



# Mastung

Integrated District Development Vision



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**Published by:**

IUCN Pakistan



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*Mastung - Integrated District Development Vision* was developed by the Mastung District Government, with technical assistance of IUCN Pakistan under its project Balochistan Partnerships for Sustainable Development (BPSD) and financial support by the Embassy of the Kingdom of the Netherlands (EKN).

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**Citation:**

Mastung District Government (2011). *Mastung - Integrated District Development Vision*. IUCN Pakistan, Quetta, Pakistan. x+83 pp.

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**Design:**

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**Printed by:**

Hamdard Printers (Pvt) Limited

**Available from:**

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# Contents

Acronyms . . . . .	v
Executive summary . . . . .	vii
<b>1. Introduction . . . . .</b>	<b>1</b>
Procedure and methodology . . . . .	2
Governance . . . . .	4
Gender mainstreaming . . . . .	5
<b>2. Population settlement patterns . . . . .</b>	<b>7</b>
Housing and settlement . . . . .	9
<b>3. Disaster management and preparedness . . . . .</b>	<b>11</b>
Earthquake . . . . .	11
Droughts . . . . .	13
<b>4. Social sectors . . . . .</b>	<b>17</b>
Education . . . . .	17
Health . . . . .	18
Drinking water . . . . .	20
Sanitation . . . . .	20
<b>5. Natural resource management . . . . .</b>	<b>27</b>
Land use . . . . .	27
Integrated water resource management . . . . .	28
Forests . . . . .	32
Wildlife and protected areas . . . . .	34
<b>6. Agriculture and livestock . . . . .</b>	<b>35</b>
Fruits and vegetables . . . . .	36
Livestock . . . . .	36
Poultry . . . . .	38
Rangelands . . . . .	38

<b>7.</b>	<b>Poverty alleviation and livelihood diversification</b>	<b>.45</b>
	Labour force	.46
	Economic opportunities and livelihood diversification	.47
	Private sector development	.48
	Communication and infrastructure	.48
	Energy	.49
	Ecotourism	.50
<b>8.</b>	<b>Implementation</b>	<b>.57</b>
	Steps and process	.58
	Financial allocations	.59
<b>Annexes</b>		<b>.64</b>
	Annex 1: Data tables	.65
	Annex 2: Vision 2030	.80
	Annex 3: Millennium development goals	.81
<b>Reference</b>		<b>.82</b>

# Acronyms

BEMIS	Balochistan Education Management Information System
BEPA	Balochistan Environment Protection Agency
BHMIS	Balochistan Health Management Information System
BLGO	Balochistan Local Government Ordinance
CIDA	Canadian International Development Agency
CNG	Compressed Natural Gas
CNIC	Computerized National Identity Card
CSOs	Civil Society Organizations
DFID	Department for International Development
EKN	Embassy of the Kingdom of the Netherlands
EOBI	Employees Old-Age Benefits Institution
EPI	Expanded Programme on Immunization
EU	European Union
FAO	Food and Agriculture Organisation
GGAP	Global Good Agricultural Practices
GIS	Geographic Information System
GoB	Government of Balochistan
GoP	Government of Pakistan
IDDV	Integrated District Development Vision
IDP	Internally Displaced Person
IFS	International Feature Standard
IUCN	International Union for the Conservation of Nature
JICA	Japanese International Cooperation Agency
LHW/V	Lady Health Workers/Visitors
LPG	Liquified Petroleum Gas
M&E	Monitoring and Evaluation

MAP	Medicinal and Aromatic Plants
MDG	Millenium Development Goals
MICS	Multiple Indicators Cluster Survey
MC	Municipal Committee
NGOs	Non Government Organisations
NIPS	National Institute of Population Studies
O&M	Operation and Maintenance
PHED	Public Health Engineering Department
UNICEF	United Nations International Children Fund
UNDP	United Nations Development Programme
UNHCR	United Nations Refugee Agency
WB	World Bank
WHO	World Health Organization
WWF	World Wildlife Fund

# Executive summary

The Mastung Integrated District Development Vision (IDDV) presents a statement of the district's development vision and in the absence of other strategic planning documents may be read as a policy statement on part of the district. A development vision expresses a desirable future condition envisaged by a nation, region or administrative unit, and charts a course of action for its attainment. It is a statement of commitment that expresses concerns and values of local communities on their priorities and resource allocation decisions.

Five principles have guided the formulation process:

- Consultation with citizens and stakeholders;
- Consensus building;
- Long term sustainability;
- Integrated planning and management; and
- Gender and income equity.

Mastung's IDDV has gained legitimacy as consultations were the bedrock of its formulation process. These have provided a way to capture local and collective thinking, transform a spirit of collective responsibility and action, and ensure ownership of priorities and choices. A total of 185 people have participated in consultations around the formulation process. The process was launched in October 2008 and finalized in May 2011. It spanned two different dispensations at the district level – in 2008 the Balochistan Local Government Ordinance 2001 was still effective, and currently a new local government system is awaited. Regardless of the governance system, district level visions and plans have the leeway to provide focus and continuity at the district and provincial levels as they allow for:

- Consensus in planning, target setting and fund allocation;
- Participation, particularly of women in decision making;
- Equity in programmes and where necessary positive discrimination for the poor and vulnerable;
- Responsiveness to citizens and clients/customers;
- Effectiveness and efficiency in service delivery;
- Social accountability and transparency of information; and
- Enforcement of laws.

At the time of the 1998 Census, the population of Mastung district was 132,044 persons. According to the National Institute of Population Studies, the projected population of Mastung district in 2011 and 2012 was 222,000 and 269,000, respectively. There was one notified urban area (municipal committee) and a few large rural settlements (Pringabad, Wali Khan, Kanak, Sheikh Wasil, Shamsabad



and Kardap); the rest of the population was scattered amongst small and medium sized settlements. Between 1981-1998 census the population grew at an average annual growth rate of 1.31 per cent. 85 per cent of the households in the district were Brahui speaking and 7.53% were Pashto speaking. Some of the larger tribal groups were Khuwaja Khel, Zar Khel, Dehwars, Saidis, Mullazais, Lahris, Kurds, Garranis, Shahwanis and Mohammad Shahi. Some tribes migrate annually to other districts. In 1998, there were 7.9 persons per household and an average of 3.3 persons per room in the district. 27.5 per cent of households had radios, 11.2 per cent televisions and 10.3 per cent had access to newspapers. Electricity was available to 68.2 per cent of households; piped gas to only 32.2 per cent households, telephone connections to 12.7 per cent and internet to 0.2 per cent-there were 22.9 per cent households without any of these facilities.

The district is categorised as 'very high risk' for earthquakes and droughts. The three recorded earthquakes in the last hundred years were in 1935, 1990 and 1997. Their intensity ranged from 5.0 to 7.5 on the Richter Scale (the Ziarat earthquake in 2008 affected Mastung mildly). The last drought lasted for nearly six years (ending in 2004) and had a negative impact across the province on livelihoods, asset depletion and income. 77.3 per cent of the walls in rural areas are made of unbaked bricks with mud bonding, on mud and wood. In the past decade, although considerable work has been done on disaster mitigation and preparedness by federal and provincial agencies, Mastung has no district level plan for mitigation or preparedness.

In the education sector, the core issue remains gender disparities and appropriate skills as well as availability of teaching staff. The literacy rate for the age group 10+ years was 27.6 per cent (males 37.7 per cent and females 15.7 per cent). There are 201 primary, 21 middle and 11 high schools, and one degree college for boys. There are 93 primary schools, seven high schools and one intermediate college for girls. In the health sector, the core health issue remains the provision of health care to women, and the access of all citizens to tertiary health care. There are three hospitals with 92 beds, three Rural Health Centres, four Mother and Child Centres, four Basic Health Units and 24 dispensaries in the district. In 2006-7, there were only 22 lady doctors in the district, 42 Lady Health Workers and 78 midwives. Only 4 per cent of the population consumed iodized salt while 20 per cent of children between 12 and 23 months were not immunized at all. Sanitation and solid waste

coverage is poor and public health risks are high. The main source of drinking water is groundwater. Only four of the 14 tube wells installed by the Public Health Engineering Department in the municipal area are operational. The district is also home to many other examples of sunk investments made by the federal and provincial government.

Improved natural resource management remains a challenge without baseline maps which could help reconcile basic data such as area of district, consolidated area, cultivated area, forest area and rangelands area. The onus for action particularly for groundwater management rests with the Mastung District Government. It will lobby for the removal of subsidy on electricity for agricultural purposes and the rehabilitation of *karez*s. The sustainability of livestock, agriculture, rangelands and forests rests on water availability as does that of human settlements.

Agriculture and livestock are the mainstay of the economy. Agriculture consumes 95 per cent of the groundwater and most of the surface water. As groundwater availability drops, a shift away from agriculture (particularly orchards) to livestock is expected. Moreover, in order to ensure that livestock assets do not perish during any future drought, infrastructure for slaughtering, selling and storage needs to be built. Livestock common in the district are (in descending order) poultry, goats, cows, sheep, asses, camels, buffaloes, mules and horses. The district is home to natural and manmade forests which are under threat not only because of water shortage and overgrazing but also because of high dependence on wood for heating purposes (85 per cent of housing units). Forests not only play a vital role for micro environments and biodiversity but have tremendous potential for ecotourism (catering both to people residing within the district, therefore expanding the number of cultural and recreational opportunities, and to tourists from outside the district). In Mastung this potential can be realised fairly rapidly as Mastung is home to two game reserves and is part of the Hazarganji Chiltan National Park.

In 1998, 49.9 per cent of the employed labour force was in the agriculture sector. Substantive potential exists in mining and minerals, and in small and medium enterprises. Sericulture is completely untapped in the district, as is value added from mines, minerals and fruits. A shift to localised and alternative energy sources is critical for the realisation of this potential.

Over the next few years Mastung District Government, in collaboration with the Government



of Balochistan and development partners will prepare detailed plans and strategies. Addressing endemic inefficiencies with appropriate human resource systems, transparency of information and capacity building will be integral to these plans as will gender mainstreaming. Furthermore, incentives for working in remote areas will be included as well as improvements in the law and order situation:

- Population settlement strategy including zoning, land use, settlement hierarchies and status markets
- Disaster mitigation and preparedness strategy
- Social sector plans for education, health, and water and sanitation
- Culture and recreation strategy including for ecotourism
- Livelihood diversification plan including strategies for mines and minerals, energy, and private sector participation
- Natural resource management plan including integrated water, forests and protected areas, rangelands, and wildlife

- Agriculture plan including fruits, vegetables, and floriculture
- Livestock and poultry plan
- Monitoring and evaluation plan

One of the major challenges that lies ahead is the alignment of district priorities with provincial financial allocations. As the situation stands currently, the IDDV identified the following priorities (in descending order): drinking water, health and education. The provincial government has allocated finances based on the following priorities (descending order): communication and roads, urban planning and development, and health.

The test of Mastung's IDDV rests on its ability to mobilise resources - human, financial, political and environmental. This requires aligning financial allocation to detailed district strategies plan (based on sector wise plans and strategies with detailed budgets). Translation of the IDDV into action therefore requires proactive planning for efficient and effective achievement of district level goals.





# 1. Introduction

**A** 'development vision' expresses a desirable future condition envisaged by a nation, region or administrative unit, and charts a course of action for its attainment. It is a statement of commitment that expresses concerns and values of local communities on their priorities and resource allocation decisions.

Such a vision needs to be able to mobilise resources, human, financial and political, to achieve common development goals. A wide consultative process involving all stakeholders is a prerequisite for such a vision to evolve. This provides a way to capture local and collective thinking, transform a spirit of collective responsibility into action, and ensures ownership of choices made.

Translation of the vision into action requires proactive planning for efficient and effective achievement of goals. Planning involves: setting of short, medium and long term targets; integration and interaction across sectors, tiers and partners; definition of roles and responsibilities; and learnings from decisions, plans and previous interventions.



In the absence of democratic representation at the district level, the Integrated District Development Vision (IDDV) can play a pivotal role in ensuring effective, efficient, equitable and sustainable services through:

1. Translation of provincial policies, strategies and priorities;
2. Identification of district development priorities;
3. Clear articulation of budgetary priorities aligned with available resources;
4. People-centred planning;
5. Introduction of participatory approaches to service delivery and monitoring;
6. Building on existing resources and capacity (civil society, private sector etc);
7. Implementing system for monitoring and evaluation;
8. Collation of baseline information;
9. District wise sector specific plans; and
10. Inter-sectoral coordination.

Mastung's IDDV is sufficiently robust and commands ownership from a range of stakeholders. It has maintained legitimacy under different legal and institutional dispensations.

Mastung's IDDV process was started at a time when the Balochistan Local Government Ordinance 2001 (BLGO 2001) was effective, which created a new local government system with elected representatives heading local governments and supported at the provincial level by more transparent institutions such as the Provincial Financial

Commission. The Balochistan Assembly repealed the BLGO 2001 in March 2010.

As the first comprehensive sustainable development strategy for district Mastung, the IDDV represents a statement of district government policy. Under the current dispensation, Deputy Commissioners will implement the IDDV as they oversee and coordinate provincial departments at the district level. This will work towards reducing the deficit in trust and coordination that exists amongst stakeholders. A committee may be established (or the IDDV Committee can be continued), with representation from key stakeholders, to oversee the implementation of the IDDV and to revise, update and improve on it.

## Procedure and methodology

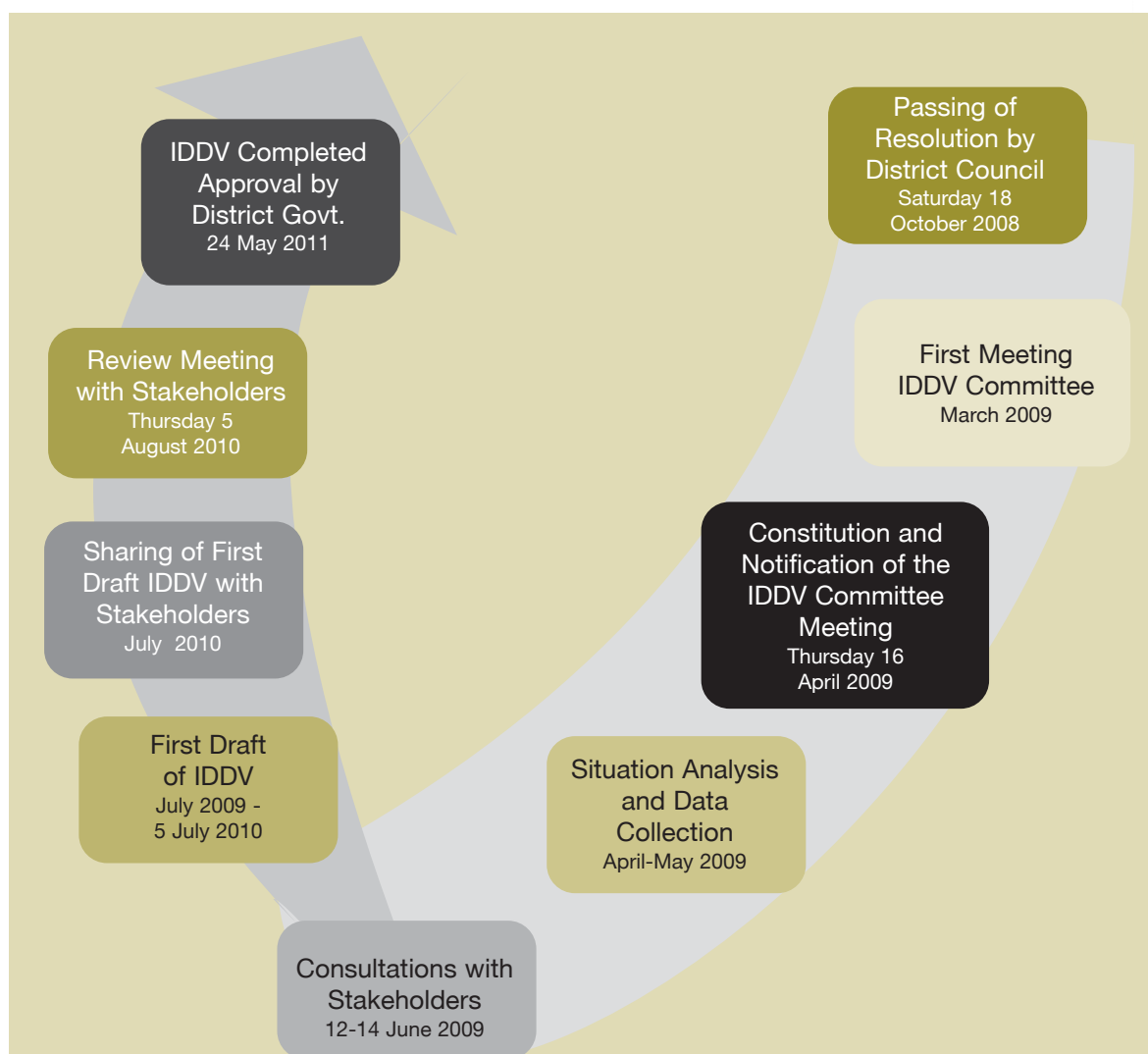
The IDDV's legitimacy is anchored in a broad based consultative process. The IDDV was launched at a consultative workshop presided by the District Coordination Officer<sup>1</sup> Mastung and a gender focused workshop with women from Mastung.

The following principles guided the formulation process of the IDDV:

1. Consultation with citizens, communities and key stakeholders;
2. Consensus building;
3. Long-term sustainability;
4. Integrated planning and management; and
5. Equity (gender, income etc).

### Box 1: Relevant GoP plans, policies and programmes

- Pakistan is a signatory to the Millennium Declaration. Importantly, for the purposes of the IDDV, many of these goals are to be implemented at the local level.
- Medium Term Development Framework, which is a five-year plan for 2005-2010.
- Poverty Reduction Strategy Paper, which provides a policy outline for poverty reduction and the achievement of MDG commitments.
- In 2007, the Planning Commission released 'Pakistan in the 21st century: Vision 2030', a roadmap for economic renewal.
- Integrated Water Resource Management Policy.
- Some national preventive health programmes in the district e.g. Expanded Programme for Immunization, T.B Control Programme, National Programme for Family Planning and Primary Health Care, Basic Development Needs and Malaria Control Programmes and Ministry of Special Initiatives Islamabad.

**Figure 1: IDDV formulation process**

Source: Based on data sent by IUCN 'ID DVs Chronology'

During the IDDV process, 19 meetings and workshops have been held and a total of 185 people have participated in consultations.

