Co, Ni, Cu, Zn, Ga, As, Se, Rb, Sr, Y, Ag, Cd, Cs, Ba, La, Ce, Pr, Nd145, Nd146, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, Lu, Tl, Pb, Th, U).
- 57 Murray, K., Sagintayev, Z., Sultan, M., Khan, S. D., Becker, D. B., Becker, R., and Milewski, A. "An integrated approach for the assessment and development of renewable groundwater resources in the Quetta valley, Pakistan." *Geological Society of America Abstracts with Programs*, 39(6), 154, 2008.
- 58 Clean Drinking Water Initiatives (CDWI) Project 2005-06.

According to the relevant federal agency, almost all installed plants are operational and being maintained by the Public Health Engineering Department (PHED) as the executing agency in the government of Balochistan.

The PHE Department has contracted two firms for Operation and Maintenance (O&M) of the installed plants at tehsil level, but the firm that installed the plants at the UC level is responsible for their O&M for a period of three years post-installation. The O&M requires change of media, change of membrane (filter), and chlorine dosing, hourly backwash system (installed for every plant).

The federal government's commitment for funds for O&M of the installed plants is for three years. Thereafter, the provincial government is expected to take responsibility for their O&M. The monthly expenditure of one plant is Rs. 12,500 which includes the operator's monthly salary of Rs. 5,000.

3.8.2 Key issues

- Inadequate availability of water. A crisis of acute shortage of water in Quetta city is on the horizon, if water supply is not arranged from outside the district to supply water to the thickly populated area. With limited resources it is difficult to combat the present situation. In the year 2000 supply of water by a division was to 70 percent of the covered population, which has gone down to 50 percent of the covered population. Twenty percent households, which were getting water previously, are now deprived of potable drinking water due to the less discharge of tubewells. The existing tubewells are mostly at the depth of 400 feet.
- Poorly designed/ dilapidated distribution network.
- Inadequate coverage of population.
- Inadequate reservoir capacity.
- Poor revenue collection.
- Inadequate coverage of sewerage system.
- Dilapidated condition of existing sewerage system.
- Inadequate waste water treatment, i.e., only one treatment plant out of three has been installed and is operating.
- Poorly maintained drainage system.
- Five percent citizens depend on water from ponds and other unhygienic sources, especially in remote rural areas.
- Pollution of ground and surface water through sewerage and agro chemicals.
- Forty-eight community schemes were handed over to WASA in 2001, and the remaining schemes were also notified for handing over, but WASA did not take over these schemes due to financial constraints.
- The required budget for proper functioning of WASA is not provided by the GOB as grant-in-aid due to payment of electricity charges of QESCO. WASA is facing difficulty in the supply of regular drinking water to the inhabitants of Quetta due to disconnection by QESCO of electricity of tubewells.
- The water rights of the alluvial aquifer, of which WASA is the owner, the law and order situation/ political environment does not allow to charge rent from the private tubewells which are functioning 24 hours on fixed flat rate as per policy of the government. Due to the reason the abstraction from aquifer is double of the allowable abstraction which is causing high depletion of groundwater in the valley.
- Although the costs of water supply may be considerable and the benefits are higher but following issues were raised by the communities regarding PHED schemes. The consequences of the dropping water table for those who fetch water could be:
 - More time will be needed to bring water from distant areas.
 - It will further burden the life of females, who fetch water.
 - It will badly affect the ecological balance and agricultural development in the district.

Table 24: Water Filtration Plants installed in Quetta District (2005-10)

| Phase-I (Tehsil Level 2005-06) water filtration plants installed in Quetta District | | |
|---|--|--|
| S. No. | Chiltan Town | Panjpai |
| 1 | At Water Supply T/Well No-2 Killi Ali Zai | Masjid Road near High School Killi Panjpai |
| Phase-II (UC Level 2007-10) water filtration plants installed in Quetta District | | |
| S. No. | Zarghoon Town - Locations in UCs | Chiltan Town - Locations in UCs |
| 1 | Quarry Road | Eid Gah Jail Road Huddah |
| 2 | Nursing Hostel Civil Hospital Inscumb Road | Samungli Housing Scheme WASA Tube Well |
| 3 | Mali Bagh Office WASA | Mano Jan Road |
| 4 | Veterinary Hospital Mechongy Road | Railway Colony Joint Road |
| 5 | Patel Road Tube Well | Killi Alam Khan |
| 6 | Gawalmandi Office | Shahbo |
| 7 | Tail Godown T/W | Killi Ismail |
| 8 | Yazdan Khan School | Killi Tarkha New Tube Well |
| 9 | Sadiq Shaheed Library | Shahzman Street |
| 10 | Hashim Khan Ghilzai Trust Nichari Road | Qurban Ali Bagh Reisani Road |
| 11 | Toghi Road Qaid Abad School | Killi Shah Mohammad |
| 12 | Khartar T/W | Central School |
| 13 | Sardar Nisar Tube Well | Stop No. 1 at Bandr Tube Well |
| 14 | Dispensary T/W | WSS Chowkal Muhammad Murad |
| 15 | Kasi Killa | Kharoot Abad Phed Tube Well |
| 16 | Civil Defence Office Dial Bagh | Haji Allah Gul Masjid |
| 17 | Kasi Grave Yard Old T/W | Killi Ibrahim/Bangulzai |
| 18 | Durrani Bagh New | WSS Chashma Jeo Jadeed-2 |
| 19 | Saeedabad | Killi Naik Mohammad |
| 20 | Allah Dina Road T/W | Bangalzai |
| 21 | Haji Ghabi Road T/W New | Gafoor Town |
| 22 | Nasrullah Chowk | Block No. 5 Near Public Park |
| 23 | Tareen Road T/W | WSS Zarkhoo |
| 24 | T&T Colony | WSS Kechi Baig |
| 25 | Barginza Villa | WSS Hazara Town Block-1 |
| 26 | Taroo Chowk | Railway Housing Society |
| 27 | Govt Boys School Prince Road | Saznar Khail Kuchlak |
| 28 | Maulana Noor Mohammad | WSS Panjpai Town |
| 29 | Mitha Chowk Usman Abad | Police Line |
| 30 | QDA T/W | |
| 31 | Jamal Abdul Baqi | |
| 32 | Sirki Kalan/Jatoi Colony | |
| 33 | WSS Malaizai Nasiran | |
| 34 | WSS Killi Nasiran | |
| 35 | Killi Babri Hanna | |
| 36 | WSS Killi Umer Road WASA Office | |
| 37 | Ismail Colony, Rehmat Colony Sirki Road | |

Source: Deputy Project Director: CDWA Ministry of Special Initiatives, Islamabad

- The practice of sending accumulated bills. Particularly the first bill is sent after a very long time.
- Some of the beneficiaries were not prepared to pay their share in the utility bills.
- Sometimes the community as a whole refuses to pay. This is due to lack of social responsibility and due to the presence of certain groups within the communities pursuing their interests.
- There have been many cases of illegal connections in the District.
- The Public Health Engineering Department (PHED) of Quetta District has been requesting time to time for replacement of dried tubewells and requesting for the funds of repair and maintenance of schemes run by PHED and for the schemes run by community as per demand.
- Groundwater is depleting fast in the district generally and very fast in Quetta Valley.
- Water filtration plants were installed at UC and tehsil levels, and will be installed at the village level in the third phase starting from July 2010 but a large number of these are said to be non-functional. This is partly due to lack of maintenance and partly because of lack of a comprehensive awareness raising programme and participation of communities in this programme.
- Poor quality of drinking water in Panjpai tehsil.
- Lack of funding for water recharge programmes and projects.

3.8.3 Vision

Safe drinking water is a basic human need and the government is obligated to provide this facility to its citizens under the MDGs by the year 2015. A target of MDG 7 is to arrange access to safe drinking water within 2 kilometres or a point so close that one could go and come back within half an hour. Only a third of the population of the district has access to safe drinking water at present. The

target of access to improved drinking water to 56 percent of population by 2015 is challenging and is very difficult to be met. However, maximum efforts will be put to accomplish as much as possible. Containing demand, efficient use, water recharge and controlling water pollution will be focused.

3.8.4 Measures to be taken

- Improved supply of safe drinking water as a strategic priority to avert the looming crisis.
- Access for all where the facility of water supply is common.
- Construction of water supply overhead tanks in urban areas and big villages.
- Construction of *pukka* tubewell delivery tanks to avoid pollution of drinking water.
- Working with media and all other possible sources to disseminate the consequences of drinking unsafe water and the options to address this issue.
- Allocating more funds to PHED for repair and maintenance of tubewells for reviving the water supply in the rural areas.
- Persuading the Revenue Department to make the transfer of property conditional to providing the NOC of WASA for clearance of water charges.
- Advocacy and actions at higher levels to influence policy-making towards sustainable management of water resources at the community level.
- Collection of royalty of water from private tubewell-owners in Quetta Valley.
- Raising community awareness about their freshwater resource potential and sustainable rates of extraction.
- Putting in place community mechanisms, including building institutions and capacities at the local level to manage freshwater resources.
- Conservation of water by stopping leakages and wastage from transportation, distribution and supply lines.

- Control of pipeline losses and illegal connections.
- Using an awareness campaign, incentives and alternatives to ensure efficient use of available water by agricultural, industrial and domestic users.
- Exploring the possibility of rooftop rainwater harvesting during monsoon and winter months and, if found feasible, introducing it.
- Ensuring supply of safe drinking water near the points of consumption in the rural areas.
- Investing on the watersheds from where the city is getting its water supply is lacking, e.g., the watersheds of Hanna and karez reservoir, Wali Tangi Dam, Mangi Dam and Halak Dam.
- Withdrawing the subsidised flat rate tariff on private agricultural tubewells, especially in Quetta Valley.
- Collecting user charges in accordance with the quantity of water supplied. Charges may be calculated by water supply duration or even by metering in areas of higher consumption and of commercial nature, e.g., ice factories, hospitals, shopping malls, hotels and restaurants, swimming pools etc.
- Conserving water and increasing recharge in the watersheds of Quetta District prioritising the watersheds of Quetta City.
- Developing and implementing an aquifer recharge plan in Quetta District, especially in Quetta Valley, on SOS basis to recover groundwater losses. As hardrock water sources are difficult to recharge compared to gravel aquifers, the selection of suitable areas for watershed programme is critical for success.
- Completing the installation of the remaining two sewerage treatment plants and installing additional plants to recycle the entire sewage of Quetta City for recycling water for green spaces, urban parks, urban forestry, agriculture and lawns.
- Banning installation of new tubewells for agriculture and water pumping.
- Monitoring of water quality.
- Controlling tubewell-dependent agriculture in Quetta Valley, with compensation to the owners of existing tubewells and prohibiting installation of new ones by enacting and enforcing a land-use and development planning control.
- Restricting and finally controlling tubewell-dependent agricultural activities in the watersheds and basin areas of Quetta District which add to the recharge of water for the priority use for water supply to the city for domestic use.
- Attaching high priority to investment in the improvement of sanitation.
- Timely and quality completion of “Quetta Water and Environment Improvement Project”.
- Providing adequate budget to WASA and PHED for their proper functioning.
- Making additional efforts in view of growing population and urbanisation to meet the target to cover the remaining population. Exploring the potential of lifting water from the nearest point of River Indus-fed canal system in Balochistan for Quetta City. Arranging water in the required quantity and of the desired quality from permanent source(s) outside the district in addition to the Mangi and Halak dams. The potential of pumping water from the nearest point of a permanent canal from Indus River system needs exploring in this regard; this may be expensive but will have to be decided upon and implemented sooner rather than later not only for filling in the current gap in demand and present supply but also for the increasing demand, including that for areas and households still without piped water supply. It is also important for avoiding paying higher costs later on due to escalation.
- Halting further increase in water demand by containing in-migration and further expansion of housing and settlements in the Quetta Valley, including putting a moratorium on construction of any building in the foothills and other active recharge areas. This will not only stop the increase in demand for health-care,

education, water and sanitation, transport and other services and employment but also for increasing the recharge to the ever-declining groundwater resources.

- Seeking compliance of and enforcing national environmental quality standards (NEQS) for municipal and industrial discharges and recovering costs of treatment where they are above NEQS limits. Increasing water recharge by managing watersheds and the active water recharge areas at the foot hills in the Quetta Valley.
- De-novo master planning of Quetta City and its implementation, taking advantage of the enhanced budget of the provincial government due to significant increase in the federal share.
- Construction of water recharge dams with built in mechanism of recharging the aquifer.

3.9 Sanitation

The National Sanitation Policy (NSP) in Pakistan, approved by the federal government in 2006-07, is focused on the safe disposal of excreta, using latrines, creating an open-defecation-free environment, safe disposal of liquid and solid waste and promoting health and hygiene practices. In order to support the implementation of guidelines, effective institutional and financial frameworks are envisaged. Sanitation programmes are linked with environment, housing, water and regional planning policies and programmes.

The federal government provides incentives for the implementation of the NSP, e.g., rewards for open-defecation-free tehsils/towns, the cleanest tehsils/towns having 100 percent sanitation coverage and the cleanest industrial estates or clusters.

The Quetta Municipal Corporation (QMC), Cantonment Board and WASA are responsible for disposal of waste and provision of sanitation facilities in Quetta City. PHED is involved in water supply but not in sanitation in the rural areas. QMC plays an active and major role in providing and managing sanitation facilities in Quetta City. Solid waste is collected at the house level. Scavengers (garbage-collectors) sort out, pick and sell the

re-usable or recyclable materials such as paper, glass, wood, metals from the waste as their livelihood. The market for such materials is well-developed. The municipal employees load the solid waste collected from dustbins on trucks and tractor-fitted carriages. There are 1,000 permanent employees equipped with 22 trucks and 3 tractors. The collected garbage and solid waste is dumped in trenched places located at a distance of about 16 km from Quetta City. The solid waste is auctioned, after every three months of dumping, for use by the farmers for agriculture.

In the Cantonment area, the responsibility for safe disposal of solid waste lies with the Cantonment Board Quetta. The Board has 190 permanent workers (65 percent male and 35 percent female) and trucks which carry the waste to a dumping ground located 8 km away along Quetta-Kach Road. However, sanitation conditions in the rural areas and slums in Quetta are very poor. There is no drainage system and the poor conditions are a constant threat to the health of the people.

Solid Waste: The Municipal Corporation is capable of disposing of only 75 percent of the solid waste generated in Quetta City. What is required is the involvement of private sector on commercial basis and community participation through awareness programmes for complete and safe disposal of solid waste.

Sewerage facilities: The existing system of Quetta consists of 60,000 metres long piped sewerage system in the inner town of Quetta, 3,790 metres long old city network and railway compound network and 31,550 metres long cantonment sewerage system. All the collection networks have separate systems discharging in the natural creeks (storm water drains) or Nalas including Durrani Nala, Habib Nala, Kanshi Nala and Sariab Nala which drain into Lora Nadi ultimately becoming Pishin Lora in the north-west of Quetta.

A partial network was laid under Quetta Sewerage and Sanitation Project with the help of Dutch government and GoB is to cater the piped sewerage requirements for a population of 150,000 only. The related wastewater flows were estimated at 120 L/s (1,618 GPM) in total.

A sewerage treatment plant of the Cantonment Board has now stopped



Vegetables grown with hospital wastewater

functioning. However, one sewerage treatment plant installed at Sabzal Road in Quetta City is functional and the remaining two are passing through the re-planning and resource mobilisation process as the cost of PC-1 has gone up significantly. However, sites for these have already been selected.

The population of Quetta is scattered in suburbs surrounding the valley. Many of these localities are not linked to essential facilities such as water and sewerage, and have an appearance of slums, showing a danger of epidemics and fatal diseases.

Drainage system: Stormwater from the built area of the city is transmitted to three major natural Nalas (Habib Nala, Durrani Nala and Sariab Lora Nadi) through a network of drains. The existing drainage system is based on major city drains, minor drains and natural streams. The estimated length of the drainage system is 373 km, out of which 323 km is being used as wastewater conveyance.

The roles and responsibilities of all stakeholders are accepted and coordinated. This includes government institutions, private sector, non-governmental organisations (NGOs), community-based organisations

(CBOs), communities, individual households and the electronic and print media. The policy officially promotes the grassroots concept of community-led total sanitation (CLTS) in smaller communities with less than 1,000 inhabitants. In larger communities, the NSP provides for the component-sharing model, under which sewage and wastewater treatment facilities are provided by the communities in case a government-developed disposal facility is not available.

A modest-sized plant for treatment of sewage was installed in Quetta City near Sabzal Road. Installation of two more plants is expected during 2010. In most rural settlements, wastewater is neither collected nor treated, leading to pollution of surface and ground water. There are not even pukka drains in most of the villages. Sewers and treatment systems would be no less than a luxury for such villages.

Before the devolution under the BLGO (2001), the PHED was responsible for development and maintenance of water supply and sanitation facilities in rural areas, whereas in urban areas these facilities were provided by the municipalities or Development Authorities and WASAs. Under the BLGO, the responsibility for water supply and sanitation

was devolved to Tehsil Municipal Administrations (TMAs), and PHED was expected to support them. The envisaged decentralisation did not happen fully. Consequently, the supply-driven schemes continued.

The hygienic and sanitation conditions prevailing in the district are not satisfactory as the Quetta City has grown significantly without planning and without extending the sanitation infrastructure accordingly. Zarghoon Road, Prince Road, Meconghy Road, Liaquat Bazar in particular, and other areas in general get flooded in heavy rains. It is due to lack of awareness and social and civic responsibility in the people. The existing toilet and drainage facilities are quite inadequate.

The use of flush systems in the Cantonment area is almost 100 percent. All houses in the new housing schemes, e.g., Jinnah, Shahbaz, Samungli and Chaman Housing Schemes have flush system installed in toilets. A growing number of households in the town are said to have linked their flush system with septic tanks. However, wastewater from most houses is disposed of through open drains and discharged through Habib Nala into Quetta Lora. The Habib Nala remains dumped with solid waste despite periodic cleaning by the municipal staff.

Wastewater remains stagnant outside the houses or in depressions, breeding mosquitoes and creating health hazard.

3.9.1 Key issues

- Throwing of garbage in Habib Nala and lack of maintenance of the sewer system including drains like Habib Nala to control pollution of groundwater.
- Inadequate treatment and re-cycling of sewage for re-use in agriculture, city parks and lawns.
- The used polythene bags are thrown out in open and are a great hazard to cleanliness, water quality and human health, aggravating the problem of solid waste and choking the sewer lines and drains.
- Illegal water connections are a menace to PHED and WASA in terms of theft of water, loss of revenue, poor sanitation etc.
- Incomplete and inadequate sewerage system, resulting in sewage oozing out of gutters.
- Stormwater drains are insufficient or choked in Quetta City, causing flooding of streets and roads during rains.
- Vegetables grown with untreated sewage.
- Manhole covers made of steel are generally stolen; even manhole covers made of cement are missing sometimes, leaving them open and resulting in death of children, even adults.
- Lack of toilets in significant proportion of households in rural areas and schools and at public places.
- Dirty washrooms in many official buildings due to lack of proper maintenance. Practice of separate washrooms for officers and other staff for this reason.
- Regular maintenance of drains is lacking.

3.9.2 Measures to be taken

The vision of sanitation includes toilets in all houses, complete coverage of sanitation facilities, safe disposal and treatment of sewage and industrial discharges in urban and rural areas of the district.

- Encouraging CSOs and CCBs in raising awareness of the people against defecation in open, improving the disposal of waste water, washing hands and personal hygiene to avoid the incidence of a large number of diseases including diarrhoea, hepatitis, malaria, polio etc.; and training them in building improved latrines on self-help or collective communal initiative basis and involving them in construction of drains and sewer lines.
- Regular maintenance of Habib Nala and other drains.
- Regulating and monitoring industries and vehicle wash stations for their discharges to meet NEQS and collecting charges for treatment of their discharges, if above the permissible limits.
- Constructing and maintaining public toilets in shopping areas and other public

places visited by people. Imposing and recovering fines from those found defecating in the open in Quetta city.

- Educating public about toilet use and hygiene.
- Monitoring that the sewer lines of houses are not connected with the storm water drains.
- Improving latrines, supply of water, open drains in small settlements and sewerage system with treatment plant(s) in towns and big villages.
- Providing financial assistance for building septic tanks, improved latrines in localities of low-income groups and in rural areas to reduce pollution of groundwater.
- Quality and timely completion of the QWSEIP.
- Using treated water for growing vegetables, irrigating orchards and crops and for urban parks and lawns.
- Complete coverage of population in the district for safe drinking water, and safe disposal of sewage and industrial discharges.
- Up-gradation of all urban areas and big villages through master planning and implementation for WatSan.

3.10 Poverty-reduction and Sustainable Livelihoods

3.10.1 Poverty-reduction

The poor are distinguishable from the non-poor through a conventional measure of poverty line. The poor are those whose income or consumption falls below this minimum standard. Calculations based on different approaches estimate poverty in Balochistan to range between 14.8 percent and 29.2 percent. The calorie-based approach

(based on the consumption of 2,250 calories per person per day) indicates that poverty has declined somewhat and is slightly lower than the national average. The basic needs approach, based on distribution of expenditure, shows a similar trend. However, in terms of distribution of income, the trend is reverse, indicating that the situation has worsened. The gap between the rich and the poor is getting wider. The problem with using any one indicator, such as income or consumption, is that it paints only a partial picture and obscures the real magnitude of what constitutes poverty.⁵⁹

For their livelihood the poor rely heavily on natural resources but the access to and control over natural assets and resources are extremely skewed against them. This is a fundamental cause of poverty as well as an effect of it. This has important policy implications⁶⁰.

Injudicious resource capitalisation is the cause, and its solution lies with the governments (federal, provincial or district), which unfortunately are influenced by the same elite.

3.10.2 Sustainable livelihoods

There is a difference between creating a livelihood and a job. Livelihood is “means of living or supporting life”. Job is a “specific piece of work (task, chore, duty) done for money”. The concept of livelihood touches all dimensions of production and consumption, work and rest, self-care and community needs. The IDDV encompasses all these aspects of livelihood.

3.10.3 Key issues

- Capitalisation of major portion of resources by a minority group.
- Undefined rights of the poor to use and develop natural resources.
- Negligence in focusing towards poor and poverty-reduction.
- Over-exploitation of the dwindling natural resources, impacting the poor the most.

59 Government of Balochistan and IUCN. *Balochistan Conservation Strategy*. Quetta: IUCN, 2000.

60 Government of Balochistan. Planning and Development Department. *Between Hope and Despair: Pakistan Participatory Poverty Assessment Balochistan Report*. Quetta: P&DD, GoB, 2003. Available <http://www.dfid.gov.uk/pubs/files/ppa-balochistan.pdf>.

- Low resource productivity.
- Degraded and depleted natural resources, including groundwater, land, soils, rangelands, livestock, forests and wildlife.
- Wastage of low quality fruits during the season.
- Low literacy and education.
- Unskilled human resource.
- Natural disasters, such as drought, flood and earthquake.
- Fewer job opportunities and mismatch in labour market and the nature of jobs.
- Lack of district-specific data regarding employment.
- Political interference and lack of consideration of merit in filling in public sector positions.
- Lack of awareness, expertise, entrepreneurship and microcredit for micro, small and medium enterprises.
- The issue of child labour. Children provide labour in workshops, restaurants, households, businesses and are even forced to beg.
- The number of professional beggars has increased manifold. They are a great nuisance to the public.

3.10.4 Measures to be taken

The vision is to promote alternative sustainable livelihoods and reduce poverty in the district for social and economic well-being of the people of Quetta District.

- Collecting data on human resources and existing livelihoods and exploring the potential of sustainable alternative livelihoods.
- Human resource development focussing on poverty-reduction and skill-development keeping in view the existing and potential livelihoods.
- Facilitating access to micro-credit (especially to women) to support self-employment.



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- Supporting the existing micro enterprises, such as handicrafts and woodwork, through technological and economic incentives and supporting the setting up of micro enterprises, including agriculture and livestock-related value addition, e.g., food processing (preparation of jams, jellies, pickles at home for local and other markets, using low quality fruits and vegetables), and handicrafts (such as knitting, sewing, embroidery).
- Providing the micro enterprises with access to state-of-the-art technology and local modifications.
- Supporting community development and involvement through social organisation, capacity building for planning and management, joint and cooperative enterprise development, management and marketing.
- Encouraging women through incentives and training to take up commercial poultry farming, bee-keeping, sericulture, handicrafts, adopting careers in education and health-care sectors and garment or pharmaceutical factories; these occupations have potential but are lacking in the district.
- Documenting and disseminating successful local and outside examples, and supporting the district successful initiatives in scaling up and replicating best practices demonstrated by private sector companies, public sector agencies or civil society organisations.
- Providing opportunities to selected trainers from receptive communities for exposure to successful experiences.
- Promoting awareness and business details of the potential micro and SMEs including the sustainable livelihood based on local resources and traditional knowledge.
- Developing and implementing a Human Resource Development Plan and a Sustainable Livelihood Plan for the district.
- Providing training to farmers in livestock and poultry farming.
- Encouraging the processing and use of various local raw materials for value addition; and facilitating links with the outside markets.
- Ensuring merit-based employment in public sector agencies.
- Providing economic incentives for sustainable use of natural resources, e.g., technology-intensive efficient irrigation systems.
- Promoting sustainable collection of wild plants and products and cultivation of local medicinal, aromatic and economic plants.
- Encouraging and supporting production, processing, grading and marketing of honey on a commercial scale.
- Launching programmes like Khushhal Pakistan Programme, after necessary modifications in the light of the past experience, to enhance livelihoods.
- Revival of previous arrangement of confining professional beggars and destitute people to a facility.
- The potential of the following SMEs will be explored in the district to introduce and support livelihood programmes:
 - Fruit and vegetable grading, packing, preservation, processing, other value addition and marketing.
 - Efficient irrigation techniques and related technology, including land-levelling, on farm water management, drip/bubbler and sprinkler irrigation.
 - Agriculture engineering including repair of agricultural machinery including tubewell machinery etc.
 - Solar, wind and biogas energy, fuel-efficient cooking, heating stoves and cheap insulation of houses.
 - Livestock and poultry feed including urea molasses blocks and urea-treated straw.
 - Handicrafts including woollen carpets, rugs and other articles.

- Exploring potential for other occupations and products such as repair of household equipment, automobile repair; solar, wind, biogas energy; fuel efficient cooking and heating stoves, and cheap insulation of houses; refrigeration and cold storage; bee-keeping or apiculture; sericulture; poultry farming; livestock and poultry feed including urea molasses blocks; basket making from mulberry twigs; dairy farming; use of computers and internet; handicrafts including woollen carpets, rugs and other articles; composting; cooking and baking, interior decoration etc.
- Identifying, encouraging and supporting appropriate potential small and medium enterprises by creating enabling environment, providing technology, and credit and development of skilled manpower.
- Settlement of land-ownership and usufruct rights.
- Supporting in accessing markets, value addition and innovative product enterprises.
- Enhancing ownership or access of the poor to natural resources and assets.
- Reducing vulnerability and providing adequate social protection to the poor.
- Eliminating discrimination based on gender, ethnicity or caste; and ensuring equal access to justice for all regardless of gender or social status.
- Arranging technical and vocational training for producing skilled work force for the feasible small and medium enterprises.
- Developing farm to market roads.
- Obtaining and using raw materials including wool and other livestock products from the neighbouring areas of Afghanistan.
- Discouraging and controlling child labour and facilitating their schooling.
- Exploring and developing micro, small, medium and large enterprises including dairy development, poultry farming, bee-keeping, sericulture, preservation and preparation of fruit and vegetable products, wool-based products, large-scale handicrafts, trade and commerce and upgradation of chromite etc.

4. Natural Resources

Natural resources sustain life by providing water, air, food and other products for local consumption and trade. The rural communities, especially the poor, depend heavily on natural resources for subsistence. Low productivity due to mismanagement and natural disasters, such as drought, affect them badly. Thus, the resources and their sustainable management are critical to the populace of Quetta District, which has both rural and urban characteristics. The key elements of natural resources discussed here include climate, area and land-use, water, drought, agriculture, livestock and rangelands, forests and wetlands, and fisheries. The nature-based eco-tourism, although relevant here as well, will be separately discussed in Section 5.6. In recent years, combating the depletion of natural resources and moving to sustainable development has been a major focus of development agencies.

The district has many positive and negative resource attributes. The positive attributes are its people, natural resources (including agriculture, watersheds, forests, rangelands, protected areas, unique biodiversity and a range of economic mineral deposits, especially coal and gas)



and its strategic location. The negative attributes include aridity, periodic droughts, fast depleting groundwater and biodiversity, overgrazed and degraded rangelands, low productivity of livestock, rugged terrain in remote areas, to mention a few. The population density is very high both in urban and rural areas except Panjpai tehsil.

Consequently, the first priority is to halt and reverse depletion and degradation of natural resources by arranging and promoting the use of alternatives, and development of existing resources. Further development is also important for meeting the future demands. The best achievement of the people and the district government would be to improve the natural resources to their maximum potential for sustainable management and use by them and future generations.

4.1 Key Issues

- Extreme aridity and periodical drought.
- Fast depleting groundwater as a result of indiscriminate water mining and mismanagement due to inappropriate subsidy on power supply for agriculture and injudicious and inefficient use of groundwater resources, and reduced recharge due to de-vegetation and changing the land-use of active recharge zones.
- Overgrazed, depleted and low-productivity rangelands and livestock due to lack of management of rangelands and invest for maintaining productivity.
- Decline in wildlife populations and degradation of wildlife habitats and ecosystems.
- Deforestation and degradation of forest vegetation in the designated state forests and outer countryside due to over-exploitation, lack of management and investment.
- Poverty of communities dependent on natural resources for their livelihood.

- Lack of research, GIS-based information databases, GIS Coordinators.
- Paltry funding for natural resources including agriculture, livestock and rangelands, forests, wildlife and protected areas sectors.
- Inefficient use of resources including water, firewood, gas and electricity.
- The sector-specific key issues are discussed in detail in the later sections in this chapter.

4.2 Land Uses

Land-use depends on the socio-economic conditions. It determines how much and how well the use and status of the natural resources are in a particular region.

The total geographical area of Quetta District has been given differently by different sources. According to the Development Statistics of Balochistan⁶¹ it is 168,800 ha, as per District Census Report⁶² it is 265,300 ha, and as per Survey of Pakistan⁶³ it is 3,499 km² (349,900 ha). The latter is believed to be a more reliable source. The reported area out of former is 147,803 ha, which is almost 42.24 percent of the total area. It means that the land-use statistics of about 57.8 percent area of the district are lacking. However, the land-use statistics used by the Government of Balochistan are reproduced in Table 25.

State forest spread on 4,872.3 ha area has been converted to other uses since the area has been transferred to various agencies including Balochistan University, Labour Department, Pakistan Air Force, a CNG Company and SOS village. The details are given in Section 4.7.

Although Quetta District is heavily urbanised in the context of Balochistan and its geographical limitations, the official land-use statistics indicate only a proportion of 14.8 percent of the area as not available for

61 Government of Balochistan. Planning and Development Department. Bureau of Statistics. Development Statistics of Balochistan 2009. Quetta: GoB, 2009.

62 Government of Pakistan. Population Census Organization. District Census Report (1998) Quetta. Islamabad: PCO, Statistics Division, GoP, 2001.

63 Quetta District. Map. Survey of Pakistan, Islamabad, 2007.

Table 25: Land Use Statistics for Quetta

| Land Use | Year 2009 ⁶⁴ | | Agriculture Statistics (1994-95) | |
|--|-------------------------|-----------------------------|----------------------------------|-----------------------------|
| | Area (ha) | Percentage of reported area | Area (ha) | Percentage of reported area |
| Total geographical area | 168,800 | 100 | 265,287 | 100 |
| Reported area | 147,803 | 87.6 | 139,821 | 52.70 |
| Total Cultivated area | 11,097 | 7.5 | 39,709 | 14.96 |
| Un-cultivated area | 136,706 | 92.5 | 43,375 | 16.36 |
| Potential for agriculture | | | 83,084 | 31.39 |
| Cultivable waste | 34,271 | 23.2 | 43,300 | 25.65 |
| Arable land suitable for cultivation | 39,700 | 26.86 | 39,700 | 23.52 |
| Not available for cultivation | 21,853 | 14.8 | 21,853 | 8.23 |
| Area under water logging and salination | | | 200 | 0.07 |
| Forest | 80,582 ⁶⁵ | 54.5 | 34,684 | 13.07 |
| Rangelands | | | | |
| Wildlife Protected Areas | 29,772 | | | |
| Undesignated Wetlands and Water storages | | | | |
| Housing and settlements, Industry, Communication Infrastructure etc. | | | | |

Source: Bureau of Statistics, GoB (2008 and 2009); Agriculture Statistics (1994-95)

cultivation. It is safe to assume that, in addition, a large part of the not-reported area is also not cultivable. More than 16 percent is reported as cultivable waste, which means that the area for agriculture could be expanded to this extent, given the availability of the required inputs, mainly irrigation water. A combination of the climate, water and land development can bring it under cultivation for growing deciduous fruits, vegetables and crops. However, shortage of water is a constraint to further expansion of sustainable agriculture.

In today's world, knowing the extent of land-uses does not depend on formal land settlement process or even on manual survey. It can be found with the help of satellite images and detailed maps can be prepared with high accuracy, which can be achieved through ground truthing.

4.2.1 Key issues

- Considering incomplete information about and discrepancy in figures of the total geographical area of the district as well as discrepancy in the figures for land-uses, these statistics cannot be fully relied upon. About 57.8 percent of the geographical area still seems to be unreported.
- Although livestock grazing is a major activity in the district, yet the exact area and location of rangelands are not available.
- Details of the cultivable waste area are not available for planning.
- The area of tree cover, and suitable tree-less area, notwithstanding the notified forest area, is not known for planning and supporting its management, preferably in collaboration with the communities.

64 Government of Balochistan. Planning and Development Department. Bureau of Statistics. Development Statistics of Balochistan 2009. Quetta: GoB, 2009.

65 As per notifications (Table 29), the notified forest area is 79,045 ha.

- Transfer of the notified areas of rangelands without trees to the Forest and Wildlife Department as forest areas, which further complicates the situation.
- Forest areas are converted to other land-uses and have been transferred to public sector agencies and also a private company.
- Land-use planning and development planning controls are not followed in the district.
- The land record in the district is maintained manually as automation has not been introduced yet.

4.2.2 Measures to be taken

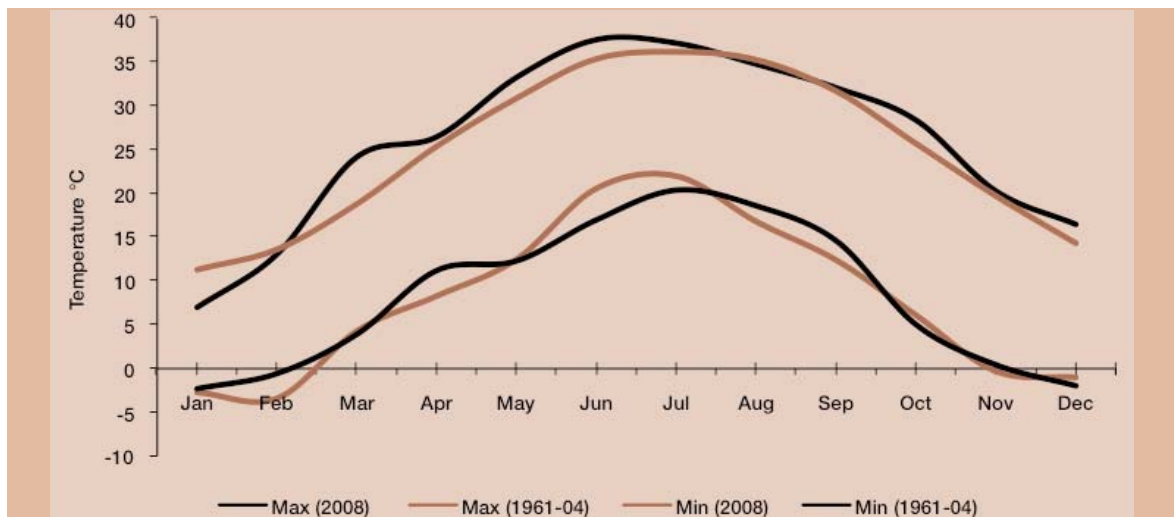
- Resolving the discrepancy in the geographical area of the district with the help of the Survey of Pakistan.
- Obtaining the digitised survey sheet maps of the district from the Survey of Pakistan or getting one digitised locally in a public sector GIS facility.
- Preparing the GIS-based maps of land-use in the district with the help of appropriate land satellite images to get complete, accurate and comprehensive inventory of natural resources and land-use in the district for planning and policy decisions and use by other users.

- Ensuring settlement of the entire geographical area of the district, in addition to land consolidation and completion of land records, and introducing automation in this process.

4.3 Climate

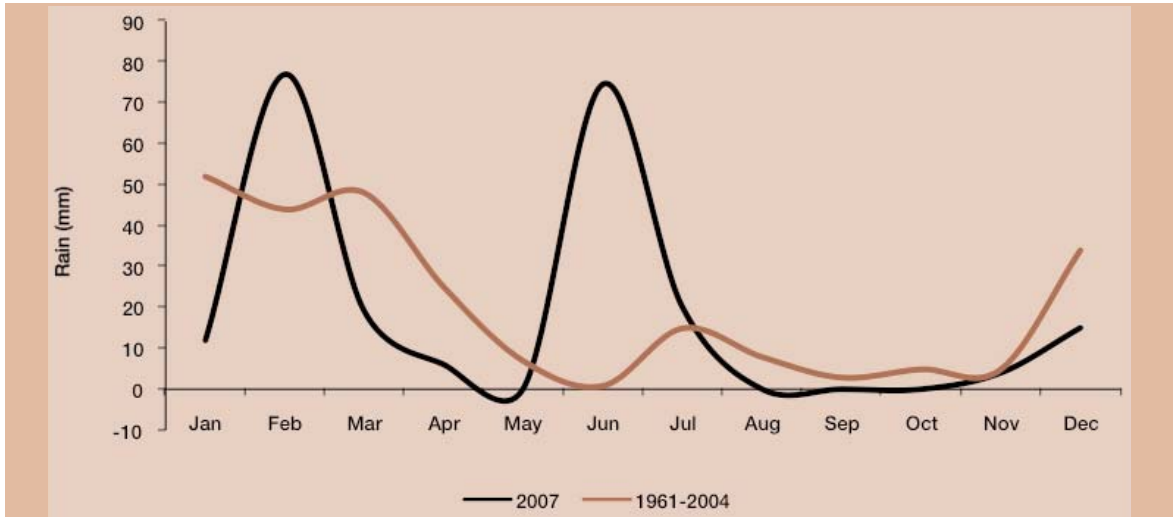
Climate is one of the key elements that influences all renewable resources, housing and settlement patterns, and lifestyles and productivity of people in many ways. The climate of the district is arid, temperate with low precipitation in winter and higher evapotranspiration in summer. The total of mean monthly precipitation for the years 1961-2004 is 247 mm and it mainly falls between January and March. The average annual rainfall for Quetta city is 226 mm, whereas in the Hanna area, the average is about 312 mm. The altitude in the district varies from 5,577 ft (1,700 metres) to 10,500 ft (3,200 metres). Therefore the weather is extremely dry. The winter is very cold and minimum temperature ranges between -2.3 °C and 20.4 °C. Summer is relatively mild and the maximum temperature ranges between 11.3 °C and 36.2 °C. June, July and August are generally the hottest months. The district lies outside the range of the monsoon currents and rainfall is scanty and irregular. Precipitation is highly unreliable and mostly available when plants are in dormant condition.

Figure 7: Monthly Mean Temperature of Quetta in 2008 and Monthly Average Mean Temperature 1961-2004



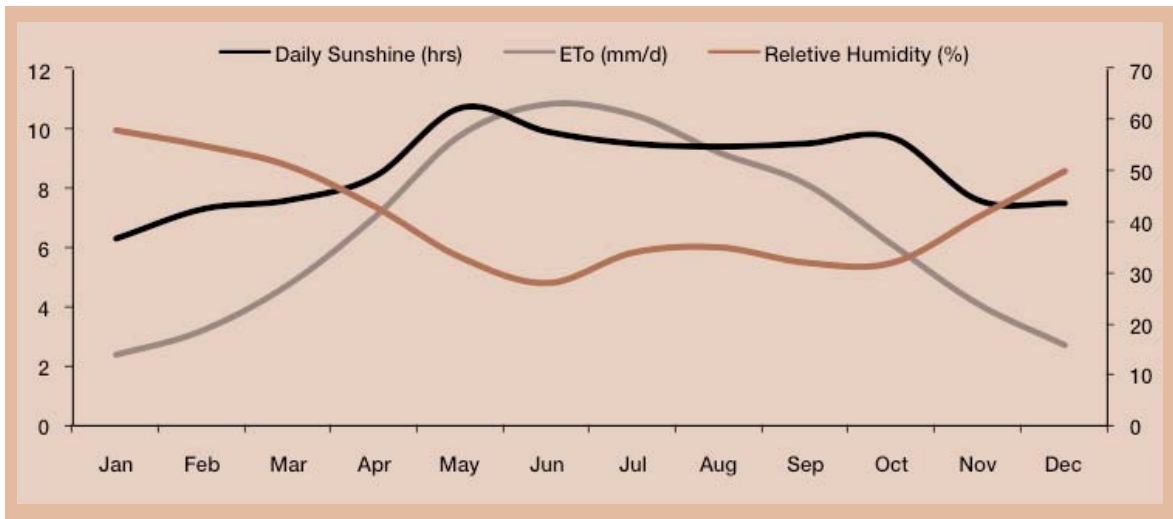
Source: IUCN (2006) and GoB (2009)

Figure 8: Monthly rainfall during 2007 and monthly mean annual rainfall during 1961-2004 in Quetta District



Source: IUCN (2006) and Regional Meteorological Centre, Karachi (2007).

Figure 9: Monthly mean RH, DS and (ET_0) in Quetta City during 1961-2004



Source: IUCN (2006)

The monthly mean temperature of Quetta in 2008⁶⁶ and monthly average mean temperature 1961-2004⁶⁷ is given in Figure 7.

The month-wise rainfall during 2007 and mean annual rainfall during 1961-2004 of the district is given in Figure 8.

Total annual rainfall during 2007 was 227.9 mm and total monthly average rainfall during 1961-2004 was 247 mm.

Reliable meteorological data form the basis for weather forecasting, for the analysis of weather patterns, assessment of trends, nature of climate change and as a basis for modelling climate variables. Balochistan urgently needs a comprehensive network of stations that meet the standards of the World Meteorological Organisation and are geared to the needs of the province. The most pressing needs are in the agriculture sector and for water basin management. The needs clearly go beyond supplying users with data sets on

66 Government of Balochistan. Planning and Development Department. Bureau of Statistics. *Development Statistics of Balochistan 2009*. Quetta: GoB, 2009.

67 IUCN. *Water Requirements of major crops for different agro-climatic zones of Balochistan*. Quetta: IUCN, 2006.

variables such as precipitation and temperature. The agricultural community needs detailed forecasts for the short-term (daily/weekly), medium-term (monthly) and long-term (seasonal).

Monthly mean relative humidity (RH), daily sunshine (DS) and evapotranspiration coefficient (ET_0) during 1961-2004 in Quetta City is shown in Figure 9, and the mean monthly wind speed is given in Figure 10.

4.3.1 Key issues

- There is only one weather station in the district, i.e., in Quetta City, which is inadequate as the weather conditions in Zarghoon hilly areas and Panjpai tehsil are quite different.
- Rainfall is low and unreliable, with periodic droughts for short or long periods.
- Livelihoods are affected by droughts.
- Climate of Quetta City has warmed up as a result of climate change.

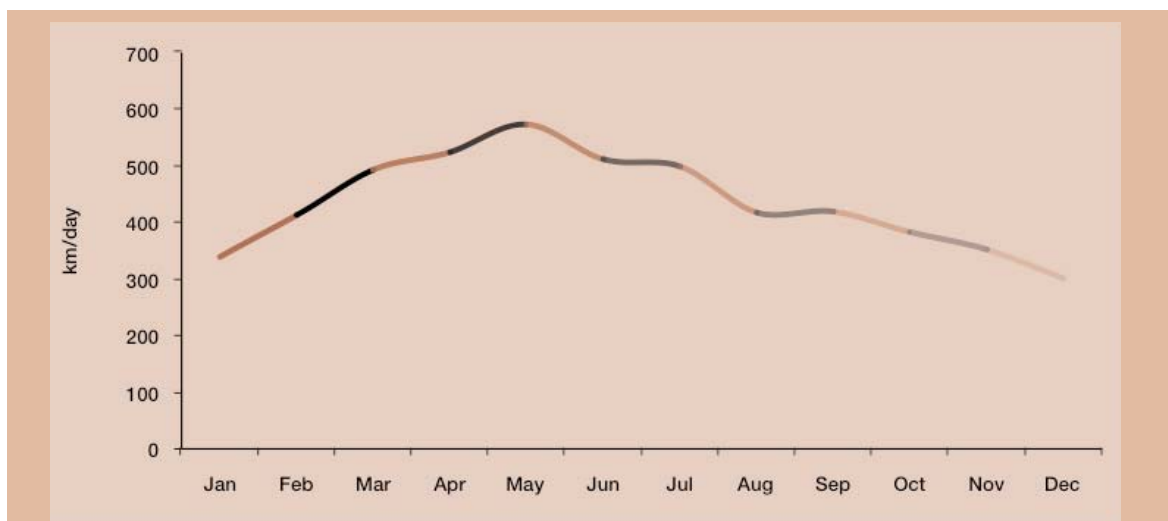
4.3.2 Measures to be taken

The vision of the climate for the district in the short-term is of generating comprehensive weather and climate data in usable form for different applications, i.e., weather forecast, long-term trends and projections for agriculture, informing the situations of water, drought, flood, windstorm, cold wave, heat

wave, rescue, relief, and rehabilitation after disasters. Two additional weather stations are required in this regard, one in central Zarghoon and the other one in Panjpai tehsil, besides the existing one in Quetta City. The data and information will be placed on the website of the Meteorological Department for users. In the long term, emissions will be reduced in order to contribute to the national and international efforts of reducing global warming; and adaptation measures will be taken to minimise the impact of global warming on natural resources and human beings.

- The Meteorological Department to upload all information and data regarding weather, snowfall, climate, windstorm, excessive heat and cold events, drought, earthquakes, cyclones, floods, and other relevant disasters on its website.
- Generating, managing and disseminating comprehensive weather, climate and disasters data, in usable forms, for different applications (weather forecast and long-term trends and projections for agriculture, water, drought, flood, windstorm, cold wave, heat wave, relief and rehabilitation after disasters) for dissemination to the users through the website of Meteorological Department.
- The Meteorological Department to expand its services to Zarghoon hilly areas and Panjpai tehsils for recording and predicting weather parameters of data to

Figure 10: Mean Monthly Wind Speed in Quetta District during 1961-2004



Source: IUCN (2006)

show its real usefulness to the great majority of the people who depend on natural resources.

- The Meteorological Department and the provincial government may work together to establish two additional met stations in the district using Remote Sensing Technology. These stations would be located at appropriate and representative sites in central Zarghoon and Panjpai tehsil. In this age of information and technology, remote data collection and computer-based management and dissemination has become easy and reliable for most parameters.
- Adaptation of the management practices in the natural resource sectors to climate change.

4.4 Water

Water is life. Quetta District lies in the arid region where water resources are expected to be limited. Water is under great stress in the district mainly due to fast depletion of groundwater due to over-exploitation for high delta and extended orchards, and vegetable and crop cultivation and significantly reduced recharge due to deforestation and de-vegetation and construction of housing on active recharge areas. The local groundwater resources cannot even sustain the existing population, agriculture, industry and nature in the district for long. However, expansion and developments continue unabatedly.

Quetta District largely falls in Pishin-Lora Basin⁶⁸. The population in the entire basin was 2.179 million in 1998, of which about 45 percent lived in Quetta City and 31 percent in Pishin; the remaining lived in Mastung and Kalat districts. The alluvium in the basin catchment area occupies about 40 percent.

The Bostan-Lora in Pishin-Lora basin drains the catchment areas of Kolpur, Quetta and Kuchlak. Figures for water balance of Bostan-Lora are not available.

Surface and ground water balance of Pishin Lora (in an average year) is in Table 26.

The future of Balochistan province is likely to be dominated by increasing pressure on water, both driven by the increasing population (set to increase by over 50 percent by the year 2025), rising urbanisation (the urban population is expected to double in the next 25 years) and increased contribution of the agriculture sector in provision of livelihood to the large population.

The most critical management challenge in the arid areas is how to deal with the short periods of too much water and flooding on one hand and, on the other, long periods of too little or no water due to low rainfall, as normally perceived. The other aspects are unsustainable management, overuse of the available rainwater and groundwater as well as lack of capacity for water harvesting and recharging.

The domestic water supply sub-sector will require significant investment and improvements in the management, efficiency and equity of availability and service delivery. Increased storage of floodwater will be required around the urban areas like Quetta City to recharge the groundwater through construction of dams. This must be matched by increasing efficiency of water use in the irrigation, industrial as well as urban and rural potable water supplies.

The water supply pipeline losses in Quetta City are around 40 percent due to leaky pipelines. In Quetta City, the galvanised iron or steel pipes were used for water supply, which are sensitive to corrosion, freezing, and thawing during the winter season.

Table 26: Surface and groundwater balance of Pishin Lora (in an average year)

| (billion m ³) | Pishin Lora | People | Livestock | Agriculture | Nature | Total | Balance |
|---------------------------|-------------|--------|-----------|-------------|--------|-------|---------|
| Surface Flows | 0.302 | 0.010 | 0.014 | 0.115 | 0.030 | 0.169 | 0.133 |
| Average Recharge | 0.170 | 0.024 | 0.029 | 0.513 | - | 0.566 | -0.396 |

Source: Water for Balochistan Policy Briefings (4) 6.

68 Javaid, Ijaz, and Shahid Ahmad. *Conjunctive Water Use and Management for Minor Perennial Irrigation Schemes in Balochistan – Key Issues and Revised Strategy for Investment*. Water for Balochistan Policy Briefings (4) 6. Quetta: Supporting Public Resource Management in Balochistan, Pakistan, 2008.

Assigning higher priority to water conservation measures including installation of water meters for domestic water supply in urban centres /towns is necessary so that consumers pay for the volume of water consumed by them. Ensuring high quality standards for construction under the schemes being implemented for Quetta City is critical in view of severe mining of groundwater.

The only options to improve the situation are Integrated Water Resources Management (IWRM), judicious and efficient use of water, enhancing water recharge significantly, and arranging additional water supplies for drinking from sources outside the district. Otherwise, the consequences will be grave for the survival of city, which will turn unsustainable and poverty will increase in the rural areas.

There are 10 minor perennial irrigation schemes (MPIs) in Quetta. Water conveyance losses usually occur in main and field channels. Headworks or water intakes often operate poorly. Some of the structures have completed the end of their useful life. Others are designed inadequately and some are partially completed. There is a considerable scope to increase irrigation supplies through rehabilitation or expanding the capacity of

these schemes. There is a large potential of saving water through improvement of main and field channels and levelling of fields. It will have direct impact on improving water productivity in the MPIs.

Agricultural Planning Directorate (APD)⁶⁹, Department of Agriculture, Balochistan, was established in 1992-93 under the Directorate General of Agriculture Extension at Quetta. Currently, the APD does not have any approved Annual Work Plan and planning activity is being hardly undertaken, except the formulation of PC-1s on the requisition made by other Directorates of Agriculture. Currently, the APD is much below the requirement, hence needs thorough review of the situation for institutional reforms by clearly articulating the mission, mandate and objectives, while restructuring it to make it knowledge-based planning institution of high performance.

4.4.1 Key issues

- Inefficient use of water for agriculture is the most serious problem in the district. Rapid groundwater depletion is continuing unabatedly due to mining by tubewells, especially in the orchard areas. There is reduced recharge due to de-vegetation of the countryside, especially for fuel wood,



© IUCN, Saadullah Ayaz

Water conservation in Hanna valley.

69 Javaid, Ijaz, and Shahid Ahmad. *Conjunctive Water Use and Management for Minor Perennial Irrigation Schemes in Balochistan – Key Issues and Revised Strategy for Investment*. Water for Balochistan Policy Briefings (4) 6. Quetta: Supporting Public Resource Management in Balochistan, Pakistan, 2008.

which is the main source of cooking and heating in the district.

- The subsidy on power supply to tubewells is against the principles of equity as only a small percentage of population, who are already better off, benefit from it. The pastoralists and the farmers practicing rain-fed farming (*sailaba* and *khushkaba*) and those using diesel pumps are kept out of this benevolence.
- Water pollution is also a serious problem due to incomplete drainage, sewerage and treatment of municipal wastewater and industrial discharges from Quetta City and use of agro-chemicals in orchards and on vegetables and other crops in Quetta Valley and rural areas.
- The Balochistan Water Policy, developed with the technical assistance provided by ADP, requires approval by the Provincial Cabinet.
- The other key issues in the district are:
 - Low efficiency and productivity of irrigation water and diminishing groundwater.
 - Rapid groundwater depletion, especially in Quetta Valley, due to mining by tubewells, inefficient use of water for agriculture, water pollution due to untreated sewerage and agro-chemicals; and reduced recharge due to de-vegetation.
 - Installation of tubewells is not monitored and controlled.

4.4.2 Measures to be taken

Groundwater of the district is highly valuable. It has to be used judiciously. This could be ensured only through precise land levelling, detailed soil investigations, and accurate calculation of water requirements for crops. Ideally, the best use of limited water should be based on soil and crop requirements, instead of traditional use of water based on land ownership and water rights to optimise the use of valuable water. The farmers would also need help in identifying suitable low delta crops and water requirements of all crops and fruit trees.

In order to improve the physical and social capital of the district in a sustainable manner, while restoring environmental degradation, incentives will have to be provided by the provincial and federal governments. At the same time the existing incentives e.g. subsidised flat rate of electricity will have to be adjusted, e.g., by shifting to efficient irrigation technology, for the long-term benefit of the people.

IWRM is more critical for Quetta District to pursue than for some others. This approach includes “a process that promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems”. All practitioners agree that this requires a consultative process, engaging the community as well as other stakeholders. The kind of consultative process spelled out in the IWRM agenda has been used in developing the IDDV of Quetta District.

- Promoting efficient use of available water by agricultural, industrial and domestic users through an awareness campaign, incentives and alternatives.
- Supporting the subsidy replacement of basin and border irrigation methods with efficient technology-intensive irrigation methods such as drip / bubbler or spray irrigation.
- Awareness-raising with comprehensive information on all disadvantages and implications of inefficient use and adopting technology-intensive, efficient irrigation systems.
- Motivating communities to construct check-dams for checking soil erosion, recharge water and plant trees.
- Broadening the mandate of the District Water Management Committee beyond tubewells to all aspects of water in the district.
- Timely and quality completion of the “Quetta Water and Environment Improvement Project”; controlling pipeline losses and illegal connections; maintenance of the sewer system including drains like Habib Nala to control

pollution of groundwater; and treatment of sewage water and its reuse for agriculture, urban parks or lawns in the city.

- Installing meters and introducing a slab system of subsidy. Alternatively, shifting subsidy on electricity to efficient irrigation methods.
- Prohibiting installation of tubewells in Quetta valley for agriculture and strictly controlling installation of tubewells in the rural areas of the district.
- Encouraging rainwater harvesting and supporting improvements in irrigation practices.
- Approval of the Balochistan Water Policy by the Provincial Cabinet.
- Conserving water and increasing recharge in the watersheds of Quetta District, prioritising the watersheds of Quetta Valley.
- Introducing and supporting the improved soil and water conservation techniques such as land levelling, irrigation according to requirements and growing low-delta orchards and crops.
- Controlling tubewell-dependent agriculture in Quetta Valley, with compensation to the owners of existing tubewells and prohibiting installation of new ones by enacting and enforcing a land-use and development planning control.
- Restricting and finally controlling tubewell-dependent agricultural activities in the watersheds and basin areas of Quetta District which add to the recharge of water for the priority use for water supply to the city for domestic use.
- Collecting user charges in accordance with the quantity of water supplied. Charges may be calculated by water supply duration or even by metering in areas of higher consumption and of commercial nature, e.g., ice factories, hospitals, shopping malls, hotels and restaurants, swimming pools etc.
- Developing storage and effective recharge dams, wherever feasible, to meet the

needs of water for drinking and agricultural purposes.

- Exploring alternative sources of drinking water for Quetta City, in addition to the existing initiatives such as Mangi Dam. These may be expensive but will have to be decided upon and implemented sooner rather than later, not only for filling in the current gap in demand and supply but also to meet the increasing demand, including that for areas and households that are still without piped water supply. It is also important in order to avoid paying higher costs later on due to escalation.
- Exercising effective control on land-use planning and development planning.
- Limiting further expansion of the city not only to stop the increase in demand for health-care, education, water and sanitation, transport and other services and employment but also for increasing the recharge to the ever-declining groundwater resources.

4.5 Agriculture

Agriculture in the district is the mainstay of the rural population and is characterised by its commercial temperate fruit orchards and vegetables for marketing. The district is grossly deficient in meeting its requirements of cereals, pulses etc. for humans and wheatstraw for livestock, which are procured from other parts of the country.

Soils: The soils are generally loam to coarse textured (sandy loam) in Quetta and other valleys, plains and depressions in the district. Drainage is good due to gradient and coarse textured soils. The organic content is from medium in Quetta Valley and plains to very low on slopes and in eroded soils. Forest soils have layers of humus. The water absorption capacity depends on texture, structure and organic matter in the soils. Generally, it is medium to low. However, the outer fringes of Quetta and other valleys have active recharge zones. The pebble-studded fans and streams have high water absorption capacity. Development of lands on the slopes for cultivation requires a long time and heavy investment as the soils are shallow, gravelly (studded with big and small boulders), and the lands are not levelled. Soils of the developed



Agriculture is the mainstay of the district's rural population

fields after some years of cultivation and use of manure become very productive. No area is affected by alkalinity or water-logging, although some of the soils are saline.

Orchards: Many temperate fruits, including apricot, apple, plum, peach, grapes, almond etc., are grown in the district. Water requirement of apple is very high. Apple trees in the district do not get the required length of chilling temperatures during winter; hence, the quality is not as good as of those from Ziarat and Kan Mehtarzai.

4.5.1 Floriculture⁷⁰

Flowers are a symbol of love, affection, aesthetic sense and have a great social, cultural and economic value. Floriculture encompasses growing of and using cut flowers, raising nurseries of ornamental plants, ornamental gardening and landscaping. It is comparatively a new agricultural activity in the province to attract the farmers although the research and promotion of it started in the 1980s. Various flowering plants were introduced at different places in the province for growing cut flowers from seeds, bulbs, corms, rhizomes, tubers etc. Private sector

has come forward in this business but this enterprise is still in its infancy in the province.

The Agriculture Department is growing flowers for demonstration and sale at Quetta and setting up floral shops in the divisional headquarters of the province for sale of cut flowers. The floral shop at Quetta is almost ready and the ones at Kuchlak and Kalat are in progress. The development of sales points is meant to provide a marketing chain to the growers. Development and promotion of a floriculture strategy is required for the province and the potential districts including Quetta District. It will also require promotion of the technique of growing flowers in plastic tunnels.

Quetta District has the advantage of its location for demonstration, expertise, skilled labour and market. The district also hosts many hotels and provincial offices of private sector companies and public sector organisations, which would like to purchase and use cut flowers.

Floriculture can improve the socio-economic conditions of farmers if they start growing cut flowers and raising nurseries of forest, fruit

⁷⁰ Government of Balochistan. Agriculture Department. Directorate of Crop Reporting Services. Agriculture Statistics of Balochistan 2008-09. Quetta: GoB, 2009.

and ornamental plants on farmlands. The total area under flower cultivation in the district was 11.3 ha, which comprised of roses (3.94 ha, 131700 sticks), gladiolus (3.44 ha, 540500 sticks), tuberose (0.26 ha, 26000 sticks), marigold (1.82 ha, 119500 kg) and statice (1.82 ha, 49250 sticks)⁷¹.

4.5.2 Key issues

- Floriculture is not a traditional practice in the district. Only a small number of farmers in the district know the techniques of growing, harvesting and marketing as well as its economics.
- The expertise in floriculture in the department, especially of its extension staff, is limited and so is the scope, which is confined to cut flowers and does not cover other aspects of landscaping.
- Flowers are a perishable commodity and require swift and certain markets.

Floriculture requires exacting inputs, investment, skills, intensive working and turnover, which needs a progressive mindset and risk-taking attitude, which is rare.

4.5.3 Measures to be taken

- Development and implementation of a floriculture promotion strategy for the province, including the Quetta District.
- Awareness-raising in providing business-related information to and capacity building of farmers, nursery-growers, amateurs and professionals.
- Arranging exposure visits of interested farmers of the district to the ornamental nurseries and cut flower growing fields in Quetta Agricultural Farm and Pattoki.
- Promoting the use of cut flowers, garland flowers and flower petals in the district. It will complement tourism promotion as well.
- Facilitating procurement, multiplication and marketing of flower seeds, bulbs, and ornamental plants, herbs, shrubs and trees.

- Regularly providing technical advice and service to growers.
- Arranging flower shows, flower arrangement shows, garden and lawn competitions.
- Facilitating farmers' access to credit from development financial institutions.

4.5.4 Potential for Expansion of Agriculture

Agriculture is the main pillar of economic growth in the rural areas of the district. Cultivable land is available but availability of water is a serious constraint in realising the full potential of growing temperate fruit orchards and early and late winter vegetables.

Agricultural Marketing: Quetta is one of the two largest agricultural markets in the province. A proper agricultural market was established in Quetta City in the recent past. The provincial agricultural marketing services are also based in Quetta City. The optimum potential of improving marketing exists in improving coordination and collaboration between the two and dissemination of accurate and timely marketing information in order to help farmers make profitable marketing decisions regarding what to produce, where to market the produce, and what price to expect.

Quetta City is a good and exclusive market in the province for certain produce, e.g., cherry and other temperate fruits, and is well connected with the markets in other cities such as Faisalabad, Lahore, Multan, Karachi and Islamabad, and even with foreign markets, e.g., Dubai.

There are two options exercised by the farmers for marketing fruits from their orchards: (1) post-harvesting sale of the fruit on the trees (sometimes at the flowering stage) and (2) sale of the harvested fruit and vegetables in the market by the owner. Both systems have their pros and cons. Sometimes transporting and selling at distant markets results in losses, especially in case of perishable fruits and vegetables, when the destination market gets flooded with fruits and vegetables and demand reduces. There are

⁷¹ Government of Balochistan. Agriculture Department. Directorate of Crop Reporting Services. Agriculture Statistics of Balochistan 2008-09. Quetta: GoB, 2009.

three options to reduce vulnerability of farmers from the imperfect system of marketing: (1) food processing at Quetta (some enterprises are already doing it but they are not enough); (2) construction of a cold storage (such facilities exist in Quetta City but more are required); and (3) developing specialised local markets similar to the existing markets for dry fruits and cherries.

GoB's Directorate of Agriculture, Economics and Marketing is planning to develop a database system at the provincial level. The Directorate of Agriculture Services and Crop Reporting has set up an on-line information system, which is now analysing supply and demand in order to distinguish those crops, which are continuously facing marketing problems (i.e., more or less production than demand, especially of perishable commodities such as tomatoes, onions, other vegetables and fruits). However, forecasting of future demand to guide farmers in their production planning is one of the most difficult tasks and will need further time and effort in its outreach.

In the scenario of sustaining Quetta City by meeting its water requirement, it is crucial that land-use within and in the catchment areas of Quetta Valley is rationalised for obtaining the maximum yield of water. This, however, is a serious challenge and requires complex futuristic exercise, innovative policy, legal, institutional, financial and monitoring frameworks based on a compensation system acceptable to landowners and users of land-based resources. Considering the present weak capacities in planning, implementation and monitoring, this idea may be parked for the time being for exploration over the long

term, when all other options to get the required additional quantity of drinking water are exhausted. However, it is important that watershed management programmes in the catchment areas of Quetta Valley as well as in the catchment areas of Mangi and Halak dams must start soon. A programme for land-use planning, development planning control and improvement in land and water use practices must be designed and implemented, short of interventions which would need compensation for compliance.

There are two cropping seasons in Quetta District: Rabi and Kharif. Important Rabi crops include wheat, barley, vegetables and fodder. Main produce of Kharif are farm fruits, melons (also grown un-irrigated), vegetables, potato, fodder, onion etc., which are cash crops. Rural women participate in agricultural activities from their houses.

Nearly 35 percent population of District Quetta depends on agriculture. They suffered heavy losses during the drought period of 1998-2004.

There are different figures of the total geographical area of Quetta District (e.g. 168,800 ha, 265,300 ha and 349,900 ha) as mentioned in Section 4.1. According to Agricultural Statistics of Balochistan (2008-09), total geographical area of Quetta District is 168,800 ha and the reported area is 147,803 ha. Total cultivated area is 13,184 ha (3,530 ha current fallow and 9,654 ha net sown). Total cropped area is 9,964 ha (310 ha sown more than once). Total un-cultivated area is 134,619 ha (cultivable waste 32,184 ha and not available for cultivation 82,150 ha).

Table 27: Area and Production of Fruits in Quetta District (2008-09)

| | Area (ha) | Production (tonnes) | Average Yield (kg/ha) |
|--------------|-----------|---------------------|-----------------------|
| Apple | 1,360 | 3,497 | 2,571 |
| Apricot | 569 | 6,926 | 12,172 |
| Grapes | 1,496 | 9,741 | 6,511 |
| Peach | 530 | 5,230 | 9,868 |
| Plum | 576 | 6,606 | 11,469 |
| Pear | 43 | 295 | 6,860 |
| Pomegranate | 2 | 26 | 13,000 |
| Cherry | 14 | 48 | 3,429 |
| Other fruits | 5 | 44 | 8,800 |

Source: Agricultural Statistics of Balochistan (2008-09)

In 2008-09⁷², out of the total irrigated area of 9,814 ha, 6,972 ha was irrigated by tubewells and 2,842 by karezes, springs and other sources. Out of the total of 751 electric tubewells, 141 are owned by government while 610 by farmers.

During 2008-09, due to non-functioning of wells and abandoning of diesel-operated tubewells, the total irrigated area dropped by 2,647 ha (21.2 percent).

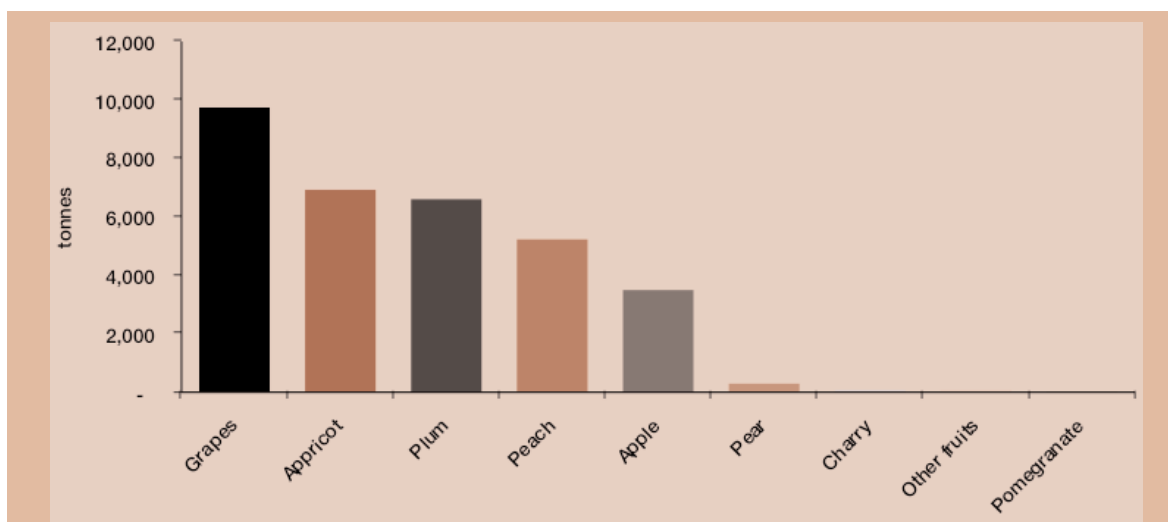
The area and production of fruits and vegetables in the district during 2008-09 is given in Table 27.