A search for both published and un-published data and analysis pertaining to the district was undertaken and data collated.<sup>2</sup> The information gathering procedure included discussions with:

1. Citizens and community representatives;
2. Private sector representatives (mining, agriculture, livestock, poultry, water, transport, businesses, tourism, traders/transporters) including from outside the district;
3. Media (print and electronic);
4. Academia (education and research organisations in the country);
5. Civil Society Organisations (CSOs) and Non-Governmental Organizations (NGOs) like World Wildlife Fund Pakistan (WWF) and Balochistan Rural Support Programme; and
6. International Organizations e.g. International Union for the Conservation of Nature (IUCN) and the Food and Agricultural Organisation (FAO).

The district administration distributed a draft to stakeholders for views, feedbacks and comments. A consultative workshop was held on the IDDV before its endorsement. See Figure 1 for details.

<sup>2</sup> All the data has not been included in this document. Interested readers may request District Government Mastung or IUCN for additional data.

## Governance

Under the 18th amendment to the Constitution of Pakistan, subjects on the concurrent list have been transferred to the province. Currently, it is unclear how many of these functions will be transferred by the Government of Balochistan (GoB) to its departments district administrations. In addition, the GoB is designing a new local government system.<sup>3</sup> Therefore the structures, through which citizens engage with the state, for areas related to everyday life, remain in flux.

The GoB has decided to continue with certain decentralisation-neutral reforms that were brought in with the BLGO 2001, including District Government Budgets and a Local Government Grants Committee headed by Finance Minister<sup>4</sup> (taking from Provincial Finance Commission instrument under the BLGO 2001).

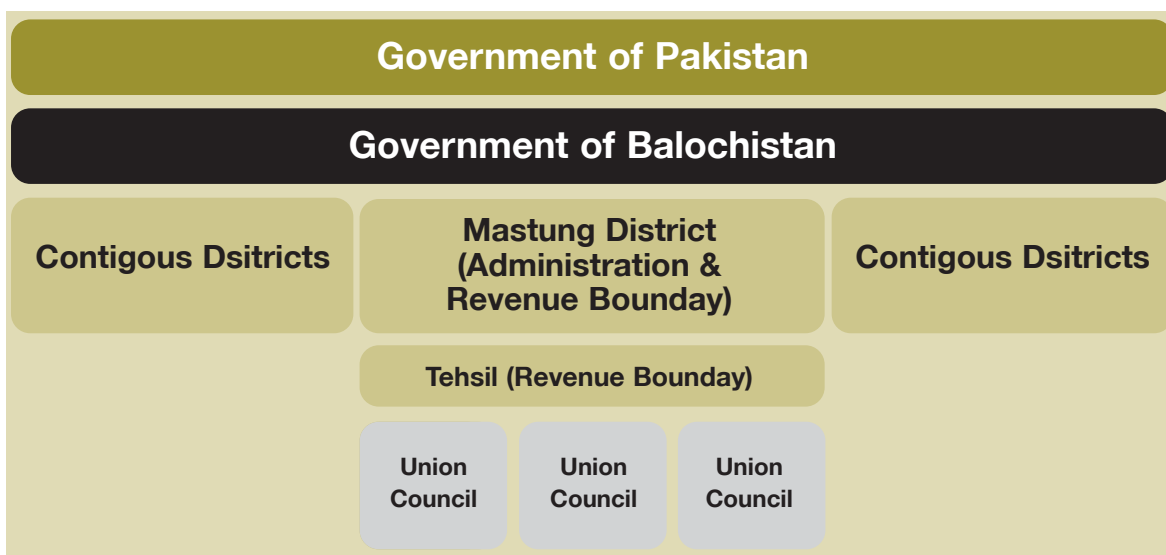
Despite the current governance situation there is room for the IDDV to contribute to improved governance in the district by working on the following seven areas:

1. Consensus in planning, target setting and fund allocation;
2. Participation, particularly of women in decision making;
3. Equity and positive discrimination for the poor and vulnerable;
4. Accountability and responsiveness to citizens;
5. Effectiveness and efficiency in service delivery;
6. Social accountability<sup>5</sup> and transparency of information; and
7. Lobbying for the enforcement of laws.

## Transparency

Mastung District Government recognises that citizens have the right to be informed and to access information in a legible form. The Balochistan Education Management Information System (BEMIS) and the Balochistan Health Management Information System (BHMISS)<sup>6</sup>, which enable decisions based on spatial and temporal data analysis, have been extended to the district level.

**Figure 2: Administrative and revenue hierarchy**



<sup>3</sup> The Balochistan Local Government Bill, 2010 (Bill No.8 of 2010) made it mandatory for the provisional set-up to ensure fair and free elections for local governments within one year.

<sup>4</sup> Secretaries Finance, Planning and Development and Local Government are the members of the committee. The Administrative Secretary of the Local Government Board is the secretary to this committee. The committee allocates development and non-development funds for local councils. Information provided on phone by Additional Secretary Finance Mr Kaleemullah on 20 September 2011.

<sup>5</sup> Mastung District had one of the highest incidences in Balochistan of 'children registered before 5 years of age with local councils' at 3 per cent. Government of Balochistan (2004). *Multiple Indicator Cluster Survey 2004* [website]. <<http://balochistan.gov.pk/departments/mics/MICS-4-Web/4-6-Results-Child%20Protection.pdf>> Accessed 10 October 2011.

<sup>6</sup> In order to computerize and handle the enormous data at the provincial level, a basic Geographic Information System has been established to meet the overall needs of the province.

The Mastung District Government is going to take the following steps to improve transparency:

1. Compile accurate basic data about the District<sup>7</sup>; create a consistent set of baseline indicators;
2. Clarity and information dissemination on the post BLGO 2001 dispensation;
3. Design a district information plan;
4. Establish a simple Geographic Information System (GIS) portal at the district level with a management information system;
5. Maintain electronic copies of records;
6. Digitize and print all district maps and thematic data linked to the maps, thereby improving efficiency and quality of decision-making and performance;
7. Link district data to relevant data portals (Pakistan Census Organisation, BEMIS, etc);
8. Establish district information centres at the district and sub-district levels; and
9. Disseminate the Freedom of Information Bill among citizens, NGOs, CSOs and the private sector. For example, the District Reconnaissance Soil Survey Reports were not provided by the Soil Survey of Pakistan for inclusion in the IDD.
10. Establish a district monitoring and evaluation procedure and in particular prioritise community based monitoring and regulation of services;
11. Work with the media to ensure outreach and awareness in order to ensure citizen feedback (extending coverage and access to radio, especially in the remote rural areas for providing information and raising awareness on good practices for grazers, farmers and others; increase airing of relevant Brahui programmes from radio and TV; translate and distribute copies of the Mastung IDD in Urdu; keep stakeholders informed about changes in the IDD etc); and
12. Undertake a capacity and training needs assessment for the public and private sectors.

## Gender mainstreaming

Mastung District Government is committed to ensuring that constitutional provisions for its citizens are enforced. The Constitution

ensures that all citizens have equal rights and authorises the state to make special provisions for the protection of women and children. Women have the right to vote and hold office and are protected by the same labour laws as men. Women also have reserved seats in the national and provincial assemblies. Under the BLGO 2001, women had reserved seats in local governments; this had initiated a process of change that will hopefully be continued and strengthened in the forthcoming local government legislation.

In Mastung, although women comprise 47 per cent of the local population, the monopoly of economic and social power lies with men. Mastung has a patriarchal culture and women's share in decision-making and economic activities is limited; currently their participation in public life is not visible.

Women carry a disproportionately large part of the workload, since household activities (fetching water and fuel wood, cleaning, child rearing, washing, taking care of livestock) are the sole responsibility of women. Their workload was further increased due to the drought as they had to walk longer distances to get water for domestic purposes.

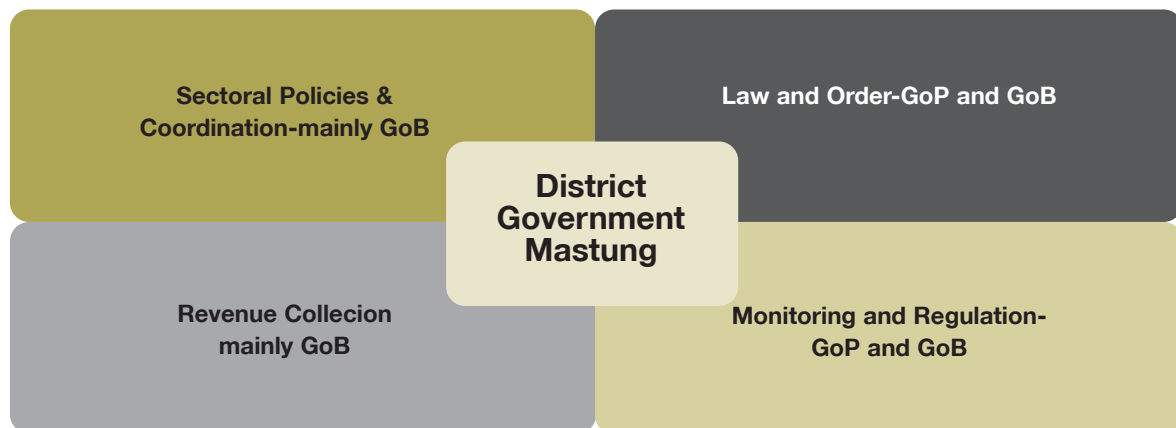
Although women contribute significantly to income and livelihoods, they are denied property rights, their contribution to the agriculture sector is generally not accounted for, under the jirga system are at times regarded as commodities, generally receive less food, and their access to medical care is more limited than that of men. A large number of women sew and embroider to enhance household income. Women also spend large amounts of time in fetching water and fuel wood.

In Mastung district:

1. The literacy rate among women is very low. According to the 2008 census data only 428 girls reached secondary schools;
2. There is only one intermediate college for females and no degree college in the district;
3. The contraceptive prevalence rate was 14.3 per cent;
4. The fertility rate was 5.7 and the child to woman ratio was 76.1;

<sup>7</sup> For example: there is a discrepancy of 39,100 hectares in the surface the area of the district i.e. 686,100 square kilometer. About 39 per cent of the geographical area is still un-reported since most of the land is not yet settled. Statistics for the reported area are not reliable.



**Figure 3: District coordination and state governance functions**

5. The mean age of marriage for women was 21 years;
6. Percentage of married women in the total female population was 67.3; and
7. Percentage of females between the ages of 15-49 years was 21.4 (compared to 59.62 per cent reported in 1981).<sup>8</sup>

Mastung District Government is committed to working towards the following goals:<sup>9</sup>

1. Establishing a leaders forum where men and women sit together to discuss Mastung's gender issues, priorities and recommendations;
2. Ensuring inclusion of women in future decision making;
3. Ensuring all government procedures are gender sensitive;
4. Raising awareness on gender issues amongst a range of stakeholders;
5. Raising awareness on the economic contribution of women;
6. Facilitating the Benazir Income Support Programme (BISP) which provides financial incentives for women to register for the National Identity Card and provides households with income to meet basic needs. This is a first step towards empowerment of women. Mastung District Government is committed to a 100 per cent registration of women for the NIC and Census;
7. Building on small changes such as: increasing the pace in girls enrolment in urban areas, creating incentives for girls education, providing scholarships for girls from middle school onwards, and establishing an educational boarding facility for girls;
8. Review of medical facilities availed by women;
9. Reporting of cases of violence and harassment against women with a view to enforcing the Prevention of Domestic Violence Act 2008 and Protection Against Harassment of Women at Workplace Bill 2010; and
10. Launching a reproductive rights and family planning campaign:
  - a. Initiate discussion with tribal leaders and community members on population control;
  - b. Engage the media as a key partner in raising awareness;
  - c. Improve service delivery by establishing maternity centres with 24-7 services, links to the Lady Dufferin hospital in Quetta, and improving services provided by Lady Health Workers/Visitors (LHW/V) and Traditional Birth Attendants; and
  - d. Organise exposure visits of concerned government staff to other parts of Pakistan and other muslim countries which have successful family planning programmes.

<sup>8</sup> Population Census Organisation (1998). *District Census Report Mastung 1998*. Islamabad, Pakistan: Government of Pakistan.

<sup>9</sup> During the IDDV procedure the statement that was formulated was "Enhanced capacities and willingness of human resources in transforming the people into ecologically responsible, educated, healthy and aware citizens, and improving the quality of life of slum dwellers, and the people living in extreme poverty and hunger".

## 2. Population settlement patterns



**M**astung's first Population Census was conducted in 1901.<sup>10</sup> The total reported population of Mastung District, according to the 1998 census, was 164,645 with an average annual growth rate of 1.31 per cent for 1981-1998. The literacy rate for 10 years and above was 27.6 per cent (males 37.7 per cent and females 15.7 per cent).<sup>11</sup>

The district's population in 1972 was 74,887, by 1981 it was 132,044 (31,871 and 100,173 in Dasht and Mastung sub-divisions respectively) and had grown at an average annual growth rate of 6.9 per cent. The household size in Mastung district was seven persons in 1981 and 7.9 in 1998.<sup>12</sup>

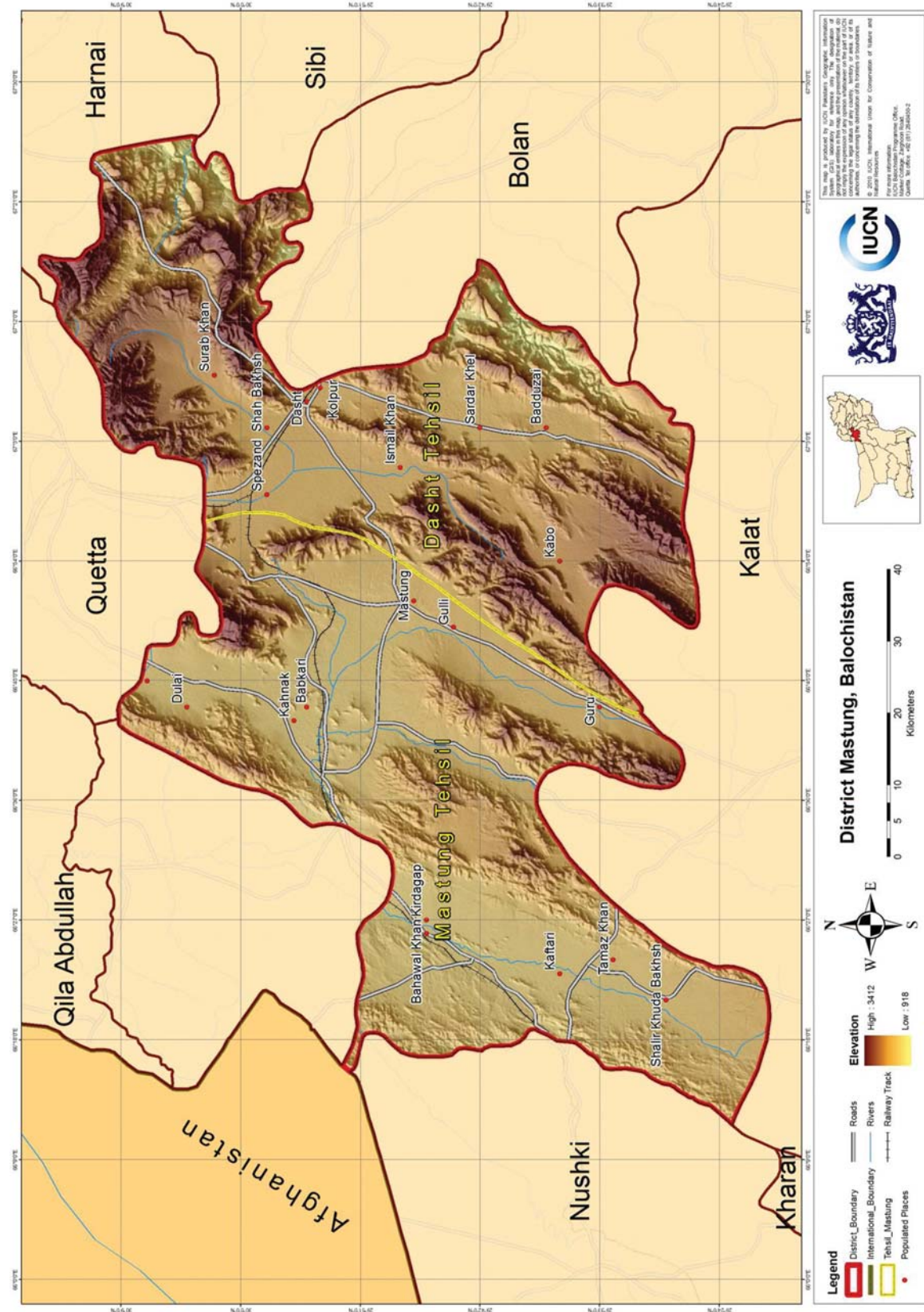
The larger rural settlements in Mastung include Pringabad, Wali Khan, Kanak, Sheikh Wasil, Shamsabad, and Kardgap.

<sup>10</sup> Population Census Organisation (1998). *District Census Report Mastung 1998*. Islamabad, Pakistan: Government of Pakistan.

<sup>11</sup> *ibid.*

<sup>12</sup> *ibid.*

## Map of Mastung district



**Table-1: Mastung at a glance**

Area	5,896 Sq. km
<b>Demographics</b>	
Population-1998	164,645 persons
Male	87,334 (53.04%)
Female	77,311 (46.96%)
Sex Ratio (males per 100 females)	113.0
Population Density	27.9 per Sq. km
Urban Population	24,131 (14.66%)
Rural Population	140,514 (85.34%)
Average Household Size	7.9
Population-1981	132,044 persons
Average Annual Growth Rate (1981-98)	1.31%
<b>Literacy</b>	
Literacy Ratio (10 +)	27.6%
Male	37.66%
Female	15.73%
<b>Housing Units</b>	
Total Housing Units	20,447
Pacca Housing Units	1,709 (8.36%)
Housing Units having Electricity	14,870 (72.72%)
Housing Units having Piped Water	4,908 (24.0%)
Housing Units using Gas for Cooking	2,600 (12.72%)
<b>Administrative Units</b>	
Sub-Divisions	02
Union Councils	12
Mauzas	278
Municipal Committee	01

Source: Population Census Organization (1998)

85 per cent of the households in the district are Brahui speaking and 7.35 per cent speak Pashto. Some of the larger tribal groups include Khuwaja Khel, Zar Khel, Dehwars, Saiads, Mullazais, Larhis, Kurds, Garranis, Shahwanis and Mohammad Shahi. Some tribes migrate annually with their families and small ruminants to Kachhi (Bolan district), Jacobabad or Larkana and return to Mastung for the winter and spring months (October-March). Some of these own lands in Kachhi, however, the majority migrate to graze their livestock and to seek employment. A large number of males go to Panjgur district for harvesting dates during the summer. The projected population of Mastung district according to the National Institute of Population Studies for 2011 and 2021 was 222,000 and 269,000 respectively. This assumes an average annual growth rate of 2.68 per cent and 2.78 per cent respectively (taking 1998 as the base year).