Production of Fruits in Quetta District during 2008-09 is given in Figure 11.

Production of Vegetables in Quetta District during (2008-09) given in Table 28.

Production of Rabi Vegetables in Quetta District during 2008-09 is given in Figure 12.

Figure 11: Production of Fruits in Quetta District (2008-09)



Source: Agricultural Statistics of Balochistan (2008-09)

Table 28: Production of Vegetables in Quetta District during (2008-09)

| Vegetables | Area (ha) | Production (tonnes) | Yield (kg/ha) | Vegetables | Area (ha) | Production (tonnes) | Yield (kg/ha) |
|------------------------|-----------|---------------------|---------------|--------------------------|-----------|---------------------|---------------|
| Rabi Vegetables | | | | Kharif Vegetables | | | |
| Spinach | 55 | 898 | 16327 | Tomatoes | 150 | 1213 | 8087 |
| Cauliflower | 40 | 583 | 14575 | Potato | 58 | 870 | 15000 |
| Cabbage | 32 | 544 | 17000 | Pumpkin | 60 | 594 | 9900 |
| Turnip | 40 | 521 | 13025 | Lady Finger | 45 | 254 | 5644 |
| Radish | 22 | 388 | 17636 | Brinjal | 20 | 174 | 8700 |
| Carrot | 13 | 230 | 17692 | Bottle Gourd | 10 | 106 | 10600 |
| Broad Beans | 18 | 174 | 9667 | Luffa | 20 | 100 | 5000 |
| Peas | 10 | 80 | 8000 | Bitter Gourd | 10 | 76 | 7600 |
| Others | 20 | 280 | 14000 | Cucumber | 10 | 68 | 6800 |
| | | | | Tinda | 5 | 27 | 5400 |
| | | | | Others | 30 | 168 | 5600 |

Source: Agricultural Statistics of Balochistan (2008-09)a

72 Government of Balochistan. Agriculture Department. Directorate of Crop Reporting Services. Agriculture Statistics of Balochistan 2008-09. Quetta: GoB, 2009.

Production of Kharif Vegetables in Quetta District during 2008-09 is given in Figure 13.

The area, production and yield of major Rabi and Kharif crops in the district during 2008-09 are given in Figure 14 and Figure 15, respectively.

Comparison of average yield of Rabi crops for the years 2007-08 and 2008-09 for Quetta District is given in Figure 16.

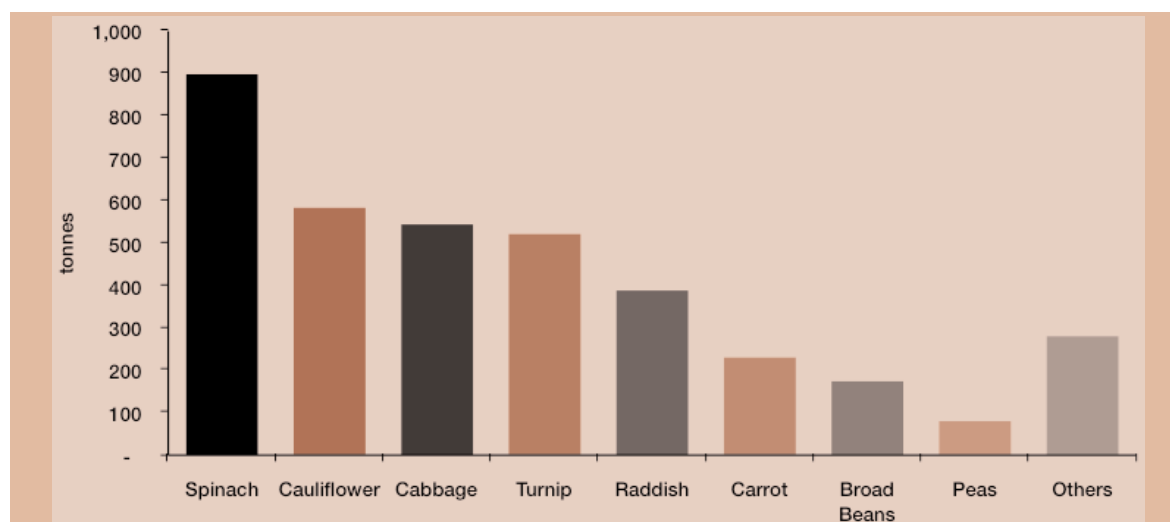
Comparison of average yield of Kharif crops for the years 2007-08 and 2008-09 for Quetta District is given in Figure 17.

The agricultural machinery in the district is shown in Figure 18.

The major sources of irrigation in the district are tubewells, wells and canal. The area irrigated by each of these sources is shown in Figure 19.

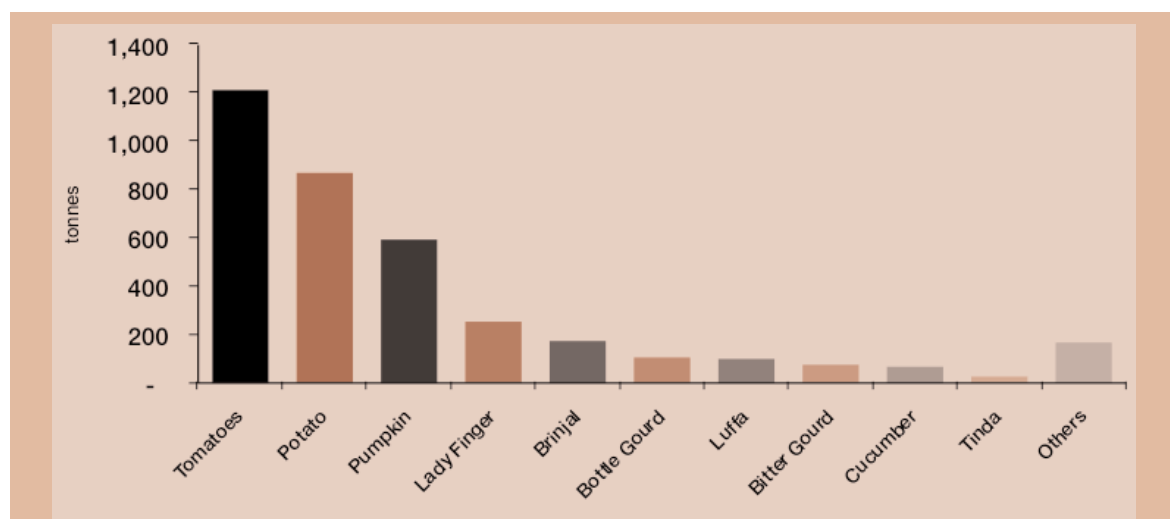
A project “Refugee Affected Hosting Area” (RAHA) is being implemented in Panjpai tehsil in collaboration with the local communities, and which is promoting cultivation of almond as well as gapes, pistachio and other low-delta high-value crops for rehabilitation of natural resources

Figure 12: Production of Rabi Vegetables in Quetta District (2008-09)



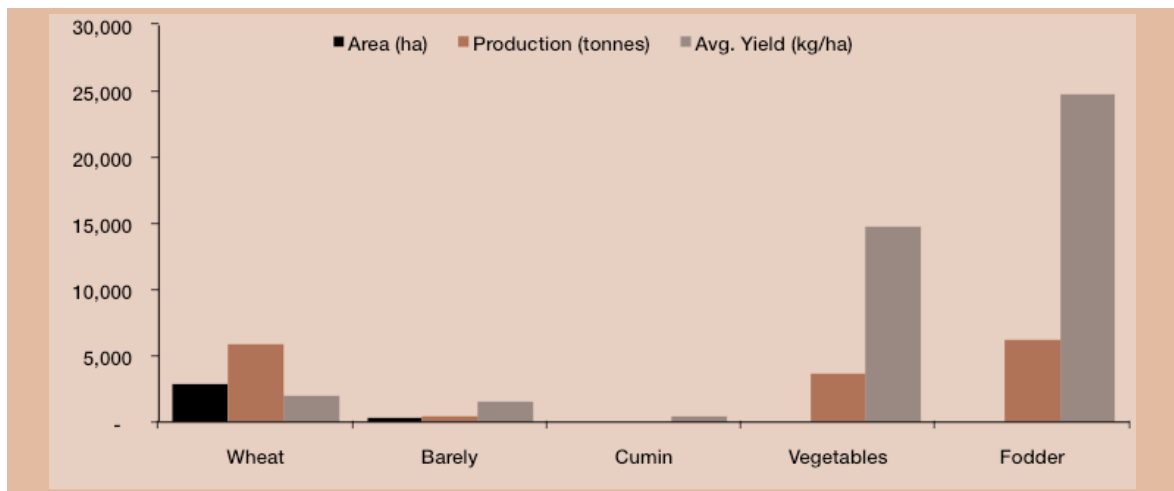
Source: Agricultural Statistics of Balochistan (2008-09)

Figure 13: Production of Kharif Vegetables in Quetta District (2008-09)



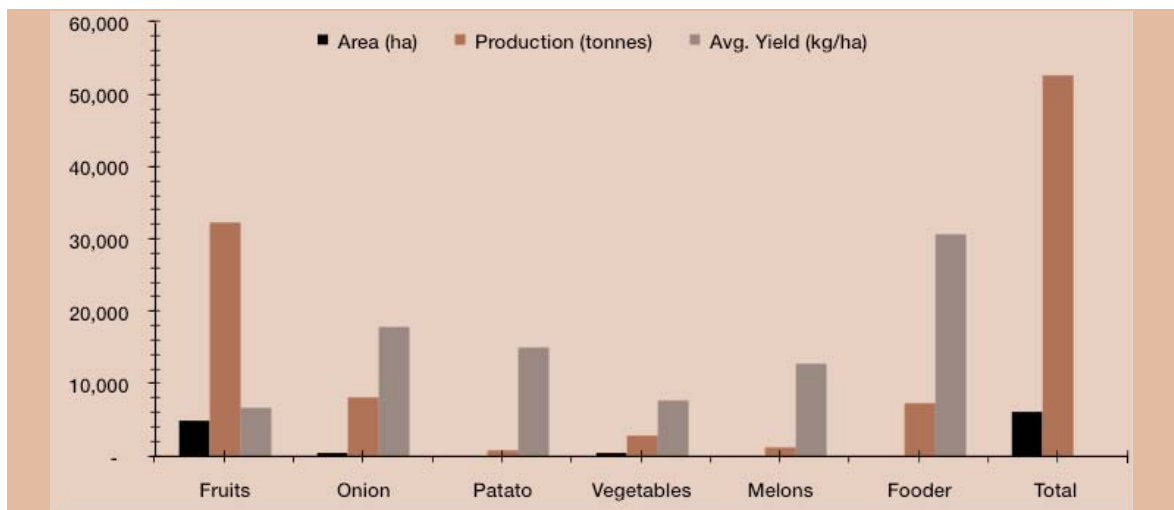
Source: Agricultural Statistics of Balochistan (2008-09)

Figure 14: Area, production and yield of major Rabi crops in Quetta District (2008-09)



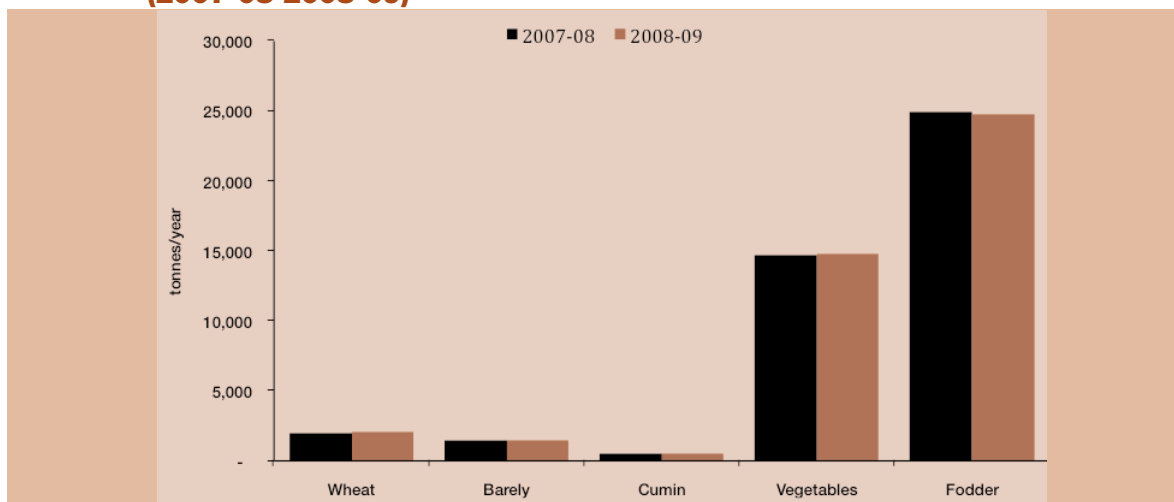
Source: Agricultural Statistics of Balochistan (2008-09)

Figure 15: Area, production and yield of major Kharif crops in Quetta District (2008-09)



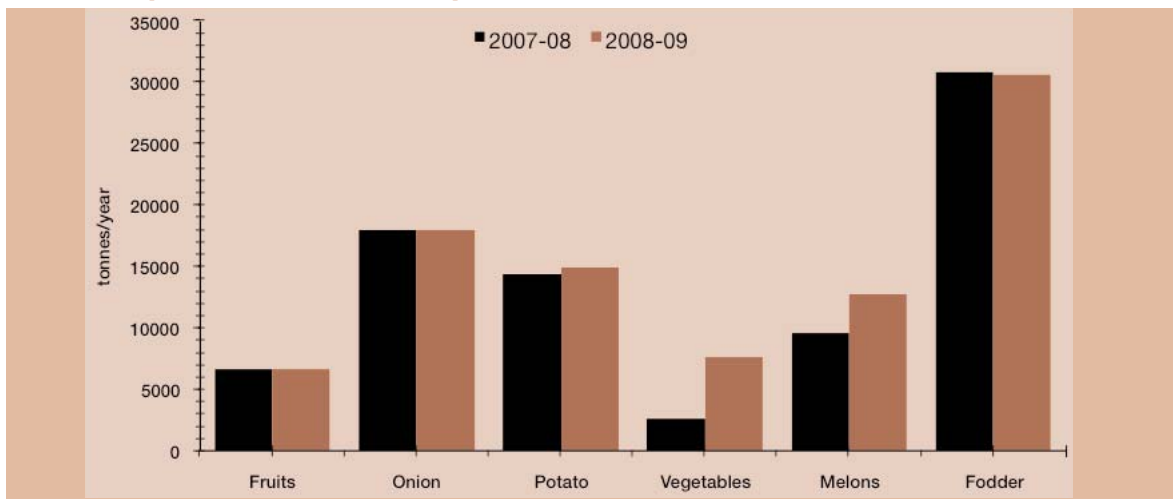
Source: Agricultural Statistics of Balochistan (2008-09)

Figure 16: Comparison of average yield of Rabi crops in Quetta District (2007-08 2008-09)



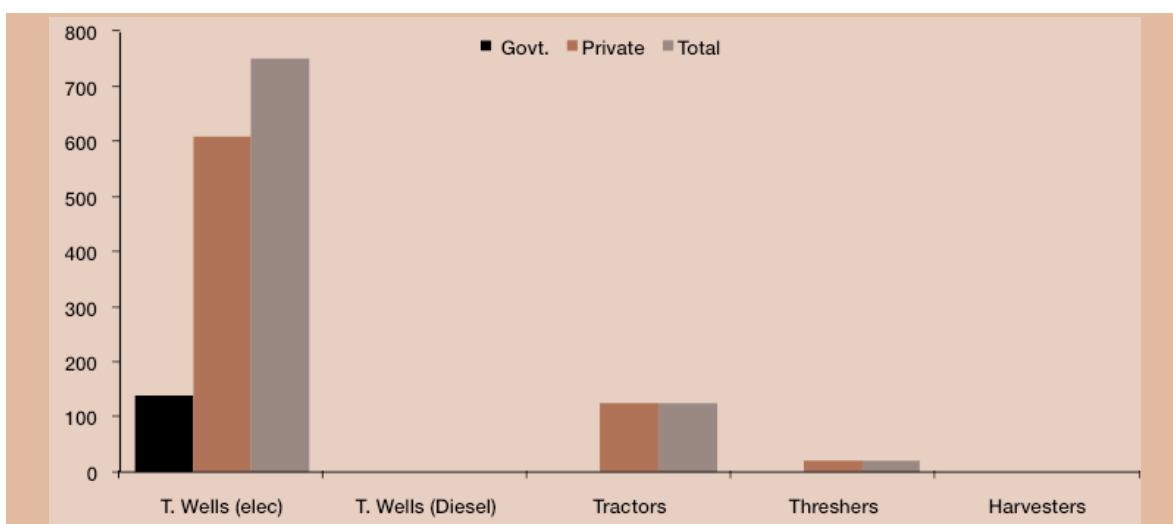
Source: Agricultural Statistics of Balochistan 2007-08 and 2008-09

Figure 17: Comparison of average yield of Kharif crops in Quetta District (2007-08 and 2008-09)



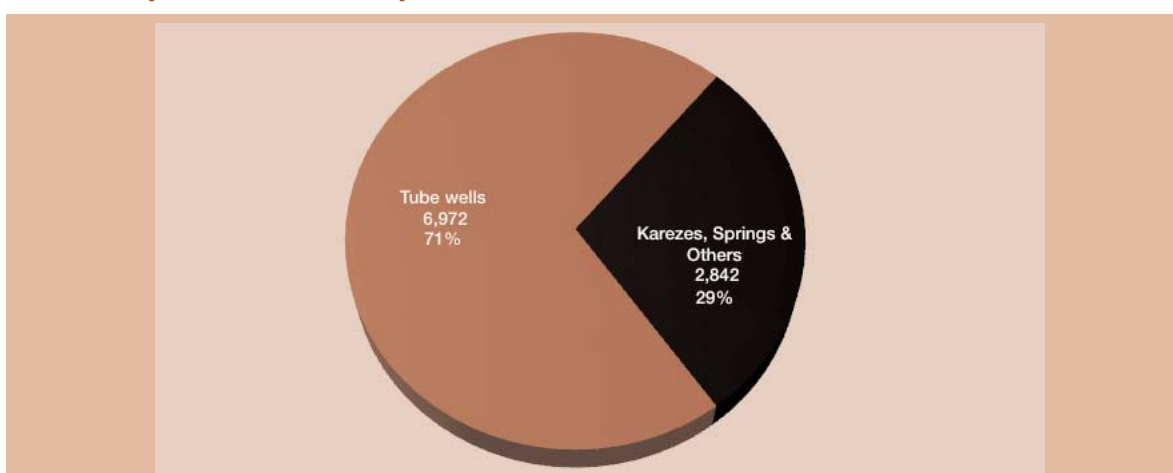
Source: Agricultural Statistics of Balochistan 2007-08 and 2008-09

Figure 18: Agriculture Machinery in District Quetta (2008-09)



Source: Agricultural Statistics of Balochistan (2008-09)

Figure 19: Comparison of average yield of Rabi crops in Quetta District (2007-08 and 2008-09)



Source: Agricultural Statistics of Balochistan (2008-09)

including agriculture. It is also trying to change the cropping pattern.

4.5.5 Key issues

- The quality, timely supply and proper use of pesticides and fertilisers, and weak agricultural extension services are amongst the major concerns.
- Difficulties in supply and high costs of agricultural inputs (fertilisers, pesticides, credit, improved seeds and farming machinery and equipment).
- Availability of water is the major constraint in developing and expanding agriculture in the district. Development of water and land, especially on slopes, requires a long time, great effort and investment, which is difficult to manage without credit and heavy agricultural machinery.
- The traditional irrigation systems, such as karez and wells, are ineffective due to depletion of groundwater by tubewells installed to get quicker and short-term benefits, with no regard to sustainability.
- Deforestation of Juniper forests for extending cultivation (orchards and crops) and fuel wood, e.g., Urak Valley.
- There is high wastage of water in the agriculture sector due to use of traditional methods of irrigation, over-watering of orchards and crops, growing high-delta fruit orchards, vegetables and crops and subsidised flat rate of electricity.
- Long hours of load-shedding of electricity and fluctuations in voltage, causing inefficient irrigation and damage to machinery.
- Fast-moving waters or flash floods and wind cause land and soil erosion in agricultural lands. Erosion of top soils and fields developed along the banks of streams is a problem.
- Water pollution due to run-off of agro-chemicals (pesticides and fertilisers).
- Low area under fodder to meet the needs of livestock. Future land-use should enhance cultivation of fodder significantly for dairy farms.
- Weak coordination between extension and research and other units of the Agriculture Department.
- Post-harvest losses.
- Extreme aridity and long and short periods of drought.
- Inefficient and unsustainable use of groundwater.
- Excessive irrigation and growing of high-delta fruits, vegetable and other crops resulting in rapid depletion of groundwater. Farmers' resistance to shifting to low-delta fruits. The Agriculture Department has already started an initiative in this regard.
- Reluctance on the part of farmers to use efficient technology-intensive irrigation systems and greenhouses for cultivation of high-value and off-season vegetables.
- Not using the full potential of rainwater harvesting and spate irrigation. Farmers should take initiatives with support from the government.
- Poor management of land resources and inappropriate agricultural practices, resulting in loss of fertile topsoil, depleting fertility and deteriorating soil structure.
- Non-utilisation of the potential of agro-based SMEs for value-addition and improving livelihoods.
- Imperfect agricultural marketing system, e.g., a long chain of middlemen.
- Lack of adequate and reliable agricultural data.
- Inadequacy or lack of maintenance of transport vehicles for staff, bulldozers, pesticide spray machines, hand-pressure pumps etc. Funds should be provided for maintenance of existing, replacement of old and procurement of new equipment.
- Inadequate budget for operations but equally significant wastage and non-priority and non-work-related expenditure.
- Inefficient water management and use.

4.5.6 Measures to be taken

Focus on enhancing availability of water for irrigation through storage, recharging and rainwater harvesting; improving cost-effective supply, quality and efficiency of inputs; reducing post-harvest losses; increasing scales of production; modernisation of agriculture, in particular for efficient irrigation systems, e.g., bubbler, drip or sprinkler and use of PVC pipes, in place of open water courses; prohibiting vegetable growing with untreated sewage; improving marketing gains of farmers by eliminating middlemen; and enhancing intra- and inter-agency coordination in agriculture sector; institutional strengthening; and skill development of farmers and farm workers.

- Improving supply and quality of seeds and other agricultural inputs such as machinery, equipment, fertiliser, pesticides and credit, and their efficient use in order to increase per unit yield of land and corresponding incomes.
- Enhancing input of manure, compost and fertilisers.
- Improving extension service and arranging study/ exposure visits of farmers to other areas where improved techniques, technologies and practices have been adopted successfully.
- Training sessions for farmers and farm workers by agricultural experts for enhancing their skills and knowledge.
- Promoting agro-forestry through extension staff, in collaboration with the Forest Department, to provide planting material and technical support to farmers.
- Ensuring intra- and inter-agency coordination.
- Dissemination of accurate and timely market intelligence is vital for helping farmers make good marketing decisions.
- Maintaining topsoils in agricultural lands through effective measures to counter wind and water erosion.
- Promoting cultivation of medicinal plants, such as local cumin and condiments, from other parts of the province/country.
- Expanding rain-fed farming with spate irrigation.
- Promoting high-value low-delta crops.
- Developing and implementing a zoning plan for crops and fruits, based on the existing information about climate, soils and water availability, and refining it later on after collecting primary data to fill in the gaps in it. The zoning should include leguminous fodder crops in the cropping pattern as well.
- Correlating the local soil classification with the scientific classification, in collaboration with the Soil Survey of Pakistan.
- Government to protect the rights of tenants through legislative measures.
- Shifting from high-delta fruit orchards and crops to low-delta fruit orchards and crops. The Agriculture Department has already started an initiative in this regard.
- The Agriculture Department to provide training in food processing and introduce food technology in order to minimise post-harvest losses of fruits and create additional jobs.
- Promoting and supporting change in cropping pattern to include floriculture and viticulture, i.e., production of grapes.
- More emphasis on rainwater harvesting and spate irrigation.
- Limiting the area of high-delta fruit orchards (e.g., apple), vegetables (e.g., onion, radish, spinach) and crops.
- Research and promotion of cultivation of low-delta fruit orchards, vegetables and crops.
- Promotion of tissue culture, although technology has advanced further in this field.
- Promoting integrated pest management (IPM).
- Technically supporting farmers in reducing post-harvest losses.

- Promoting floriculture in rural areas and landscaping in urban areas.
- Registration of fruit and floriculture nurseries with the Agriculture Department for providing technical support and monitoring quality of planting stock.
- Capacity-building of nursery growers, farmers and other persons involved in agriculture-related activities.
- Promoting disease-free and true-to-type planting stock of fruit plants.
- Trying grafting of olive plants, as has been successfully done in Loralai, Zhob and Khuzdar.
- Introducing hybrid variety of tomato.
- Advocacy for legislation to prohibit bad agricultural practices.
- Establishing an Advisory Technical Committee of senior professionals in the Agriculture Department to provide technical direction and guidance; suggest improvements in professionalism and intra- and inter-agency coordination; and promote integrated planning and management for creating synergic impact of the Department's efforts. The Committee may include representatives of all directorates of research and extension. It would also be useful if the Committee meets prominent progressive farmers from different parts of the province twice a year, i.e., in January and July, to enrich its experience regarding ground realities.
- Facilitating farmers' access to credit.
- Placing the right man at the right place to maximise contribution from the human resources of the department.
- Establishing market intelligence system for farmers throughout the province, especially at the approved places, i.e., Quetta (where it is established but needs strengthening) and linking it with other places within the province and outside, Khuzdar, Uthal (Lasbela), Qila Saifullah, Barkhan, Nasirabad and Panjgur.
- Improving and enhancing efficient use of water for irrigation through land-levelling, on-farm water management and use of technology-intensive irrigation methods such as bubbler / drip irrigation and spray or LEPA irrigation. These systems would be popularised through subsidy, availability of materials, technical support, demonstration and necessary training to operate these efficiently. In this regard, the Agriculture Department should pursue the concept papers developed and submitted by it, and mobilise financial resources through development of PC-1s.
- Promoting agro-based cottage and small industries.
- Federal Quarantine Department, with support from the provincial staff of Agriculture Economics and Marketing Directorate, to improve plant quarantine at the entry posts and informal routes along Pak-Afghan and Pak-Iran borders, Gwadar seaport, Quetta and Gwadar international airports. The Agriculture Department to exercise vigilance on plant materials brought in the province from other parts of Pakistan. The necessity for quarantine has emerged after the infestation of Dubas bug on dates in Panjgur district, which may get more serious in future. The Agriculture Department also needs legal authority to receive quarantine fee in that case to defray its costs for the service.
- Promotion of organic farming and expansion of off-season vegetables using plastic tunnels.
- Detailed soil investigations to manage the prime agricultural lands under high-value crops for optimising inputs of water, fertilisers etc. To get optimum yields.
- Expanding agro-based SMEs.
- Enhancing availability of water for irrigation through storage, recharge and rainwater harvesting.
- Enhancing agriculture-related livelihoods through small and medium enterprises (SMEs) to reduce poverty.
- Improvement in marketing system to reduce the influence of middlemen and get appropriate prices of produce for farmers.

- Expansion of arid agriculture is possible by harnessing and harvesting the water of hill torrents. Mapping of surface drainage of the entire district including inflow from the adjoining districts, if any, would help in planning appropriate sites of storage and recharge dams.
- Promoting expansion of fruit-processing in private sector with technical support and information on technology, sources, costs and credit sources.
- Experimenting cooperative farming, by integrating small holdings into bigger farms to be managed collectively, in a suitable area where socio-economic dynamics would support its application. Its results, experiences and impacts would be monitored, documented and disseminated.
- Availability of water being a critical factor, working out crop yields in terms of units of water applied. The priority for such information is for areas where groundwater is used.
- Promotion of tourism in Hanna and Urak as a sustainable livelihood for reducing the pressure on irrigation water for orchards.

The water issues, policy and strategy relating to agriculture sector at the operational level are given in Table 29.

4.6 Livestock and Rangelands

Livestock and rangelands are important for the people of the district for subsistence, reducing poverty and enhancing livelihood. A large workforce and households in the district are engaged in livestock-rearing. The district has great potential in this regard but this sector, especially in case of rangelands, has not received adequate attention. As many as 26.3 percent households in the rural areas own livestock. A significant percentage of workforce and households in the district are engaged in livestock rearing. Generally, sheep and goats are grazed in the rangelands in the rural areas.

The importance of livestock and rangelands as a major source of livelihood has decreased due to engagement of large number of people in commerce and trade, growing orchards and vegetable cropping with irrigation. The district also suffers from drought periodically. The recent long drought of 1998–2004 resulted in mortality of livestock, degradation of rangelands and losses to the livestock dependent households.

Unfortunately, the subjects of livestock and rangelands are separated in the Rules of Business of the Government of Balochistan. Livestock is with the Livestock Department whereas Forest and Wildlife Department is assigned the subject of rangelands. The coordination between the two is almost non-existent. The livestock sector is informal and disorganised in the district as elsewhere in the province. The concept of commercialisation is limited to dairy-farming in Quetta City and its suburbs and that too has not been translated into action so far. As a result, the full potential of livestock and rangeland resources has not been realised.

4.6.1 Livestock

Livestock is an important sector for the country's economy. It is also an important sector for the district although direct dependence of the population in the district on livestock has reduced significantly due to urbanisation. However, the rural population in the district depends upon livestock-rearing to a large extent. It is a source of income for the owners and meets the nutritional requirements of the population. Livestock plays an important role in subsistence and livelihood. Livestock includes cattle, buffalos, sheep, goats, camels, horses, mules etc. Poultry is also grouped with the livestock. Livestock produces milk, meat, beef, hides, wool, hair and other products as well as income for the people. One salient feature of livestock sector in the district is that dairies have been established in large numbers in Quetta City and its suburbs. The other characteristic is that grazing in rangelands is largely sedentary and there is very little transhumance.

The Livestock and Dairy Development Department provides animal health-care and production extension facilities to livestock

Table 29: Water issues, policy and strategy regarding agriculture sector at operational level

| Issues | Policy | Strategy |
|--|--|---|
| | Water Quality | |
| | Enhancing Availability of Water | |
| Depleting reservoirs | Augmentation of capacities of existing reservoirs (such as Pechi), and mitigation of sedimentation | Enhance capacity of existing reservoirs Undertake Watershed Management, check dams, soil conservation measures and incorporation of sluicing devices in new dams. Construction of new small dams may also be undertaken wherever feasible keeping in view the requirements of Mangi Dam |
| Inadequate storages | Rainwater harvesting and other conservation measures | Support rainwater harvesting and spate irrigation |
| Improving Irrigation Practices | | |
| Traditional methods of irrigation, e.g., flood irrigation. | Promote better irrigation practices at farm level | Furrow and border irrigation and land levelling Land levelling Prepare pilot projects, ensure timely implementation and adequate funding for the above and high efficiency irrigation system |
| | Promote high efficiency irrigation systems (long term sustainability of agriculture will increase and increase in cost of production is justifiable if the cost of water saved is accounted for) | Educate, undertake, encourage and support R&D in improved irrigation practices. Support high efficiency irrigation systems (e.g., bubbler, drip and sprinkler technically and with subsidy) |
| High delta fruit orchards, vegetables and crops with tubewell irrigation causing depletion of ground water | Promote low delta and discourage high delta fruit orchards, vegetables and crops in tubewell irrigated areas, causing depletion of ground water Judicious use of water | Promote low delta and discourage high delta fruit orchards, vegetables Discourage high delta fruit orchards, vegetables and crops Promote better operational practices , e.g., seed certification, farm mechanization, integrated pest management (IPM), manure, fertilizers, etc. coupled with judicious use of water. |
| Low crop yields and cropping intensity | Easy and timely supply of quality inputs at affordable price | Ensuring timely availability of quality inputs at affordable price to farmers |
| | Introduction of and support to technology | Introduction of support to plastic tunnel technology for growing off season vegetables |

| Issues | Policy | Strategy |
|--|---|---|
| Lack of modern irrigation techniques and low irrigation efficiencies | Promote use of high technical and modern irrigation techniques | <p>Introduce and support with subsidy sprinkler, drip and , e.g., bubbler, drip and sprinkler irrigation system</p> <p>Undertake demonstration projects for promotion and dissemination of drip, sprinkler irrigation practice.</p> <p>Indigenization, manufacture/ marketing of high tech. irrigation system at affordable prices and easy access to farmers</p> |
| Enhancing Irrigation Infrastructure and sustainability | | |
| Low efficiency in conveyance of water (conveyance losses) | Promote and support higher efficiency in conveyance and use of irrigation water | <p>Preference to PVC pipe (instead of watercourse) and then to concrete lining over brick lining</p> <p>Promote, silt clearance, lining and periodic rehabilitation of water conveyance infrastructure giving priority to high filling and sandy reaches.</p> <p>Ensure sustainability of infrastructure through adequate funding for O and M.</p> |
| | Promote beneficiaries participation in maintenance | Encourage formation of Farmers Organizations for O and M of irrigation systems. |
| | Establish local water system maintenance Fund | Introduce assessment and collection system for water users' committee (of beneficiaries) Fund for financing maintenance of the irrigation infrastructure. |
| Lack of irrigation infrastructure for existing areas and irrigation of new areas | Developing new storage dams keeping in view the requirement of Mangi Dam | <p>Explore appropriate sites for new storage dams after detailed studies, considering the impact of any new site in Ziarat Tehsil on Mangi Dam.</p> <p>Develop the new sites and commit adequate funding.</p> |
| Improving Groundwater Irrigation | | |
| Excessive Pumping (Lop-sided pumping) | Avoid excessive pumping, and optimise groundwater exploitation | <p>Replace subsidy on electricity tariff with subsidy on high efficiency irrigation system</p> <p>Improve power availability and fluctuation in voltage</p> <p>Delineate areas with falling water table for restricting uncontrolled abstraction.</p> <p>Undertake monitoring to ensure sustainable use of groundwater from individual tubewells for improved aquifer management.</p> |

| Issues | Policy | Strategy |
|---|--|--|
| | Pumping should not exceed recharge. In this regard, promote groundwater recharge, soil conservation measures and construction of check/delay action dams for sustainability of ground water, wherever feasible technically and economically. | Launch watershed, range management and planting programmes and development of water recharge structures in the district Control deforestation and de-vegetation. Prepare a groundwater Atlas for Ziarat District Enforce groundwater control regulations to prohibit mining. |
| Harnessing Hill Torrents Irrigation | | |
| Under-utilization of potential of Hill Torrents | The potential of hill torrents shall be exploited fully to supplement surface water irrigation | Develop Feasibility for Harnessing Hill Torrents in Sanjawi Tehsil. Develop projects in Hill Torrent Areas to supplement water availability and alleviate poverty. |
| Arranging Funds | | |
| Lack of investment | Arrange funding from indigenous and international sources for various programmes (high efficiency irrigation systems, watershed, range management, plantation) and various structures including storage and recharge dams, check dams, ponds, water retaining structure for rainwater harvesting and hill torrents' management structures for flood control. | Feasibility studies, a master water plan for the district, development of projects for funding by the provincial and federal governments and bilateral and multilateral donors and international organizations directly or through international organizations, e.g., IUCN). Implementation of an IDA assisted provincial Small Scale Irrigation Project through PSDP 2010-11 is under progress |

Source: Draft National Water Policy Water and Power (2006)

farmers to increase the productivity of animals and uplift their socio-economic status. The mortality rate in kids, lambs, newly-born calves and adult sheep, goats and cattle has reduced due to mass vaccination and treatment, drenching and dipping (against endo and ecto parasites) programmes extended in veterinary hospitals and dispensaries in the district.