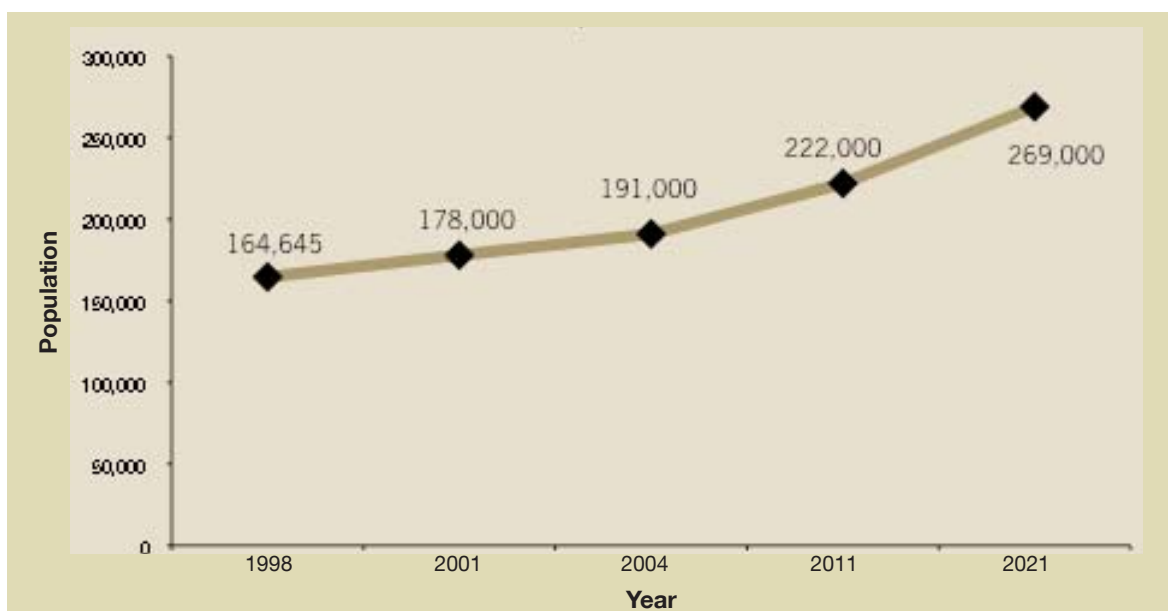
Mastung district is mainly rural (nearly 85 per cent of the population). The district should urbanise in a way that opportunities for livelihood diversification, the empowerment of women, and substantive reduction in unit cost of services are optimised, and slum development, congestion, and pressures on social services are minimised.

Mastung District Government plans to prepare a strategy for district wide population settlement within one year.

## Housing and settlement

In 1998, there were 7.9 persons per household and 3.3 persons per room in the district; 14.1 per cent of the population lived in one-room houses; 24 per cent households had access to piped water; 43.4 per cent households were without latrines; 72.7 per



**Figure 4: Population growth trends**

Source: District Census Report Mastung. (1998); National Institute of Population Studies projections (2010)

cent households had electricity; 27.5 per cent had radio; 11.2 per cent had televisions; and 10.3 per cent has access to newspapers.

Electricity was available to 68.2 per cent of the households; piped gas to 32.2 per cent; water connections to 39.2 per cent; telephone connections to 12.7 per cent; and internet to 0.2 per cent. There were 22.9 per cent households without any of these facilities.

The percentage of households with air conditioners was 0.3 per cent and 42.6 per cent had air coolers or fans. One per cent had cooking ranges or microwave; 7.7 per cent refrigerators; 23.9 per cent washing machines; 25 per cent sewing or knitting machines; 21.9 per cent radio; 14.5 per cent television; 51.2 per cent bicycle; 13.9 per cent motorcycle or scooter; 12.5 per cent car or other vehicle; 0.4 per cent personal computer; and 0.1 per cent mobile phone; 3.2 per cent water pump; and 22.9 per cent households had none of these facilities.<sup>13</sup>

In Mastung district, 77.30 per cent of houses in rural areas have walls that are made of unbaked bricks (with mud bonding and mud and wood walls). Construction material consumed in urban and rural households in Mastung includes baked bricks/blocks/stones, unbaked bricks/earth blocks, wood in the outer walls, and reinforced concrete, cement/iron sheet, wood bamboo in roofs.<sup>14</sup>

District Government Mastung will prepare recommendations for the use of building materials in construction keeping in mind the risk of earth snakes. Plans to prepare strategic infrastructure plans (including zoning, land use, markets, social sector infrastructure, protection of natural resources etc) for Mastung town and for the larger rural settlements. These will also recommend the demarcation and notification of urban areas to the Population Census Organisation.

See Annex 1: Data Tables for details on materials consumed for constructing houses.

13 Government of Balochistan (2004). *Multiple Indicator Cluster Survey 2004* [website]. <<http://balochistan.gov.pk/departments/mics/MICS-4-Web/4-6-Results-Child%20Protection.pdf>>. Accessed 10 October 2011.

14 Population Census Organisation (1998). *District Census Report Mastung 1998*. Islamabad, Pakistan: Government of Pakistan.

### 3. Disaster management and preparedness



**A**ccording to the GoB's Disaster Risk Management Plan 2008 the risk and severity of the various hazards that threaten Mastung District are:

- Very High: Earthquake
- Very High: Drought
- Low: Flood
- Very Low: Locusts/Pests

The district's emergency response equipment and machinery includes: five ambulances; two fire brigades; nine dozers; one grader; five tractors and one truck.<sup>15</sup>

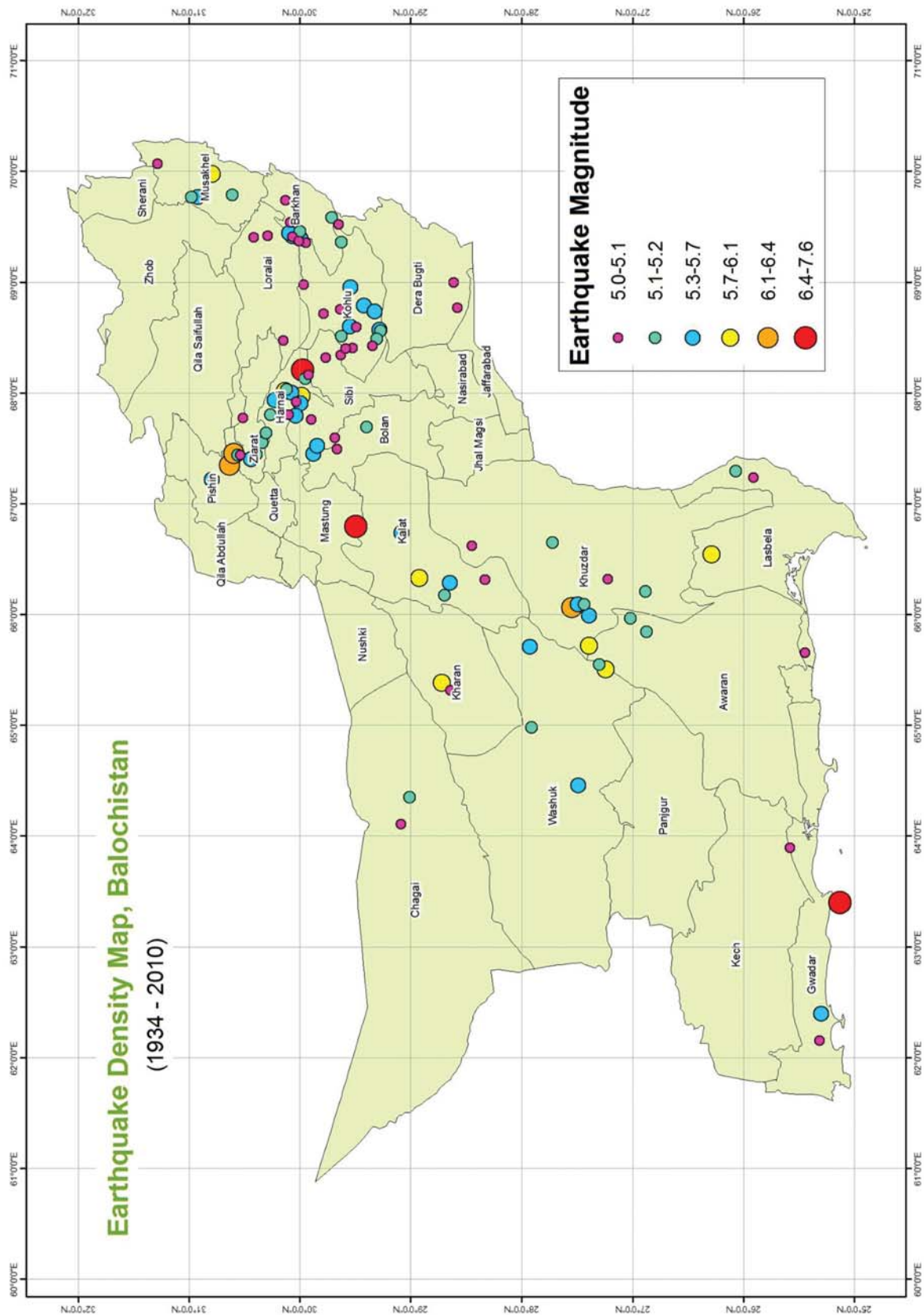
#### Earthquake

The whole of Balochistan Province lies in a seismically active region. The province has experienced catastrophic earthquakes in the past. A powerful earthquake devastated Quetta town and the adjoining areas in 1935. Approximately 35,000 people were killed in Quetta alone. The magnitude of this earthquake was 7.0 on the Richter scale.

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<sup>15</sup> Government of Balochistan (2006). *Balochistan Disaster Risk Management Plan, 2006* [website]. <<http://unportal.un.org.pk/sites/UNPakistan/OneUN/DRM%20Documents/Balochistan%20Draft%20PD RM%20Plan.pdf>> Accessed 9 October 2011

## Seismic Map







Mastung district during the drought

Recorded earthquake incidences in Mastung (and the intensity at Richter scale) in the past are: 1935 (7.5); 1990 (5.8-6.1); and 1997 (5.0-6.2). The Ziarat earthquake in 2008, with a distantly located epicentre, affected district mildly.<sup>16</sup>

## Drought<sup>17</sup>

District Mastung is arid and its climate is temperate. Consequently, it receives up to 150 to 300 mm precipitation annually. Long periods of drought are common.

The last drought, a province wide one, lasted nearly six years (1998–2004). This drought is considered to be one of the worst in the recorded history of Balochistan. According to the Balochistan Disaster Risk Management Plan (2006) the severity of the drought was rated as ‘5’ i.e. the highest possible.<sup>18</sup> District Mastung was categorised as a highly affected district by the Board of Revenue.<sup>19</sup> Economic growth slowed down to 2.6 per cent during the drought. According to the figures released by the Ministry of Finance, the drought caused a loss of PKR 25 billion to the national exchequer in the year 2000-2002, mostly attributable to Balochistan.

**Table 2: Relative severity of hazards in Mastung**

Hazard	Drought	Floods	Earthquake	Landslides	Communicable diseases	Fire	Locusts/ Pests
Incidence	2	2	5	-	-	-	1
Hazard	Crisis situation	Industrial & mines accidents	Transport accidents	Cyclones	Tsunami	Refugees & IDPs	Comments
Incidence	-	-	1	-	-	-	

Source: Balochistan Disaster Risk Management Plan (2006)

<sup>16</sup> Pakistan Meteorological Department, Quetta Station Plan (2006), <<http://www.pakmet.com.pk/>>

<sup>17</sup> A drought usually refers to an extended period of below-normal rainfall, but can also be caused by the drying up of water resources (wells, springs, tube wells, ponds or lakes), or anything that reduces the amount of available water.

<sup>18</sup> Government of Balochistan (2006). *Balochistan Disaster Risk Management Plan, 2006* [website]. <<http://unportal.un.org.pk/sites/UNPakistan/OneUN/DRM%20Documents/Balochistan%20Draft%20PDRM%20Plan.pdf>> Accessed 9 October 2011

<sup>19</sup> Government of Balochistan (2006). *Contingency Plan for Drought Affected Districts of Balochistan 2006*. Quetta, Pakistan: Government of Balochistan.

Agriculture and livestock are severely harmed during droughts, consequently causing damage to livelihoods. During this drought (1998-2004) livestock suffered the most, not only from shortage of forage and water but also from contagious diseases (e.g. Foot and mouth disease). Communities had limited knowledge on treating sick animals and lost substantive numbers. Household incomes dropped significantly.

Conserving water, storing water and a strategy to procure water for critical needs are important interventions to cope with a drought. Droughts also create environmental conditions that increase the risk of other hazards such as fire.

Mastung District Government is planning to take the following measures:

1. Raise fodder-tree groves at appropriate sites and closing off specific grazing areas for exclusive use during droughts;
2. Providing livestock pens and water points within the grazing areas and at makeshift sites for exclusive consumption during periods of drought;
3. Creating a rapid retailing system for livestock to reduce complete asset and income loss during a drought; and
4. Disseminating and supporting traditional design and construction principles for mud buildings.

*See Section Natural Resource Management for more details.*

**Table 3: Sabotage activities in Mastung**

Year	Number and Type of Explosions				Persons	Persons
	Bomb Blast	Land Mine	Hand Grenade	Rocket Fire	Killed	Injured
2002	-	-	-	-	-	-
2003	-	-	-	-	-	-
2004	2	-	1	-	1	0
2005	13	-	-	4	4	6
2006	23	-	-	7	14	21
4 April 2007	11	-	-	-	-	-
Total	49	-	1	11	19	27

Source: Balochistan Disaster Risk Management Plan (2006)

### Box 2: Disaster mitigation and preparedness in Mastung

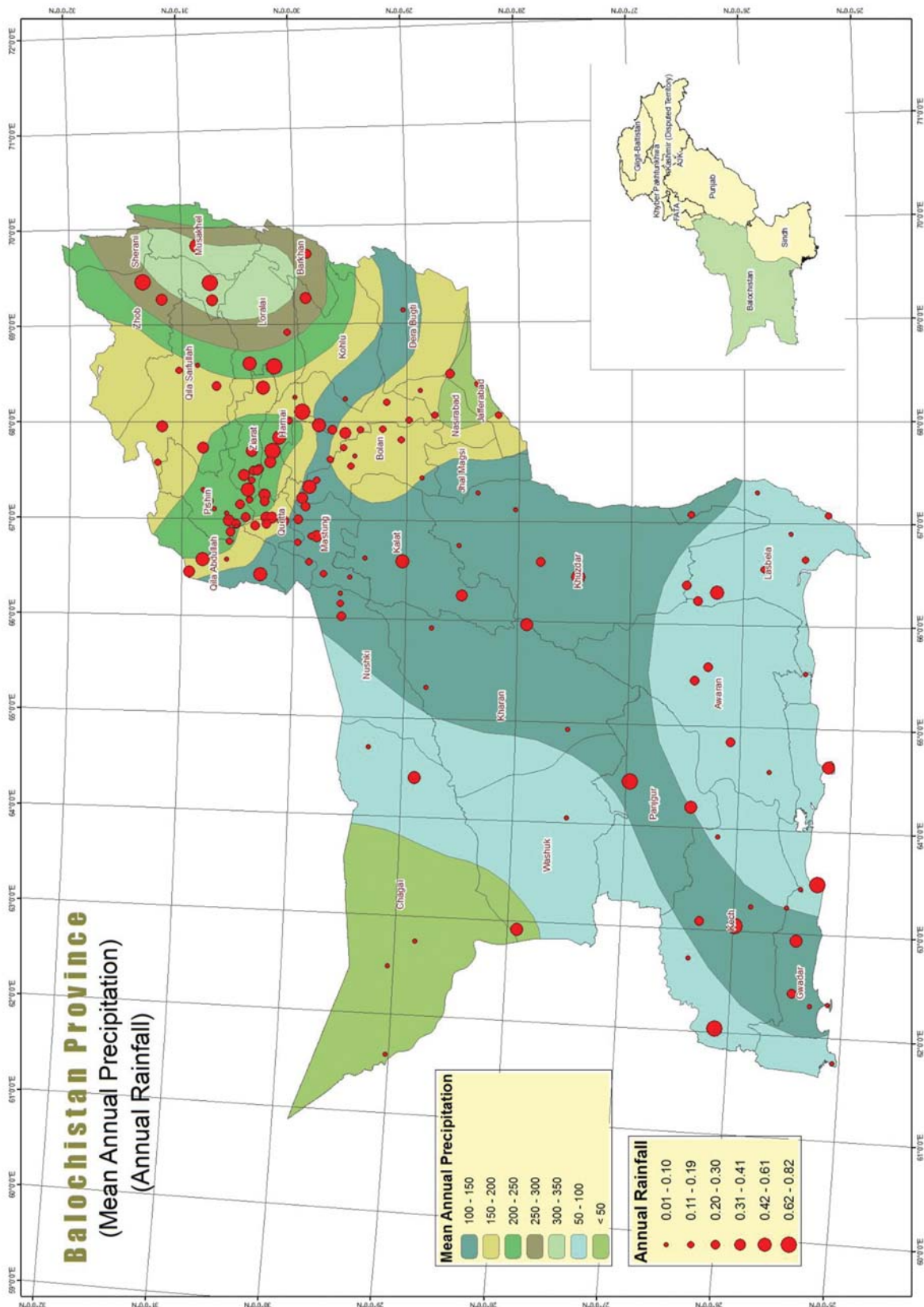
The last drought (1998-2004) has led to the following consequences in Mastung:

- Drop in household income.
- Loss of household assets.
- Rise in food prices.
- Increase in malnutrition.
- Fodder shortage.
- Substantive destruction of apple trees and orchards.
- Migration of people.
- Heavy cost of relief work.
- Increased vulnerability to disease.

Mastung District Government will lobby and work with the GoB on:

- Implementation of the provincial disaster risk management plan.
  - Establish a system on disaster preparedness.
  - Lobby for a drought emergency fund at the provincial and national levels.
  - Allocate different responsibilities to different stakeholders.
- Disaster management and seismic briefing/trainings for all stakeholders including senior administrators, professionals, members of legislative assemblies, medical professionals, education professionals, grazers, farmers, and the private sector and CSOs.
- Improve data and its interpretation particularly for early warning systems in Mastung; lobby for direct information from relevant organizations/agencies.
- Evaluate flash floods and landslide hazards and design corrective techniques to reduce risk in Mastung.
- Design roads and bridges in Mastung keeping in view vulnerability to flash floods and landslides.
- Retain waterways in their original dimensions in Mastung in order to allow for increased discharge of rainwater during flash floods.
- In Mastung, plan for landslides at vulnerable places and keep the relevant machinery and equipment ready for clearing affected areas, in particular highways and roads, bridges, houses etc.
- Reconstruct affected villages, ensure proper town planning based on geo hazard-zone mapping (including the local geology, geomorphology, geo-hydrogeology, and geotechnical investigations).
- Prepare district-wise Climatic Moisture Index and Soil Moisture Index maps for Mastung with the help of remote sensing.
- Establish facilities for development and marketing of livestock products from Mastung (refrigeration of large quantities of meat are lacking currently, even at the provincial level).
  - Arrange mobile refrigerated meat storage vans during droughts along with government controlled purchase prices to motivate owners to slaughter and sell their livestock, when they are likely to die because of drought or disease.
- Agree on an emergency drinking water plan for Mastung (for citizens and livestock).
- Build and operate a weather station in Mastung.
- Collate and disseminate reliable data on temperature, precipitation, run-off, recharge, soil moisture and ground water.
- Develop forest plantations in Mastung of multi-purpose fast growing forest species (for fodder, fuel, control of soil and bank erosion, water recharge, enhanced biodiversity, and fodder tree groves for use only during long drought periods).
- Introduce and manage high protein molasses blocks for winter feeding and drought periods in Mastung.
- Improve housing construction techniques keeping in view vulnerability to earthquakes and cold waves in Mastung.
- Promote diversified livelihoods.