Low animal productivity is mainly due to low-productivity breeds, and forage and feed shortages generally. It is reduced further during low-rainfall years due to inadequate supply and quality of feed. Straw and other agro-industrial by-products as a basal feed for ruminants during fodder

scarcity season is an option. Cereal straws are deficient in critical nutrients and need supplementation. Urea treatment was suitable in the farming system in the province, which improves the crude protein content and digestibility of wheat straw and thus increases animal's feed intake. Feeding the urea molasses blocks (UMB) is another option. UMBs and urea treated straw were supplied on subsidised cost during the drought period, and trainings were imparted in preparing it.

There were three, six and five veterinary hospitals⁷³ and 14, 10 and 11 veterinary dispensaries in Quetta District during 2004-05, 2005-06 and 2006-07, respectively. Total

207,188 animals were treated, 226,262 vaccinated and 1,942 castrated in 2007⁷⁴.

The total livestock population⁷⁵ of 326,222 animals during 2005-06 included 11,244 cattle, 25,547 buffaloes, 163,799 sheep, 120,384 goats, 1,377 camels, 297 horses (211 above three years, 86 below three years), 106 mules (more than three years of age) and 3,468 asses (2871 more than three years, 598 below three years). While the number of poultry birds were 128,331 (16,287 cocks, 63,199 hens, 48,625 chickens, 220 birds).

Livestock population in Quetta District (2006) is given in Figure 20.

The cattle by sex, age and herd size in the district are given in Figure 21:

Milk cows/buffaloes by sex, age and herd size in the district is in Figure 22.

Population of buffaloes by sex, age and herd size in the district are in Figure 23.

Population of sheep and goats in Quetta District are given in Figure 24.

The number of cattle by sex and breed in the district is given in Figure 25.

Foreign/Cross Breed were 7,619 in number (1,495 male and 6,124 female). Out of 11,244 cattle, 498 male were of age more than three years (214 for breeding and 284 others) while 1,737 were below three years of age; 6,331 female cattle were of age more than three years (5,657 were in milk, 480 were dry and 195 were not yet calved) while 2,678 were below three years of age.

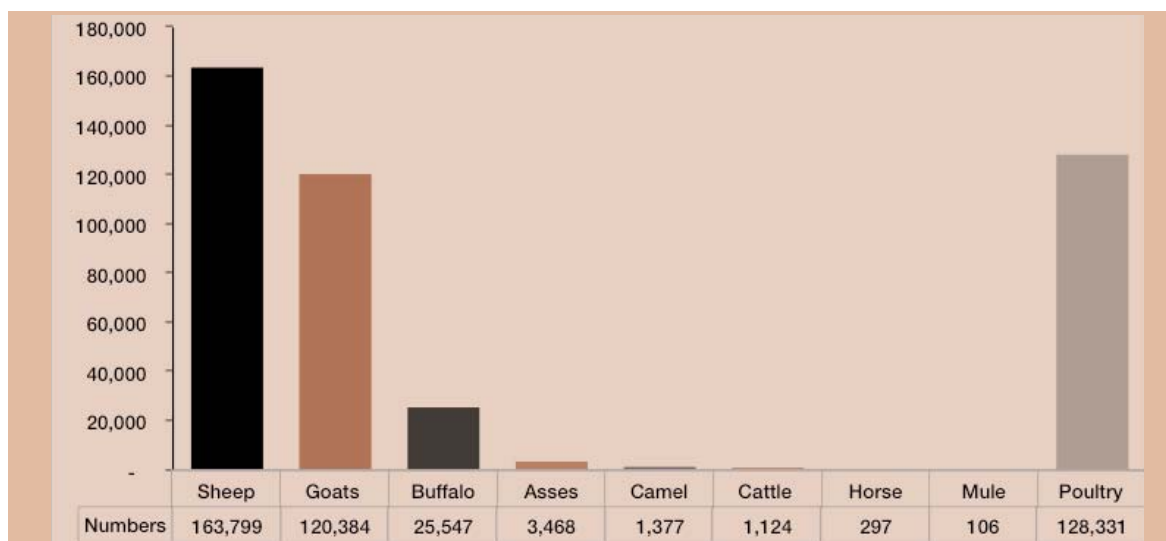
The number of buffaloes by sex and breed in the district during 2006 are given in Figure 26.

Out of 25,547 buffaloes, 333 males were of age more than three years (203 for breeding and 130 others) while 1,510 were below three years of age; 20,866 female buffaloes were of age more than three years (19,649 in milk, 935 dry and 282 were not yet calved); while 2,838 female buffaloes were below three years of age. Sheep by sex, age and breed in the District are given in Figure 27.

Out of 163,799 sheep, 110,037 were of age more than three years (32,729 male, 77,308 female) while 53,763 were below one year of age.

Goats by Sex, Age and Breed in the District are given in Figure 28.

Figure 20: Livestock population in Quetta District (2006)

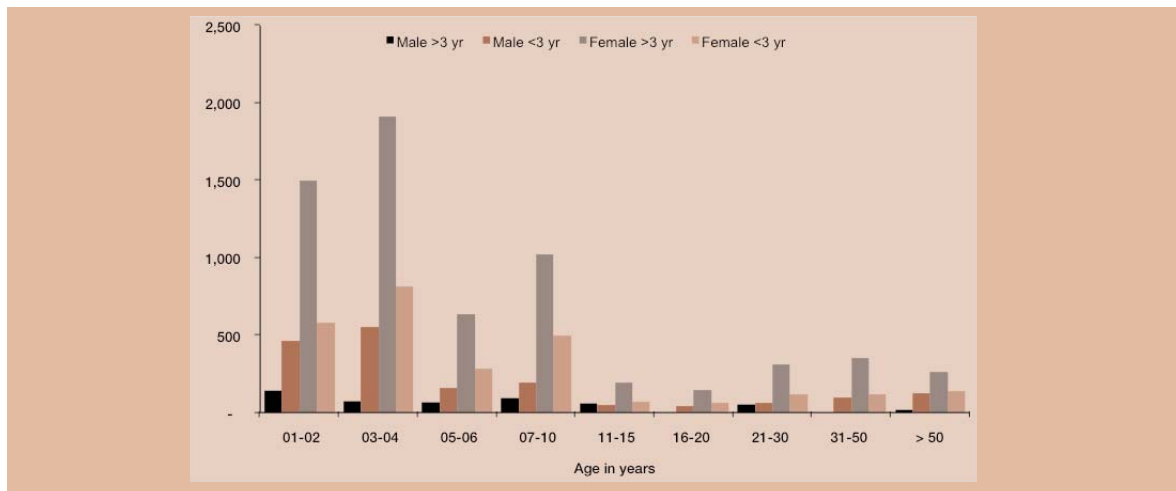


Source: Balochistan Livestock Census, 2006

⁷⁴ Livestock Department, Quetta.

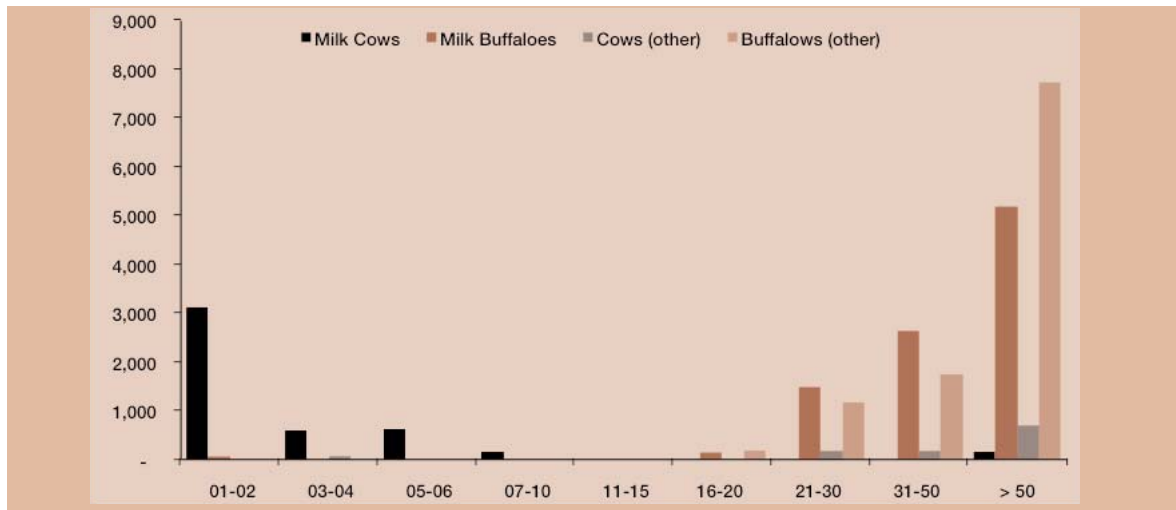
⁷⁵ Government of Pakistan. Agriculture Census Organization. Livestock Census 2006. Islamabad: ACO, Statistics Division, GoP, 2007.

Figure 21: Cattle by sex, age and herd size in Quetta District



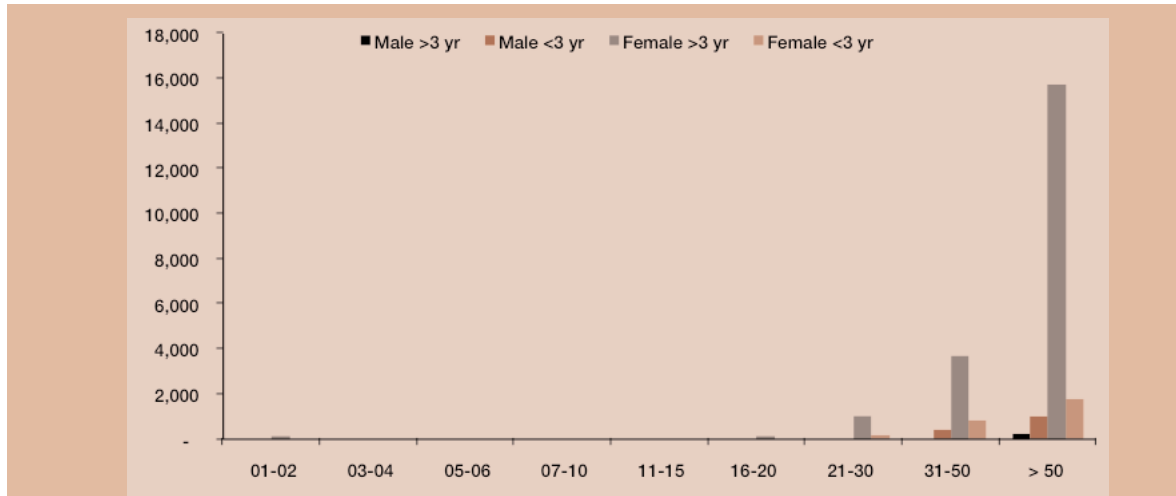
Source: Livestock Census, 2006

Figure 22: Milk cows/buffaloes by herd size in Quetta District



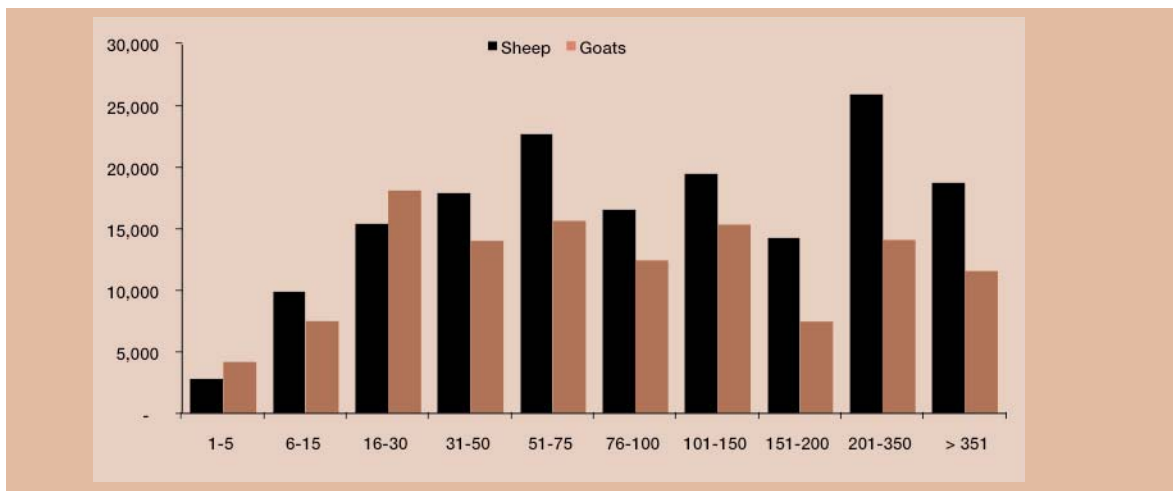
Source: Livestock Census, 2006

Figure 23: Population of buffaloes by sex, and herd size in the District



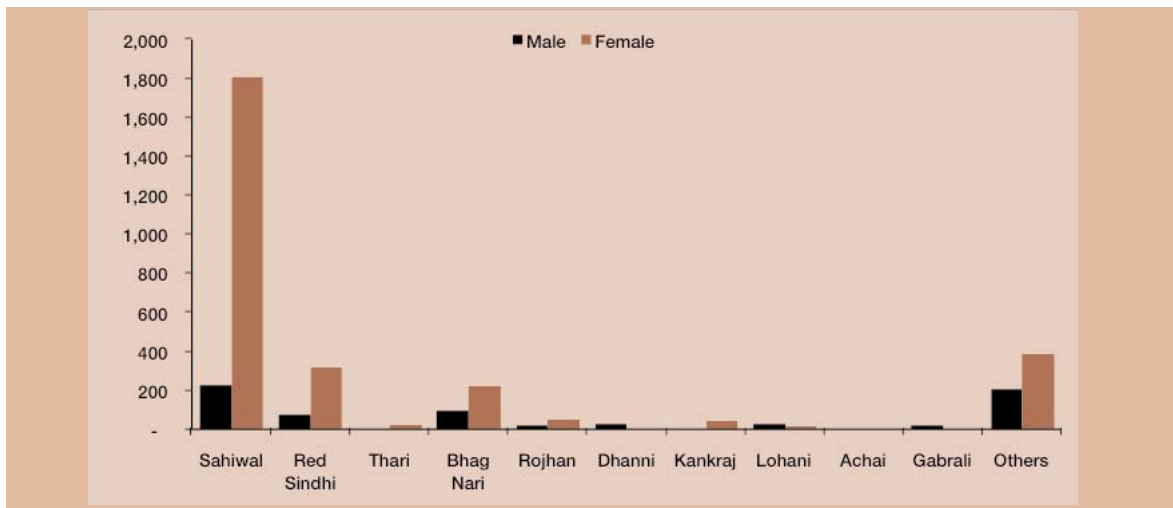
Source: Livestock Census, 2006

Figure 24: Population of sheep and goats in Quetta District



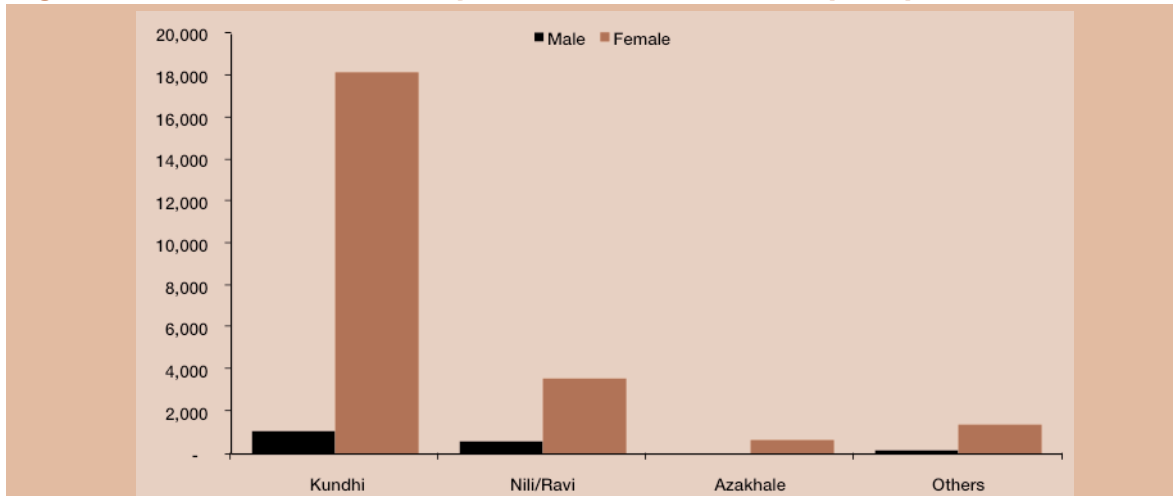
Source: Livestock Census, 2006

Figure 25: Number of cattle by sex and breed in Quetta District (2006)



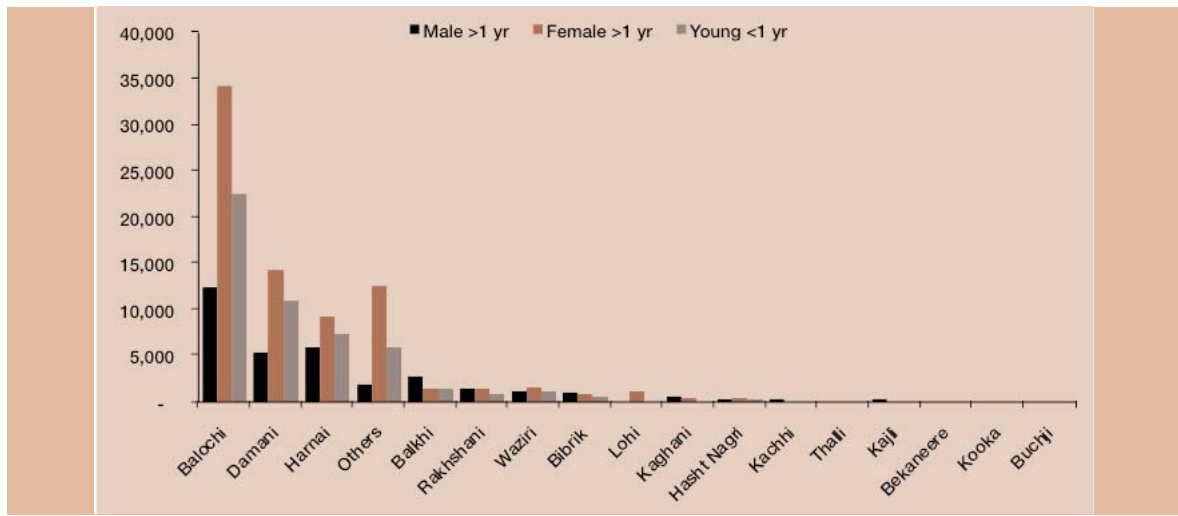
Source: Livestock Census, 2006

Figure 26: Number of buffaloes by breed in Lasbela District (2006)



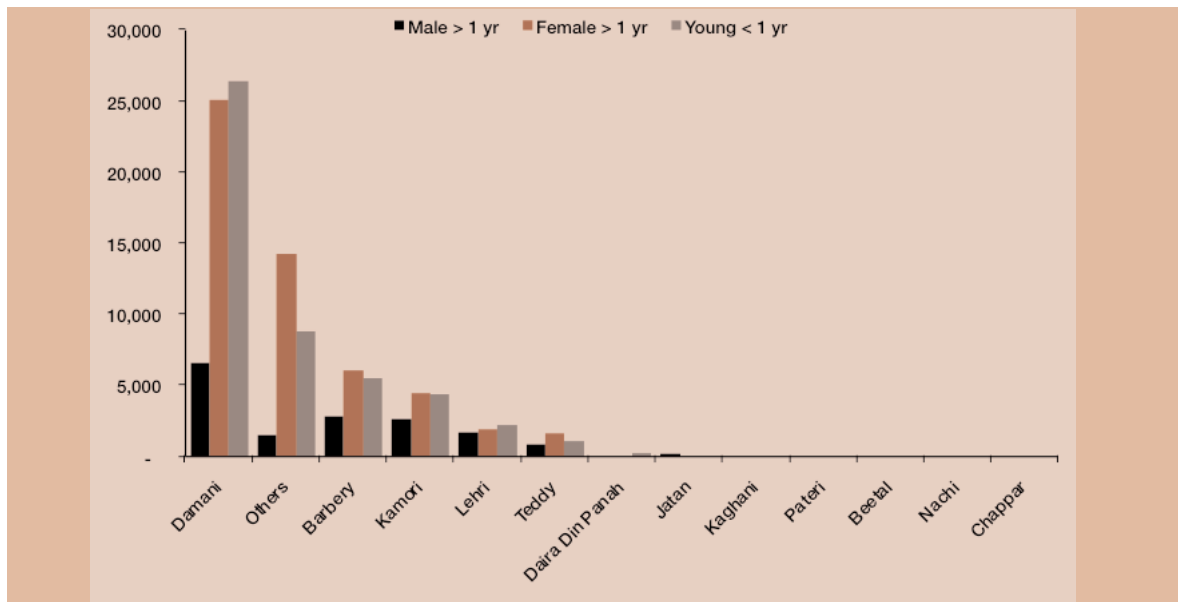
Source: Balochistan Livestock Census (2006)

Figure 27: Number of sheep by breed in Lasbela District (2006)



Source: Balochistan Livestock Census 2006

Figure 28: Goat improved breeds and their numbers in Quetta District



Source: Balochistan Livestock Census 2006

Out of 120,384 goats, 70,944 were male and 16,306 female; 54,637 were of age more than one year (40,988 in milk, 11,315 milking for human beings, 8,152 were dry and 5,497 were not yet lambed); 49,441 goats were of age below one year.

Out of total 1,377 camels, 492 were male (377 above three years and 115 below three years of age); 885 were female (641 above three years while 245 of age below three years).

Work animals for agricultural and other purposes included 617 camels, 193 horses,

2,211 asses and 52 mules during twelve months before Livestock Census 2006.

Veterinary coverage of cattle, buffaloes, sheep, goats and camels during last twelve months before Livestock Census 2006 is given in Figure 29.

Out of 6,331 cows, 2,718 (42.93 percent) and out of 20,866 buffaloes, 46 (0.22 percent) were artificially inseminated during twelve months before Livestock Census 2006. The reasons for low ratio of artificial insemination are disliking (40.02 percent), AI centre being

located far away (0.71 percent), process being very expensive (0.47 percent), results being not satisfactory (8.4 percent) and artificial insemination service not being satisfactory (0.06 percent).

Total animals slaughtered in the district were 90,705 (40,093 in slaughterhouses, including 13,207 buffaloes/cattle, 13,800 sheep and 13,086 goats; and 50,612 in the open, including 20,112 buffaloes/cattle, 13,800 sheep and 16,700 goats during 2006-07⁷⁶).

4.6.2 Key issues

All three main elements of livestock and rangeland sector, i.e., breed, feed and health, are weak. Therefore, the productivity of range-dependent animals is low.

Breed

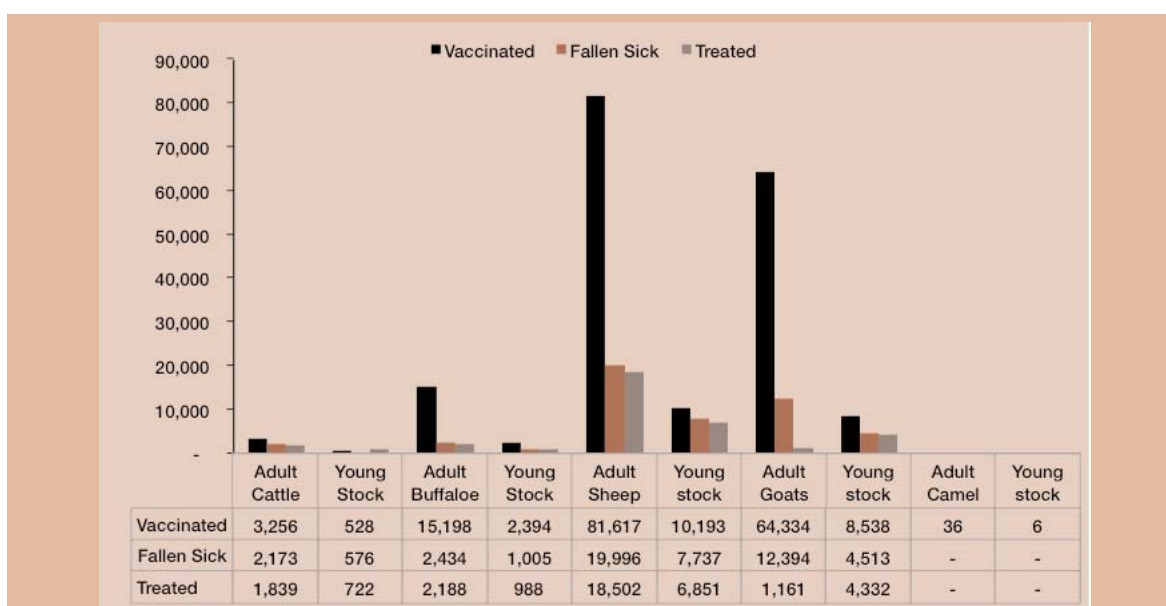
- A large number of unproductive livestock.
- Less than sufficient benefits from facilities of artificial insemination (AI) centres due to poor results of AI in the past and social reservations about AI. Culling of less productive animals (used as status symbol and handy cash).

- Lack of conscious gene-pool conservation.
- Lack of sires of better breeds for improved breeding.

Feed

- Less fodder production due to preference for orchards, vegetables and other cash crops rather than fodder.
- Forage yield in rangelands less than potential because of overgrazing, degradation and lack of grazing management (rotational and deferred rotational grazing, early spring and late grazing at the time of ripening of seeds) or investment (re-seeding, seeding, development of water points, placement of salt licks).
- Lack of introduction of high-yield fodder species.
- With the influx of Afghan refugees in the province, the number of animals also increased and, with drought conditions, added pressure to the veterinary services and the rangelands in Quetta District, in particular in Panjpai tehsil.

Figure 29: Annual veterinary coverage of livestock in Quetta District (2006)



Source: Balochistan Livestock Census 2006

76 Government of Pakistan. Agriculture Census Organization. *Livestock Census 2006*. Islamabad: ACO, Statistics Division, GoP, 2007.

- Livestock from other districts of the province use the rangelands and veterinary services of Quetta District. The local herds, therefore, suffer.
- Erosion of native and endemic gene-pool of livestock.

Health

- Lack of awareness and skills among farmers regarding diseases, vaccination and treatment of animals.
- Health-care facilities for livestock – both preventive (vaccination) and cure – are inadequate.
- Transmission of contagious diseases from the livestock of Afghan *pawindas* and other herds passing through or staging in the district for grazing.
- Lack of mobile facility for staff in case of emergency relief cases/ outbreak such as Congo virus control, haemorrhagic septicaemia (HS) and bird flu etc.
- Lack of well-equipped laboratory.

Feed

- Over-grazing and degradation of rangelands due to lack of grazing-management and excessive number of low-productivity animals.
- Periodic droughts, sometimes long and protracted.
- Less area under fodder cultivation.

Damage to Juniper Forests

- Use of branches of Juniper trees for making temporary pens during open grazing in summer.
- Trampling and foraging of young regeneration of Junipers and other vegetation by livestock.

Slaughtering

- Slaughtering in the open in contravention to laws.
- Only one of two slaughterhouses is functional.
- ADB is willing to fund construction of a slaughterhouse but there are issues still

to be resolved. Liability is the core issue in the conflict between the Livestock Department and the Quetta Municipal Corporation. Khuchlak and Almo Chowk were proposed as possible sites for development of new slaughterhouses. However, Pakistan Air Force has objected to these sites since these lie in the flying zone.

- The slaughterhouses, an old one, a new one and a planned one, are a bone of contention between the Livestock Department and the Quetta Municipal Corporation, since they are a source of income. One of the two existing slaughterhouses is operational. Shifting of a slaughterhouse to Almo Chowk or Kuchlak was proposed but Pakistan Air Force objected to it, as slaughterhouses attract birds, which are a hazard to the aircrafts landing or taking off. More than these two slaughterhouses are required in order to meet the requirements of different parts of the city to discourage slaughtering in the open.

Value addition

- Lack of value-addition of livestock products, e.g., wool, hides, skins, horns and hoofs.
- Lack of commercial production of meat for marketing in the country and abroad.

Miscellaneous

- Imperfect livestock marketing.
- Not making biogas from livestock dung and urine and using the slurry as manure. Cold climate is no more a constraint in getting fermentation of animal refuse.
- Lack of reliable climatic data (spatial and temporal) to adapt to management of rangelands, in particular grazing, re-seeding and drought aspects of it.
- Absence of any early warning system of drought.
- Smuggling of goats to Iran is causing hike in prices of milk and meat.

4.6.3 Measures to be taken

Launching programmes in the district for improvement in breed, feed (including range-

management), health-care, disease/parasite control, commercial meat production and marketing; commercialisation of range-based livestock, with involvement of local communities, on sound scientific basis; integrated planning and management of livestock, rangelands, forests, agriculture and water; reliable data-collection and management at the Union Council level and using it for planning, management and monitoring; improvement of rangelands, cultivation of improved /high yielding fodder crops and varieties and over more area and use of animal feed (urea-molasses blocks, urea-treated straw or of feed mills); and public-private-community partnership in livestock and range improvement, management and marketing programmes.

- Extending preventive cover, including vaccination against infectious and communicable diseases, precautions against worms and ticks, and curative treatment including de-worming, which is important for the health of livestock. Deputing veterinary assistants on the established migratory routes for vaccination against and treatment of diseases especially the infectious and communicable diseases.
- Introducing high-yield grass varieties (benefitting from Loralai project experience in this regard), and introducing and supporting high-protein urea-molasses blocks for winter feeding and drought periods.
- Improvement of breeds while ensuring conservation of indigenous gene-pool of the livestock in the district from among the best animals.
- Increasing the quota of medicines.
- Supporting fattening programmes for beef and meat production and export.
- Improving coordination between the Livestock, Forest and Wildlife, and Agriculture Departments for improvement of livestock and rangelands. Launching joint livestock and rangeland projects, interventions and activities, for implementation by joint teams.
- Improving coordination between the Livestock Department and Quetta

Municipal Corporation regarding slaughterhouses, and seeking resolution of the ongoing conflict between the two at the level of the Chief Secretary.

- Arranging refresher courses/ trainings for the staff to equip them with the current advancements in knowledge and practices.
- Arranging training for farmers regarding management, grazing, diseases and marketing of livestock; poultry diseases and farming; preparation of cost-effective rations for dairy cattle and buffaloes, poultry and sheep/goats.
- Shifting one of the slaughterhouses and adding more at suitable sites (avoiding the flying zone) to control slaughtering in the open.
- Expediting shifting of dairy farms from residential areas of Quetta City by implementing the policy of allotment of plots for Gawala Colony in Chashma Achozai area for dairy farms.
- Regulating existing dairies, slaughterhouses and poultry farms for environmental safeguards and supporting them for moving out from residential areas to suburbs of Quetta City, and encouraging establishment of additional dairy farms and poultry farms there.
- Maintenance of the existing kacha civil veterinary dispensaries in the district.
- Establishing new veterinary dispensaries in the densely-populated livestock areas of the district and in the merged areas of Mastung district, e.g., Zarkhu.
- Facilitating mobilisation of veterinary staff by providing motorcycles to them.
- Distribution of genetically-improved breeding rams on subsidised rates.
- Continuation of rural poultry birds scheme for women.
- Arranging field days, trainings, workshops and seminars for livestock farmers to help them improve their livestock production.