## Annual precipitation



## 4. Social sectors



In terms of social indicators, Mastung is ranked in the bottom quartile and is 73rd of all districts in Pakistan.<sup>20</sup>

### Education

Primary education remains neglected in Balochistan and the pervasive gender-bias plays a significant role in determining lower participation of girls in education including enrolment in primary schools.

In 2005 the District Education Index was as low as 39.4.

The adult literacy rate is as low as 35-49 per cent.<sup>21</sup>

20 Ghaus, A.F. Aisha, Pasha, Hafiz A, Ghaus, Rafia [1996]. 'Social Development Ranking of Districts of Pakistan'. *The Pakistan Development Review*, 35:4 pp 593-614.

21 Directorate of Health (2008-09). *Balochistan Health Management Information System* (2008-09) (no additional information).



The district till 2008 had 201 primary, 21 middle and 11 high schools, and one degree college for boys; 93 primary, 11 middle and seven high schools, and one intermediate college for girls. Makeshift arrangement for girls for degree classes have been made in the Boys Degree College Mastung.

## Health

Ill health reduces the efficiency, potential, productivity, income, and quality of life of individuals.

For the year 2008, cases of diseases common in the district include: dysentery (13,214), fever or clinical malaria (33,878), acute respiratory infections (38,265), coughs more than two weeks (2,075), and scabies (264). Cases of meningococcal meningitis, poliomyelitis, neonatal tetanus, diphtheria, whooping cough, suspected viral hepatitis, suspected aids, and snake bite were not reported. Among all prevalent diseases acute respiratory illnesses and most frequently reported.<sup>22</sup>

These diseases may spread due to extreme weather, lack of rains and long dry spells.

**Table 4: Education at a glance**

Level	Gender	Education Institutions (2008-09) No.	Enrolment (2008-09) No.	Teaching Staff (2007-08) No.
Primary	Boys	201	8,459	339
	Girls	93	5,258	161
	<b>Total</b>	<b>294</b>	<b>13,717</b>	<b>500</b>
Middle	Boys	21	3,662	255
	Girls	11	1,844	135
	<b>Total</b>	<b>32</b>	<b>5,506</b>	<b>390</b>
High	Boys	11	3,897	238
	Girls	7	2,806	152
	<b>Total</b>	<b>18</b>	<b>6,703</b>	<b>390</b>
Total	Boys	233	16,302	832
	Girls	111	10,023	448
	<b>Total</b>	<b>344</b>	<b>26,325</b>	<b>1,280</b>
Private Schools	Male	2	48	0
	Female	-	104	7
	<b>Total</b>	<b>-</b>	<b>152</b>	<b>7</b>
Intermediate Colleges (2007-08)	Male	0	269	0
	Female	1	240	18
	<b>Total</b>	<b>1</b>	<b>509</b>	<b>18</b>
Degree Colleges (2007-08)	Male	1	68	41
	Female	0	111	0
	<b>Total</b>	<b>1</b>	<b>179</b>	<b>41</b>
Professional Colleges (2008-09)	-	1	-	-

Sources: Balochistan Health Management Information System (2008-09)

22 Directorate of Health (2008-09). *Balochistan Health Management Information System* (2008-09) (no additional information).



District Headquarter Hospital Mastung

Moreover, diseases specific to women and children may remain unreported.

The LHW/V programme is only partially successful as it covers only 16 per cent of the population. This is due to the non-availability of suitable persons for recruitment, lack of facilities, and poor working conditions. Infant mortality rate in ages under 5 years was high. Underweight prevalence was 49 per cent and 69 per cent mothers sought advice regarding their pregnancy.

According to the Multiple Indicator Cluster Survey (MICS), 2004, maternal health indicators are alarming. A total of 49 per cent women received antenatal care from a skilled health worker; 17 per cent received birth care from a skilled health worker; and 15 per cent post-birth care from a skilled health worker. About 75 per cent of the pregnant female population relied on Traditional Birth

Attendants for child birth; only 8.1 per cent and 6.3 per cent managed to benefit from government hospitals and private clinics respectively. 14 per cent of married women had heard about HIV/AIDS.

The indirect total fertility rate in Mastung was 8.4 per cent. Practice of contraceptive use is very low, only 10 per cent of women practiced this. However, 81 per cent of married women had knowledge relating to fertility.<sup>23</sup>

According to the Health Directorate in 2006-07 in Mastung, there were three hospitals with 92 beds, three Rural Health Centres with 30 beds, four Mother and Child Health Centres, four Basic Health Units and 24 dispensaries.<sup>24</sup> The public sector health staff in the district in 2006-07 consisted of 59 doctors (including 22 lady doctors) and 238 paramedical staff. There were 42 LHWs and 78 mid wives. The female health services are

23 Government of Balochistan (2004). *Multiple Indicator Cluster Survey 2004* [website]. <<http://balochistan.gov.pk/departments/mics/MICS-4-Web/4-6-Results-Child%20Protection.pdf>>. Accessed 10 October 2011.

24 The update received in August 2010 reveals that there is one functional 50-bed hospital and one new 92-bed hospital under construction in Mastung town. The number of Rural Health Centers has increased from three in 2006-07 to four and the number of Basic Health Units from four to 13. Government of Balochistan (2004). *Multiple Indicator Cluster Survey 2004* [website]. <<http://balochistan.gov.pk/departments/mics/MICS-4-Web/4-6-Results-Child%20Protection.pdf>>. Accessed 10 October 2011.



over-burdened; in 2007 the total number of reported outdoor patients in the public sector hospitals was 185,104 and the majority of these were females (98,202).<sup>25</sup>

Only 4 per cent of the population consumed iodised salt whereas 31 per cent were aware of its uses and benefits. 77 per cent of children of the ages between 12 and 23 months were fully immunized; 3 per cent partially immunized; and 20 per cent were not immunized at all.<sup>26</sup>

## Drinking water

Access to and availability of safe drinking water has always been a problem in the district, especially in the rural areas, where people use water from wells and perennial streams. Currently, the Public Health Engineering Department (PHED)<sup>27</sup> is responsible for construction and Operation and Maintenance (O&M) of rural drinking water schemes; in Mastung Town PHED is responsible for capital works and the Municipal Committee (MC) for O&M.

Sources of water include:

1. 3 per cent of the population was served by springs, hand pumps and a single *karez*;
2. 7 per cent of the population was served by 10 perennial streams;
3. 20 per cent of the population was served by 733 wells;
4. 30 per cent of the population was served by 2,252 tube wells; and
5. 40 per cent of the population was served by 32 piped water supply schemes<sup>28</sup> run by PHED.

Generally, children and women fetch water from long distances in the more remote areas in the district. Most of the groundwater is concentrated in the Pishin Loralai basin, which is where most of the districts population resides.

The MC is responsible for supplying water to Mastung town.

The estimated requirement of drinking water for the town's population (40,000) is 60,000 gallons per day. PHED has installed 14 deep wells to meet this demand. Seven of these dried up due to the drought and three have broken down. As only four of the 14 tube wells installed by PHED are operational the town has limited coverage of piped water. The municipality's task in supplying water is further exacerbated by illegal connections.

PHED has installed 37 other tube wells for the rural population of 125,000 people. Fourteen of these dried up and three broke down, leading to an acute shortage of drinking water. At such time people collect water from alternate sources such as private tube wells.

In addition to these initiatives the Local Government Department has provided hand pumps on a cost sharing basis.

## Sanitation

The prevailing conditions in Mastung district regarding hygiene and sanitation are unsatisfactory. The number of households in Mastung town whose limited sewage is disposed off through septic tanks has grown but most of the houses have dry pits in their houses. The wastewater from the houses is disposed through open drains.

The only urban area (Mastung MC) has grown without any master planning; therefore, it lacks a sewerage system. Hygiene is poor. There are no public toilets.

Conditions are far worse in the rural areas of the district where wastewater stagnates outside the houses, breeding flies and mosquitoes and creating health hazards. Most of the people defecate in the open or in fields.

Only 10.4 per cent of the population has proper wastewater disposal facilities. 5.7 per

25 Government of Balochistan (2004). *Multiple Indicator Cluster Survey 2004* [website]. <<http://balochistan.gov.pk/departments/mics/MICS-4-Web/4-6-Results-Child%20Protection.pdf>>. Accessed 10 October 2011.; Directorate of Education (2008-09). *Balochistan Educational Management Information System (2008-09)* [website]. <<http://www.bemis.edu.pk>>. Accessed 3 January 2012.

26 EPI, <[http://www.emro.who.int/publications/emhj/16\\_Supp/article4.htm](http://www.emro.who.int/publications/emhj/16_Supp/article4.htm)> Accessed on 9 October 2011

27 The PHED staff in Mastung comprises 163 persons headed by an Executive Engineer.

28 Most of the water supply schemes are based on groundwater sources, tube wells, open surface wells, spring or *karez*. For domestic use surface water (springs and *karezes*) is mostly consumed in areas where water supply schemes are run by PHED.



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Disposal of effluent

cent households were connected to a public sewer and 2.4 per cent to septic tanks. 3 per cent had flush toilets, 49.9 per cent used traditional (closed) pit latrines, 2.4 per cent used service or bucket latrines, and 36.5 per cent defecated in the open.

The MC is responsible for the disposal of solid waste and provision of sanitation facilities.

Due to negligible Own Source Revenue it is largely dependent on GoB's funds for the provision of these services.

*See Annex 1: Data Tables for more details on the education and health sectors.*

### Box 3: Mastung social sector plan - education

Objective: Ensure access and quality education in Mastung; Meet the MDG targets as applicable to Mastung.

The scope of the Mastung Education Plan will be:

- Map and compile directory of existing stakeholders and service providers.
- District map showing existing infrastructure (including functional and non functional):
  - Ghost schools; Defunct schools; Functional public sector schools.
  - Private schools.
  - *Deeni Madaris*.
- Establish principles and working policies for Mastung.
- Agree on indicators for the purpose of monitoring; establish a baseline for these indicators in Mastung:
  - Household income disparities.
  - Gender disparities.
  - Urban-rural disparities; sub-*tehsil* disparities.
  - Standardised indicators for shortage of schools, colleges and higher education institutions.
  - Standardised indicators for shortage of teachers, particularly female teachers.
  - Teacher quality as measured in results and outcomes and qualitative feedback from parents, principals, teachers, students on standardised questions.
  - Standardised indicators for quality of building and built infrastructure (availability of toilet, boundary walls in girls schools, sports etc).
  - Standardised indicators for desks and chairs.
  - Standardised indicators for books and teaching aides.
  - Standardised questions for qualitative feedback from community representatives, tribal leaders, parents, mothers and children on low enrolment and drop out rates.
- Assess current and projected needs for Mastung.
- Review MDGs and National Vision 2030 targets as applicable to Mastung.
- Implement measures to raise awareness on education as a human right in Mastung.
- Focus on access to education for children from poor families and girls in particular in Mastung:
  - Reach out to families which cannot afford schooling with free schools, free uniforms, hygiene kits and stipends for girl children.
  - Offer scholarships to gifted students.
- Evaluate the work, contribution and impact of different service providers in Mastung:
  - Enforcement of traditional supervisory visits and participatory monitoring and effective application of BEMIS.
  - Identify means to improve teacher-child ratio.
- Include measures to ensure security for educational establishments in district Mastung.
- Effective coordination between Mastung district and GoB on:
  - BEMIS.
  - Teacher training; training of local literacy enhancement staff, refresher courses.
  - Merit based appointments.
  - Review of ratio of operational: non operational expenses and salary: non salary expenses.
  - Performance based salary system.

- Financial incentives for working in remote areas.
- Separate wings for girls in colleges.
- Security and accommodation for female teachers.
- Upgrading single teacher schools to multi teacher schools.
- Community managed monitoring systems (Teacher absenteeism and ghost schools; creating real time links with BEMIS on public information regarding these aspects).
- Offer scholarships to teachers.
- A secure work environment for women.
- Construct boarding houses for students and teachers.
- Collaborate with the Balochistan Education Fund.
- Improving governance, accountability and participation in Mastung by:
  - Replicating the good practice model of Qila Saifullah and Pishin where community elders identified good teachers, lobbied for their transfer to their areas, and have assured them residence and protection.
  - Disseminating information regarding funds and their application.
  - Regulation of private schools (a) fees (b) quality of education (c) facilities (d) faculty (e) bringing *deenis madaris* into the mainstream education system.
  - Establishing platforms for engaging with parents, civil society and private sector organisations; and establishing Parent Teacher Associations.
  - Piloting projects in collaboration with NGOs/CSOs and private sector (e.g. literacy with a particular focus on women's literacy).

#### Box 4: Mastung social sector plan - health

Objective: Ensure access to primary and preventive health care for all in Mastung; meet the MDG targets as applicable to Mastung.

The scope of the Mastung Health Plan will include:

- Map and compile a directory of existing stakeholders and service providers in Mastung:
  - District map showing existing infrastructure (functional and non functional).
- Review existing facilities, establish a criteria for continuing with or closing facilities, explore optional applicability for these facilities.
- Assess current and projected needs for Mastung.
- Establish principles and working policies for Mastung.
- Identify indicators for the purpose of monitoring, establish a baseline for these indicators for Mastung:
  - Household income disparities.
  - Gender disparities.
  - Urban-rural disparities; sub-*tehsil* disparities.
  - Intra rural disparities.
  - Age disparities.
  - Standardised indicators for shortage of health facilities and services.
  - Standardised indicators for health and allied health professionals/services.
  - Health care service quality as measured in results and outcomes and qualitative feedback from care givers and patients on standardised questions.
  - Standardised indicators for quality of building and built infrastructure (availability of toilet, boundary walls etc).



- Strategy for maternal health, reduction in child mortality and arresting the spread of communicable diseases; Increasing immunization coverage through the LHW/V programs for Mastung:
  - Standardised indicators for maternal health, child mortality.
  - Standardised indicators for communicable diseases and immunisation coverage.
  - Standardised indicators for public health.
  - Standardised indicators for non-communicable diseases for e.g. mental health and nutrition.
- Strategies for preventive, primary and secondary health care services at the district level and linking patients from Mastung with tertiary health facilities in Quetta city:
  - Preventive health care will include mental health, awareness raising, vaccination, safe drinking water and sanitation, safe disposal of wastes (solid, hospital, mining and industrial) and control of air, water and noise pollution.
  - Awareness on contagious and communicable diseases including HIV/AIDS, hepatitis etc.
- Strategy for the distribution of fortified food and health supplements particularly to women and children in Mastung.
- In the absence of ambulance services, agreements with private sector to transport patients from Mastung.
- Promotion of smoke efficient stoves and latrines recognising that both have a very significant impact on women and child health in Mastung.
- Incentives for the private sector for providing affordable health care services in Mastung.
- Motivate and provide incentives to the medical and paramedical staff to work in remote rural areas. These may include economic incentives and security and facilities such as transport and accommodation, especially for female staff in Mastung.
- Strategy for ensuring a secure work environment including security particularly for women in Mastung.
- Action Plan for hospital/medical waste management for Mastung.
- Action Plan for cleaning of ground water (agro chemicals, sewage, waste from mining etc) for Mastung.
- Strategy to improve human resources and their management, counter absenteeism, fill vacant posts and recruit female staff in Mastung.
- Lobby with the GoB for the following in Mastung:
  - Improved coordinations with BHMIS.
  - Refresher and training courses for staff and private sector.
  - Performance based salaries.
  - Community managed monitoring linked to financial incentives.
  - Preference to O&M over capital expenditure.
  - Strong monitoring and evaluation systems.
  - Improved supplies of medicines (coordination with the Essential Drug Programme).
  - Clear role for indigenous medicine.
  - Improved coordination with special health services provided by the GoB to improve or facilitate health programmes.
- Improve governance, accountability and participation in Mastung:
  - Disseminate information regarding funds and their application.
  - Regulate private medical services (a) fees (b) quality of health care (c) facilities (d) faculty (e) bring *indigenous medicine* under a regulatory framework.
  - Establish platforms for engaging with civil society and private sector organisations; establish doctor, nurses, LHW/V, Trained Birth Attendants, etc.
- Pilot projects in collaboration with NGOs/CSOs and private sector in Mastung.

### Box 5: Mastung social sector plan - water and sanitation

Objective: Ensure access to safe drinking water and adequate sanitation facilities for all in Mastung; meet the MDG targets as applicable to Mastung.

The scope of the Mastung Water and Sanitation Plan will include:

- Directory and map of stakeholders and services.
  - District map showing existing infrastructure (including functional and non functional, informal and formal).
  - Detailed maps of built schemes.
- Principles and working policies for Mastung:
  - Review of existing facilities, establishment and enforcement of criteria for continuing with or closing facilities.
- Indicators for the purpose of monitoring, establish a baseline for these indicators, establishment of targets for Mastung:
  - Unaccounted for water and non revenue water.
  - Willingness to pay.
  - Unit cost of operating PHED and Clean Drinking Water Program built schemes.
  - Ratio of built to functional schemes and infrastructure.
  - Gender disparities in access and workload for collection of water.
  - Standardised indicators for quality of built infrastructure.
  - Urban-rural disparities; sub-*tehsil* disparities; intra rural disparities; age disparities.
  - Public health indicators.
  - Quality of services as measured in results and outcomes and qualitative feedback from citizens on standardised questions.
- Strategies for ensuring the following in Mastung:
  - A minimal amount of water available to all (hand pumps where water table is within 50 feet).
  - Installation of water treatment facilities at distribution or reservoir points.
  - Reduce loss during transmission.
  - Recycle sewage, after appropriate treatment, for agriculture.
  - Preventive health care and awareness on sanitary practices; recruit female staff.
  - Enabling environment for and incentives for private sector participation.
  - Improved human resources and their management, counter absenteeism and negligence.
  - Pricing and policing of drinking water.
  - Increasing number of plans and projects with community participation (during planning, capital works and O&M).
  - Assessing current and projected needs.
- Raise awareness on efficient consumption of drinking water and on the consequences of drinking water without treatment; cost effective methods for treating water prior to drinking.
- Establish a district Code of Conduct on Water Use.
- Provide a range of services with different price tags: household connection; communal; communal filtered etc.
- Take action on unaccounted for water, non revenue water in Mastung.
- Ensure all schemes are demand driven and not supply driven (in particular provincial and federal schemes tend to be supply driven and little care is taken to determine unit cost of O&M for these services; this more often than not leads to sunk investment) in Mastung.