- Providing funds for the remaining/ replaceable equipment of the operation theatre at the Civil Veterinary Hospital, Quetta.
- Providing mobile veterinary vans for vaccinations and handling of emergency situations in pandemics and a well-equipped laboratory and equipment for an operation theatre.
- Taking measures to improve marketing and supporting speedy marketing of livestock to reduce losses during drought.
- Providing technical support in value-addition of animal products.
- Maintaining suitable ratio between livestock and forage in the rangelands.
- Preserving the best selected native and endemic gene-pool while improving breeds and reducing animal numbers to balance the animal to range forage ratio.
- Increasing the number of veterinary hospitals and locating those at the outer rim of the city.
- Establishment of hide/ skin market.
- Establishment of mutton, poultry and vegetable markets under one roof in different areas of Quetta City.
- Cooperating with the federal government in the setting up of an early warning system for drought.
- Providing funds for laboratory, and space, furnishing and equipment for extension work.
- Establishing a legal regime for regulating and controlling livestock-related activities in the district and generating revenue to support such work including the following:
 - Establishing a market committee for supervising and monitoring livestock food items and collection of license fees.
 - Registration of meat, milk and poultry shops against license fees, and their monitoring.
 - Registration of veterinary drug stores to seek compliance of and enforce the Drug Act,
 - Registration of businesses of hide/ skin, wool/ hair and other animal by-products against license fees.
 - Inspection of the health of export animals and their vaccination against fee for issuing Health/Vaccination certificates
- Establishing livestock disease monitoring and vaccination centres at the entry points to the district to control the spread of contagious diseases and charging fixed amounts for vaccination.
- Seeking Compliance of and enforcing the “Animal Cruelty Act”, and imposing and collecting deterrent fines.

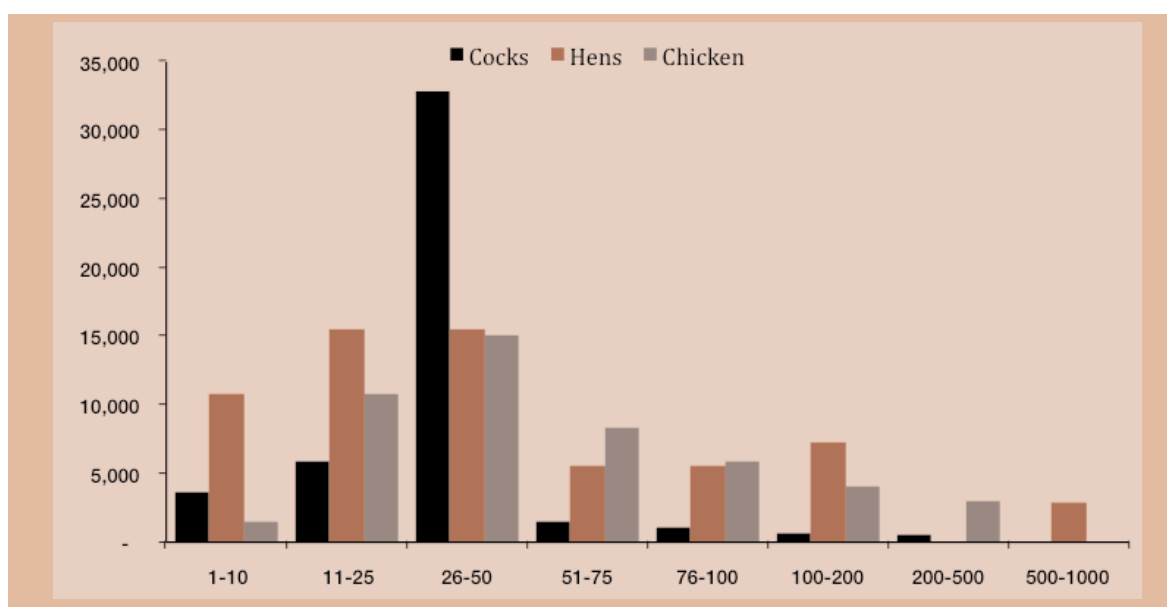
4.6.4 Poultry

Poultry provides protein as well as income. Poultry is farmed on a commercial scale, though domestic poultry-keeping is also popular in the rural areas of the district. It is the main source of eggs and also white meat for the population in Quetta District since much less fish is eaten. Poultry is, however, vulnerable to diseases and farm-mismanagement. In case of domestic poultry-keeping, eggs and meat are generally used for family members and guests while surplus eggs and birds are sold and women can use the income thus generated. Chicken and eggs produced under free-range system (*desi*) fetch higher prices as compared with farm-bred chicken and eggs.

There is a government-owned and many privately-owned poultry farms in the district. There were 12,8331 poultry birds (16,287 cocks, 63,199 hens, 48,625 chicken and 219 ducks /drakes/ ducklings) in Quetta District in 2006. Flock sizes of poultry birds in the district are given in Figure 30.

4.6.5 Key issues

- Prevalence of poultry diseases including New Castle disease (*rani khet*), bird flu etc.
- Lack of knowledge of poultry diseases and preventive and curative measures on

Figure 30: Flock sizes of poultry birds in Quetta District

Source: Balochistan Livestock Census 2006

the part of women in rural areas who generally keep the poultry birds.

- Weak extension service regarding poultry.
- Lack of specific poultry farm data.
- Poor quality of medicines smuggled in from a neighbouring country.
- Poor hygienic conditions in poultry shops.
- Prices of chicks, feed and medicines.
- Very cold climatic conditions during winter.

4.6.6 Measures to be taken

The vision of poultry in the district is that it should develop farming not only to be self-sufficient but also to be able to supply to the neighbouring districts, which are deficient and are likely to remain so as compared to Quetta District.

- Supporting women through incentives (parent stock, vaccination, disease-control kits), training them in disease-identification, vaccination and treatment, and encouraging them to raise more poultry birds in their homes.
- Providing training to farmers in poultry farming, and facilitating and supporting

them in exposure visits and access to credit.

- Helping interested persons technically in setting up commercial poultry farms in the private sector at appropriate places (away from the residential areas).
- Producing poultry products in the district to meet the demand in the district and supply to the neighbouring districts.

4.6.7 Rangelands

A rangeland is an open area with indigenous vegetation where animals feed directly on the forage. One of the major land-uses in Quetta Sadar and Panjpai tehsil is livestock-grazing on rangelands. Almost all cultivable wastes and areas not suitable for cultivation and most of the unreported areas are rangelands. Therefore, rangelands are a big resource. Most of the livestock in the district depend on rangelands and are important for the livelihood of local people. Rangelands are also the principal watersheds for the water-starved Quetta Valley and plains. Other products of rangelands include medicinal plants, firewood and wildlife. Significant areas of rangelands in the district have been converted for use in agriculture, housing and settlements, communications and other infrastructure sectors. A considerably larger area is destined to conversion due to further developments in the water and other sectors mentioned above.

The productivity potential of rangelands in the district is high due to comparatively better precipitation. However, rangelands have degraded due to overgrazing, and lack of inputs and management. The long drought during the six-year period of 1998-2004 aggravated the situation due to heavy degradation. The productivity of rangelands has declined, so has their water-recharge capacity and their ecological character as habitats of wildlife.

4.6.8 Key issues

- Traditional knowledge is very important but the grazers do not know the sound and innovative ways of grazing and livestock management. The pastoralists need to know the carrying capacity of rangelands for their sustainable use. Unfortunately, data on carrying capacity is not available.
- No research on grazing-management, livestock-forage ratio (which is assumed as adverse) and high-yield fodder species has been undertaken locally.
- Overgrazing of rangelands and grubbing of bushes for fuel, resulting in their depletion and forage shortage.
- Disappearance of traditional community institutions for natural resource management, resulting in the tragedy of commons.
- The general perception of rangelands as wastelands and lack of awareness on the part of communities, political leaders and decision-makers regarding the loss and degradation of rangelands and consequences of such a situation.
- Lack of coordination among the range resource related agencies, especially Forest and Wildlife Department and Livestock Department and other stakeholders.
- Lack of investment in maintaining productivity and ecological functions of rangelands.

4.6.9 Measures to be taken

- Discouraging and reducing gradually the open free grazing of livestock, replacing it

with rotational and deferred rotational grazing in accordance with the carrying capacity of the rangelands and well-established forests (ban on grazing/browsing in the regeneration areas and plantations until they are fully established, on early spring and late grazing at the time of ripening of seeds) and investment (re-seeding, seeding, development of water points, and placement of salt licks).

- Improving coordination among key public sector agencies and other stakeholder agencies.
- Creating awareness about the issues related to rangelands and their management.
- Advocacy for prioritisation of rangelands for investment in order to rehabilitate them (increasing productivity), economic incentives to communities and sustainable management through integrated planning.
- Institutional strengthening of Forest and Wildlife department and Livestock Department in integrated planning and management of livestock and rangelands, and training of staff.
- Training of pastoralists in proper use of rangelands.
- Improvement and sustainable management of rangelands. Developing rangelands, including water points, salt licks in the district. This will also help in enhancing recharge of water, conservation of biodiversity, especially the palatable plant species and the dependent species of all forms of wild animals.
- Developing fodder-tree grooves as reserves for use only during the drought period.
- Mobilisation, organisation (including revival of local level-institutions), motivation, participation and capacity-building of communities in planning and management of livestock and rangelands.
- Improving and managing water recharge/storage/harvesting and spreading structures that will help in

improvement of palatable and nutritious vegetation in rangelands.

- Undertaking and using ecological zoning of rangelands in the district for planning, management and development of rangelands.
- Identifying and mapping through satellite remote sensing (SRS) techniques, and disseminating the exact areas of productive rangelands.
- Keeping track of status and carrying capacities of various rangelands in the district.
- Using remote sensing technology and employing vegetation indices in determining the carrying capacity of rangelands in the various zones.
- Conducting further research on fodder species of trees and shrubs, their planting, yield and nutrition value etc.
- Establishing replicable models of livestock and rangeland management and documenting and disseminating the same for scaling up and replication.
- Federal government to establish early warning information systems (EWIS) for forecasting unusual weather conditions and drought.

4.7 Forests

The Juniper forests in Quetta District are second to such forests in Ziarat district in terms of area and quality. These forests form part of the largest chunk of Juniper forests of a single Juniper species (*Juniperus excelsa*) in the world and are of global importance. There are scrub forests in the district as well as some grasslands (without trees), which have been designated as state forests. The actual area of forest cover out of the designated area is low. However, Quetta is forest-rich compared to most other districts in Balochistan. The few districts, which will excel or compare favourably, are Ziarat, Zhob and Lasbela. Juniper forests are very important for meeting the local needs for timber, fuel wood, and other non-timber forest products and for environmental services. These forests are degrading due to

overexploitation. However, the rate of degradation has declined in the forests situated near the settlements to which natural gas has been supplied.

Total forest area in Quetta District is 79,045 ha. This includes Maselakh S.F. (28,231 ha), Southern Maselakh S.F. (18,324 ha), Spin Karez (7,257 ha), Central Zarghoon S.F. (6,944 ha), Khur, Tur, Tagha (6,216 ha), Karkhasa (4,047 ha), Southern Takatu (2,894 ha), Zarghoon North S.F. (2,331 ha), Mazar S.F. (881 ha), Chiltan (782 ha), Mari Chak S.F. (741 ha), Babri (394 ha) and Dhobi Ghat S.F. (4 ha).

According to Development Statistics of Balochistan (2009), the coniferous and scrub forests in the district are 43,029 acres and 42,518 acres respectively, with a total of 85,547 acres. Two designated state forests have been assigned to wildlife fully or partially and designated as protected areas under the Balochistan Wildlife Act, 1974. This is mainly Chiltan S.F. (27,421 ha including part of Karkhasa S.F.) and designated as national park. The land-use of the NP is for wildlife and protected areas instead of forest. Duzadara and Koh-e-Surko (2,351 ha) has been designated as game sanctuary but this area is not in the list of designated forest areas.

There is inconsistency in the figures of forest area from different sources. The forest area in Development Statistics of Balochistan 2009 is shown as 80,582 ha (85,547 acres), whereas the area accounted for from the notifications (Table 30) is 79,045 ha. The area of Chiltan S.F. and Karkhasa S.F. (27,421 ha) has been designated and assigned to wildlife as a protected area. Therefore, the forest area is now 51,624 ha. All forests included in this figure do not necessarily have forest trees. Therefore, the wooded area would be a small percentage of this.

The forest area figures need updating after further scrutiny since the boundaries of the districts have changed, e.g., Zarkhu S.F. has been transferred from Mastung district to Quetta District. There is also confusion about the placement of Southern Maslakh S.F. and Southern Takatu S.F. in Pishin district or Quetta District.

There is a tendency to convert forest lands into other land-uses. An area of 4,872.3 ha

Table 30: Forests in Quetta District

| S. No. | Forest | Legal Status/ Notification | Forest Area | | Rights admitted | Remarks in Notification |
|--------|------------------------|---|--|----------------------|--|---|
| | | | Notified Area | Equivalent Area (ha) | | |
| 1. | Karkhasa | State Forest/ NO. 39F.C./998.F. dated the 4th April, 1944. | 15 square miles or 10,000 acres approximately. | 4,047 | Subject to the permission of and declaration by the Forest Dept., that dry wood, <i>zeera</i> and grazing are available to certain individuals. | At present almost completely devoid of tree growth. |
| 2. | Spin Karez | State Forest/ Notification NO. F. /12(41)/1416/Fts. Dated the 29th June 1945 | 17,933 acres or 28 square miles. | 7,257 | All previous rights eliminated. | - |
| 3. | Khur | State Forest/ NO. 575-F Dated the 13th January 1911 effective from the 1st April 1911 | 15,130 acres or 24 square miles | 6,216 | | |
| 4. | Tur | | | | | |
| 5. | Tagha | | | | | |
| 6. | Southern Takatu | State Forest/ No. 13/44/F. C/75/F. dated the 8th January 1946 | 7,150 acres or 11 square miles | 2,894 | The Dumars, Bazais and Kasis of the neighbouring villages and hamlets will be permitted by Forest Department to graze their own domestic cattle in case of fodder famine, and to remove dead wood for domestic use only. Camels will not be permitted to graze. Forest Guard for protection and labour for works to be recruited from local Dumars, Bazais and Kasis | |
| 7. | Babri | State Forest/ No. 1940. Dated the 15th August 1904. | 973 acres | 394 | | |
| 8. | Maselakh S.F. | State Forest/ No. 2586/9/51-FC dated the 23rd July 1951 | 69,760 acres or 109 square miles | 2,8231 | 1. Removal of dead fallen wood for <i>bona fide</i> domestic use. 2. First choice of labour and contractors within this area to the tribes concerned proportionately. 3. New karezes and <i>chashmas</i> will be the property of right holders. | |
| 9. | Southern Maselakh S.F. | State Forest/ No. 2586/9/51-FC the 25th Sept. 1951. | 70.75 sq. miles | 18,324 | | |

| S. No. | Forest | Legal Status/ Notification | Forest Area | | Rights admitted | Remarks in Notification |
|--------|---------------------|--|----------------------------------|----------------------|--|---|
| | | | Notified Area | Equivalent Area (ha) | | |
| 10. | Dhobi Ghat SF | State Forest/ No. 5776, dated 22nd October 1890, HAGG in Balochistan | 10 acres | 4 | A public road across | 3 acres added and then 13 acres given up for railway purposes |
| 11. | Mazar S.F. | 1940, dated 5th April 1906 | 2,176 | 881 | <p>The residents of Hanna under the Maliks Baz, Ghafur and Maruf have permission.</p> <p>To graze their cattle (camels and goats excluded)</p> <p>To take dry fuel for their bona fide personal use free</p> <p>To have timber for building purposes and for agricultural implements free on application</p> <p>To take such Juniper bark as hangs loose from the bole of the trees free for roofing their houses on application</p> <p>To collect dry fuel for sale at the discretion of Forest Officer and subject to the payment of the price</p> <p>To use the Nari Road through the Mazar Forest.</p> | |
| 12. | Zarghun North S.F. | No. 5776 dated 22nd October 1890. A.G.G In Balochistan. | 5,760 acres | 2,331 | | Notification effective from 15th November 1890. |
| 13. | Central Zarghun S.F | State Forest/. No. 407 dated 20th January 1891. | 13,520 *3,640 17,160 acres | 6,944 | | |
| 14. | Mari Chak S.F. | State Forest/No. 3502 dated 6th July 1893 | 1,830 acres | 741 | | |
| 15. | Chiltan | State Forest/No. 227-F. dated the 27th Sept. 1929. | 1932 acres | 782 | | |
| Total | | | | 79,045 | | |

Source: Balochistan Forest and Wildlife Department (2010)

state forests in Quetta District has been transferred to various agencies. These transfers⁷⁷ are 4.05 ha and 0.28 ha of Zangi Lora S.F. to the Balochistan University and a CNG station, respectively; 9.71 ha and, 2.02 ha of Woodcock Nursery S.F. to the Labour Department and SOS Village, respectively; and 4,856.24 ha of Maslakh S.F. to Pak Air Force. The entire land (13 acres) of Dhobi Ghat S.F. was transferred to the Railways.

In order to arrest the trend of transferring forest lands for non-forestry purposes, it is essential that extraordinary measures are taken so that forests are saved from further reduction in area and are scientifically managed to perform diverse productive, protective and environmental functions.

Forest and Wildlife Department may move a summary to the Chief Minister proposing the following actions:

- Imposing restrictions on transfer of forest lands for non-forestry uses.
- Withdrawing powers of de-notification under the Balochistan Forest Regulations (1890) and Pakistan Forest Act (1927) and any other provincial law until the existing legislation is amended.
- Withdrawing the powers of the provincial Board of Revenue to transfer forest land to any agency and to vest these powers in the Cabinet in case such transfers are unavoidable and alternate land is not available.
- The Law Department may be advised to frame suitable legislation prohibiting transfer of forests land for non-forestry uses.
- Annual auditing of forest lands including extent of encroachments be considered.
- Provincial Board of Revenue may transfer the ownership of additional lands to Forest and Wildlife Department for forestry, range management and wildlife management, and enter such transfer in mutation documents so that the ownership in respect of transfer rests with

the Department, which is the custodian of such lands. The Revenue Department should complete the mutation of the lands already transferred to the Department for the above-mentioned purposes.

The Forest and Wildlife Department should also ensure that the lands transferred to it are affectively used for the three purposes mentioned above.

The land area of the Forest Nursery along Samungli Road has been converted into BEPA office building. The Forest Department now maintains a forest nursery at Baleli Road.

The urban forestry in Quetta City is limited to a few urban parks and plantation on a few roadsides. The beautiful chinara trees on Zarghoon Road were felled for widening of road. Quetta ash and Persian pine were the choice species for roadside planting. Quetta City needs large green areas as lungs of the city as well as for rescuing the population during earthquakes and other disasters.

The flora of the Juniper forests of Quetta District resembles closely that of Ziarat district. The flora of western parts of Quetta Sadar and Panjpai tehsil resembles that of Mastung and Pishin. There are more than 225 species of plants in Quetta District. The vegetation in Hazarganji-Chiltan NP includes bushy Juniper, *Pistacia khinjuk*, *Tamarix gallica*, Khanjal (*Pistacia cabalica*), mash monk (*Prunus eburnea*) and archin (*Prunus amygdalis*), *Arundo donax*, *Calligonum polygonoides*, *Artemisia maritime*, *Haloxylon salicornicum*, *H. griffithi*, *Salsola* spp. Cummin, wild onion and tulips also grow there and the vegetation also includes some medicinal and aromatic plants, e.g., black cummin, *Asa foetida* (heeng), *Paganum harmala*.

The vegetation cover in the district is generally sparse. However, on the gentle slopes of the hills and mountains, especially on the northern slopes and in the streams, it is thick and well-developed, where undamaged. It is also relatively better in the state forests where protected. Out of the above mentioned vegetations, *Carum bulbo castanum* (Zeera

77 WWF-P. "Conversion of Forests to Non-Forestry Uses in Pakistan." (http://www.wwfpak.org/newsroom/250610_shockingforestland.php).

siyah) is fetching high value in the market. Further, *Ephedra* (Huma) and *Sicymbrium sopihia* (Khakshir) are found in large quantities and have medicinal value. A major proportion of the above-mentioned vegetation is marketed. This vegetation, having medicinal value, is largely used by villagers, as they believe that the use of these vegetations has no side effects. Moreover, they are easily available and cheap. Wood is not available for timber purpose; the only type of wood available for fire is Pistachio Khinjuk and temarex.

Planting and maintenance activities as well as nursery-raising of the Forest and Wildlife Department have been quashed due to paucity of funds, and the protection of natural forests is suffering due to weak law enforcement. The Department is not undertaking watershed-management and range- management activities, again, due to low priority and non-allocation of funds. Briefly, the forestry sector is almost dormant in Quetta District.

4.7.1. Key issues

- Forestry appears to be a low-priority sector for the government of Balochistan, the political will seems weak and there is no budget for forestry activities in the district, but there is a great demand by the masses for plantations on state lands.
- Rapid growth in human and livestock populations and very slow rate of growth of Juniper trees.
- Juniper and scrub forests in the district are being over-exploited for firewood, timber and grazing, and are degrading continuously with the passage of time. These are being used excessively as rangelands for herding livestock, as the second best source of subsistence and livelihood for the people in rural areas after agriculture.
- Lack of regeneration due to change in the climatic, adaphic and biological conditions compared with the conditions of their origin.
- Lack of scientific management of forest resources.
- Infestation of fungal diseases.
- Encroachment of forest lands, deforestation and conversion for agriculture including orchards and crops.
- Currently, agro-forestry is negligible in the district as forest trees compete with fruit trees, especially in irrigated areas. Consequently, almost the entire pressure for firewood, in areas where there is no supply of natural gas, is on forests, rangelands and vegetation in the outer countryside.
- The existing parks and limited plantations in Quetta are not in good condition; rather these are under stress due to lowering of groundwater table.
- There should be separate block allocation for beautification, raising ornamental plantations and uplifting the environment of Quetta District.
- There should be an independent authority to negotiate with the commercial enterprises to develop important roundabouts (*chowks*) for aesthetic purposes.
- Thirty-five percent of the reported area is under forest land-use (area of Hazarganji-Chiltan National Park is excluded from forest area). In view of the expectation of further urbanisation of the district, it is of great importance to protect the existing forests and even to undertake and promote tree plantation.
- In order to enhance forest protection, the Forestry Department needs to be strengthened. Also, NGOs should increase their role in the field. Creating awareness among the population involved and promoting community participation is something to which the NGOs should give priority in this respect.
- Protected areas as Hazarganji show how the vegetation can regenerate when an area is free from interference from humans and animals.
- Lack of awareness of the systems, methods and economics of agro-forestry as compared to other land-uses.
- There is not much information available about the state forests in Panjpai tehsil.

- Some designated forests are without tree cover.
- The existing forest nursery is quite inadequate for providing planting stock to the farmers, government departments, education institutions, army and others.
- Agro-forestry has not been an attraction due to the availability of alternatives such as vegetation in the state forests, rangelands and the wider countryside (which unfortunately has degraded and is unable to support even the existing demand of the increasing population); and competition with fruit plants. Agro-forestry is negligible in the district as forest trees compete with fruit trees, especially in irrigated areas. Currently, most of the domestic energy need in the district is being met by fuel wood, which is becoming scarce.

4.7.2 Measures to be taken

The Forest Biodiversity Vision 2030 enshrines that “By 2030, Pakistan will be managing all types of forests on ecosystem approach, enabling them to perform potential functions of conserving biodiversity, providing sustainable livelihood to dependent communities....” This vision is very relevant for Quetta District.

None of the forests in the district or even in the province (whether state-owned, communal or privately-held) is capable of sustained exploitation of wood on a commercial scale. Rather, these are serving to meet the subsistence requirements of local communities for forest products, irrespective of legal rights. Conservation of biodiversity and sustainability of forests do not receive any consideration from the communities. The only aspect of forest management exercised by the Forest Department is “protection” through the Balochistan Forest Regulation, 1890, enforced ineffectively by low-paid and ill-equipped junior forest staff, getting little political support from their seniors.

The aspects related to biodiversity and environment (water recharge, soil conservation, safeguard against floods, countryside recreation and tourism, carbon sequestration) and meeting subsistence needs of local communities are more important than wood and Non-Wood Forest Products (NWFP)

for commercial exploitation or local livelihoods. However, these aspects could receive priority, attention and acceptance if the communities had access to alternatives of wood and NWFP from forests to meet the ever-increasing demand.

Participation of local communities in forest management is crucial for their sustainability. It is only recently that community participation has been started by the GEF/UNDP-funded Juniper Conservation Project in Ziarat district and is envisioned for replication by other projects there and in Quetta District.

The key Strategic Measures for realising Forest Biodiversity Vision are presented in Box 5.

- Expanding nurseries in public sector and supporting nurseries in private sector for supply of planting material throughout the year.
- Promoting agro-forestry in the district by raising awareness through forestry campaigns, supply of planting stock and technical support.
- Motivating communities to construct check-dams to conserve water and soil and plant forest trees for fuel and fodder.
- Controlling cutting of trees and other vegetation from the forest areas for marketing, and regulating removal of wood on sustainable basis by local communities for meeting their local needs and practicing efficient use;
- Development of nurseries of appropriate multipurpose species for planting in state forests, other potential areas around the orchards, along stream banks, roads, railways as wells as agro-forestry.
- Maintaining and extending urban forestry.
- Institutional strengthening of the Forest and Wildlife Department and reorientation of its staff.
- Replicating the Ziarat Juniper conservation model developed by IUCN with GEF/ UNDP funding.
- Promoting farmland planting with economic incentives, technical support

Box 5: Key Strategic Measures for realizing Forest Biodiversity Vision 2030

- All forests will be managed for biodiversity values and environmental functions, accommodating the subsistence use by the local communities to the extent of sustained productive capacity.
- Alien invasive species will be discouraged and eradicated, where possible.
- Major revenues from natural forests will generate from non-wood forest products, ecotourism, water production, carbon sequestration and protected areas.
- Ecology of degraded forests will be restored by planting with maximum number of species and by employing improved techniques of regeneration and protection.
- Sustained supplies of timber and fuel-wood will be largely met from farm forestry, raised with maximum number of native species.
- Role of the private sector, NGOs, CBOs and communities will be enhanced significantly under a proper legal cover.
- A management plan, for all juniper and other forests will be developed and implemented.
- Concepts and practices of ecosystem approaches will be promoted in forest management
- Capacity building of the forest staff and all other stakeholders will be undertaken to reorient them to the new ways of managing the forests and to effectively perform their role in this regard.
- Capacity building of forest staff and local people on participatory management, through site specific and need based training programmes.
- Alternate sources of livelihood will be promoted for the forest dependent communities.
- Energy efficiency will be improved by promoting fuel efficient stoves, and by supporting alternate energy sources , e.g., biogas.
- Import of timber from out-side the district will be encouraged and local taxes will not be imposed on the same.
- Vision 2030 on forest biodiversity conservation is unachievable unless the whole paradigm of forest management is centred on participatory planning and decision-making.
- Social mobilisation and. supporting village organizations for participatory forest management including control on illegal cutting, grazing etc. through legal cover and formal agreements; and developing and implementing village participatory forest management plans for the areas outside state forests.
- Provincial policies and laws need amending accordingly.

- and mobilisation of farming communities for raising multiple-purpose tree plantations for energy, fodder, soil conservation, biodiversity, carbon sequestration etc.
- Management planning of forests of Quetta District for objectives including biodiversity conservation, and maintaining environmental services, grazing, ecotourism, wild medicinal and aromatic plants, soil and water conservation etc..
- Launching watershed and range management programmes.
- Promoting forest and PAs based ecotourism.
- Implementing the forest management plan developed in the short-term for improving management of forests with participation of local communities.
- Increasing the extent of forest vegetation to meet the existing and latent needs of the district by supporting the local communities and farmers in raising and managing forest plantations on communal lands, along the stream and river banks around the storage and recharge dams, on the borders of fields etc.
- Motivating communities to participate in the management, development and sustainable use of the state forests and forest vegetation in the wider country side.

- Exercising control on land-use planning and development planning.
- Encouraging alternate sources of cooking and heating including farmland planting, getting supplies of firewood from Sindh to reduce pressure on the Juniper forest.
- Launching watershed management in the district, the construction cost of the dams should include the cost of watershed management and taking all relevant strategic measures in this regard.

4.8. Wildlife and Protected Areas

Wildlife and protected areas are important reservoirs of genetic diversity. They meet the conservation, recreation, educational and cultural needs of the society. The Juniper ecosystem is quite unique. Its vastness in Quetta and the adjoining Ziarat district reveals the significance of biodiversity in the area. Using the Juniper forest as the best example of less-stressed Juniper forest as a World Heritage Site has been on the cards for a long time. The other ecosystems found in the district include broad-leaved, wetland ecosystem, although limited to water reservoirs and seasonal streams as well as a diversity of agricultural ecosystems with their associated plant and animal species. Hazarganji-Chiltan National Park, a protected area (PA) of global significance due to viable population of endemic Chiltan goat (markhor) largely lies in the district.

4.8.1 Wildlife

The district is rich in biodiversity, especially wild fauna including the national bird, i.e., chakur and the endemic Chiltan goat, which has restricted range in Hazarganji-Chiltan National Park only. The other key mammal species include urial (*Ovis orientalis*), leopard, wolf, hyena, Pallas's cat (*Felis manul*), porcupine fox, jackal, hare etc. Perhaps chinkara (*Gazella bennetti*) no more exists in the district. The avifauna include golden eagle, hawk, falcons, shikra, bearded vulture, warblers, rock nuthatch chakur (*Alectoris chukar*), houbara bustard (*Chlamydotis undulata macqueenii*), see-see, grey partridge, sand grouse spp., blue rock pigeon, ducks, coots, waders and other resident and

migratory birds. The diversity of reptiles is high but representation of amphibians and invertebrates is low.

4.8.2 Protected Areas

A list of protected areas in Quetta District is given in Table 31.

Part of Karkhasa is now a part of the national park but is situated in the north, at a distance of about 10 km from Quetta. It is a 16 km long narrow valley having a variety of flora, such as ephedra, artimisea and sophora. Hazarganji-Chiltan National Park is only 15 km from Quetta City and attracts many visitors. The facilities for the visitors include a museum, wildlife watching, especially Chiltan goat watching in early morning and evening hours, and accommodation in rest houses.

The conservation and increase in the population of Chiltan goat in this national park is a success story. This was mainly the result of the interest by local communities, untiring efforts of the local game officials, keen interest taken by the Forest and Wildlife Department, political commitment shown through funding and interest of senior officers, and technical support provided by the WWF-Pakistan. Due to its global significance, the Hazarganji-Chiltan National Park was visited in 1990 by the Duke of Edinburgh in his capacity as the President of WWF International.

The Management Plan of the national park was developed by WWF-Pakistan on a contractual arrangement with the Forest and Wildlife Department, but unfortunately it has not yet been implemented.

4.8.3 Key issues

- Wildlife is depleted largely due to the loss of habitat and excessive exploitation through hunting in almost all areas of the district except Hazarganji-Chiltan National Park where the depleting populations have increased due to conservation efforts. The key issues facing the wildlife and PAs in the district include:
- The main causes for such widespread destruction and degradation range from rapid growth in human population to consequential changes in land-use with expansion of settlements and agriculture

Table 31: A list of Protected Areas in Quetta District

| Name | District | Location/ Area (Ha) | Established in (year) | Established to Protect | Current Status | Notes |
|------------------------------------|--------------------|--------------------------------|--------------------------|---------------------------|---|--|
| National Park | | | | | | |
| Hazarganji-Chiltan NP | Quetta and Mastung | 29°59'N 66°24'E 27421 ha | 1980 | Chiltan Markhor | Created from two forest management areas that had been extensively grazed. Trees and shrubs used for fuel. Contains the only viable population of Chiltan Markhor in Balochistan (IUCN: Vulnerable) Management Plan submitted by WWF-P to GoB, 1997 | <ul style="list-style-type: none"> ● Owes its success to the involvement of the community surrounding the park. Hazarganji State Forest declared in 1980 (2267 ha) Shahwani Tribe granted access to Chiltan Shrine and to collect shina fruit. (Pistacea Khinjik) British used the area for grass and fodder production. Chiltan designated State Forest in 1964. Last Urial Short in 1970s ● Settlement of tribe on boundary of park in 1992 led to illegal hunting, fuel wood collection and grazing in northern parts of the park. ● The Area (2351 ha) of existing Duzdara and Koh-e-Surko Game Reserve is likely to be included in this national park. |
| Game (Wildlife) Sanctuaries | | | | | | |
| Duzadara and Koh-e-Surko | Quetta | 2351 ha | 1999 | | Notified | <ul style="list-style-type: none"> ● Negotiation is being held with the community for inclusion of this area into the Hazarganji-Chiltan National Park. |

Source: Frisina et al. 1998; Groombridge 1988; IUCN 1997; WWF-P 1997

and development infrastructure, causing threats to habitats and species. The vital need of planning and managing these inevitable changes with least adverse impacts on biodiversity, wildlife and protected areas (PAs) is ignored.

- Over exploitation of species is a major problem, especially due to illegal and

unwise hunting, killing and trapping. Excessive use of agro chemicals in orchards, vegetables, introduction of plant species without trials and invasive alien plant species by default is another problem.

- Long-term vision, goals and management objectives of these resources, i.e.,

conservation and sustainable use, are lacking, and their treatment, at best, is ad-hoc and unscientific. The focus of the Forest and Wildlife Department (BF&WD) has been on protection of trees and game species in the wild. The other plant and animal life were relegated to low priority. Sound scientific planning and management of wildlife and PAs has been generally lacking.

- There is no specific provincial biodiversity, wildlife and PAs policy to provide comprehensive direction or guidance in this area. The Biodiversity Action Plan for Pakistan (2000) and the National Forest Biodiversity Vision 2006 of the Ministry of Environment are, however, useful. The 1974 wildlife law is outdated but it has been revised recently and is expected to be enacted by the Provincial Assembly in the near future.
- The punitive wildlife protection approach failed in halting the decline of wildlife and degradation of PAs due to alienation of local communities and lack of enabling provisions in it as well as weak enforcement of law.
- The institutional framework is generally inadequate and specifically inappropriate
- Inter- and intra-agency coordination and interaction with the non-state stakeholders (NGOs, communities, private sector, research and educational institutions as well as support seeking interaction with the media) are generally weak.
- The existing use regime of PAs (NP and Game Sanctuary) in Quetta District, as in other parts of the province, is not in accordance with the 1974 wildlife law. The existing categories of PAs are insufficient to accommodate such legally invalid but otherwise acceptable uses, within sustainability limits, for ensuring community participation and support.
- The current and potential social, economic, environment and cultural value of biodiversity, wildlife and PAs are not recognised widely. The low provincial funding, due to little political will and consequent low priority for wildlife, has remained a significant

and weak. The capacity of the BF&WD in undertaking education, training, research, survey, assessment, planning, management and monitoring of biodiversity, wildlife and PAs is very weak.