- Incentives for improved sanitation in Mastung:
  - Incentives and awards for open-defecation free villages and union councils as set out in the federal sanitation policy.
  - Financial support for building septic tanks and improved latrines in low-income areas.
- Lobby with the GoB for the following in Mastung:
  - Coordination on a water and sanitation MIS.
  - Refresher and training courses for staff and private sector contractors/plumbers etc.
  - Private sector enhancement through incentives and training e.g. septic tank management entrepreneurship.
  - Performance based salaries.
  - Community managed monitoring linked to financial incentives.
  - Preference to O&M over capital expenditure.
  - Strong monitoring and evaluation systems.
- Provide support for making latrines in houses on a self-help basis; safe disposal of waste water, solid waste and hospital waste; and importance of washing hands and personal hygiene in Mastung.
- Prepare a strategic solid waste management plan; construct and manage a landfill<sup>1</sup> in Mastung.
- Encouragement and support for collection and segregation of solid waste by households and disposal of waste to a collection point, from where the Mastung MC can transport it to proper landfills.
- Improving the supply chain for recycled goods - market for recyclable/ reusable materials; composting of biodegradable waste; recycling of usable waste (metallic articles, glass, wood, paper etc.); and recycling of waste water in Mastung.
- Pilot projects in collaboration with NGOs/CSOs and private sector in particular to make a concerted effort for raising awareness in Mastung.
- Improving governance, accountability and participation in Mastung:
  - Disseminating information regarding funds and their application including water quality, air and water pollution, and public health.
  - Regulation of private sector service providers (a) fees (b) quality of water (c) facilities (d) open dumping (e) environmental degradation (f) public health concerns.
  - Establish platforms for engaging with civil society and private sector organisations.

<sup>1</sup> Only a minor fraction of waste is disposed of properly. The remainder is deposited on roadsides into waterways or added to the heaps of existing solid waste, thus causing an unhealthy living environment. In urban areas, solid waste is mostly collected by municipal sweepers and is taken out of the city in open trucks disseminating the odour and dropping waste, on the way, due to unsafe transport. In rural areas households collect and dispose waste themselves. The solid waste is largely used as farmyard manure.



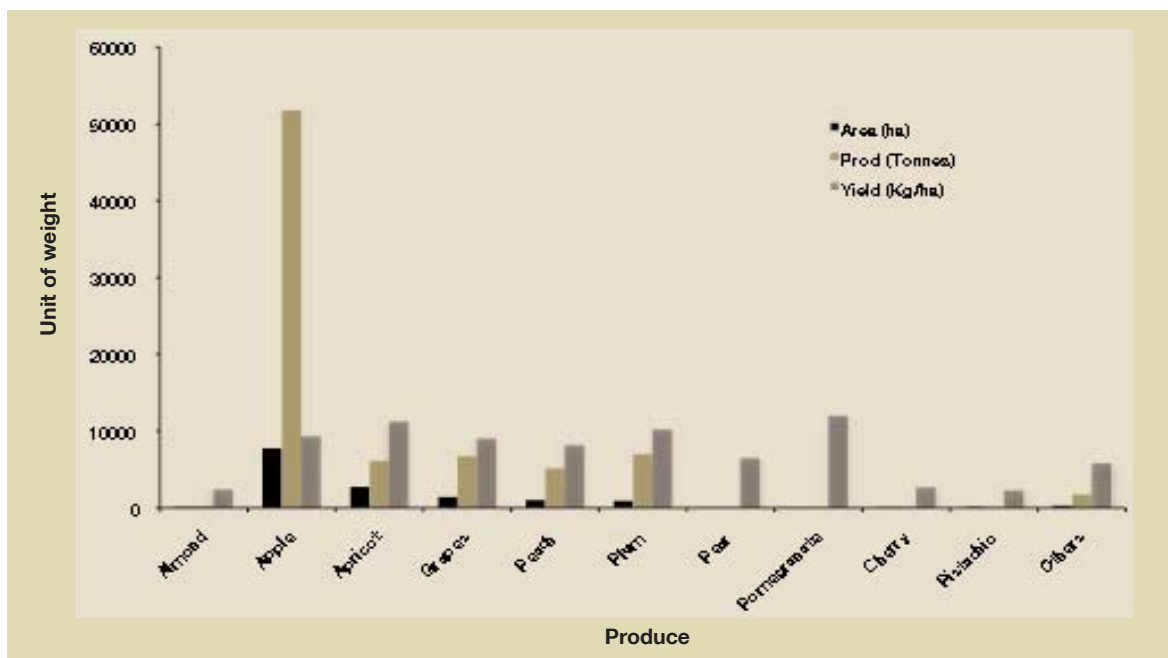
## 5. Natural resource management

**M**astung District Government recognises that natural resource management in Mastung needs to be undertaken keeping in view that the area is water-scarce; largely rural; characterised by poverty; and that citizens have limited access to basic services.

### Land use

Environmental and biodiversity safeguards in land use are required to arrest further loss or degradation of species and habitats given the rapid growth in population (requiring expansion of settlements) and the deteriorating food security situation in the province. Land use change needs to be guided by the Mastung District Government keeping several factors in mind; some of these include: environmental safeguards, over exploitation, inter-governmental responsibilities, enforcement of law, low institutional capacity; sub-optimal role of planning and management; and lack of awareness on the medium to long term impact on income and assets.



**Figure 5: Land use by type**

Source: Agriculture Statistics of Balochistan (2008-09)

The district is mountainous. Hilly spurs run in a north-south direction with large vales in between, small parts of which are cultivated with irrigation water, while the remaining land is barren. The geographical area of the district is 6,470 square kilometers (647,000 hectares) or 686,100 hectares 324,075 hectares area is reported<sup>29</sup>, which is 47.23 per cent of the district. The cultivated area<sup>30</sup> was 204,798 hectares; of which 181,664 hectares were current fallow and 23,134 hectares were sown more than once. 50,410 hectares are cultivable waste, 47,511 hectares or 14.7 per cent of the reported area is not available for cultivation and 21,356 hectares<sup>31</sup> are notified forests.<sup>32</sup>

Mastung District Government is fully aware of the need to apply land use management as a tool for developing its agriculture and horticulture sectors, and capturing the advantages brought by proximity to Quetta and the RCD Highway. Mastung District Government will work with the Survey of Pakistan, Pakistan Space and Upper

Atmosphere Research Commission, Board of Revenue and private sector organizations such as WWF and IUCN to see if satellite images can be applied to validate land uses. Steps will be taken to procure archival maps of the district.

## Integrated water resource management

The complexity of water resource management poses many challenges. Fresh water is the most precious commodity for people living in arid areas like Mastung.

Water managers need to solve a range of interrelated problems involving a range of stakeholders, navigating conflicting priorities and varying contexts. The management of water in the context of climate change is one of the most pressing challenges of our times.

<sup>29</sup> Land being used for different agricultural purposes including fodder and which has been reported but not authenticated.

<sup>30</sup> Government of Balochistan (2006 and 2008-09). *Agricultural Statistics of Balochistan* 2006, 2008-2009. Quetta, Balochistan: Government of Balochistan.

<sup>31</sup> Currently the forest area in the district, after transfer of Zarkhu Forest area to Quetta District is 14, 350 hectares,

<sup>32</sup> Government of Balochistan (2006 and 2008-09). *Agricultural Statistics of Balochistan* 2006, 2008-2009. Quetta, Balochistan: Government of Balochistan.

**Box 6: Mastung natural resource plan - integrated water**

Objective: Manage existing water efficiently and conserve water resources for future generations in Mastung.

The scope of the District Integrated Water Management Plan for Mastung will be:

- District Water Management Committee (scope to include all aspects of water).
- Directory and map of stakeholders.
- Mastung district map showing 'Water Sources' and 'District Land Capitalization Plan' including:
  - Delineation of detailed micro basins in the district and evaluation of their potential for developing surface water storage.
  - Estimating ground water sources (by using latest radar imageries), and comparison with benchmarks, where available for future planning.
  - Analysis of ground water depletion, year wise, based on tube well use.
  - Resistivity survey of potential groundwater area for estimating the aquifer status.
  - 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, spate irrigation and rainwater harvesting).
- Target indicators and baselines for Mastung.
- Assessment of current needs and linkages with other sectors; instruments and incentives for better coordination in Mastung.
- Assessment of the impact of climate change in Mastung.
- Coordination with other districts on the Pishin Loralai Basin Recharge Effort; targets for groundwater recharge prioritised by active recharge zones.
- Flood water management in Mastung.
- Rain water harvesting for direct consumption; increasing water storage capacity; check dams and other infrastructure in Mastung.
- Extensive coordination with the following sectors in Mastung: livelihood diversification, forestry, protected areas, rangelands, drinking water and sanitation, health and disaster management.
- Raise awareness on the environmental and ecological functions of water sheds and their impact on Mastung.
- Promotion of water efficient technologies in Mastung: land levelling, different types of irrigation systems precision irrigation, drip irrigation (introduced in Quetta), sprinkler irrigation and spate irrigation.
- Demanding policy reforms at the federal and provincial levels and endorsement of a district Tube Well Policy for Mastung. Application of the federal water resource management policy. The water table is depleting at a rate of ten feet per year due to the installation of a large number of tube wells. The water level has dropped to about 1,000 feet in certain areas:
  - Need to price water extracted by tube wells.
  - Need to remove subsidy on electricity for tube wells.
- Extension work and dissemination of research on low delta crops and fruit orchards and on optimising soil-plant-water for application of optimal water in Mastung.
- Ensure the sewage is treated before recycled for vegetable cultivation and orchard irrigation or before draining into streams; and that solid waste does not block and pollute water courses and in Mastung.
- Motivate communities to construct local check dams for conserving water and planting trees in Mastung.
- Introduce watershed management operations in forests and rangelands in Mastung.
- Pilot projects in collaboration with NGOs/CSOs and the private sector.

Water Resource Management has to take into account the competing demands on water:

1. Drinking and domestic needs;
2. Water for food production (agriculture, livestock etc);
3. For economic infrastructure development and use (energy, industry, transport, tourism etc.);
4. Water conservation for periods of drought;
5. Water conservation for future generations; and
6. Water for natural habitats.

The environmental, social and political aspects of water management span a wide array of issues and areas. These include: water policies; water rights; water uses; water infrastructure development; river basin management; watersheds; wetlands; water storage; water allocation; water distribution and sharing arrangements; drought preparedness; and water-related disputes and their resolution.

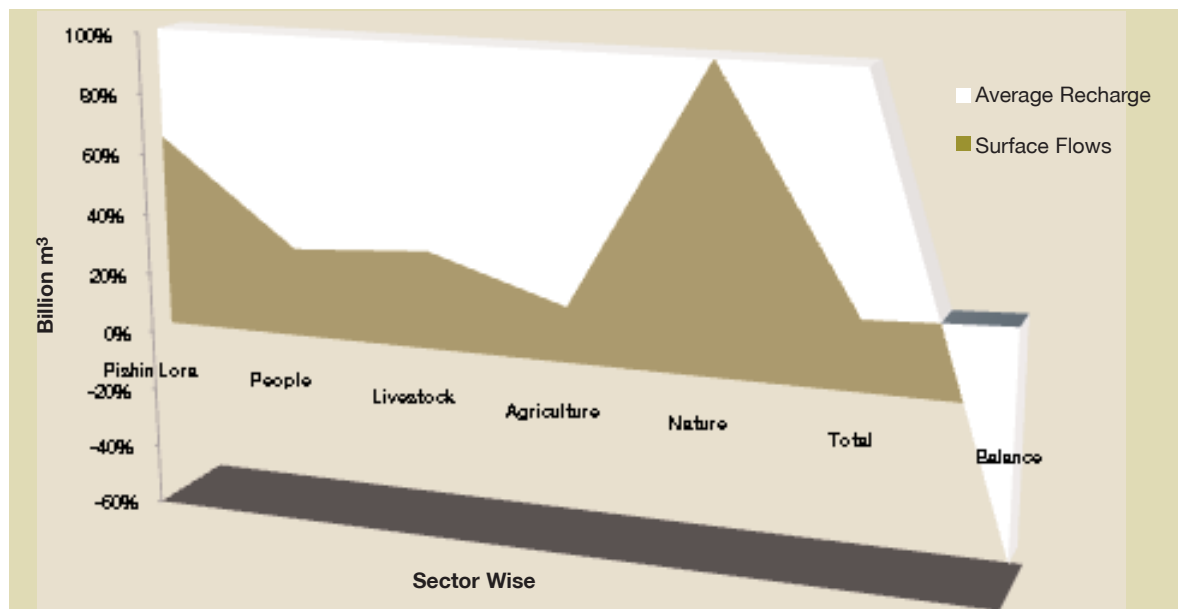
Social participation in water management and governance is traditionally found in the

tribal societies such as Mastung. Traditional water management systems, (e.g. *karez*) have not been able to transform into modern water management systems as a result traditional and indigenous wisdom has been lost.

Since the 19th century the major source of irrigation in Mastung district has been through *karezat*. Now, however, that has been overtaken by tube well irrigation. Most of the 360 *karezat* have dried up due to drought and extraction of excessive ground water by tube wells. In Mastung water for agricultural purposes:

1. Extracted from:
  - a Electricity operated tube wells;
  - b Diesel-operated pumps; and
  - c Bucket or small pumping systems fitted to dug wells.
2. Tapped from:
  - a 15 perennial<sup>33</sup> irrigation schemes;<sup>34</sup>
  - b Streams and springs fed by rain, snow or underground sources;
  - c Flash floods. (For optimal use of water from flash floods Mastung District

**Figure 6: Surface and groundwater balance of the Pishin Loralai Basin**



Source: Water for Balochistan Policy Briefings, Vol 4; No. 6 (2008)

- 33 The perennial sources of water outside the Indus basin mainly comprise of groundwater (springs, *karezat*, tube wells and dug wells) and minor perennial surface water resources. Most of the perennial streams and springs in the province are small with wide temporal variations.
- 34 Javaid, I. and Ahmad, Dr S. (2008). 'Water for Balochistan Policy Briefings 4:6. *Conjunctive Use & Management for Minor Perennial Irrigation Schemes in Balochistan-Key Issues and Revised Strategy for Investment.*' Quetta, Pakistan: Supporting Implementation of IWRM Policy in Balochistan, a project of Government of Balochistan, Asian Development Bank and the Royal Government of Netherlands.



Unmetered use of water for irrigation

- Government will ensure that water is used productively);<sup>35</sup> and
- d. *Karezat*. The major source of irrigation in Mastung district during the early 20th century was *karezat*. Mastung was famous for its *karezat* (360 *karezat* in total). However, most are no longer in use.

In Balochistan, the total annual renewable freshwater resource is approximately 26 billion m<sup>3</sup> or 752 m<sup>3</sup>/hectares, which is around 30 per cent of the national average. However, there is a large spatial variability within the province as certain basins have one-half to one-third of the average resources.<sup>36</sup>

Of the 14 basins in the province, the Pishin Loralai Basin is the most stressed due to non-sustainable groundwater exploitation. The Basin covers Quetta, Mastung, Pishin, Qila Abdullah and Kalat districts. The surface and groundwater balance of Pishin Loralai Basin shows that the rate of recharge is in deficit.<sup>37</sup>

Mastung District Government is committed to working with the district governments of Quetta, Pishin, Qila Abdullah and Kalat on a joint Pishin Loralai Basin Recharge Effort.

As the level of the water table is declining sharply, groundwater is no longer a viable solution for long run water needs.

Agriculture and livestock is the mainstay of the economy of Mastung district. Agriculture consumes 95 per cent of groundwater and most of the surface water. Mainly, high delta crops and orchards are grown in the district. Further, the lowering of the water table level have also had an impact on soil moisture, which in turn has had an impact on agriculture and income. The water recharge capacity is generally high, due to vegetation and the gravel beds of the streams, but most of it drains out of the district.

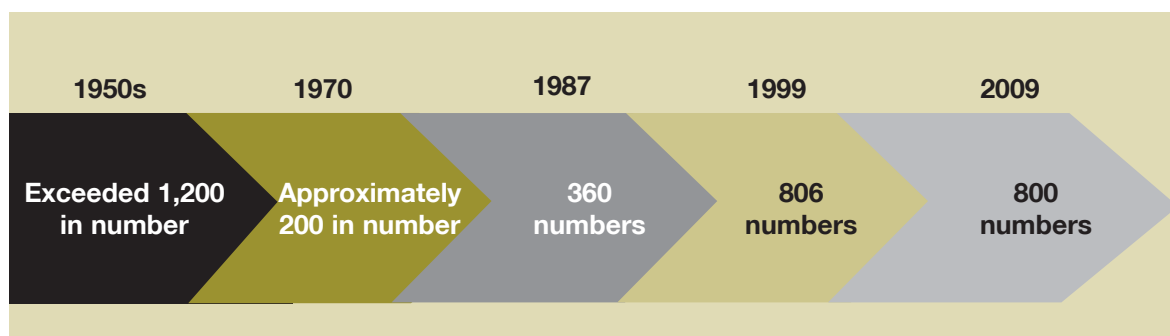
Livestock population and stock water demand is largely met through groundwater. It is assumed that 40 per cent of stock water

35 These will include the following measures: plant ground cover, as soon as possible since erosion caused by loss of vegetation can increase the risk of damage at the time of flash floods) and trigger additional landslides; using bioengineering technology on slopes and building retaining walls; in mudflow areas, building channels or deflection walls to direct the flow around buildings and other infrastructure; and replanting where damage has been caused by flash floods and landslides.

36 Javaid, I. and Ahmad, Dr S. (2008). 'Water for Balochistan Policy Briefings 4:6. *Conjunctive Use & Management for Minor Perennial Irrigation Schemes in Balochistan-Key Issues and Revised Strategy for Investment*.' Quetta, Pakistan: Supporting Implementation of IWRM Policy in Balochistan, a project of Government of Balochistan, Asian Development Bank and the Royal Government of Netherlands.

37 Groundwater availability depends on two factors: recharge and storage in aquifers. Normally availability is based on average annual recharge.



**Figure 7: Outcomes of chiltan goat conservation efforts**

Source: The Management Plan of Hazarganji-Chiltan National Park, WWF (1998)

demand is met through surface water, whereas 60 per cent demand, is met through groundwater resources.