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Dwindling camel population

constraint. The words “biodiversity and protected areas” are still unfamiliar to the masses and politicians and thus have not attracted the attention of decision-makers and investment planners.

4.8.4 Measures to be taken

The vision for the district regarding wildlife and PAs is that the mandate and the entire working of the Balochistan Forest and Wildlife Department are changed in the light of the National Forestry Vision 2030, since commercial forestry is neither possible nor practiced in the province or district. The forests and rangelands are to be managed in order to meet the subsistence needs of local communities (mainly firewood, grazing and water), and for environmental services (including water recharge, soil conservation, biodiversity conservation, ecotourism and carbon sequestration which is saleable in the international market).

The vision in the context of wildlife and protected areas is to protect and enhance the natural environment by:

- Protecting, restoring and enhancing natural ecosystems.
- Exercising extraordinary care with ecosystems that contain species which are rare or endangered or are critical to living systems.
- Allowing extraneous material to be introduced to ecosystems only in such forms and quantities as can be absorbed by the receiving systems without material harm.
- Using renewable resources at no greater rate than they can be replenished.

The following strategic priorities will be pursued to visualise the vision:

Safeguarding against damaging developments: Environmental and biodiversity safeguards in land-use change are required to arrest further loss or degradation of species and habitats as the landscape in the district is susceptible to changes from rapid growth in population (requiring expansion of settlements) and the deteriorating food security situation in the province. Thus, the

use of environmental assessment tools such as the strategic environmental assessment (SEA) of policies, plans and programmes; and the initial environmental examination (IEE) and environmental impact assessment (EIA) of projects needs to be complied with. BUFFED, as the key agency to safeguard biodiversity, wildlife, wetlands and PAs in the province and district against the onslaught of damaging developments, will be active in playing its proactive role in this regard in collaboration with the BEPA and the development agencies.

Promoting sustainable use and best practices:

It is critical to gradually minimise and ultimately eliminate over-exploitation and other detrimental practices. Awareness raising of all user, stakeholder, development agencies, local communities, teachers, students and academia, media, politicians, decision-makers and planners can help in this regard besides creating demand for conservation and support for its high priority. Best practice field models will be established and promoted for replication through documentation and dissemination with economic incentives and technical support.

Improving coordination: Inter- and intra-agency coordination will improve by changing the composition and mandate of the Wildlife Management Board and making it functional to support the efforts.

Improving institutional framework: The institutional framework in Quetta District cannot be seen in isolation from what it is in the province and other districts. The conservation-related institutional framework in the province requires overhauling and improvement of structure, strengthening, capacity-enhancement, commitment, motivation, objectivity and accountability of staff at all levels. The key positions of the wildlife staff will be filled with technical persons. Specialists in the various aspects of biodiversity, wildlife, wetlands and PAs will be recruited in the BF&WD to incorporate scientific approach in planning and management and support wildlife conservation and PA management in the district.

Management and programme review of the BF&WD: The BF&WD will revisit its mandate, develop a long-term vision, goals, objectives and action plan for 5-10 years for the

province and districts, identify the need for human and financial resources for implementing the same, and then assess and adjust its management and programme accordingly.

Building capacities of BF&WD and other key organisations: This would require multi-faceted approach including competency development of individuals through education and training and strengthening of BF&WD as well as other key stakeholder organisations with focus on natural resource management, planning, development and finance, education, training and research, and organisations concerned with development of water, energy, industry, communications and other infrastructure.

The BF&WD including its staff in the districts should be strengthened in conducting scientific surveys and studies, wildlife and wetland inventory, resource planning, management and assessment for in-situ conservation and sustainable use of protected areas and species, communication and awareness raising, social mobilisation and community participation, programme and project planning, management and monitoring etc.

Strengthening planning and management: The GIS-based database for wetlands, proposed to be developed by the Pakistan Wetland Programme (PWP) at the provincial level, could be expanded for other ecosystems and the requirements of districts should be considered for promoting sound scientific planning, management and monitoring of the conservation resources. The management plans of PAs, the recovery, and the re-introduction plans of the endangered and wiped out species could benefit from such a database.

Participation of local communities will be encouraged and supported with economic incentives. Public-private partnership and partnership with relevant research institutions would be established for mutual benefit. Poverty reduction through sustainable alternate livelihoods, promotion of sustainable alternatives of relevant natural resources (if the use exceeds the production capacities), and gender will be the other guiding principles in planning and management of programmes and projects.

Although over-exploitation and illegal hunting is a major problem in the province, hunters and others involved in these offences are not approached through feasible options of forming hunters' associations. Keeping them out is not helpful due to weak enforcement of law. Hunters' associations will be formed and supported to seek their cooperation in sustainable use.

The Biodiversity Action Plan for Pakistan provides the basis for action to address issues related to biodiversity. It sets out steps to promote conservation and sustainable use of biodiversity.

Key measures for conservation for biodiversity include a comprehensive education and awareness programme; community-based sustainable use programmes; and developing institutional capacity to manage biodiversity including development of a biodiversity database.

- Early approval of the draft Balochistan Wildlife and Protected Areas Act, 2010, by the Provincial Cabinet and Provincial Assembly.
- Institutional strengthening and development of competencies of staff in planning, management, assessment and monitoring of wildlife and protected areas for creating a strong and effective set up for wildlife and PAs.
- Raising awareness of communities, teachers, students, staff of relevant public sector agencies and masses about the importance of wildlife and PAs, causes of decline and degradation of these, their roles in conservation and the expected benefits.
- Controlling hunting, trapping and capturing of wildlife, and its illegal trade.
- Improving intra- and inter-agency coordination and with other stakeholders including communities, private sector, NGOs, CBOs, CCBs, academia and media.
- Forest and Wildlife Department to activate the GIS node of PWP regarding wetland database to link with the National Council for Conservation of Wildlife (NCCW), PWP,



Hanna Lake

WWF-Pakistan and expand it to cover other ecosystems, PAs, habitats and species.

- Expediting the negotiation process with the community for early consent for merging Duzdara Game (Wildlife) Sanctuary with the Hazarganji-Chiltan National Park.
- Controlling land-use changes of critical habitats in the district through control of land-use planning and development planning, ensuring EIAs of projects and other development activities, Strategic Environmental Assessment (SEA) of policies and programmes and improving coordination as well as the processes of consultation; conducting EIAs of all big projects and other developments that are likely to impact forests, wildlife and PAs adversely, so that their possible negative impacts could be eliminated or mitigated.
- Ensuring participation of local communities in planning and management including sustainable consumptive use and benefit-sharing, e.g., from ecotourism.
- Supporting the communities in replicating the Torghar conservation experience, i.e., community participation, through social mobilisation, organisation, awareness-raising, capacity-building and economic incentives (community-based trophy-hunting).
- Enhancing funding for conservation of wildlife and PAs.
- Implementation of the management plan of Hazarganji-Chiltan National Park; monitoring and refining of the plan.
- Development and implementation of management plan of Juniper forests and institutional strengthening and capacity-building of their staff.
- Creating demand for conservation and enhancing political will and support of masses for conservation of nature by introducing and enhancing direct and indirect benefits of wildlife and PAs.

- Establishing additional protected areas on the state-owned biodiversity-rich areas for extending the network of PAs.
- Using the tools of information technology, GIS database and websites, and introducing work-related automation.
- Promoting wildlife and PAs related ecotourism.

4.9 Wetlands and Fisheries

There are no permanent natural water bodies in the district. Many small- and medium-sized reservoirs were developed for water storage or recharge. The medium-sized ones are called “lakes”, although this is a misnomer. Some of these reservoirs are also used for recreation. Resident aquatic birds and migratory water birds use some of these for staging during their migration in the direction of southeast and return migration towards northwest.

The significant wetlands in the district, especially for migratory water birds, include Hanna Lake, Spin Karez Lake and Wali Tangi Dam, but there is no commercial fishing there. The fish fauna of Karezes has endemism but it is not of economic importance. Generally, most of it has been wiped out or declined due to drying of Karezes.

The fish fauna of Karezes has not been studied fully and should be studied before it becomes extinct. Large number of people visits Hanna Lake and use mechanical boats. There is, therefore, some degree of disturbance to the migratory water birds during staging in winter and spring, and low level of oil pollution from boats.

The role and support of visitors can be enhanced significantly for conservation of wetland resources by explaining the importance of wetlands and conveying appropriate messages to them for raising their awareness and enhancing their enjoyment. A code of conduct for visitors would also be useful.

5. Economic Development

The economy of Quetta District is dependent on commerce and trade, transport, agriculture; fruit orchards and vegetables, mining, livestock and domestic tourism (the last two have considerably reduced due to urbanisation and insecurity, respectively). The process of rapid development induced through incentives is often accompanied by lapses and oversight of the regulatory controls, which lead to over-exploitation of resources, environmental degradation and marginalisation of some sections of population. Quetta District is no exception to this.

The WB-ADB-GoB (2008)⁷⁸ identified the pillars, sectors and areas of growth in Balochistan. These include (1) natural resources, (2) value-addition in industrial hubs and support services in urban areas, and (3) business environment which can be enhanced with transport, education and information. Agriculture, poultry and tourism are the other important potential sectors of growth and sources of livelihood and poverty-reduction in the district.



78 Government of Balochistan, World Bank and ADB. Balochistan Economic Report. Quetta: GoB, 2007.

5.1 Commerce and Trade

Quetta City is the largest commerce and trade centre in Balochistan and one of the largest in the country. Its watershed is not only the province and the country but also the neighbouring countries of Iran and Afghanistan as well as international markets. The rapid growth of the city is due to many reasons but commerce and trade heads the list for business as well as employment.

5.2 Industry

Markers Ice Factory, and Markers Alkaloid Limited in the private sector, and Bolan Textile Mill in the public sector were among the earlier investments in the industrial sector in Quetta City. However, the latter could not survive due to expensive transportation of cotton from a distance (not grown locally), lack of local skilled labour and

mismanagement. There are ghee and edible oil mills, flour mills, cold storages, ice factories, food-processing and beverage factories, and a large number of SMEs in the informal sector in the city.

Main industries in the district in 2009 are given in Table 32.

5.2.1 Key issues

- Haphazard growth of industry in the city in the absence of a proactively-planned industrial estate.
- Lack of trained local labour.
- Unavailability of raw materials at reasonable distances.
- Lack of the required initial investment, high risks and fear of unknown, and low profitability vis-a-vis commerce and trade.

Table 32: Industries in Quetta District (2009)

| S. No. | Name of Industry | Location | Status | Type | Remarks |
|--------|-------------------------------------|----------------------------|--------------|------|---------|
| 1. | M/s Mohkam Wood Industry | S.I.E., Sirki Road, Quetta | Unregistered | | |
| 2. | M/s Naz Furnitures | S.I.E. -do- | Unregistered | | |
| 3. | M/s Nurband Wood Industry | S.I.E. -do- | Unregistered | | |
| 4. | M/s Ghazavi Floor Mills | S.I.E. -do- | Registered | | |
| 5. | M/s Nadeem Flour Mills | S.I.E. -do- | Registered | | |
| 6. | M/s Adil Floor Mills | S.I.E. -do- | Registered | | |
| 7. | M/s Madina Floor Mills | S.I.E. -do- | Unregistered | | |
| 8. | M/s Masood and Company | S.I.E. -do- | Registered | | |
| 9. | M/s Dittu and Sons | S.I.E. -do- | Registered | | |
| 10. | M/s Quetta Plastic Factory | S.I.E. -do- | Unregistered | | |
| 11. | M/s Trans Balochistan Enterprises | S.I.E. -do- | Unregistered | | |
| 12. | M/s Kharan Marble Factory | S.I.E. -do- | Unregistered | | |
| 13. | M/s Haji Naseer Shaheed Flour Mills | S.I.E. ? | Unregistered | | |
| 14. | M/s Chiltan Ghee Mills | S.I.E. -do- | Registered | | |
| 15. | M/s Iqbal Brothers | S.I.E. -do- | Unregistered | | |
| 16. | M/s National PVC Pipe Factory | S.I.E. -do- | Unregistered | | |
| 17. | M/s Sharakat PVC Pipe Factory | S.I.E. -do- | Unregistered | | |
| 18. | M/s Super Slice Bread | S.I.E. -do- | Registered | | |
| 19. | M/s Fresh Food Industry | S.I.E., Sirki Road, Quetta | Registered | | |
| 20. | M/s Quetta Distillery | Quarry Road, Quetta | Registered | | |

| S. No. | Name of Industry | Location | Status | Type | Remarks |
|--------|--|--|--------------|------------------|-----------|
| 21 | M/s Farooq Ghee Mills | P.No. D-276-278 | Registered | | |
| 22 | M/s Ishaq Flour Mills | Sariab Road, Quetta | Registered | | |
| 23 | M/s Zia-ud-Din Flour Mills | P.No. A-7-9 Q.I.E. | Registered | | |
| 24 | M/s Jalil Food Industries | Sabzal Road Quetta | Registered | | |
| 25 | M/s Halim and Sons | Sariab Road Quetta | Registered | Ghee/Oil | Operating |
| 26 | M/s Haji Mohammad Shafi Tin Container | Mansafi Road Quetta | Registered | Tin Plates | |
| 27 | M/s Clifton Food Industries | Kirani Road Quetta | Registered | Bread | Operating |
| 28 | M/s Iqra Flour Mill | Western By-Pass Quetta | Registered | Flour | Operating |
| 29 | M/s Bolan Beverages (Pvt) Ltd | P.No. Q.I.E | Registered | Beverages | Operating |
| 30 | M/s Farooq Beverages (Pvt) Ltd | Arbab Karam Khan Road | Registered | Beverages | Operating |
| 31 | M/s Bolan Steel Industries | Kirani Road Quetta | Registered | Steel | Operating |
| 32 | M/s Habib Arkady | P.No. A-25-26 Q.I.E | Registered | Dextrose | Operating |
| 33 | M/s Chiltan Flour Mill | P.No. B-81-83 Q.I.E | Registered | Flour | Operating |
| 34 | M/s Habibullah Power Station | Chaman Road Quetta | Registered | Power Generation | Operating |
| 35 | M/s Merck Marker (Pvt) Ltd | Jail Road Quetta | Registered | Pharmaceutical | Operating |
| 36 | M/s Bolan RCC Pipe Quetta | Chaman Road Quetta | Unregistered | RCC Pipe | Operating |
| 37 | M/s Mohakam Soap Factory | Kansi Road Quetta | Unregistered | Soap | Operating |
| 38 | M/s Farooq Flour Mill | Arbab Karam Khan Road Quetta | Unregistered | Flour | Operating |
| 39 | M/s Hajvairy Steel Mill | Phase-IV Q.I.T.E | Registered | Steel | Operating |
| 40 | M/s Bolan Mining Enterprises | Model Town Quetta | Registered | Barites | Operating |
| 41 | M/s Dar Steel Mill | Phase-IV Q.I.T.E | Unregistered | Steel | Operating |
| 42 | M/s Agha Flour Mill | Link Road Hazarganji, Sariab Road Quetta | Unregistered | Flour | Operating |
| 43 | M/s Bilal Flour Mill | Phase-IV Q.I.T.E | Unregistered | Flour | Operating |
| 44 | M/s Ahmed Flour Mill | P.No. B-13 Q.I.T.E | Unregistered | Flour | Operating |
| 45 | M/s Insaf Flour Mill | P.No. B-5 Q.I.T.E | Unregistered | Flour | Operating |
| 46 | M/s Iqbal Flour Mill | P.No. B-9 Q.I.T.E | Unregistered | Flour | Operating |
| 47 | M/s Habib Sultan Flour Mill | P.No. A-19 Q.I.T.E Quetta | Unregistered | Flour | Operating |
| 48 | M/s Quetta Flour Mill | P.No. A-10 Q.I.T.E Quetta | Unregistered | Flour | Operating |
| 49 | M/s Pakistan Flour Mill | Western By Pass Quetta | Unregistered | Flour | Operating |
| 50 | M/s Quetta Chemical (Pvt) Ltd | P.No. A-3 Q.I.T.E Quetta | Unregistered | Ghee/Oil | Operating |
| 51 | M/s Mehran Ghee Mill | P.No. B-6 Q.I.T.E Quetta | Unregistered | Ghee/Oil | Operating |
| 52 | M/s Yawar Ghee Mill | P.No. C-64 Q.I.T.E Quetta | Unregistered | Ghee/Oil | Operating |
| 53 | M/s Shaheen (Serela) Cement Kolpur Darwaza | Spezand Road Quetta | Unregistered | Cement | Operating |
| 54 | M/s Shukrana Feed Mill | Sariab Road Quetta | Unregistered | Feed | Operating |
| 55 | M/s Ghazi Steel Mill Phase IV | Q.I.T.E Quetta | Unregistered | Steel | Operating |

- A high level of insecurity.
- Strike culture in the city.
- Environmental issues including air, noise, soil, land and water pollution.
- Workers' safety and occupational health issues.
- Health-care and other facilities expected through the social security system and Employees Old Age Benefits schemes are available to permanent workers, leaving out a significant number of contractual labour.
- Monitoring of workers' safety and occupational health conditions as well as efficient delivery of social security facilities and old age benefits to the workers of industries by the Labour Department and Mining Directorate.
- Using the industry and services/utilities related policies to keep the industries competitive and attractive for new investors.

5.3 Micro, Small and Medium Enterprises

The water-related issues, policies and strategies regarding industries are given in Table 33.

5.2.2 Measures to be taken

- As per law, pursuing industries for treatment of industrial effluents and air emissions to keep these within permissible NEQS limits; safe disposal of solid waste; contributing to social welfare as corporate social responsibility (CSR), safety at workplace, social security and old age benefits for workers.
- Regular periodic monitoring by the Balochistan EPA to validate safe disposal of industrial solid waste and compliance of NEQS.

According to WB-ADB-GoB (2008), a major global re-structuring is underway in the manufacturing as well as services sector. This has taken the form of relocation of manufacturing, design, and service activities to places where cost-reduction can be achieved without compromising reliability. Such activities are generally undertaken by small and medium enterprises (SMEs), which comprise the bulk of any nation's economic units and contribute significantly to employment.

The contribution of small and medium industries (SMEs) to Pakistan's economy, employment-absorption, and poverty-alleviation can be gauged from the fact that 90 percent of all private sector manufacturing

Table 33: Water related issues, policies and strategies regarding industries

| Issues | Policy | Strategy |
|---|--|---|
| Inadequate water supply for industries | Ensure adequate supplies of water for industry on priority basis to promote industrial development and economics growth. | Review, enhance and incorporate water for industry needs in all future planning. |
| Unauthorised ground water extraction | Curb unauthorised groundwater extraction by industries. | Review existing legislation and enact amended regulation laws related to water pumping, licenses etc. |
| Disposal of Industrial effluent without treatment | Enforce measure for treatment of industrial wastewater (under EPAs) to protect water bodies and effective monitoring. | Promote industrial expansion on larger industrial estates to simplify wastewater treatment and monitoring of effluent disposal. |
| | | Enforce effective implementation of effluent disposal standards. |
| | | Promote community participation to check water pollution. |

Source: Draft National Water Policy (2006).a

Box 6: National Vision 2030 Regarding SMEs

National Vision 2030 proposes to overcome the serious deficit of SMEs to adapt and improve hardware and processes, by increasing their internal and external efficiencies through training in skills and better managerial practices and technological levels. The purpose is to bring them at a plane where they can interact positively with large modern companies in Pakistan or abroad, or even the modern SMEs in the Newly Industrialised Countries (NICs).

The mechanism whereby technology and business skills are delivered or embedded in an SME is of paramount importance. This *change management* (training, skill development, and adaptation of technology) has been institutionalised in a series of clusters and training programmes across the country, since low-income, small- and micro-enterprises in developing countries always tend to under-invest in innovation relative to the social optimum.

Business networking and trust will be enhanced through better contract enforcement, as part of the overall enabling environment. Instruments for micro- credit and information technology will further help fill the gap in the SME sector, viz-a-viz networking and match-making for markets and technology.

Since women outnumber men in farming and dairy activities, it will be essential to prepare female trainers for extension services in order to improve the capacity of rural women. An important initiative is the recently launched AHAN project (*Aik Hunar-Aik Nagar* or 'One' product – 'One' village) which is expected to provide an important instrument for upgrade of skills and marketing of village enterprises. It will further improve the linkages with the small farmer, who generally stays away from large industry.

Non-farm activities and incomes will be further strengthened through encouragement of co-operatives, which can promote small-scale industry thus helping poor non-farm households to improve their livelihood. The initiative for more efficient use of water for agriculture (land levelling, or drip/sprinkler irrigation) is one example of new activities which will require a higher set of skills for operation and maintenance, and are therefore eminently suitable for seeding of new rural micro-businesses. Community development will follow community mobilisation.

units employ less than 99 persons. Their impact is extremely high in the manufacturing sector, even when most of this may be employment-generation at 'subsistence levels'. They contribute seven percent to GDP, and produce 25 percent of exported manufactures. However, low investments in technical and managerial skills, coupled with an unfavourable legal, regulatory, and taxation environment, prevents the SMEs from achieving their actual growth potential for employment, income-generation, and poverty-reduction.

In the 1980s-90s, it was shown that manufacturing could be undertaken anywhere; now designing can also be done anywhere. These activities are ideally suited for SMEs if they can become partners in an internationally accepted supply chain. This is the peril, but this is also the promise of the present globalisation. The WB's vision of Pakistani SMEs is to evolve these into major global players and conglomerates through this activity, offering complete end-to-end services in the supply chain, whether as manufacturers

of piece parts and systems, or providers of IT-enabled services.

The key ingredient needed to make SMEs competitive is enhanced technical and organisational capacity. Earlier attempts in this direction in Pakistan and elsewhere were not very successful, partly due to limited conceptualisation of technology and its role in development, and lack of practical experience in project implementation and delivery mechanisms.

National Vision 2030 proposes to overcome the serious inability of SMEs to adapt and improve through training in skills and better managerial practices and technological levels (Box 6) for interacting positively with large modern companies in Pakistan or abroad.

In Quetta District, fruits, vegetables, livestock produce and minerals offer the highest potential for setting up SMEs and industries. There were 154 cooperative societies⁷⁹ in Quetta District in 2006-07 having 6,950 members, Rs.3.331 million as share capital,

79 Registrar Cooperative Societies, Quetta.

and Rs.30.214 million as working capital. These are comprised of provincial cooperative bank, central non-credit societies, agricultural cooperative societies and non-agricultural cooperative societies.

5.3.1 Key issues

- Lack of information regarding potential, technology and costs.
 - The lack of or low technical and managerial skills and entrepreneurial capacities.
 - Unfavourable policy, regulatory, taxation and bureaucratic environment is prohibitive in achieving growth, enhancing employment and income generation, and reducing poverty.
 - Lack of credit facilities or difficulties involved in accessing it.
 - Competing with the well-established enterprises with advantages of location, skilled labour availability, access to credit, and information about technology and market chains is difficult unless heavy public sector support and patronage becomes available.
 - Security situation in the district is unsatisfactory.
- plans. The way forward can be worked out in collaboration with SMEDA.
- Increasing investment in developing technical expertise and skills for modernisation of agriculture, livestock and mining sectors, and development of SMEs in the district.
- Using instruments of micro-credit and information technology to further help fill the gap in the SME sector, i.e., networking and match-making for markets and technology.
- The initiative for more efficient use of water for agriculture (land-levelling, or bubbler irrigation) is one example of new activities that will require a higher set of skills for operation and maintenance, and are therefore eminently suitable for seeding of new rural micro-businesses.
 - Improving the security situation in the district.
 - Conducting a comprehensive study for setting up SMEs.
 - Ensuring comprehensive EIAs of all industrial and most SMEs projects and implementation of mitigation measures.
 - Developing, after proactive planning and managing the settlements, roadside facilities and SMEs to avoid unplanned growth and related environmental and other issues.

5.3.2 Measures to be taken

The National Vision 2030 will be implemented, which proposes to overcome the serious inability of SMEs to adapt and improve by increasing the internal and external efficiencies of SMEs through training in skills, better managerial practices and technological levels, enhancing networking and trust through better contract enforcement for interacting positively with large modern companies in Pakistan or abroad. The focus in the district will, however, be on promoting SMEs, mainly for increasing the production of raw products and for value-addition, in mechanisation of agriculture, mining, poultry farming, ecotourism, value-addition in agriculture and livestock products, handicrafts etc. In this regard, the steps required to be taken are identification of the types of SMEs; preparation of their technical and economic feasibilities; support to such ventures and developing and implementing feasible action

5.4 Minerals and Mining

The WB-ADB-GoB (2008) in the Balochistan Economic Report have assessed the mineral and mining in Quetta District as one of the pillars of economic growth.

5.4.1 Minerals

The mineral resources found in the district include coal, marble, fluorite, limestone, building stone and clay. Coal mining activity has been in operation at Sorange for the past hundred years. Only male labour, mostly from Khyber Pakhtunkhwa is involved in mining of coal. It is marketed through middlemen (commission agents) who transport it to Sindh and Punjab where it is used in brick kilns. Private sector is actively involved in the mining sector. The district has not yet

Table 34: Prospecting licences number and mining leases number in Quetta District

| S. No. | Minerals | Prospecting Licences | | Mining leases | | Total | |
|--------|----------------|----------------------|-----------------|---------------|-----------------|------------|-----------------|
| | | No. | Area (acres) | No. | Area (acres) | No. | Area (acres) |
| 1. | Coal | 34 | 30124.66 | 47 | 31754.13 | 81 | 67878.79 |
| 2. | Limestone | 20 | 1803.40 | 9 | 581.60 | 29 | 2385.00 |
| 3. | Ordinary stone | 0 | 0 | 3 | 92.20 | 3 | 92.20 |
| 4. | Marble | 5 | 2729.51 | 1 | 50 | 6 | 2779.51 |
| 5. | Fluorite | 1 | 1000 | 0 | 0 | 1 | 1000 |
| | Total | 60 | 35657.57 | 60 | 32477.93 | 120 | 68135.50 |

Source: Balochistan Directorate General of Minerals, Quetta.

exhausted its potential of exploring and exploiting coal reserves and a comprehensive survey needs to be carried out.

Mineral concessions in the district (as of 30 June 2009) are given in Table 34.

5.4.2 Mining

It is believed that the mining sector has considerable potential; however, its potential role in the economy of the district has not been fully realised. The sector has thus been limited to extraction of those minerals that can be located and exploited with little effort.

Minerals found in the district are coal, marble, fluorite, limestone and ordinary stone. Other construction materials such as clay, sand and gravel deposits are also found in the district.

Fluorite mining by the private sector is often carried out on a sporadic basis to supply small tonnages only, as and when the opportunity arises. Royalties are payable on any mineral that is mined, and hence the lessees of the mines declare only a part of the production to avoid payment of full royalty. This leads to reduced government revenue and discrepancies in statistics.

Minerals and rocks are being used in local industries and for other domestic purposes. Potential exists for large-scale export of certain mineral commodities like marble, building stones, provided export markets could be developed. Enormous resources exist for local consumption in the form of cement raw material and aggregates for use in the construction industry.

Although the mining industry could generate as many jobs as currently existing, little has changed in the mining sector since preparation of the Environmental Profile of Balochistan⁸⁰ which raised concern about water and air pollution caused by coal mining. Remedies were proposed including the treatment and management of the coal waste and sulphur dioxide emissions, as well as the preparation of EIA (Environmental Impact Assessment) Reports of the potential mining developments.

The development of major mines and the lack of attention to water management may preclude other mining operations in the basin in terms of both water availability and economics.

5.4.3 Key Issues

- Like other sectors, the lack of funds for exploration and proper feasibility studies is one of the main constraints.
- The mandate of the Mines and Minerals Department is presently less focused on mining and more on royalty collection.
- Exploitation is becoming more difficult and expensive, as the base of coal reserves is horizontal and narrow.
- Mining is done in traditional ways. Mostly, labourers collect the minerals with the help of a trolley, a pickaxe and a hoe, and use a generator for pulling and loading. Very few mine-owners use the latest technology.

80 van Gils, H. A. M. J. (editor) and M. Shabbir Baig (editor). *Environmental Profile Balochistan Pakistan*. Enschede: ITC, 1992.

- Minerals and mining remained a provincial subject, as it was not devolved under the previous, now defunct, local bodies system. The current environment does not enable exploitation of the great potential of mining in the district, which could be further improved by the provincial and federal governments.
- Research and management data is put in the manual files and shelved without any analysis and not used as a basis for policy and management decisions. Accounts are still prepared manually and are not computerised. Licences for exploration and mining are thus granted on an ad-hoc basis.
- MIFA at the provincial and MIFV at the federal level are yet to be established. The National Mineral Policy and the AUSAID-funded report about the re-organisation of the department and its systems have not been implemented.
- Geologists and other professionals feel frustrated as mining engineers at decision-making level dominate the department. Some impacts of this are said to be a lack of monitoring of the leases, that the relevant expertise in the provincial department is not being fully utilised, and that the decisions, regarding licences, exploration and royalty rates for example, are not based on sound scientific knowledge. The impact of it is on both rational management regimes and the revenue of the provincial government. The auction system, although well-conceived, is said to have failed to yield the intended results due to faulty implementation. Extraction of marble blocks results in wastage and increase in transportation cost.
- Although Quetta District has an obvious potential for mining, most of the area is as yet unexplored. The main bottlenecks in exploitation and development of minerals are the lack of infrastructure and the high cost of estimating the reserves and preparing feasibility reports.
- Most of the minerals are sold in raw form. Value-addition is not done, limiting the employment and income-generation opportunities.
- Often, the mine-owners do not get a fair price due to distantly located markets.
- Incomplete documentation of the quantities of minerals extracted; the production of minerals is grossly under-reported to avoid paying full royalty.
- Scarcity of skilled labour; local labour is not skilled in mining and is not easily available.
- Poor safety and occupational health condition, and a lack of social security and old age benefits to the workers.
- Damage to human or animal life, landscape, soil erosion, silting of streams etc. could occur from untreated mines.

5.4.4 Measures to be taken

- Establishing computer-based system for data and information management in the Directorate General of Mines and Minerals, Quetta.
- Developing proper GIS database to support development and implementation of mineral-based plans.
- Encouraging the mine-owners to contribute in the context of their corporate social responsibility (CSR) in raising awareness about and improving education, health-care, livelihoods and environment.
- Addressing occupational health, workers' safety and environmental issues.
- Monitoring production and realising full royalty.
- Providing and arranging technical support, electricity, monitoring, credit
- Using new technology and safety measures shall be applied in the mining sector.
- It is imperative to adopt a modern mining strategy. Steps will be taken to promote public and private sector cooperation with teamwork spirit, resolving obstacles faced by the mining sector. Sustainable mining strategy shall focus on modernising the provincial mineral directorate and update



Coal mining site near Quetta

- data on each mineral with helpful maps for entrepreneurs.
- Establishing Mining Export Processing Zone in Quetta District for the minerals mined in Quetta and the adjoining districts, including marble, lead and zinc, magnetite, etc.
- Cutting and transportation of marble sheets at the mining sites will be more economical and will provide jobs to the local people. Wastage in marble extraction will be minimised with the use of appropriate technology.
- Promoting value addition instead of marketing the raw mineral.
- Creating enabling environment for foreign investors.
- Using technology for improving efficiency and quality of extracted materials.
- Value-addition instead of marketing the raw mineral.
- Further exploration of minerals and non-mineral deposits.
- Exploring the scope for utilising limestone by cement factories.
- Undertaking complete geological survey of the district, especially of the mineral-rich area, with modern equipment and techniques.
- Promoting large-scale commercial mining of several other minerals that are found in the district.
- Treating abandoned quarry sites for safety, landscaping, and disposal of waste and loose materials.
- Developing marble and dimension stones (granite and limestone) mining systematically to add a new dimension to the economy of the district.

5.5 Energy

At the national level, current per capita electricity consumption (14 million BTUs as against 92 million BTUs for Malaysia) is low in Pakistan. A target of 162,000 MW of power-generation by 2030 was projected in the Energy Security Plan (2005-2030) against the

effective supply of less than 18,000 MW currently to meet the short fall.

The energy-related problems that were experienced, especially during 2008 - 2010, include:

- Load-shedding, breakdown of power conveyance and generation systems.
- Steep rise in power tariff and prices of fossil fuels.

The public, industries, tubewell-owning farmers, traders, transporters, commuters and others face great inconvenience because of unprecedented load-shedding, and its multiplier effects on the prices for all commodities, utilities and services.

5.5.1 Oil and Gas

Potential gas deposits exist on the eastern part of Quetta Sadar. Gas exploration began in the late 1990s in Quetta Sadar and in the adjoining Torshore area of Harnai district, with success in the latter.

Quetta City and its suburbs are supplied with natural gas. There are a total of 72,867⁸¹ gas connections, out of which 71,188 are domestic, 1,613 commercial and 66 industrial connections. Fuel wood, cylinder gas and animal dung are used as other sources of energy, especially in the remote rural areas of the district.

5.5.2 Power

A Coastal Power Plant has been set up in Quetta under private ownership and is producing electricity, which is supplied to the national grid. This is a gas-fired plant which is comparatively clean.

The major sources of energy are used for light, fuel and power for industry as well as tubewells for agricultural and drinking water purposes. Since the electricity is being provided from the national grid in all parts of

the district, there has been an acute shortage of power due to huge demand-supply gap in the country, hence frequent and long periods of load-shedding and fluctuations in power supply. Militants and insurgents, frequently damage power pylons and transmission lines, affecting the supply of power to consumers of all kinds. As a result, efficiency and production of industry, SMEs and human resource suffer. The machinery and equipment operated with electricity are damaged. The agricultural production is also adversely affected.

Supply of power to agriculture tubewells is on a subsidised flat rate. This has many implications. It is against equity as only the privileged people benefit from it; there is burden on the financial exchequer of the provincial government and motivation to the owners to mine groundwater, which already stands depleted seriously.