The Mastung District Government recognises that the groundwater of the district is highly valuable and has to be used judiciously. This can only be ensured by a realistic and coherent policy, regulating water extraction combined with water conservation, and introducing efficient practices (precision land levelling, detailed soil and water analysis and investigations, water-crop requirement prioritisation; and integrated management of agricultural inputs). Most importantly, water needs to be priced in order to ensure judicious use.

## Forests

Forests are vital for environmental services and for maintaining the ecological balance of an area. They play an important role in the supply of wood and non-wood products including water, grazing, Medicinal and Aromatic Plants (MAP); maintaining watersheds, wildlife habitats and dependent species of wild animals and plants; control of erosion and conservation of soils; sequestration of carbon; and provision of countryside recreation and ecotourism.

The Forest and Wildlife Department manages the forests and plantations in the district and is also responsible for rangeland management. The Executive District Officer Forest is the district head of the department and is assisted by Range Forest Officers, Foresters and Forest Guards. Temporary labour is employed for forestry operations in the district.

Two types of forests are to be found in the district: natural forests and manual plantations. Shaikh Wasil is the only natural forest in the district, mainly and has scrub vegetation. The sand dune plantations were established in the 1950s in the district near Mastung Town as the moving sand dunes used to block the highway. There is some farm forestry as well in the district.

The availability of Sui gas in Mastung Town and other places has reduced, to some extent, the pressure on vegetation but most of the domestic energy needs in the district are still met by fuel wood.

2,120 acres of (Shaikh Wasil) forest and 12,230 acres of six sand dune plantations comprise the total designated forest area (14,350 acres or 5,807 hectares) of the district. Zarkhu natural forest (21,120 acres) previously in Mastung district has been transferred to Quetta district. None of the forest or plantations are commercially managed.

The vegetation in Mastung 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.*, cumin, wild onion and tulips. The vegetation also includes MAPs such as black cumin, *Asa foetida (heeng)*, and *Paganum harmala*.

Agro-forestry is negligible in the district as forest trees compete with fruit trees, especially in irrigated areas.

### Box 7: Mastung natural resource plan - forests and protected areas

Objective: Manage existing forest efficiently and conserve forest resources for future generations in Mastung; ensure forest biodiversity and maintenance of ecosystem functions including regulation of waters, combating natural disasters, mitigation of climate change, improvement of habitats in protected areas, promotion of ecotourism and greening urban environments.

The Mastung Forest and Protected Areas Plan will:

- Establish principles and working policies for Mastung.
- Map using satellite images of forest areas, forest cover, vegetation in the forests, property rights, land capitalization and flora and fauna in Mastung (although livestock grazing is the main land capitalization in the district, the exact area and location of rangelands is not available, no details are available for the cultivable waste area and the actual area of forest cover).
- Raise productivity of forests in Mastung; discourage alien invasive species; ecology of degraded forests in Mastung can be restored by the planting.
- Capacity to manage forests, learn techniques for regeneration, management of diseases, and community based management and regulation will be created in Mastung.
- Incentivise alternative energies for fuel in Mastung.
- Pilot alternative energy sources in Mastung: dispersed application of alternate energy sources including biogas, solar PV, wind and solar thermal. Compile data on wind feasibility.
- Promote affordable alternatives to fuel wood and the extension of gas infrastructure in Mastung; reduce wood wastage in Mastung.
- Develop of nurseries of soil and water compatible plants in Mastung.
- Raise non-wood forest produce in Mastung: ecotourism, water production, carbon sequestration, and protected areas.
- Raise forest plantations on communal lands in Mastung, along the stream and river banks around the storage and recharge dams, on the borders of fields with multi purpose trees.
- Raise plantations and encourage and support agro-forestry for multiple purpose trees for fodder, firewood, timber, soil conservation, watershed, biodiversity and carbon sequestration in Mastung; raise herbs, resins and gums in Mastung.
- Establish state-owned biodiversity rich areas as protected areas in Mastung.
- Set up scientifically managed protected areas (forest and wildlife areas) for ecotourism and sustainable use in Mastung.
- Expand efforts beyond tree and game species to the general flora and fauna in Mastung.
- Establish target indicators and baselines for Mastung.
- Raise awareness on current situation and the future (including climate change, population growth) using specific data on Mastung; assessing current and future needs for Mastung.
- Promote community participation in management and regulation of forests, rangelands and protected areas in Mastung.
- Establish fodder tree groves exclusively for drought periods in Mastung.
- Lobby with the GoB for Mastung:
  - Implementing the Biodiversity Action Plan for Pakistan (2000) and the National Forest Diversity Vision (2006) as applicable to Mastung.
  - Preparing a province specific action plan for biodiversity, wildlife and protected areas with specific plans, policies and targets.
- Pilot projects in collaboration with NGOs/CSOs and private sector e.g. sericulture, dwarf palm related handicrafts, MAPs etc in Mastung.
- Promote regeneration of left over vegetation in natural forests in Mastung.
- Raise nurseries and forests.

## Wildlife and protected areas

The Chiltan goat or Chiltan markhor (*Capra falconeri chialtensis* and *Capra eagagrus*) are found in Chiltan Hazarganji National Park, which is partly in district Mastung and partly in district Quetta. It is the only viable population of Chiltan Markhor in Balochistan and is vulnerable.<sup>38</sup> It is protected by the Balochistan Wildlife Act, 1974. The park also has a large quantum of biodiversity.

The population of the Chiltan goat has increased significantly after the establishment of the Park and due to involvement of communities surrounding the Park. In 1987, 360 animals were reported with an increase of 806 by March 1999. Since then the population has fluctuated as a result of drought and anthropogenic disturbances.

The Suleiman markhor (*Capra falconeri jerdoni*) is also present in the northern part of the Chiltan Range. The urial (*Ovis vignei blanfordi*) was last shot in the 1970s in the

Park. However, a few urials still survive on the western slopes between 1,500m and 2,100m. Settlement of a tribe on the boundary of the park in 1992 led to illegal hunting, fuel wood collection and grazing in northern parts of the Park.

In most areas of the district the population of wild animals has declined significantly. The goitered gazelle, once plentiful in the nearby Raskoh Range is believed to be almost extinct.

Harboi Juniper Forest in Kalat district is not very far from the southern boundary of Mastung district and contributes to the Juniper associated flora and fauna in the southern fringes of Mastung district.

Duz-Dara and Koh-e-Surkhois are game reserves in Mastung district (a game reserve is an area where sustainable hunting of game animals is undertaken under a valid license issued by the wildlife authorities), which cover over 2,351 hectares and are adjacent to Hazarganji Chiltan National Park. They act as a buffer protecting the Hazarganji Chiltan National Park.

### Box 8: Mastung natural resource plan - wildlife and biodiversity

Objective: Secure species and promote sustainable conservation.

The Mastung Wildlife Plan will include:

- Map of existing animals in the district including annual count of migratory birds.
- Directory of stakeholders and retailers.
- Photographs, map and list of endangered species.
- Baseline data.
- Target indicators.
- List of individuals involved in trade of animals (legal and illegal).
- Lobby with GoB on:
  - Preparing a provincial action plan for wildlife, rangelands biodiversity, wildlife and protected areas, and livestock with Mastung specific plans, programmes and interventions.
- Promote:
  - Hunters' associations and lobby with them to ensure sustainable practices.
  - Community participation, through social mobilisation, organisation, awareness raising, capacity building and economic incentives (community based trophy hunting), has succeeded in other parts of Balochistan (Torghar), Khyber Pakhtunkhwa, and Gilgit-Baltistan.<sup>3</sup> Dureji is another success model. These need scaling up, replication and institutionalising.
  - Design and implement projects for ecotourism.
- Community regulation and enforcement of laws and policies in Mastung.
- Implement pilot projects in collaboration with NGOs/CSOs and private sector in Mastung.

## 6. Agriculture and livestock

**D**istrict Mastung's soils are primarily formed of limestone and clay. The soils of the area are not delineated separately in the reconnaissance survey of the Kalat Area, (which includes Mastung district) prepared by the Soil Survey of Pakistan. The soils are moderately deep, strongly calcareous, gravelly clay loam and are suitable for irrigated agriculture.

District Mastung is a water stressed area for both agriculture and drinking water. Additionally, the choice of crops in the area is high-delta, high value cash crops like vegetables and fruits, which are water intensive. Out of a total irrigated area<sup>39</sup> of 35,652 hectares, 35,644 hectares (99.98 per cent) is irrigated by 2,546 tube wells. The important *rabi* crops are wheat, barley, cumin, fodder and vegetables. Wheat is sown in irrigated as well as rain fed areas. The major *kharif* crops are cash crops including onion, fruit, fodder, vegetables, melon and potato.



<sup>39</sup> Government of Balochistan (2006 and 2008-09). *Agricultural Statistics of Balochistan* 2006, 2008-2009. Quetta, Balochistan: Government of Balochistan.

The cropped area was only 7.65 per cent of the reported area and cultivated area was 63.2 per cent of the reported area<sup>40</sup> showing that a significant area remains fallow, mainly due to shortage of irrigation water. 2,546 legally sanctioned tube wells are operating in addition to a large number of illegal ones.<sup>41</sup> Mastung district falls in Zone V (water requirements of major crops for different agro-climatic zones of Balochistan).<sup>42</sup>

## Fruits and vegetables

The district produces significant quantities of fruits and vegetables, which are marketed inside and outside the province. There are numerous intermediaries in the marketing process thereby reducing the income from the produce for farmers.

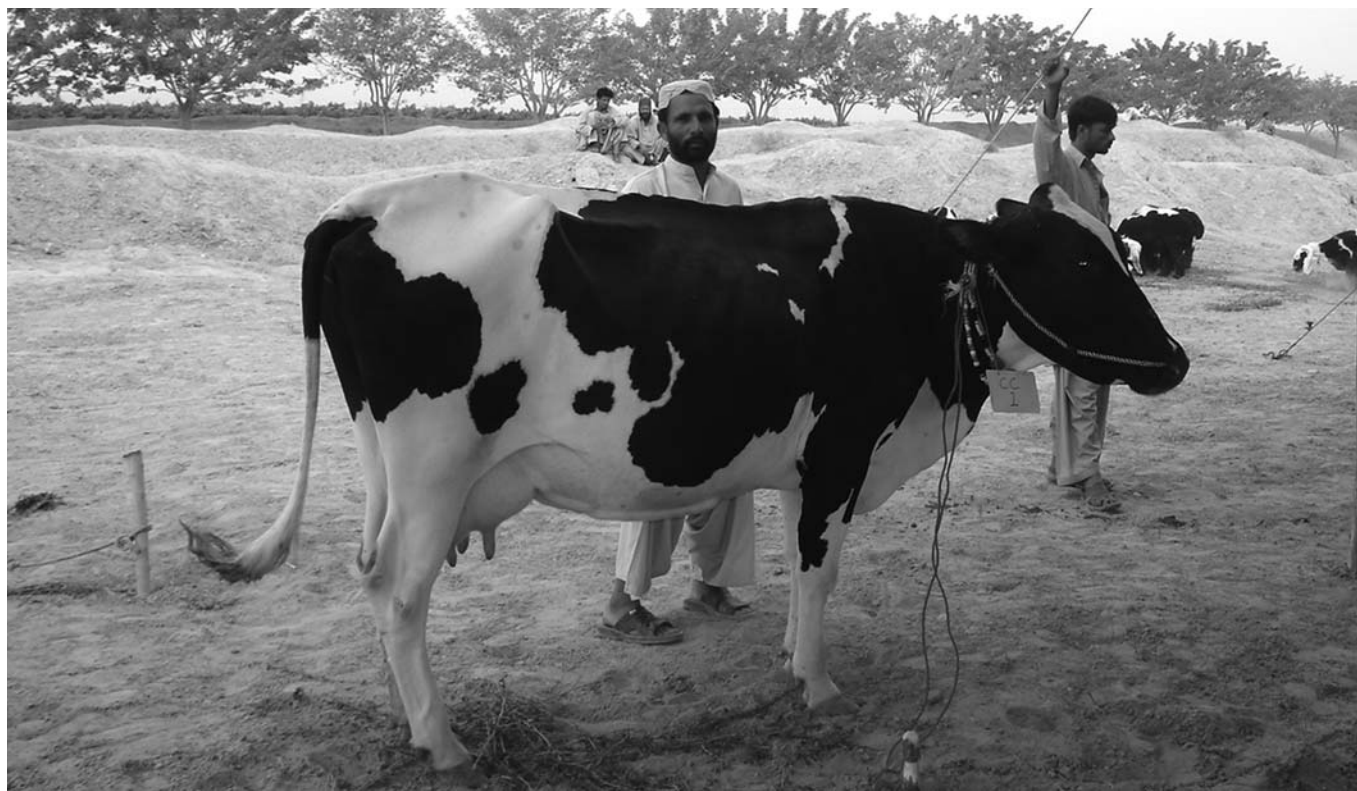
## Livestock

Livestock is an important source of livelihood for a majority of the rural population and a large percentage of the workforce and

households in the district are engaged in livestock rearing. Livestock are a major source of nutrition (milk, yogurt, *lassi*, *kurt*, meat, beef) and income (sale of animals, wool and hides). These are an important source of transportation particularly where the area is hilly or the terrain is rugged.

Both men and women are involved in the livestock sector. Women are responsible for watering and feeding the animals, cleaning their abodes and making dairy products such as yogurt, butter and *ghee*. However, they have no ownership rights over the livestock and poultry.

Local livestock markets exist with fluctuating prices that drop during periods of drought and increase at the time of *Eid-ul-Azha*. Animals are slaughtered generally in the open and there is no meat processing plant in the district. Hides, skins and wool are not processed in the district and are sold raw. There are presently 46 minor shops in the district, selling milk and cream locally.



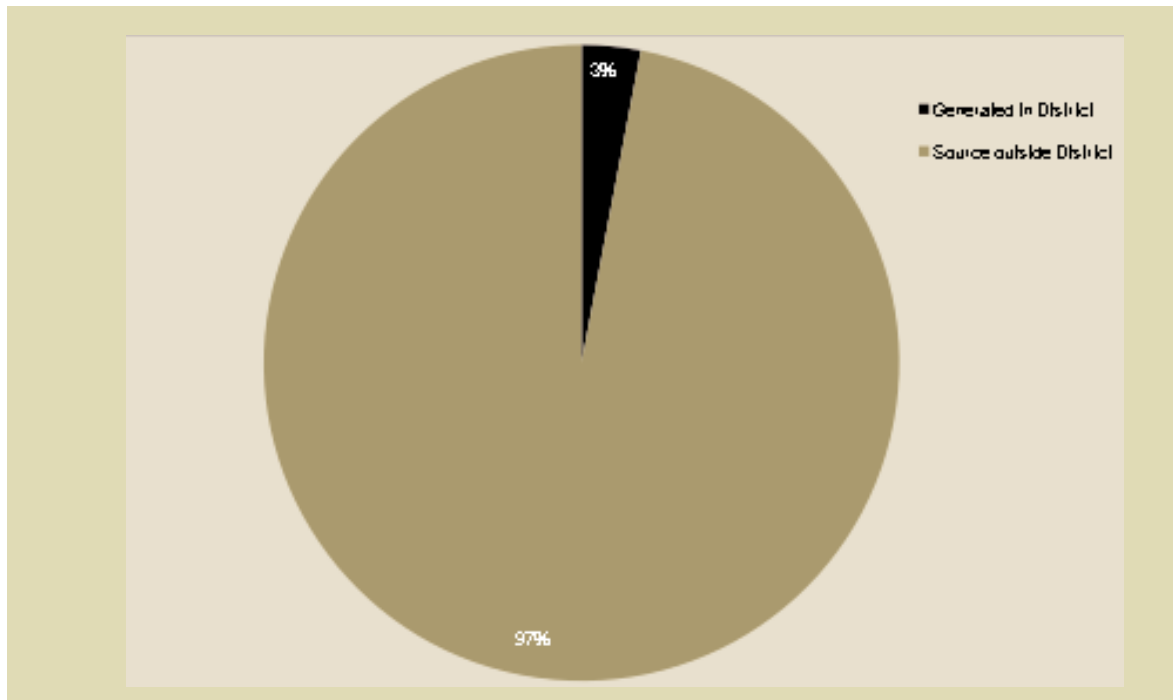
Newly introduced Friesian cows

40 Government of Balochistan (2006 and 2008-09). *Agricultural Statistics of Balochistan 2006, 2008-2009*. Quetta, Balochistan: Government of Balochistan.

41 *ibid*.

42 IUCN (2006). *Water Requirement of Major Crops for Different Agro Climatic Zones of Balochistan: Balochistan Program*. Quetta, Pakistan: IUCN.



**Figure 8: Source of dairy products**

Source: Balochistan Livestock Census (2006)

In the recent drought (1998-2004) a large number of livestock died and the rangelands where they graze were badly depleted.<sup>43</sup>

Over the past three decades the importance of livestock and rangelands as source of income decreased due to the extension of tube well supported agriculture. A reversal in this trend is foreseen as tube well agriculture is not likely to be viable for much longer.

The most common diseases among the livestock in the district are:<sup>44</sup>

1. Foot and mouth disease;
2. Rinderpest;
3. Black quarter and *Piro plasmosis* for cattle;
4. Anthrax;
5. *Entero toxemia*;
6. *Pleuropneumonia* and sheep pox for sheep and goats;
7. Newcastle disease; and
8. Chicken dysentery and *Entero toxemia* for poultry.

The Livestock Department supported by development partners like FAO and UNDP, is working on: animal husbandry; disease prevention and treatment in veterinary hospitals and dispensaries; artificial insemination; input supplies; dairy development; and training on livestock management. Marketing services and price setting are influenced by the private and public sectors.

The Assistant Director Livestock is also responsible for public sector veterinary facilities and operations in the district. There is a skeletal network of veterinary facilities including three hospitals, 18 dispensaries, one Artificial Insemination Centre (1,135 cows and buffaloes were artificially inseminated in the Artificial Insemination Centre) and one Disease Investigation Laboratory unit. In addition the district has mobile units. There are also a large number of private veterinary clinics. There is a cattle breeding and research centre in the district. Veterinary drugs are available in the market and also in the government veterinary hospitals. Smuggled veterinary medicines are also used.

43 Government of Balochistan (2006). *Contingency Plan for Drought Affected Districts of Balochistan 2006*. Quetta, Pakistan: Government of Balochistan.

44 Government of Balochistan (2006). *Balochistan Livestock Census, 2006*. Quetta, Pakistan: Government of Balochistan.

The Livestock Department is responsible for livestock whereas the management of rangelands is in the domain of the Forest and Wildlife Department. Coordination between the two departments is practically non-existent. As a result, the full potential of livestock and rangeland resources is not being realized. The Mastung District Government will improve coordination at the district level between the departments.

## Poultry

Domestic poultry in Mastung is popular. Women are largely responsible for the management of poultry; in rural areas women are also allowed to sell eggs and retain the income. This amount is not sizeable as flocks are largely small indicating asset poverty. Moreover, poultry is very vulnerable to diseases.

There are two government poultry farms and five private poultry farms. The private farms employ eight persons each and keep flocks in the range of 500-700 birds. According to the Balochistan Livestock Census the number of

poultry birds are 218,682 (cocks 19,387, hens 97,082 and chicken 103,101).<sup>45</sup>

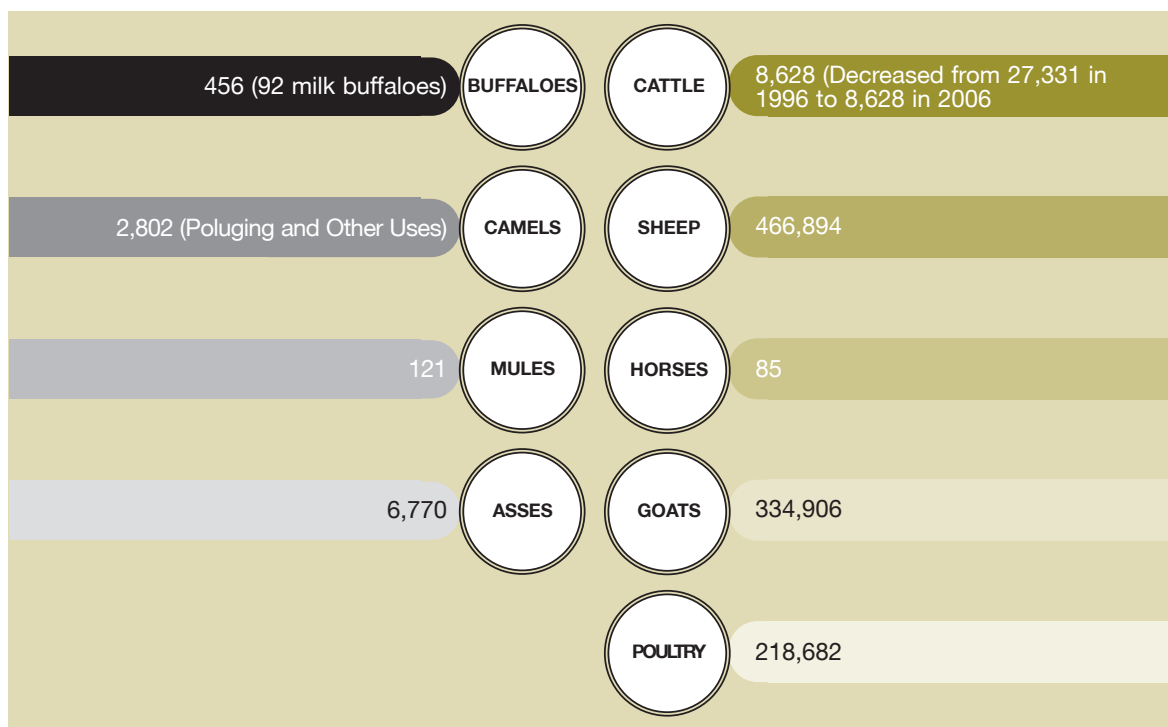
## Rangelands

The rangelands of Mastung have a mediterranean climate with annual rainfall ranging from 150 to 300 mm, most of it during winter or early spring. These rangelands have low productivity due to degradation, particularly after the drought.

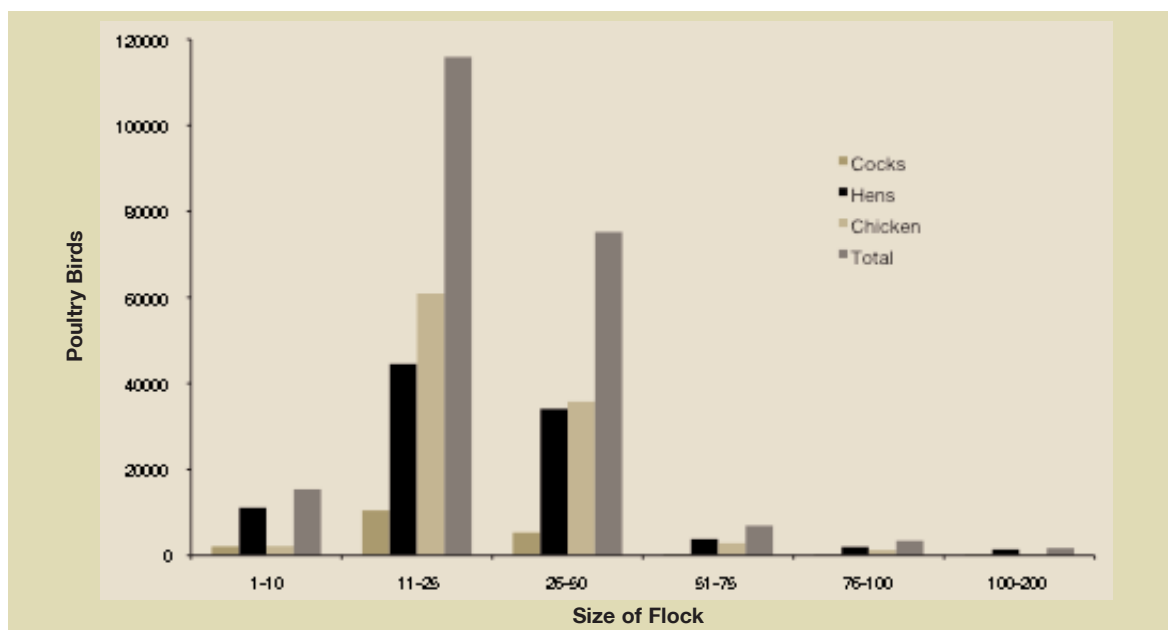
Range-based livestock production systems are one of the major sources of livelihood for people living in rural areas. Small ruminants, such as sheep and goats, are better adapted to the harsh environment and greatly outnumber large ruminants. It is estimated that the number of sheep and goats is many times that of the carrying capacity of the rangelands. Poor nutrition results in high mortality, high parasite loads and stunted growth of animals. Livestock owners sustain high losses, especially during a drought.

See Annex 1: Data Tables for more details.

**Figure 9: Livestock population in Mastung district 2006**



Source: Balochistan Livestock Census (2006)

**Figure 10: Poultry birds by size of flock**

Source: Balochistan Livestock Census (2006)

### Box 9: Mastung agriculture plan

Objective: Ensure sustainable growth, food security and income generation opportunities in Mastung.

The Mastung Agriculture Plan will include:

- Map and directory of stakeholders service providers and retailers.
- Land Settlement and land records; land consolidation; ownership rights; cultivable area.
- Map and list of all crops grown.
- Map soil quality (vulnerability to wind erosion, adoption of agro chemicals, cultivation practices).
- Directory of stakeholders, service providers (agricultural machinery mechanics etc.)
- Map and list of potential crops and an assessment of water consumption, energy consumption, income, yield and sustainability in Mastung:
  - Analysis of soil-crop-water requirement, compatibility and efficiency.
  - Adoption of practices to prevent soil erosion and desertification.
  - Construction of mini dams and development of command area for the dams.
  - Adoption of integrated pest management.
  - Fruit and vegetable documentation and expansion, greenhouse (tunnel), off season vegetable production and organic farming.
- Links with:
  - Directorate of Agriculture Services for Crop<sup>1</sup>, which has also set up an online information system, which collects marketing information from a variety of sources in both the public and private sectors.
  - Directorate of Agriculture Extension; which provides subsidised seeds<sup>2</sup> and through its extension field staff introduces the application of new technology (optimum use of water, fertilizer, seeds, maintaining top soil etc.) to farmers.

<sup>1</sup> GoB is now analyzing supply and demand in order to distinguish those crops, which continuously face marketing problems (i.e. production needs to be reduced) from those which have only occasional marketing problems or for which there is strong market demand.

<sup>2</sup> There are seed corporations in all other provinces except Balochistan.

- Directorate of Agriculture, Economics and Marketing Balochistan Quetta is now planning to develop a provincial database so that relevant agencies can operate more efficiently.
- AGMARKET in Balochistan has decentralized the marketing information system to improve access to information at the district level.
- Promote in Mastung:
  - Low delta crops and orchards such as pistachios, grapes, olives and almonds.
  - Cultivation of MAP.
  - The cultivation of tomatoes, onions, maize, potatoes, melons and chillies.
- Lobby with GoB on measures that can be given immediate affect e.g. availability of bull dozers.
- In Mastung:
  - Restrict and regulate high delta crops such as spinach and radishes.
  - Design a community managed zoning plan for crops based on water, soil, and income.
- Facilitate access to inputs; manure and compost; seed and fertiliser availability; quality of seeds; and marketing of certified seeds in Mastung.
- Compile list of possible sectors in Mastung where value added for fruit and vegetable can be tapped; identify potential agro based small and medium enterprises; (feasibility of food preparing and other agro-based industries in the area) and Global Good Agricultural Practices (GGAP) and International Feature Standard (IFS) certification for processing plants, pack houses and transport of agricultural produce to make it more export-worthy.
- Adopt practices to reduce post-harvest losses and reduce waste of low grade fruit in Mastung.
- Improve storage and transport of agricultural produce, fruits, vegetables, and flowers in Mastung.
- Design a strategy to reform the Market Act and adopt modern marketing practices for agricultural produce which are more inclusive, transparent and fair in Mastung.
- Design an effective business model for Mastung for linking agricultural produce to markets.
- Enable access to agriculture machinery in Mastung and create small and medium enterprises around its maintenance.
- Pilot cooperative farming in Mastung.
- Pilot with NGOs, CSOs and the private sector in Mastung, water efficient irrigation (e.g. land levelling, drip and sprinkler irrigation, organic produce, and GGAP and IFS certified products for export).
- Facilitate accreditation of labs used in the agricultural sector in Mastung.
- Restructure current labs to make them more self-sustaining in Mastung.
- Enter into partnerships in Mastung with the private sector, NGOs/CSOs for extension services.

#### Box 10: Floriculture in Mastung

Floriculture includes the growing of and use of flowers, raising ornamental plant nurseries, ornamental gardening and landscaping.

It is a comparatively new agricultural activity in Balochistan. Various flowering plants have been introduced at various places in the province (seeds, bulbs, corms, rhizomes, tubers etc.) The private sector has come forward in this business.

The Agriculture Department grows flowers for demonstration and sale at Quetta and it plans to increase flower shops at divisional headquarters for sale of cut flowers. The flower shop at Quetta is almost ready and the ones at Kuchlak and Kalat are underway. Floriculture requires exacting inputs, investment, skills, intensive, which in turn needs risk taking. More importantly, it requires communication and storage infrastructure.

Floriculture can improve the socio-economic conditions of the farmers if they include growing of cut flowers, and raising nurseries of forest, fruit and ornamental plants on farmlands. Floriculture is not a traditional practice in Mastung, only a small number of farmers in the district know the techniques of growing, harvesting and marketing flowers as well as its economics. The expertise in floriculture in the department, especially its extension staff is limited, and so is the scope, which is confined to cut flowers:

- Develop and implement a Floriculture Promotion Strategy for the province and for Mastung.
- Prepare feasibilities for small and medium enterprises and small farmers in Mastung. Raise awareness, and provide business related information to farmers, nursery growers and amateurs.
- Prepare a map of Mastung district with known floriculture species with climatic and water conditions.
- Prepare a list of experts in Mastung, province and rest of the country.
- Prepare a list of commercial enterprises across the country.
  - Gradually create adequate transportation and storage in Mastung.
- Flowers are a perishable commodity and require near, rapid access and certain markets.
- Arrange exposure visits for interested farmers from Mastung to see ornamental nurseries and cut flower fields at the Quetta Agricultural Farm and Pattoki.
- Promote the use of cut flowers, garland flowers and flower petals in Mastung.
- Facilitate procurement, multiplication and marketing of flower seeds, bulbs, and ornamental plants-herbs, shrubs and trees in Mastung.
- Provide technical advice and service regularly to growers in Mastung.
- Arrange flower shows, flower arrangement shows in Mastung.
- Facilitate farmers' access to credit in Mastung from development financial institutions.
- The Mastung District Government is committed to:
  - Piloting practices such as growing flowers in plastic tunnels.
  - Raising nurseries of ornamental plants on farmlands.
  - Providing the necessary equipment, such as lathe houses.
  - Linking the produce to demand from the markets.
- Pilot with NGOs, CBOs and the private sector in Mastung.

### Box 11: Mastung livestock and poultry plan

Objective: Ensure that the full potential of the livestock and poultry sector is realised in Mastung without compromising its sustainability and that of agriculture and natural resources.

The Mastung Livestock and Poultry Plan will include:

- Map and director of service providers and facilities in Mastung.
- Map of livestock by grazing area in Mastung.
- Establishment of baseline indicators and targets in Mastung:
  - Nutrition of livestock.
  - Diseases in livestock.
  - Age of livestock.
  - Milk production.
  - Size of herds.
  - Size of herds by households.
  - Ratio of unproductive: productive livestock.



- Price of hide: price of value added hide.
- Livestock: forage.
- Livestock: veterinary Hospital.
- Livestock: vets.
- Livestock: extension workers.
- Household: extension workers.
- Native: endemic livestock breeds.
- Native: endemic fodder and feed types.
- Prepare a management plan for Mastung focusing on feed, breed and health.
- Close coordination between the Livestock, Forest and Wildlife and Agriculture Departments for improvement of livestock and rangelands in Mastung; joint livestock and rangeland projects, interventions and activities for implementation by joint teams.
- Disease prevention and control plan for Mastung (hygiene at poultry farms and livestock farms, poultry management kits, training on diseases, training on hygienic slaughter practices, markets for medicines, vaccination).
- Coordinate with the Livelihood Diversification Plan for Mastung and Forests and Rangelands Plan for Mastung.
- Introduction of optimal breeds for Mastung's arid climate.
- Discussions with nomads and pastoralists to understand their priorities and needs in Mastung including:
  - Large-scale movement of nomad and semi nomad livestock, which deplete the rangelands and transmit diseases to local livestock. There is no quarantine system applied to the migrant herds from outside or to local herds when returning after grazing from the *kachhi* plains.
  - Difficulties in nomadic grazing due to uncertainty of forage and absence of facilities, both for the grazers and animals on and along the migratory routes, as well as dependence of grazers and animals on the co-operation of local communities.
- Vaccination and quarantine camps should be setup in Mastung on the migratory routes of animals especially during the march-april migration through the district.
- Raise awareness of GoB plans and programmes as impacting Mastung.
- Coordinate with the NGOs/CSOs and private sector on piloting new initiatives in Mastung:
  - Find solutions for the present situation of imperfect livestock marketing and dependence on outside markets.
  - Design projects and interventions for the production and marketing of silage, that has tremendous advantage as feed for animals in arid and drought-prone areas.
  - Introduce and manage high protein molasses blocks for winter feeding and drought periods.
  - Improve animal health care facilities (vaccination against infectious and communicable diseases, precautions against worms, ticks, and curative treatment including de-worming are important for the health of livestock).
  - Depute veterinary assistants on the established migratory routes for vaccination and treatment, especially the treatment of infectious and communicable diseases. Find solutions for issues such as slaughtering in the open (weak monitoring, surveillance and monitoring of meat being sold, resulting in low quality or un-healthy meat being supplied to the market). There is no meat processing plant in the province.
  - Local livestock markets exist in different parts of the district. Livestock prices increase rapidly and sometimes fluctuate due to the arrival of nomads from Afghanistan with their livestock, droughts when the owners cannot afford to feed the animals, slaughtering of a large number of animals on *Eid-ul-Azha*. However, consumers do not benefit from the temporary reduction in prices.

- Improve livestock marketing and reduce dependence on external markets in Mastung.
- Improve supply, management, access and knowledge of feed and fodder in Mastung:
  - Increase high yielding grass varieties and information on grazing areas.
  - Educate and train farmers in Mastung through livestock extension services and training programmes.
  - Organise livestock shows in Mastung like the Sibi *mela*.
  - Increase fodder and feed production.
  - Conduct research on fodder species of trees and shrubs, their planting, yield and their nutrition etc.
  - Construct seasonal facilities for the grazers and livestock on the migratory routes in remotely located range areas.
- Improve monitoring of veterinary staff and other services regarding cure and prevention in Mastung:
  - Improve animal health care facilities.
  - Control infectious livestock diseases being introduced by the livestock of Afghan Powindas from across the Pak-Afghan border.
  - Provide training to farmers in treatment of livestock diseases.
- Introduce and promote dairy farming and encourage animal fattening for marketing.
- Strengthen the market of livestock and their products in Mastung:
  - Hides.
  - Milk products.

### Box 12: Mastung natural resource plan - rangelands

Objectives: Ensure that rangelands in Mastung are restored and are used sustainably.

- The Mastung Rangeland Plan will include:
  - Map of district with land use and zoning area.
  - Forest cover (actual area).
  - Rangeland (actual area).
  - Forest areas (actual area).
  - Ownership (private, communal, disputed) of land.
  - Land settlement and records.
  - Livestock.
  - Wood and vegetation use for energy.
  - Access to rangelands by income.
- Map of rangelands in Mastung by types and vulnerability.
- Map of Rangelands in Mastung by grazing potential and short term rejuvenation:
  - Ecological zoning of rangelands.
  - Water points and salt licks.
- Lobby with the GoB on: preparing a province specific action plan with detailed district plans for rangelands, biodiversity, wildlife and protected areas and livestock with specific plans, programmes and targets for Mastung.

- Establish productive rangeland identification and monitoring through satellite imagery for Mastung.
- Establishment of baseline indicators and targets for Mastung such as:
  - Ratio between livestock: rangeland.
  - Animals and livestock-forage ratio (to work towards alternative feeds such as molasses).
- Plan and implement grazing management in Mastung; discourage and reduce 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 (enforce ban on grazing/browsing in the regeneration areas and plantations until established fully).
- Invest in reseeding, seeding, development of water points, and placement of salt licks for improving the rangelands in Mastung; this will also help in enhancing recharge of water, conservation of biodiversity, especially plant species.
- Pilots on community participation/planning, management and regulation for rangelands in Mastung.
- Coordinate between the Forest Department (responsible for rangelands) and the Livestock Department for/in Mastung; launching programmes in Mastung for improved breeds, feed (including rangeland management) and health of livestock.
- Engage with nomads to see how nomadic paths and rangeland management can be complementary in Mastung.
- Raise pastoralist awareness on rangeland management in Mastung.
- Coordinate with NGOs/CSOs and the private sector to introduce new initiatives in Mastung.

## 7. Poverty alleviation and livelihood diversification

**A**n estimated 60 per cent of the population of Balochistan lives below the poverty line; and almost 43 per cent of children are malnourished.<sup>46</sup>

The poor rely heavily on natural resources but their access to and control over natural assets and resources is limited.