Out of 193,588 consumers⁸² of electricity in the district in 2007-08, 139,803 were domestic, 49,739 commercial, 1,341 industrial, 2,485 agricultural and 220 others. Out of 195,007 consumers⁸³ of electricity in the district in 2008-09, 140,649 were domestic, 50,272 commercial, 1,289 industrial, 2439 agricultural and 358 others.

The coverage of electricity in the Quetta District is reasonable. There is acute shortage of electricity. Farmers and other users have been experiencing long periods of load-shedding of electricity in the district during summer of 2006 onwards, partly due to damage to transmission infrastructure outside the district. Fuel wood is the main source for cooking and heating, and kerosene for lighting, in remote rural areas which have not been supplied electricity so far.

These are two important constraints for extension of the coverage of electricity through the national grid (1) the countrywide gap in supply and demand of power and (2) the rural areas are relegated in power supply throughout the country. There is limited use of LPG cylinders due to deficiency in supply and

81. Government of Balochistan. Planning and Development Department. Bureau of Statistics. Development Statistics of Balochistan 2008. Quetta: GoB, 2008.

82. Government of Balochistan. Planning and Development Department. Bureau of Statistics. Development Statistics of Balochistan 2008. Quetta: GoB, 2008.

83. Government of Balochistan. Planning and Development Department. Bureau of Statistics. Development Statistics of Balochistan 2009. Quetta: GoB, 2009.

un-affordability because of high cost. Kerosene and electricity are used for lighting only. Kerosene is expensive. A limited number of households and businesses use electric generators during load shedding, which is common. Agricultural tubewells suffer the most.

5.5.3 Key issues

- Inadequate coverage of electricity and frequent load-shedding and fluctuation in voltage in the district as elsewhere.
- High cost of LPG cylinders is a constraint due to which people in the rural areas without electricity, cannot afford LPG.
- Growing pressure on forest and rangeland vegetation resulting in dwindling status of energy sources for cooking and heating.
- Lack of progress towards developing alternative energy.
- Besides other factors, shortage of energy has not allowed the development of SMEs in the district.
- There are conveyance losses, theft and inefficient use of electricity by the consumers. Public sector agencies and commercial entities default in payment of power and gas bills. Efficiency of work force and entities has gone down due to load-shedding.
- Interest and visibility of oil and gas exploration companies in the province and district is low.
- Promoting efficient use of energy (tuning of vehicles, tubewells, efficient cooking stoves, saver bulbs etc.).
- Promoting the use of and arrange regular supply of LPG cylinders in the urban areas through regulated marketing mechanism that is monitored.
- Introducing metering of electrical tubewells and adopt a slab system of tariff on the electricity consumed, with limited, reasonable subsidy. Alternatively, instead of subsidising electricity for tubewells, subsidy would be given to the procurement and use of efficient technology-intensive irrigation systems.
- Improving electricity coverage from the national grid and reduce load-shedding and fluctuation in voltage.
- Reducing the use of fuel-wood to reduce pressure on the natural vegetation in the forest areas by promoting fuel-efficient stoves and alternatives such as coal and coal dust bricks.
- Encouraging exploration of gas and oil in the district.
- Promoting and subsidising development alternate energy sources including off-grid solar PV, wind energy for rural electrification, solar thermal for heavy load, especially for dispersed application, and biogas for cooking and heating in the rural areas.
- Raising fuel wood plantations and undertaking agro-forestry on farmlands.

5.5.4 Measures to be taken

From a long-term environmental and economic perspective, appropriate energy goals for the district are meeting shortfall of power and fossil fuel, LPG and CNG; conservation of energy; and identification and use of new renewable sources of energy, especially solar.

The district depends on power supply from QESCO system, which needs beefing up. There is great potential for exploiting solar energy due to long sun hours. Wind energy could also be explored in potential areas in the district.

5.6 Culture and Ecotourism

5.6.1 Culture

There are some mounds and karezes of ancient time in the district. The most important archaeological site is a Quetta Miri (a mass of indurate clay). The base of Miri is 183 metres long by 122 metres wide and rises 24.4 metres above the plane. The Miri is now used as an Arsenal. Among other noticeable mounds are the one between Katir and Kuchlak, known as the Kasiano Dozakh, Tor Ghund near Baleli and Tor Wasi between Panjpai and Muhammad Khel. Besides, some

karezes of archaeological interest can be found at Kirani, Sariab and Kechi Baig.

The most important archaeological sites in the district are listed in Table 35.

5.6.2 Handicrafts

Embroidery is a prominent activity for women. It is not only an economic activity, but also a traditional heritage of this district. Quetta,

being a multi-lingual and multi-cultural city, is the custodian of traditional heritage of Pushtoon, Baloch, Brahu, Hazaras, Punjabis, Parsis, Hindus, Christians etc., therefore a variety of handicrafts can be seen here.

The traditional handicrafts include embroidery work on kameez and shalwar for children and women as well as embroidery on caps and bed covers, pillow covers etc. Traditional handicraft activities also include making

Table 35: Most Important Archeological Sites in Quetta District

| S. No. | Name of Site | Period | Legal Status | Area | Salient Features / Location of the Sites |
|--------|-------------------|-----------------------|--------------|-------------------------------|---|
| 1 | Kill Gul Mohammad | Neolithic/ Bronze age | Protected | 98.6x45.2m Height: 8m | Located 3 km northwest of Quetta City on the left side of the road leading to Chaman Discovered in 1949 and excavated in 1950. Cultural materials recovered were painted pottery, bone spatula, and terracotta humped bull figurines. |
| 2 | Kechi Beg | Early Bronze age | Protected | 45.72x22.86m Height: 4.52m | Located 8 km south of Quetta City on the road leading to Sibi Excavated in 1950 Various pottery types contained bio-chrome, monochrome, and polychrome painted designs. |
| 3 | Damb Saddat | Early Bronze Age | Protected | 140x105m Height: 14m | Located 13 km southwest of Quetta Town Excavated in 1950 Yielded mud-brick walls on stone foundation Cultural materials were painted pottery, bone implements, beads, scrapers, cores, and terracotta figurines of humans and animals. |
| 4 | Ahmad Khanzai | Bronze age | Protected | 45.72x12.2m Height: 3.5m | Located 5 km south of Quetta Town Excavated in 1950 Yielded painted pottery of Bronze Age, including beads of lapis lazuli and chalcedony |
| 5 | Quetta Residency | 1878 and 1936 | Unprotected | — | Built of mud brick and partially with burnt bricks It was the residence of the Assistant Governor General of Balochistan during British Rule. Now used as Governor House. |

Source: GoB and IUCN (2000)

woollen sweaters. Mirror work and embroidered jackets, shirts, hand bags are common traditional items.

To popularise the traditional handicrafts in this area, the relevant government agencies and NGOs working for betterment of women have taken a keen interest and started a number of programmes for training of girls and women. The programmes also include several carpet-weaving centres. The women who are engaged in embroidery work sell their finished work to the local shopkeepers.

Women make handicrafts, both within and outside their houses. There is also an opportunity to sell their ware outside the district through NGOs. In this connection, exhibitions are held periodically in Quetta, Karachi, Lahore, Islamabad and other places.

5.6.3 Nature and ecotourism

Balochistan is the fruit basket of Pakistan. Almost all temperate fruits are grown in Quetta District. The fruit-laden orchards and their spring blossoms are an attractive sight. The Quetta Valley is surrounded by mountains. The Hazarganji-Chiltan National Park is a major eco-tourism attraction in the district. This is one of the most outstanding national parks of Pakistan. It has given protection to this globally endangered endemic animal species called the Chiltan Markhor. There is a splash of colours during the spring season when most of the plants including wild tulips are in full bloom. The park is easily accessible from Quetta City and attracts many visitors that include nature lovers, students, scientists and researchers. The best time of the year to visit is from March to September.

The Hazarganji-Chiltan National Park has a cultural significance as well. "Hazarganji" literally means "a thousand treasures". Legend has it that in the folds of these mountains, there are over a thousand treasures lie buried, reminding people of the passage of great armies down the corridors of history. The area is mountainous with precipitous slopes divided by ravines. Tourists can stay at the rest houses of Hazarganji-Chiltan Park.

Other important wildlife and Protected Areas (PAs) include Takatu, Central Zarghoon, Karkhasa and Hanna Lake and Spin Karez Lake for water birds. The diversity of species, both terrestrial and aquatic, is high and

includes leopard, Chiltan goat, markhor, urial, terrestrial and water birds, waders, reptiles, amphibians and invertebrates.

The outer countryside and outdoor recreational resources also include Hanna Lake, Spin Karez, Karkhasa, orchards of Hanna-Urak, Central Zarghun Forest cum Wali Tangi Dam and Askari urban Park. Shopping of a range of merchandise in Quetta is an attractive proposition. Great tourist attractions such as Ziarat, Bolan Pass and Chaman are within easy reach from Quetta. From Quetta, other tourism spots like Bund Khushdil Khan and Ziarat are also easily accessible.

Quetta is famous for its traditional cuisine, particularly *Sajji* (roasted goat), *Khadda kabab* (goat roasted in a pit), *Roash* (fried meat), *Chappal Kabab* (made of minced meat), *Afghani Naan* etc.

Maintenance and use of archaeological sites with proper interpretation and promotion, offering packages of archaeological, other cultural properties and natural sites to tourists would be very helpful. These cultural properties and other tourism resources would be preserved, interpreted and promoted for tourism.

There is a wide scope for the tourism industry in Quetta District and Balochistan as a whole. What is needed is to exploit the tourism potential of this area. The government, through the Pakistan Tourism Development Corporation (PTDC), has tried to introduce Quetta and other tourist spots in Balochistan to potentially interested tourists in and outside Pakistan. For this purpose, attractive pamphlets with complete information are available free of cost. The PTDC offices provide information and assistance if needed.

5.6.4 Key issues

- There is a sense of insecurity and a negative image of the region due to insurgency.
- Lack of tourism-related infrastructure and facilities.
- Lack of promotion of tourism assets.
- The requirement of NOC/ visit permit, issued by the provincial Home Department, for foreign nationals to visit

places outside Quetta City is also a negative factor and validates the concerns of the foreigners about the likely security situation.

- Most visitors make day trips, which does not contribute to significant income to the local people.
- The National Vision 2030 aims to exploit the great potential of cultural, natural and religious tourism of the country to its optimum level for employment generation. Quetta will adopt and implement this vision. The district wants tourism to be the fifth largest income earner for the local people after commerce and trade, agriculture, livestock and mining by 2020.
- Opening the province and the district to domestic and foreign tourists and do away with the requirement of visit permits. There is no possibility of promoting tourism as long as this condition is there.
- Conducting research and developing information packages on the district's archae
- Developing and promoting community-based tourism for enhancing the income of the local people.
- Encouraging the private sector to develop tourism infrastructure including lodges and eating-places and other tourist facilities.
- Identifying and interpreting caves and carvings as other tourist attractions.

5.6.5 Measures to be taken

- Preserving, interpreting and promoting tourism of ecologically-attractive areas and cultural properties, and other elements like handicrafts, folklore in the district.
- Improving the security conditions in the district and province.
- Improving roads and developing tourist infrastructure including accommodation, and arranging evening cultural events to motivate them to stay overnight or even for several days.
- Selecting and training local educated young persons as tour guides and linking



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A view of the street plantation in Quetta

them with the national and international companies; also training receptionists, cooks and other personnel linked with tourism.

- Development and implementation of codes of conduct for visitors, communities, tour guides and tour companies, and transporters.
- Identification and planning of sites for development of tourist facilities and preparing projects for investment by the private sector or, alternatively, PTDC, if the private sector does not come forward.
- Seeking support of the federal and provincial governments for providing incentives to private sector for development of tourist facilities.
- Supporting and nurturing sports and local cultural activities in educational institutions.
- Promoting community- based⁸⁴ tourism; involvement of local communities in tourism management and their participation in touris-related occupations.
- Creating awareness and love for nature and natural phenomena, such as the Juniper forests in Zarghoon, by sensitising visitors about them.

5.7 Communication and Other Infrastructure

It is true that development in any area follows the development of communications infrastructure that makes the area accessible. The district enjoys a strategic location. As a result, it would be growing as a hub of transport system that links the provinces of Punjab and PK with Balochistan. There has been good progress on road development in the district during the last five years.

5.7.1 Highways and Roads

Quetta is linked by air, road and railways with all parts of the province, the country and

regional neighbours. A network of metalled roads links all major towns and villages of the district. Three major national highways, i.e., Karachi-Quetta, Quetta-Jacobabad and Quetta-Qila Saifullah National Highways, serve Quetta. In addition, there are metalled and shingle roads in most parts of the district.

During 2005-06 total road length was 996 km in Quetta District (594 km black-topped and 402 km shingle) while during 2006-07 total road length was 1,066 km (664 km black-topped and 402 km shingle)⁸⁵. National highways are the responsibility of the National Highway Authority (NHA). The maintenance of provincial roads is the responsibility of the C&W Department.

An initiative of rail link from Gwadar to Mastung, Quetta and onward to China is on the anvil. This mega-development is necessary for the optimum use of the Gwadar Port. However, this development should be environment-friendly.

5.7.2 Key issues

- Although this sector consumes the maximum public sector budget, the road conditions are less than satisfactory.
- All urban-based key issues and measures have been discussed above in Section 3.7.

5.7.3 Measures to be taken

- Ensuring comprehensive EIA and implementation of mitigation measures for all infrastructure development.
- Ensuring that settlements do not grow along the highways, railways and roads.
- The measures regarding transport in urban areas are discussed in the Section 3.7. above.
- Maximising benefits of the envisioned mega-projects of communication infrastructure, i.e., improvement of national highways and the broad-gauge

84. Community provides accommodation, meals, tour guides, porters, and pack animals against reasonable charges as well as opportunity to the tourists to interact with the community and enjoy their culture – folklore, music, songs, dance, etc.

85. Communication and Works Department, Government of Balochistan, Quetta.

railways by using EIA and participating actively in their designing and planning.

5.8 Private Sector and Public-Private Partnerships

According to WB-ADB-GoB (2008), the revival of private sector investment is a major element of the National Vision 2030, in the environment of deregulation, liberalisation and privatisation. Notwithstanding a host of tax concessions and incentives provided to the private sector, it remains shy and fails to make investment in the domestic economy of the right quality and magnitude.

On the other hand, private sector is inhibited in its investment initiatives by diverse factors such as high prices of utilities, many administrative barriers to investment such as corruption and red tape, and higher costs of inputs resulting from the ubiquitous imposition of 15 percent GST.

In this context, privatisation of strategic assets in energy may need to be re-examined, and separation of ownership from responsible corporate management practices must be

reinforced. Public-private partnerships in Pakistan have been successful in telecommunications (privatisation and management transfers) and in highways (construction and/or toll collection). It can be extremely effective in sanitation and waste collection.

New models for partnership are being experimented within Pakistan at present. A policy and operational framework for fostering public-private partnerships is gradually evolving in order to facilitate provision of resources, technical expertise, outreach and financial mechanisms. Private sector should be regulated to the extent that its initiative is not stifled, while the state should focus on institutional arrangements, performance-assessment, licencing and accreditation of service delivery facilities, and quality assurance mechanisms.

Recent studies suggest that governance in the Pakistani private sector needs considerable improvement. Social accountability, observation of international norms in labour laws and right of association, and complying with environmental standards will need to be widely accepted and enforced in a speedy manner.

6. Disaster Risk Management

Government of Balochistan has established Provincial Disaster Management Authority (PDMA) and a Disaster Risk Management Plan (2008) has been developed.

Quetta, like other parts of Balochistan, is an arid, largely mountainous district. The main five hazards that pose potential threats to the population in Balochistan are droughts, floods, earthquakes, communicable diseases, and landslides and mudslides. For Quetta, drought, flood and earthquake (which can also trigger landslides) pose dangers.

Earthquakes occur with high level of relative severity as compared to other hazards in Quetta whereas fire has medium level of relative severity. Droughts, locust/pest attacks, crises and transport accidents have low level of relative severity while industrial mining accidents have very low relative severity. At present, guidelines on the relative severity of floods are neither available nor worked out for Quetta. The existing emergency response machinery and equipment are not enough to meet a big disaster in Quetta.

Index for severity of drought in Quetta District is 2 (low) and index for diversity of livelihoods is 3 (medium). Relative severity of various earthquake-related hazards in district Quetta is 5 (very high), of fire 3 (medium), of locust/pest attack 2 (low), of a crisis situation 2 (low), of an industrial mine accident 1 (very low) and of transport accidents 2 (low). As far as emergency response machinery/equipment in Quetta District is concerned, there were 25 ambulances, 4 fire brigades, 2 graders, 8 tractors, 8 trucks and 37 water-tanker. (Disaster Risk Management Plan-2008, PDMA Government of Balochistan)

6.1 Earthquake

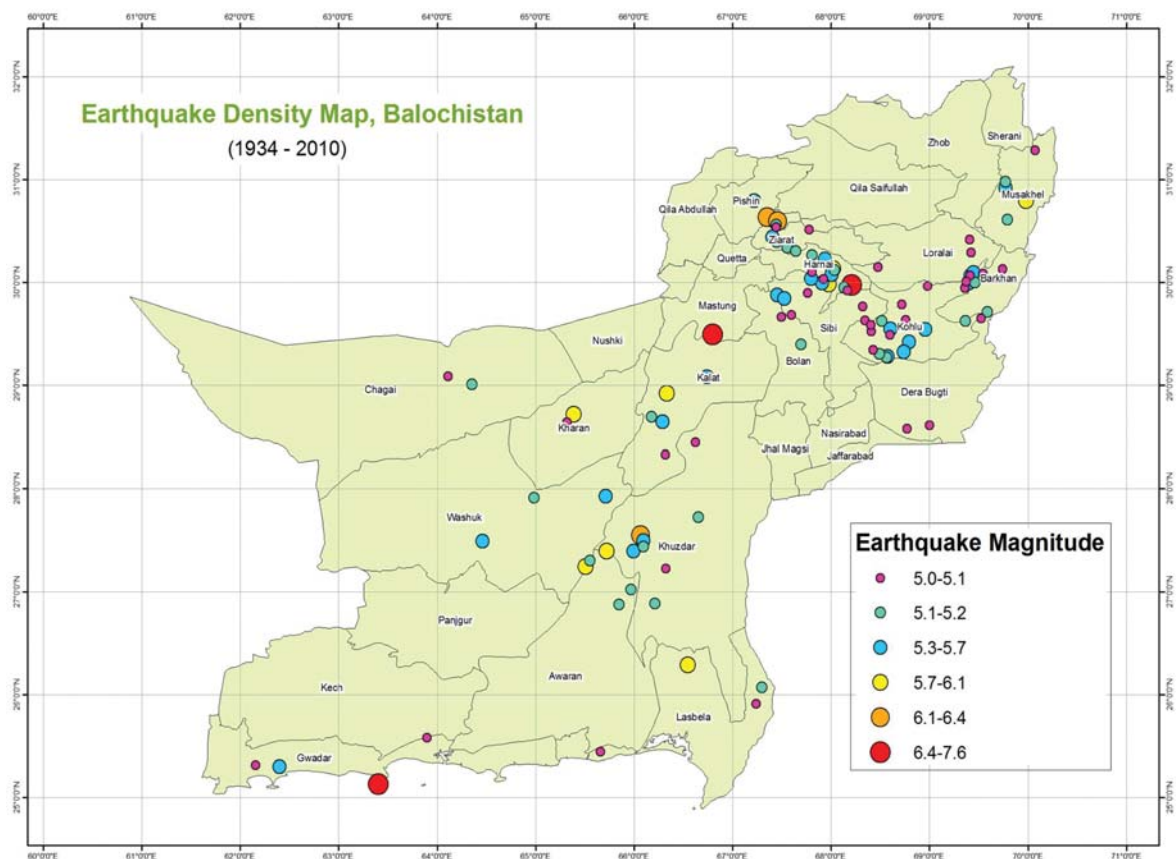
Quetta District is seismically sensitive and prone to earthquakes. Relative severity of earthquake in the district (Panjpai) is 5 (very high). The district lies in the active seismic region, therefore earthquakes occur from time to time. Ground acceleration factor is

high because Quetta Valley is in a very hazardous zone and can have major negative impacts.

The worst earthquake occurred in May 1935, when a large part of Quetta town was destroyed and 60,000 people died. In the morning of 31 May 1935 at 02.33 am local time (PST), the powerful earthquake devastated Quetta town and the adjoining areas in which most of the fatalities occurred in Quetta alone. Tremors were felt over much of the areas what now constitutes Pakistan and as far as Agra in India. The epicentre of the earthquake was 4 kilometres South West of Ali Jaan in Balochistan.

On the 28 November 1945, at 05:26 PST, another earthquake measuring 8.6 on the Richter scale hit Balochistan. The epicentre was 97.6 km SSW of Pasni in Balochistan. The quake triggered a huge tsunami that caused great damage to the entire Makran coastal region.

Figure 31: Earthquake density of Balochistan



Recently, the earthquake of magnitude 7.1 on the Richter scale in February 1997 hit Quetta hard.⁸⁶ The earthquake density of Balochistan is shown in Figure 31.

The recorded earthquake incidences in Quetta District⁸⁷ with year and Intensity at R/Scale are 1935 (7), 1935 (7.5), 1941 (5), 1955 (6), 1975 (5.4), 1978 (5.4), 1987 (5.6), 1990 (5.8 - 6.1), 1992 (5.7), 1993 (5.7), 1995 (5.2), 1996 (5.3), 1997 (5-6.2), 1998 (5.3), 2000 (6), 2006 (4), 2007 (3.5), 2008 (6.4), 2009 (5.1 and 5.7), 2009 (3.4), 2010 (2.2, 3.7, 3.1, 3.4, 3.9, 3.1, 2.4, 2.7).

Earthquakes strike suddenly, violently and without warning. Identifying potential hazards ahead of time and advance planning can reduce the dangers of serious injury or loss of life from an earthquake. Repairing deep plaster cracks in ceilings and foundations, anchoring overhead lighting fixtures to the ceiling, and following local seismic building standards, will help reduce the impact of earthquakes.

Balochistan Disaster Risk Management Plan will be implemented and the necessary arrangements will be made in accordance with the procedure set in the Plan. The following actions will be taken at district level:

- Implementation of code of conduct for construction activities in Quetta District so that seismic issues are addressed in the design before the start of activity.
- Conducting awareness-raising campaigns.
- Training of government officials, civil defence volunteers, CBOs, NGOs, community activists and other groups in the district.
- Introducing a course at the school level in which the following contents should be covered:
 - What to do during an earthquake?
 - What to do after an earthquake?
 - Identification of safe places, indoors and outdoors.

- Safety and evacuation procedure.
- Emergency communication plan.
- Who to contact in case of separation (a real possibility during the day when adults are at work and children are at school)?
- Developing a plan for reuniting after the disaster.
- Fire-fighting drills, and installing and using extinguishers.

6.2 Drought

A drought is a period of time when there is not enough water to support agricultural, urban, human, or environmental water needs. Drought usually refers to an extended period of below-normal rainfall, but can also be caused by drying bores or lakes, or anything that reduces the amount of liquid water available. Although what is considered “normal” varies from one region to another, drought is a recurring feature of nearly all of the world’s climatic regions. The effects of drought vary greatly, depending on agricultural, urban and environmental water needs of a particular area. Drought originates from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some livelihood activity to a community group, or environmental sector.

Precipitation in Balochistan is shown in Figure 32.

Balochistan is an arid region with occasional rain events. It has a history of droughts but the recent droughts (1997-2002) were the longest dry spells in many years. The district of Quetta has low severity index level (2) as compared to Kalat, Chagai, Naukundi and Zhob which have been severely affected by drought on many occasions. However, compared to these districts, the level of awareness to mitigate the drought is much higher in Quetta due to presence of a number of interventions and NGOs.

86. IUCN. *Preliminary Environmental Assessment of the Earthquake in Pakistan: IUCN Field Mission Report*. Islamabad: IUCN, 2005.

87. Meteorological Department, Quetta Station.

The consequences of the drought can be following.

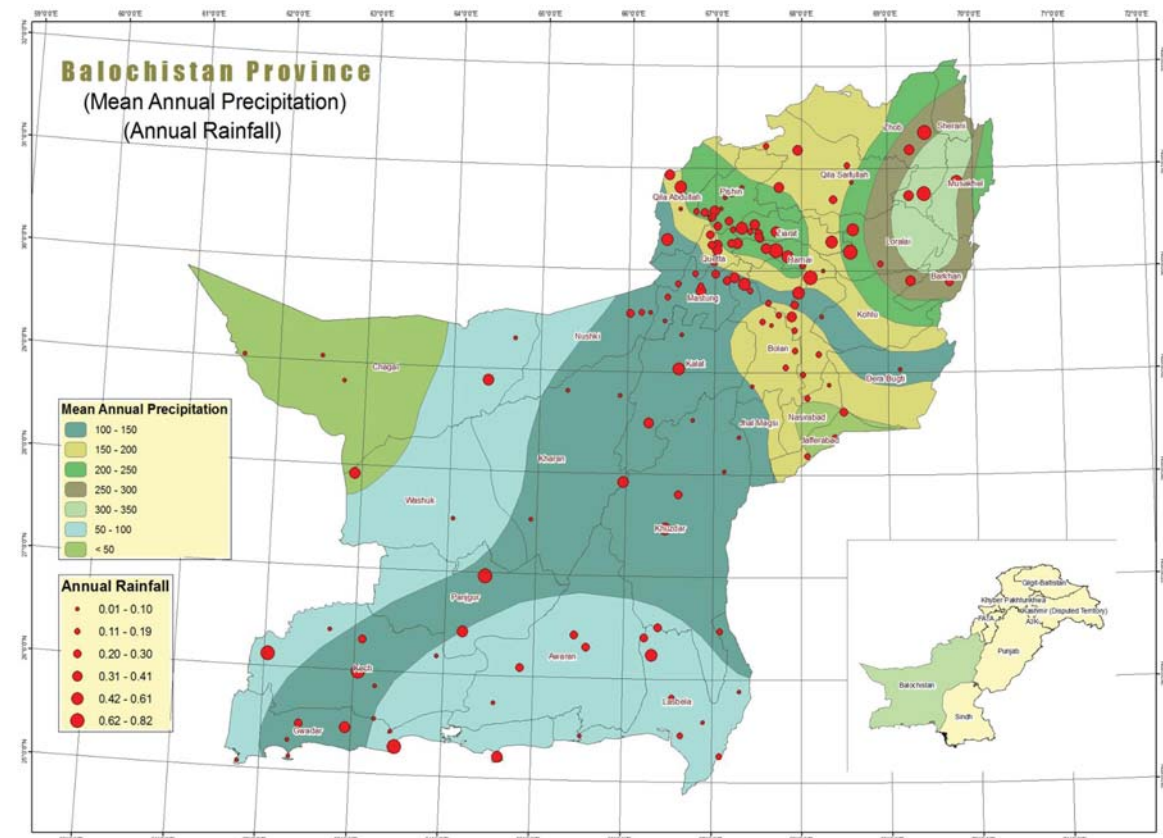
- Increase in inflation rate and rise in food prices.
- In remote rural areas, a very low level of food intake causes different diseases and malnutrition to affected populations.
- Poor health of livestock due to shortage of fodder, which negatively impacts on the economy of rural areas of the district.
- Nearly 80 percent destruction in apple trees and orchards
- Migration of people from drought-affected areas.
- The drought also contributed to the incidence of Crimean Congo Haemorrhagic Fever (CCHF).

Managing long periods of drought, their socio-economic impacts, and introducing and managing integrated water resource management (IWRM) are the main challenges faced by the people in Quetta District.

There is no early warning system for drought in place at the provincial or even national level. There are several technological options, which can help in forecasting, early warning and appropriate management of disaster to reduce the impact of drought. There is no system or practice of preparedness to minimise losses, manage drought and rehabilitate the affected people. The minimum elements for preparedness include drinking water and food for human beings and livestock, prevention and control of human and livestock diseases, fodder tree reserves and adjustment strategy. The management of losses from the last drought is a current priority.

Data on temperature, precipitation, run-off, recharge, soil moisture and groundwater is

Figure 32: Precipitation in Balochistan



needed to determine the intensity of drought, which should be collected by the relevant agencies. This involves great effort but in this age of information technology, data collection has become easy and its results reliable with the help of satellite technology.

6.2.1 Key issues

- Lack of data, its interpretation and early warning system.
- Lack of strategy and plan to reduce damage, manage drought related relief, and undertake rehabilitation in the district.
- Alternative means and options are non-existent.
- Facilities for speedy processing and marketing of livestock products and refrigeration of large quantities of meat are lacking currently.

6.2.2 Measures to be taken

- Balochistan Disaster Risk Management Plan to be implemented and necessary arrangements made in accordance with the procedure set in the Plan. The following actions will be taken at the district level:
 - Drought monitoring at the district level. It is a continuous observation of rainfall situation and comparison with the existing water needs of a particular sector of a society.
 - Application of water supply conservation at the district level. Water can be conserved through rainwater harvesting, which can be used for agricultural purposes during dry conditions.
 - Land-use planning. Low-delta fruit orchards and crops should be grown in drought-prone areas.
 - Livelihood planning. A section of a society which is likely to be least affected by droughts should be advised to live there.
- Awareness-raising at a massive level, and training of the staff involved in extension work and community on the following topics:
 - How to respond to the drought?
 - Water conservation techniques at home level.
 - Introduction and support to efficient, technology-based irrigation systems, e.g., bubbler, drip, sprinkler irrigation.
- Building capacity of public sector organisations, grazers, farmers, private sector, CSOs, CCBs in preparation for drought, coordination, information dissemination, relief and rehabilitation.
- Reducing damage or losses through preparedness. Planning relief and rehabilitation in advance, and implementing and monitoring while in progress.
- Raising fodder-tree groves at appropriate sites strictly for use only during drought period.
- Providing livestock pens and water points within the grazing areas and at the makeshift sites to tide over the drought period.
- Helping and supporting marketing of livestock to reduce losses from drought. Fixing rational purchase prices to motivate the owners to sell their livestock which they cannot afford to maintain or which is likely to die because of drought
- Arranging for mobile slaughter and refrigerated storage vans.
- Coordinating at the district level with GoP to establish a satellite monitoring system for Balochistan, Sindh, southern KP and southern Punjab for monitoring and early warning of drought situation, interpretation of data and dissemination of information to those who need it.
- Strengthening GIS facility at the provincial headquarters to prepare district-wise Climatic Moisture Index (CMI) and Soil Moisture Index (SMI) maps with the help of remote sensing and GIS facilities.
- Establishing a Drought Emergency Fund at the district, provincial and national levels.

6.3 Flood

There is a low level index of flood for Quetta. Flood impacts can be local, affecting a neighbourhood or a community, or very large, affecting entire river basins. Some floods develop slowly, sometimes over a period of days. However, flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things that come in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks, producing effects similar to flash floods. Even very small streams, gullies, creeks, culverts, dry streambeds, or low-lying ground that appears harmless in dry weather can flood.

The Disaster Management Plan of Balochistan will be implemented and the necessary arrangements made in accordance with the procedures set in the Plan. Additionally, the following actions will be taken at the district level:

- Awareness-raising campaigns for the inhabitants of gullies to avoid building in floodplain unless elevation and reinforcement are used.
- Providing relevant training to CBOs, government officials, community activists and other groups in the district.
- Arranging for regular training and periodic drills of emergency preparedness and response team at the district level for potential hazard of flood, especially in gullies of Quetta.

6.4 Fire Crisis (Urban and Rural)

Urbanisation in most parts of the province, settlements exposed to fire hazards from gas or electricity and the lack of awareness and training in fire safety pose a danger of fire which may result in considerable loss of life and property. The need for awareness on fire safety and fire-fighting and first-aid for burns is literally a matter of life and death and is urgently needed. Quetta needs an effective fire control programme including construction of fire escapes in all buildings, particularly in high-rises.

Crisis situations/sabotage can be brought about by unpredictable incidents that degenerate to uncontrollable proportions causing chaos and mayhem. Such a situation may result from incidents, such as bomb-blast, bomb-scare, hostage-taking, riots and demonstrations or civil unrest, crowds and stampede, terrorist attack and refugee influx. The frequency of sabotage incidents in Balochistan, especially those related to bomb-blast, landmines, hand grenade and rocket fire, is common in the districts of Quetta.

7. Information Management and Communication

Decision-making is based on the quantum and quality of relevant information available. That information might come from different sources – radio, television, newspapers, or discussions with family, friends, colleagues and advisors. It might involve information acquired over a long time, in the course of education, research, management or from experience in the past.

Decision-makers must weigh a great deal of information, considering what is reliable, what to disregard, and whose opinion to trust. Whether buying livestock or a new car, the process is much the same, but the sources of information might be quite different. In the first case, the opinions of people skilled in livestock breeding might be very important. The experience and knowledge of skilled, though uneducated people might be more valuable than research reports and databases. The second case might depend on comparative statistics of cost, performance and reliability, supplemented by the opinions of other car owners and personal preferences. The tactics are quite different.



Information is of many kinds, e.g., relating to social sectors, NRM sectors, environmental parameters, sustainable development; policies, plans, programmes and projects; statistics, data, research papers and studies; positions of the federal, provincial and local governments on any controversial issue; information needed by people in their daily life, such as laws, rules, regulations, orders, public sector systems, procedures and the various forms and other formalities with which they have to deal with.

The opportunities of livelihood including technology and employment as well as availability of credit and its terms are some of the other needs of the people. It is important that the people get all kinds of relevant information for their needs as well as for transparency and accountability in the public sector.

At the provincial level, spatial/temporal data manipulation and decision-making systems such as BEMIS⁸⁸ and BHMIS⁸⁹ do exist, but these need to be used optimally and extended to the district level. In addition, collection of relevant and reliable data is crucial to make the best use of the system. These key agencies are now coming up with targeted policy documents aligned with MDGs.

It is difficult to provide information without having developed computer-based GIS systems. Computerisation has become crucial for efficiency, accuracy, cost-effectiveness, and developing the management information systems that help in appropriate and speedy decision-making. Fortunately, its cost is getting affordable day by day. It can strengthen institutions and enhance their efficiency.

Geographic Information Systems (GIS) offer a set of amazing tools to bring efficiency in decision-making and transparency, and demonstrating public accountability. All over the world, the contribution of this technology on the municipal level has shown amazing

results in handling diverse data at various scales and on various levels of generalisation. Even in Pakistan, the initial results of the pilot projects which used the GIS facility have produced amazing results. The GIS system of TMA, Jaranwala, is one such example.

In order to evolve GIS into a real Decision Support System, it must have as many data layers as needed. GIS application can help in sustainable development, sustainable management of natural resources and environment-protection; and planning, management and M&E of programmes and projects.

In order to computerise and handle the enormous data at the provincial level, a basic Geographic Information System was established to meet the overall needs of the province. The Area Development Programme, Balochistan (ADPB) inherited a system from FAO projects on natural resources. This system can be used at the district level by networking⁹⁰.

Efficiency of the district administration could be enhanced manifold by using the GIS facility. All district maps would be digitised and printed, and thematic data linked to the maps, improving efficiency and quality of decision making and performance of local governments.

The trend of classification of documents must change so that the information could be used for policy-making, planning and management, and also for the sake of transparency. The systems and procedures need to be looked into for substantial change for improvement.

It is important that the information disseminated is free of party politics for establishing its credibility. It would help if the bulletin and other products relating to information have a standard design and corporate entity for visibility and recognition.

88. Balochistan Educational Information System. Available <http://www.balochistan.gov.pk/New%20Folder/BDSSP/BDSSP-Data/Education/Strenthening%20of%20MIS%20Edu.pdf>.

89. Balochistan Health Information System. Available http://57.69.14.59/evaldatabase/files/PAK_99-800_Part2.pdf.

90. ADPB, Volume 1, 1998.

Consumers require and should have access to the following information for demanding quality services:

- What they should be entitled to in terms of service delivery from different tiers of governments, including the types, standards, and funds allocated to service delivery, and their performance in the district?
- Their role in ensuring service delivery, including participation in user committees and other mechanisms and what to do if services are not adequately delivered, including where and how to complain.
- The role of public representatives in service delivery and their responsibility for education, health and water and sanitation services in particular.

To achieve this, all levels of government, be they federal, provincial or local, play a role in ensuring that the masses are well-informed of their rights.

Facilities such as schools, health-care centres etc. will be required to display public information on the services they are supposed to deliver, including the names and attendance of staff members, e.g., teachers and doctors, as well as monthly revenues and expenditure.

The district will publish its plans and budgets and their transfers to service providers, sector expenditure, and performance reports, and use the local media as a vehicle for presenting and discussing local issues relating to service delivery.

Encouraging the establishment of independent district-level radio station(s) as the local mass media is crucial in keeping the people of the district informed about what is happening and seeking their participation and feedback as well as in making local accountability work.

Creating demand for standard services and related information is to create a direct link between user fees, local taxation and service delivery. This can be done by:

- Retaining user fees and spending them locally by their respective service providers, guided by the user committee.
- Providing information on how user fees and local revenues are spent, and encouraging the payers to ask how their user fees are being spent.
- Subsidising many of the costs of accessing the services directly.

7.1 Means of Communication

Today's means of information, e.g., telephone, mobile phone, print media, electronic media and the internet are necessary to fulfil the communication needs of modern government agencies and business enterprises. The coverage of telecommunication facilities has improved in the district thanks to the strong involvement of private sector. Telephone and internet services are provided by PTCL in the main towns of the district and in some adjacent localities. According to Development Statistics of Balochistan (2008), by the end of year 2007, there were sixteen auto, one optical fibre and thirteen WLL exchanges in Quetta District. The number of auto exchanges was fifteen with 49,611 connections during 2008-09⁹¹. There were a total of 65,495 connections in the district (56,167 automatic, 902 optical fibre and 8,246 WLL connections).⁹² Radio is very popular in villages and remote areas as a source of information and entertainment.

Ufone, Mobilink, Warid, Zong and Telenor networks provide the mobile services to a wide area in the district. The number of post offices in the district⁹³ has increased from 70 in 2000-01 to 75 in 2006-07.

91. Government of Balochistan. Planning and Development Department. Bureau of Statistics. Development Statistics of Balochistan 2009. Quetta: GoB, 2009.

92. General Manager, PTCL Quetta Region.

93. Development Statistics of Balochistan 2008 (Postmaster General Office Quetta)

7.2 Key issues

- The public sector agencies do not proactively or directly provide information to the public on their policies, plans, programmes, projects and the cooperation required from the public. Participation and contribution of stakeholders and people in programmes and projects suffers due to not sharing the information. There is also the major issue of lack of transparency in the working of the public sector agencies due to non-sharing of information.
- Underlying the problem of poor information management is the weak demand for information, because implementers and managers have limited capacity and incentive to use this information. Firstly, this is due to limited managerial skills and secondly, to the fact that managers have little real autonomy to make decisions or incentive to perform, and therefore, to use information effectively.
- The data produced for public consumption is not readily available. Most of the information is in English, which automatically excludes the masses and therefore their critical participation.
- Lack of integrated databases and information management systems at the district level
- There is low usage of computers and little utilisation of GIS technology at the district level.
- Tendency to hold information and not to share horizontally in the organisations and with other stakeholders.
- Non-utilisation of data and information in planning and implementation.
- The credibility of government agencies regarding accuracy of information is often questioned. Rumours arise in the absence of timely and accurate information from the government agencies.

7.3 Measures to be taken

- Free flow of all kinds of relevant information in a proactive way from the government agencies to the masses, specific target groups and other users is envisioned. A comprehensive computer-based information system and database will be set up. A communication strategy will be developed through a wide consultative process and implemented.
- Filling-in the information gap between the government and the masses and continuously updating them. District level departments to develop and regularly disseminate targeted information through periodic bulletins at suitable intervals.
- Extending coverage and access to radio, especially in the remote rural areas, for providing information and raising awareness among grazers, farmers and other citizens. Broadcasting and telecasting relevant Pushto and Urdu programmes from radio and TV.
- District administration will develop and distribute information materials and periodic bulletins regularly at short intervals.
- Translating the Integrated District Development Vision (IDDV) of Quetta District into Urdu and distributing its copies to the key stakeholders, implementing agencies, and federal ministries and agencies.
- Promoting, introducing and expanding e-mail service in the areas where electricity and telephone facilities are available.
- Promoting the use of newspapers as a means of communicating information, making these interesting with pictorials, graphics, cartoons etc.
- Promoting electronic and print media, especially radio and Urdu newspapers.
- Pasting bulletins in public sector institutions such as schools, colleges, hospitals and other health-care facilities, bus-stands, courts, post offices and markets.



Traffic congestion in Quetta

- Distribution of bulletins with newspapers.
- Development and maintenance of an official district website for all local governments in the district.
- Identifying key areas of information to be disseminated, and developing and operating the system.
- Preparing for dealing with the likely crisis of depletion of groundwater; active participation in the Population Census of the district in 2008; designing and planning mega and large projects; opportunities for employment; SMEs, environmental issues, technology and other innovations; common heritage and common future; and campaign against social evils.
- Developing and operating GIS-based information systems at the district level and dissemination of all kinds of information.
- Fulfilling the information needs of all target groups and stakeholders.
- Promoting and using information technology, and setting up information management system by extending the systems already setup at the provincial level such as BEMIS and BHMIS.
- Establishing information centres at the district, tehsil and union council levels.
- Using health management information system (HMIS) data to take timely decisions regarding drug procurement and supply to health-care facilities, health education on current pandemics, as well as staff of health facilities. The lack of reliable water and sanitation data is a major hurdle in service delivery.
- Extending coverage of TV transmission and supplying TV sets for common meeting places of remote communities (separately for men and women) on

subsidised prices or even free of cost for communal use.

- Promoting community organisations to manage local broadcasting units in remote areas.
- Running information booths at social and cultural events.
- Information dissemination may prioritise the current issues facing the district, such

as the likely crisis of depletion of groundwater; active participation in the population census of the district in 2010; current programmes and projects, suggestions regarding designing and planning new programmes and projects; opportunities of employment; opportunities and development of SMEs, environmental issues, technology and other innovations; common heritage and common future; and campaign against the social evils.

8. Implementation of IDDV

The real value of this document is in implementation by all implementing agencies and stakeholders.

8.1 Priority Programmes and Projects

The priorities for development and implementation of programmes and projects are:

8.1.1 Governance

- Improving security and addressing the issues that have led to insurgency.
- Improving governance by strengthening policies, laws, institutions, competencies, planning, management and monitoring, and establishing rule of law and improving transparency and accountability.
- Developing a computer based and GIS-supported database of all sectors and an information management and dissemination system at the district level; improving availability and reliability of data and information.
- Improving information flow, in particular horizontally including all stakeholders and masses.



- Setting up and implementing a mechanism to address grievance.
- Setting up a Steering Committee (of key stakeholders) at the district level to coordinate, disseminate, catalyse, support and monitor the implantation of IDDV and assess its impact for course correction.
- Developing and implementing district plans for all sectors.

8.1.2 Social Sectors

- Improving cohesion and integration in society, focusing on common social and economic development agenda.
- Improving education and health-care sectors through strengthening institutions, developing competencies of staff, improving and adding facilities, increasing budgets, providing enabling environment, monitoring service delivery and impact.
- Mainstreaming equity and gender, and eliminating gender disparity.

8.1.3 Natural Resources

- Reconciliation of the accurate geographical area of the district with the Survey of Pakistan.
- Determining the land-uses, and the extent to which they remain unreported, using the satellite images and ground truthing for future planning, notwithstanding the formal land-settlement exercise.
- Land-use mapping and planning as well as assessment of natural resources in the district using modern technology and methods.
- Detailed delineation of sub-watersheds in the district and evaluation of their potential for forestry, agriculture, watershed management, range management and water development (developing surface water storage, hill torrent control, rainwater harvesting and spate irrigation).
- Improving efficiency in the use of natural resources (renewable and non-renewable

natural and energy resources) and reduction in and safe disposal of wastes.

- Rehabilitation of natural resources (water, forests, livestock and rangelands, and wildlife and protected areas), enhancing their productivity and their sustainable use; and achieving sustainability of water for domestic, agricultural, industrial and other uses.
- Making agriculture sustainable and modern through:
 - Use of technology including high-efficiency irrigation systems (e.g., land levelling, on-farm water management and bubbler irrigation/drip irrigation) and mechanisation appropriate to small land holdings and hilly terrain.
 - Greenhouse (plastic tunnel) and off-season vegetable production and organic farming.
 - Diversifying agriculture to include low-delta fruit orchards, vegetables and other agricultural crops, floriculture and viticulture, especially in the valleys where groundwater is depleting.
 - Improving marketing of livestock, fruits, vegetables, and medicinal and aromatic plants.
- Raising forest plantations, and encouraging and supporting agro-forestry of multiple purpose trees for fodder, firewood, timber, soil conservation, watershed, biodiversity conservation and carbon sequestration.
- Setting up, planning and managing forests and protected areas (wildlife areas) in Quetta District scientifically for conservation, sustainable use and ecotourism.
- Economic investment for improving rangelands and livestock (improvement of breeds, feed and health of animals) and supporting livestock and poultry farming.
- Evaluating grazing potential of rangelands of the district and managing grazing accordingly.

- Harnessing the potential of groundwater recharge, rainwater harvesting.

8.1.4 Economic Development

- Improving and extending energy supply, commerce and trade, mining, industry, tourism and SMEs for poverty alleviation.
- Controlling the spiralling high inflation and cost of utilities.
- Human resource development for alternative sustainable livelihoods.
- Urban and regional planning and implementation to make Quetta City, its suburbs, towns, and big villages sustainable.
- Upgradation of the existing towns, villages, and development of new planned medium level towns based on the master plans.
- Controlling air, water, soil, land and noise pollution, and traffic congestion in Quetta City.
- Exploring and developing agriculture and livestock-based small and medium enterprises (SMEs) for sustainable livelihoods and poverty-reduction (dairy development including animal fattening for beef and meat, poultry farming, bee-keeping, sericulture, preservation and preparation of fruit and vegetable products, wool-based products, large-scale handicrafts, and trade and commerce.
- Preservation, interpretation and promotion of natural areas and cultural sites for tourism.
- Electrification and energy development in remote rural areas through dispersed application of alternate energy sources including biogas, solar PV, wind and solar thermal; the latter would need wind data and feasibility studies.
- Institutional strengthening of the Directorate General of Minerals and Mining.

- Exploration and promotion of exploitation of minerals and development of mining.

- Improving power supply from the national grid.

- Enhancing revenue generation at the district level, especially through revival of octroi system.

8.1.5 Disasters

- Coordinating in the establishment of early-warning systems for drought by the federal government for Balochistan and other arid areas of the country.
- Preparedness to reduce disaster risks, planning disaster management to reduce damage and rehabilitation for sustainability.
- Establishing fodder-tree groves for use only during drought periods.
- Facilitating the use of appropriate designs and construction materials for housing and other infrastructure including dams, bridges, and health, education and office buildings, keeping in view the seismic sensitivity.
- Facilitating upgradation of existing houses.
- Keeping and maintaining enough open green spaces in Quetta City as green lungs of the city and for camping during disaster.

8.2 Key Stakeholders

- District Administration
- Provincial Departments working at the district and provincial level
- District Council
- Union Councils
- Federal Agencies – WAPDA, National Highway Authority (NHA), PCRWR, Sui Southern Gas Company (SSGC), Meteorological Department, Benazir Income Support Programme, Waseela-e-Haq, SMEDA, Zarai Taraqqiati Bank

- Civil Society Organisations
- International Organisations, like IUCN
- Communities
- Private Sector (mining, agriculture, livestock, poultry, water, transport, businesses, tourism)
- Media (print and electronic)
- Academia (education and research organisations)

Indirect Stakeholders

- Transporters from outside
- Fruit and vegetable related SME investors from outside
- Traders of livestock
- Other traders from outside

8.3 Action Plan

The district would work closely with the Planning and Development Department, Planning Commission, other provincial and federal agencies, communities, CSOs and private sector in developing, resourcing and implementing district-based programmes and projects (listed in 8.8 below) for implementation of the IDDV. It would focus on human resource development and would make use of the various federal and provincial programmes and projects in this regard.

8.3.1 Dissemination of IDDV and Action Plan

The Action Plan will be communicated to all implementing agencies and milestones will be worked out in consultations with them. The donors are expected to support the programmes, projects and priorities of the IDDV, since these constitute a home-grown agenda developed through a wide consultative process.

8.3.2 Institutional Arrangements

The district administration would involve all stakeholders in the implementation of the

IDDV. An IDDV Steering Committee (IDDV-SC) will be established to oversee and guide, coordinate, catalyse, support and monitor implementation of IDDV. The IDDV-SC will be headed by the DCO and composed of public sector representatives including the local, provincial and federal governments; politicians, religious leaders, tribal chiefs; the private sector including the Kissan Committee, mining, livestock, poultry, tourism, trade, transport; and civil society organisations, academia and media. The Steering Committee would meet quarterly in the early days of its working and every six months later on or as the need be. The Committee will nominate its secretary for coordination of implementation and monitoring.

A Management Committee will be formed by the SC which will be headed by an official nominated by the SC and will comprise of the representative of key implementing agencies for sorting out implementation problems and ensuring coordination, monitoring and feedback. The business of this Committee will be reported to the Steering Committee.

These committees will develop their Terms of Reference (ToR) and Rules of Business for systematic working.

The district administration would seek the assistance of credible and interested international organisations, such as IUCN, to help facilitate implementation of IDDV including the promotion of best practises of governance, and planning and management of natural resources.

8.4 Financial Resources

8.4.1 Public Sector Development Programmes

A summary of the Public Sector Development Programme (PSDP) allocations (original) to the district during the three-year period from 2008-09 to 2010-11 is presented in Figure 33, which shows the investments made in various sectors and indicates comparative priorities of investment of the provincial government for those sectors.

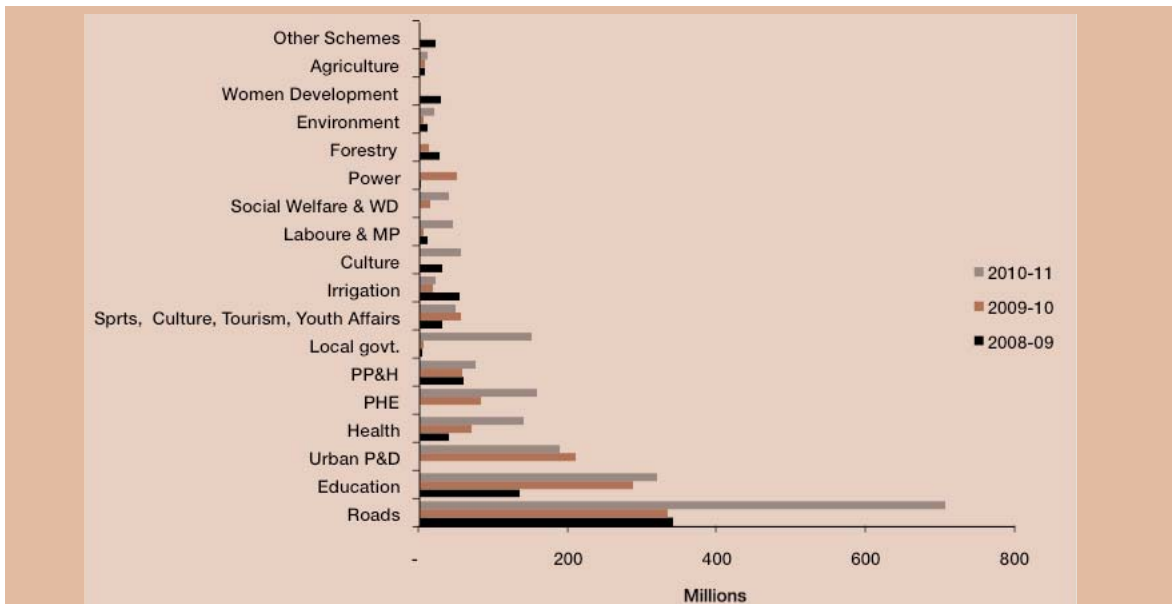
The sequence of investment in sectors in 2008-09 in the descending order is: Roads, Education, PP&H, Irrigation, Health-care, Sports, Culture and Tourism, Youth Affairs, Culture, Women Development and Forestry. The sequence of investment in sectors in 2009-10 in the descending order is: Roads, Education, Urban P&D, PHE, Health, PP&H, Sports, Culture and Tourism, Youth Affairs, Power, Irrigation, Social Welfare and WD and Forestry and the sequence of investment in sectors in 2010-11 in the descending order is: Roads, Education, Urban P&D, PHE, Local

government, Health, PP&H, Culture, Sports and Tourism, Youth Affairs, Labour and MP, Social Welfare and WD and Irrigation.

A comparative analysis of actual total PSDP fund allocation (for years 2008, 2009 and 2010) in different sectors for Quetta District is given in Figure 34.

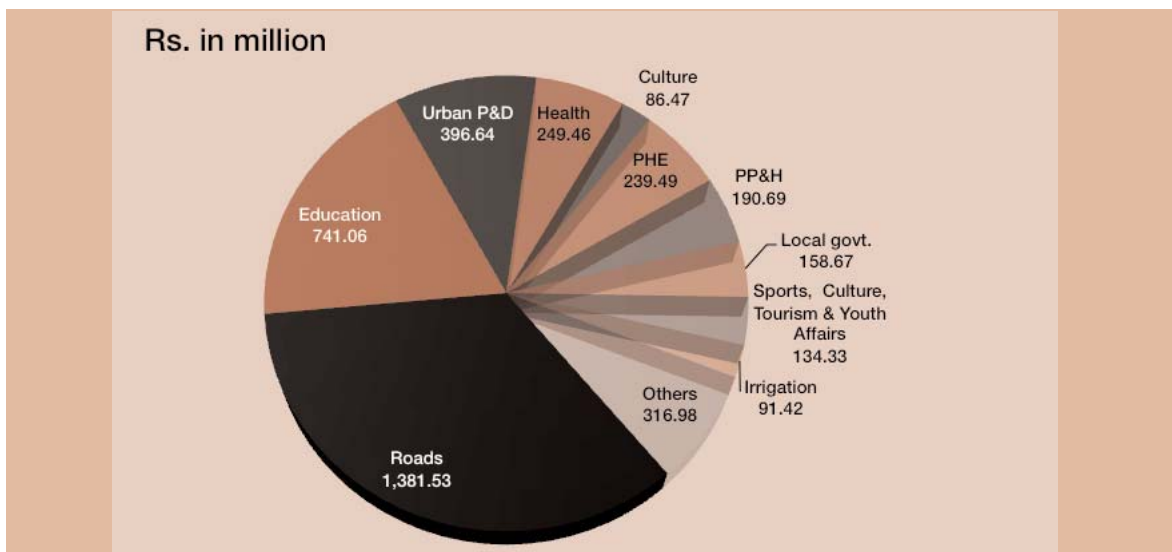
Other 316.978 million include Labour and MP (60 million), Social Welfare and WD (55 million), Power (52.67 million), Forestry (38.739 million), Environment (36.635 million), Women

Figure 33: Actual PSDP allocations to Quetta District (2008-09 to 2010-2011)



Source: Public Sector Development Programmes

Figure 34: Combined Actual PSDP allocation (2008, 2009 and 2010) for Quetta District



Source: Balochistan PSDP 2008-09, 2009-10 and 2010-11 (Original)

Development (29 million) and Agriculture (24 million).

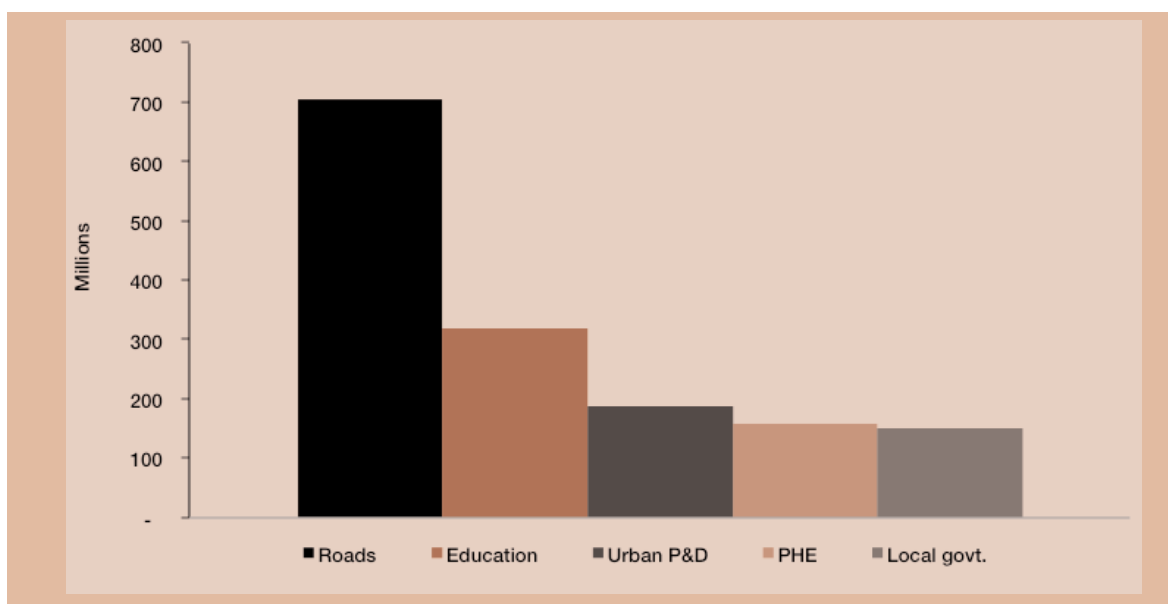
Comparison of PSDP's five high investments in the district in 2010-2011 is shown in Figure 35.

A comparison of PSDP's low-level investments in Quetta District in 2010-2011 is shown in Figure 36.

A comparison of actual provincial PSDP fund allocation in different sectors for the years 2008-09, 2009-10 and 2010-11 is given in Figure 37.

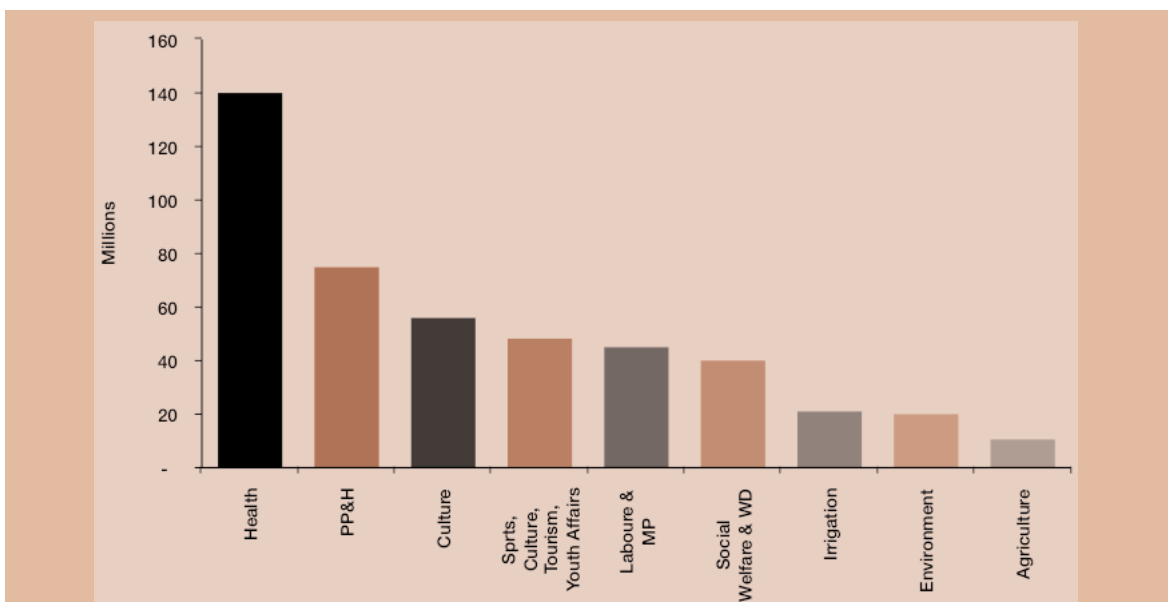
The above allocations shown in the various Tables and Figures do not include allocations for other schemes worth Rs. 4,082.411 million (2008-09), Rs. 3,910.098 million (2009-10) and Rs. 5,872.753 million (2010-11).

Figure 35: Comparison of PSDP's Five High Investments in Quetta District in 2010-11

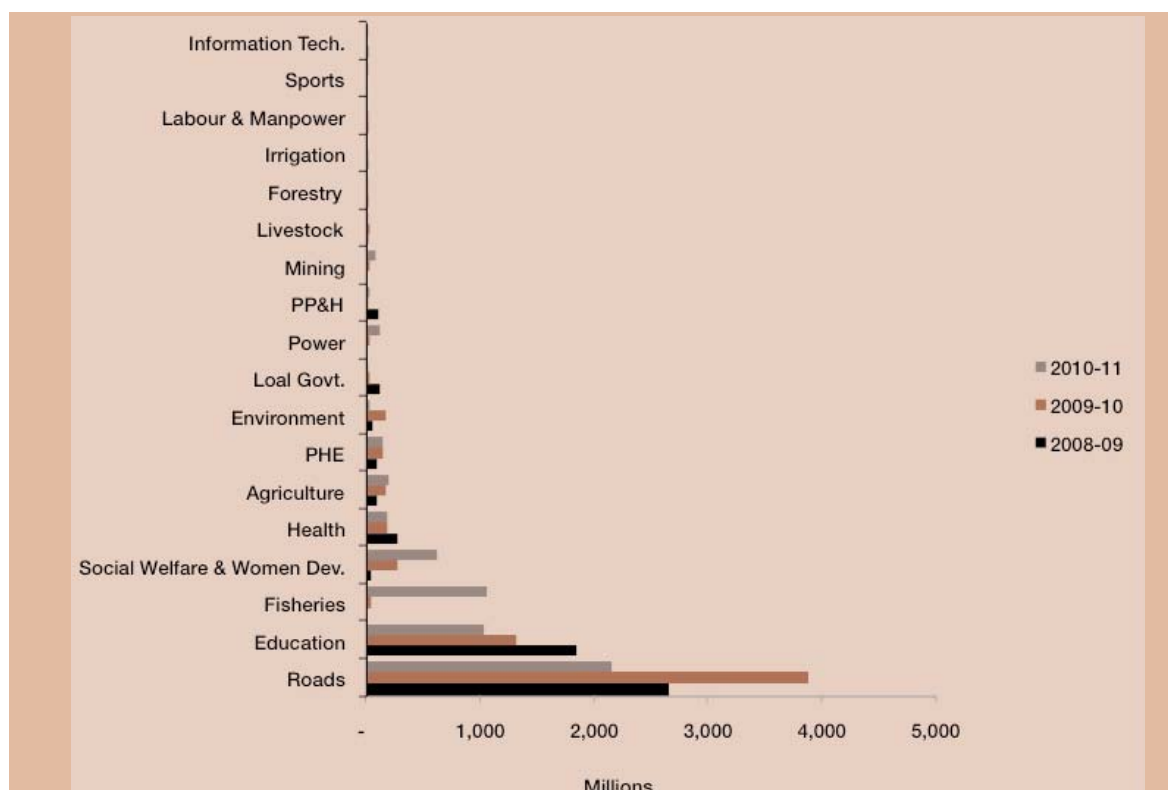


Source: Balochistan PSDP 2010-11 (Original)

Figure 36: Comparison of PSDP's Low Investment in Quetta District in 2010-11



Source: Balochistan PSDP 2010-11 (Original)

Figure 37: Sectoral PSDP allocation (2008-09, 2009-10 and 2010-11) for Balochistan

Source: Balochistan PSDP 2008-09, 2009-10 and 2010-11

Provincial allocation is worth Rs. 510.984 million for completion of all incomplete schemes in the province for 2010-11. The allocation figures for the incomplete schemes for 2010-11 of Quetta District are not available on P&DD website.

8.4.2 Resource Mobilisation and Efficient Use

The district administration will approach the provincial and federal governments for funds by using the Public Sector Development Program (PSDP) mechanism. It is important to make the best use of the funds received from various sources for the various programmes and projects including human resource development programme.

The donors and international agencies which have been supporting their relevant programmes and projects of their interest in Balochistan include UNDP, ADB, WB, EKN, USAID, GEF, EU, UNICEF, JICA, Kuwait Fund, CIDA, DFID, FAO, IUCN, WWF-P and these may be interested in funding different parts of IDDVI that match with their priorities.

Donors should support the programmes, projects and priorities of the IDDVI, since these constitute a home-grown agenda developed through a wide consultative process. However, the constraints faced in this regard include lack of ideas and good concept papers and project proposals, efficient and prudent use and timely utilisation of funds. For example, a grant of Rs.100 million meant for sanitation was not used in the past and had to be surrendered.

Quetta District requires a greater share of income from RGST/VAT based on population, area and revenue-generating capacity lost due to abolition of octroi, being the district that meets the requirements for tertiary health-care, education, market and transport services for the entire province and hosts the provincial government.

Financial resources and their efficiency will be enhanced by tapping the following sources and approach:

- Efficient and prudent use of funds.
- Stringent control on public spending, punitive measures for misappropriation of funds, if any.

- Balancing the budget between salaries of staff and activities.
- Mega projects funding and grants from the federal government.
- Donor funding (grants and soft loans) directly or through the government system or CSOs.

The District Administration, in consultation with the provincial government, would also try to raise revenue through taxes, levies, rents and user charges.

8.5 Monitoring and Evaluation

The implementing agencies will work out the Action Plans with implementation milestones, in consultation with key stakeholders and under the supervision of the Steering Committee. These agencies will be supported. The implementation of the Action Plan will be monitored annually and major constraints in implementation will be identified and addressed.

Lessons learned and best practices will be identified, documented and disseminated for replication and scaling up.

Indicators of sustainability will be decided by the implementing agencies in consultation with key stakeholders. Its mid-term impact on sustainability of the district will be assessed in the 3rd, 8th, and 13th year of implementation in order to see the effectiveness and impact of IDDV, and course correction. The IDDV may be revised in 2025, in case the situation, issues, options to address the issues change significantly and additional opportunities are created by that time.

Monitoring and evaluation will focus on the following:

- Documenting, disseminating and using the lessons learned and promoting the best practices.
- Monitoring of the implementation of the IDDV.
- Impact assessment of the implementation of IDDV.
- Developing and implementing monitoring framework for programmes and projects of all sectors in the district.
- The result of monitoring and assessment will be reported to the Steering Committee for further guidance or adjustment.

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Annex 1: Un Millennium Development Goals

| S. No. | Goal | Target |
|--------|--|--|
| 1 | Eradicate extreme poverty and hunger | Halve, between 1990 and 2015, the proportion of people whose income is less than \$1 a day |
| | | Achieve full and productive employment and decent work for all, including women and young people |
| | | Halve, between 1990 and 2015, the proportion of people who suffer from hunger |
| 2 | Achieve universal primary education | Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling |
| 3 | Promote gender equality and empower women | Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015 |
| 4 | Reduce child mortality | Reduce by two thirds, between 1990 and 2015, the under-five mortality rate |
| 5 | Improve maternal health | Reduce by three quarters the maternal mortality ratio |
| | | Achieve universal access to reproductive health |
| 6 | Combat HIV/AIDS, malaria and other diseases | Have halted by 2015 and begun to reverse the spread of HIV/AIDS |
| | | Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it |
| | | Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases |
| 7 | Ensure environmental sustainability | Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources |
| | | Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss |
| | | Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation |
| | | By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers |
| 8 | Develop a global partnership for development | Address the special needs of least developed countries, landlocked countries and small island developing states |
| | | Develop further an open, rule-based, predictable, non-discriminatory trading and financial system |
| | | Deal comprehensively with developing countries' debt |
| | | In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries |
| | | In cooperation with the private sector, make available benefits of new technologies, especially information and communications |

Source: UN (<http://www.un.org/millenniumgoals/index.shtml>).