The main stay of the majority of the population is agriculture and livestock. In 1998, 49.9 per cent of the employed labour force was in the agricultural sector. Diversification into new industries and addition of value-added at the district level can have a significant impact on poverty, employment and income generation, especially for women.

The thrust of GoB's development programme, in the context of its Poverty Alleviation Strategy (1999), was to raise the standard of living in the province with an initial investment of Rs. 1.27 billion and estimated return of Rs. 2.26 billion.



<sup>46</sup> Government of Balochistan (2004). *Multiple Indicator Cluster Survey 2004* [website]. <<http://balochistan.gov.pk/departments/mics/MICS-4-Web/4-6-Results-Child%20Protection.pdf>>. Accessed 10 October 2011.

It included provision of 270,000 jobs for providing sustainable livelihood to 70 per cent of the poor population. However, this strategy could not be implemented due to the paucity of funds and a shift in GoB's priorities.

## Labour force

The overall unemployment rate was 48.46 per cent (48.82 per cent males and 4.36 per cent females) in 1998.

The majority of employed labour in the district is associated with agriculture. 64.20 per cent of total employed workers (64.63 per cent males and 35.18 per cent females) were self-employed in the district.<sup>47</sup>

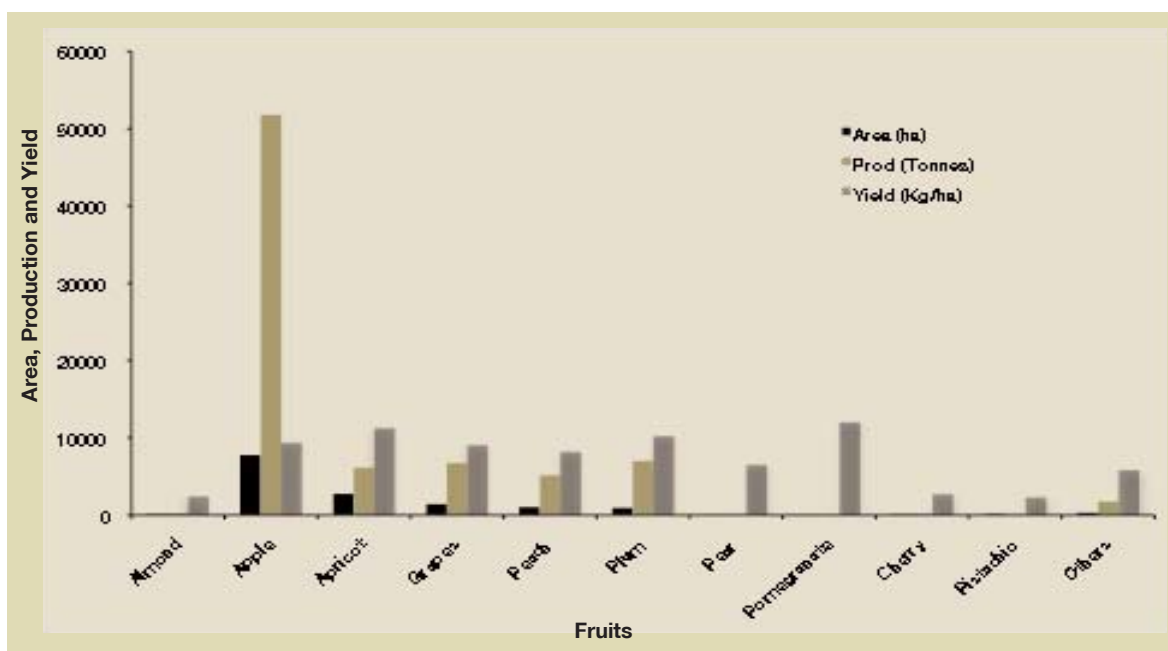
Mastung District Government will coordinate and lobby with the provincial government on human resource development. Technical professional vocational training facilities will be strengthened, expanded or created to meet the existing and future demand of the district. Skills based teaching programmes that can facilitate employment will be introduced: construction material fabrication units; mining, tourism, agricultural engineering, commercial agriculture, livestock management, and poultry farming.

Labour-related laws will be enforced in the mining sector. These include: (i) Employees Social Security Ordinance 1965, (ii) Employees Old-Age Benefits Act 1976, (iii) Employment of Children Act 1991, and (iv) The Minimum Wages Ordinance 1961. These labour laws will provide social insurance to workers.

Under the Employees Social Security Ordinance 1965, all establishments employing more than five workers are required to register their employees and pay for their social security benefit. Similarly, all establishments employing more than 10 workers are required to register their employees for old age pension benefits and pay for the same. Workers in the district are generally not registered for any of the mentioned benefits.

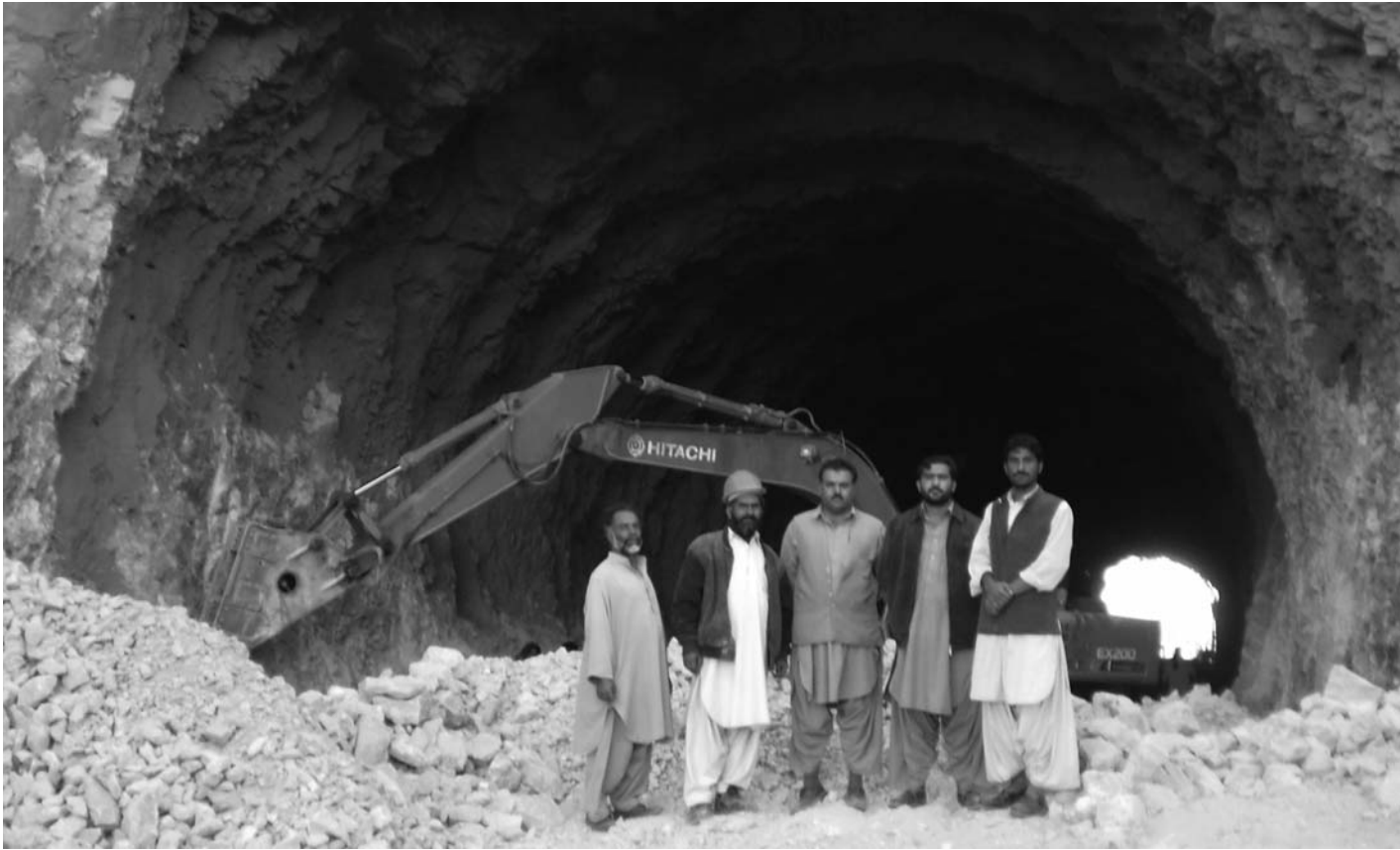
Mastung District Government will coordinate with the Employees Old-Age Benefits institution (EOBI) to register these establishments and their workers. Social security provides health care facilities to all workers and their families and provides wages in case of chronic disease that requires long-term treatment. EOBI provides pension to workers on retirement. One time registration provides coverage for life, even if the worker changes jobs.

**Figure 11: Area and fruit production in Mastung**



Source: Agriculture Statistics of Balochistan (2008-09)





Construction of the Lak Pass tunnel

## Economic opportunities and livelihood diversification

The Government of Pakistan's new economic policy is based on the premise that partnerships between the public-private sectors will become the engine of economic and industrial growth, making workers partners in development projects and adopting trade, instead of aid, for overcoming economic problems.

The Balochistan Economic Report 2008<sup>48</sup> has included priority areas and strategies for realising the provinces' potential. Taking from these the Mastung District Government will focus on supporting urbanisation, profitable enterprises, productive jobs and creating employment links for male workers outside the district.

Keeping in line with federal strategies and the GoB's economic policies Mastung District Government will prioritise agriculture (with a

specific focus on sericulture); value addition in minerals; ecotourism; and support services in urban areas.

1. Agriculture and livestock;
2. Value-addition in minerals; and
3. Support services in urban areas.

The business environment can be enhanced with transport, education, access to information and improved infrastructure.

As part of its livelihood diversification plan Mastung District Government is committed to the following guiding principles:

1. Develop and efficiently use those activities and physical infrastructure that are critical to the long term economic health and creative strength of the Mastung;
2. Ensure decisions and actions are affordable and do not accumulate liabilities for future generations in Mastung; and
3. Ensure that economic benefits and resources are adequately distributed so as to avoid inequities.

48 Asian Development Bank and World Bank (2008). Balochistan Economic Report Islamabad Pakistan: Government of Balochistan.

## Private sector development

Since the closure of its sole cement factory, district Mastung no longer has an industrial sector. Some cottage industry units of Balochi *chappals*, carpets and embroidery are currently operational. Traditional handicrafts are also made by women in their homes and include embroidery on coats, shoes, caps, leather belts and *shalwar* and *kameez*.

Mastung district, like the rest of the province, has tremendous potential for small and medium enterprises, around shoes, carpets, Balochi embroidery and dwarf palm products.

Recognising that the private sector is hindered by diverse factors such as high prices of utilities, administrative barriers to investment, red tape and higher costs of inputs, Mastung District Government will lobby with the GoB for tax exemptions and other incentives for investment. In the rest of Pakistan the private sector has been most successful in the transport and energy (gas cylinders marketing) sectors, the same is true for Mastung. Medium to larger scale private sector investments in mining, corporate agriculture and livestock, sanitation and waste collection sectors need to be strengthened.

The Mastung District Government is committed to ensuring an enabling environment for the private sector, especially small and medium enterprises.

## Communication and infrastructure

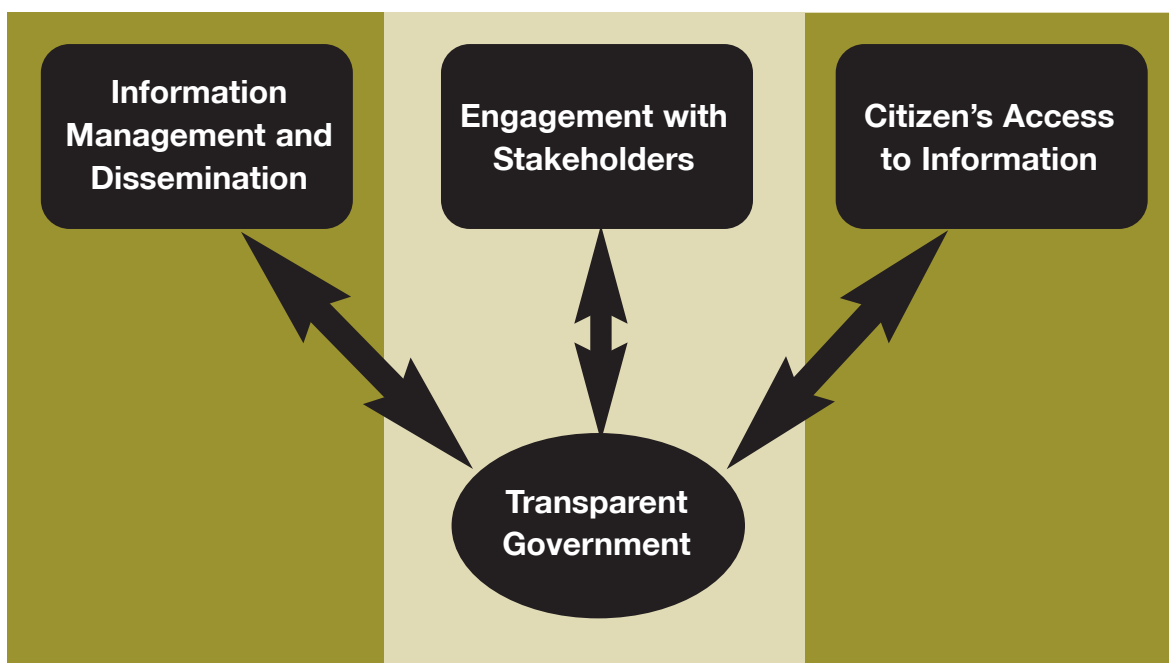
Communication infrastructure is vital for accelerating the pace of economic development e.g. farm to market roads, highways, railways etc. Most parts of the district are well served by three national highways, black and shingle roads and railways. District Mastung is linked with all other parts of the province and country through roads. The closest airport is in Quetta.

Federally funded agencies have developed major infrastructure in the district.

A large number of different types of privately-run vehicles are available for travel to and from Mastung Town to Quetta, Kalat, Khuzdar, Nushki, and Shahdad Kot (Sindh) and almost all villages within the district. The Quetta–Karachi, Quetta–Taftan and Quetta–Sukkur public transport travels through Mastung district.

The total length of roads in the district is 557 km, (269 km of shingle road and 288 km of

**Figure 12: Ensuring transparency**





Transmission infrastructure for electricity

metalled road). The total length of the three national highways [(i) Quetta–Kalat–Karachi, (ii) Quetta–Nushki–Taftan–Iran, and (iii) Quetta–Sibi–Sukkur] running through the district is 215 km. The shingle roads link most villages within the district and their ratio in provincial roads is very high. Most shingle roads are in bad condition.

The length of railway line sections in the district is 104 km i.e. Quetta to Sibi 24 km and Quetta to Taftan 80 km.

Road maintenance is the responsibility of the Communication and Works Department, headed by an Executive Engineer at the district level.

## Energy

An affordable and regular supply of power is crucial for basic needs such as cooking and heating; essential for adding value to and diversifying livelihoods (mechanization of agriculture, modernization of mining, poultry farming, ecotourism, value addition to agriculture and livestock products); and for the provision of basic social services such as education, health care and piped water.

In Mastung district, the major sources of energy are:

1. Heating: Wood is used by 85 per cent of the housing units;
2. Cooking: Piped natural gas was made available to households in Pringabad and Mastung town in 1996. The use of kerosene oil, wood and dung cakes, and dry bushes is also common in the district.
3. Lighting: In the rural areas 35 per cent while in urban areas 90 per cent of the houses use electricity for lighting. 65 per cent houses in rural areas use kerosene oil for lighting.
4. Economic Infrastructure: Electric generators are used by a limited number of business and offices (and a few homes).

There is a severe shortage of energy (gas is provided to only 39 per cent, and electricity to 68 per cent of the people in urban areas) in the district. The population is dispersed and the terrain is rugged both of which are major constraints for the extension and coverage of

electricity through the national grid. In June 2007, the number of consumers for electricity and gas were 12,913 (domestic 9,045, commercial 991, industry 111, agriculture 2,765 and others).

Government of Pakistan's Water and Power Development Authority supplies electricity through the national grid to six local grid stations in the district. Two major issues with electricity are:

- a. The number of domestic consumers in rural areas is increasing more rapidly than the number of industrial and commercial consumers; and
- b. Agricultural connections are for tube wells only. There were 1945 electric tube wells in Mastung in 2007-08. Over the last decade the use of electricity for agricultural purposes has increased very rapidly. As tube-wells need to be phased out over the medium to short term there is likely to be greater energy available for other uses.

There is limited use of LPG cylinders due to both, low supply and lack of affordability. 17 villages have been provided gas connections.

## Ecotourism

Areas of natural and cultural significance in the district need preservation, interpretation and including tourism.

Ecotourism is hindered by security problems in the district. Two areas are popular and have the potential for further development; Hazarganji-Chiltan National Park (part of it is in Mastung district) and Harboi Juniper area in Kalat (not very far from the south-eastern boundary of Mastung district). The spring bloom of the deciduous fruit trees in Mastung district is also very attractive. Shahi Bagh (Royal Garden) of the Mughal era could be developed as a tourist destination with both an historical and botanical emphasis. Lak Pass and Sangti Pass have some potential for development as picnic spots. There are five rest houses in Mastung district: three in Mastung town, one in Digari and one in Sinjidi. However, accommodation in these rest houses is limited.

Mastung District Government will work with the Park authorities and the Culture, Tourism and Archives Department of the GoB. Ready and easy information will be made available at transport stands and at the rest houses in the short term. In the medium to longer term work on the development of more tourist infrastructure will be undertaken.

### Box 13: Mastung livelihood diversification plan

Objective: Ensure diversification of livelihoods and introduction of employment opportunities in Mastung which enhance income and asset creation.

The Mastung Livelihood Diversification Plan will include:

- Map of markets, commercial outlets, mines, small and medium enterprises.
- Map demarcating potential new enterprises (ecotourism) or the re-location of existing enterprises (e.g. naswar units).
- Directory of market associations and credit facilities.
- Directory of provincial and federal training institutes, and private sector training institutes.
- Data on the number of current jobs by nature and sector.
- Data on unemployment, employment and number of vacancies by nature and sector .
- Data on sectors where employment gaps can be exploited (these may include sectors where immediate action can be taken such as information technology and sectors such as ecotourism which may take several years to develop.
- Indicators to measure employment.
- Feasibilities on initiating small and medium enterprises.
- Establish a monitoring and evaluation system for Mastung:
  - Targets for employment (including for phasing out child labour).
  - Targets for employment diversification.
- Establish bazaar association in Mastung:
  - Developing a district level market for fruits, vegetables, livestock and their products to attract buyers from outside the district rather than transporting the saleable goods to markets outside the district.
  - Job creation opportunities.
  - New product creation (for e.g. floriculture).
  - Market Information.
  - Link between producers and retailers and customers.
  - Ensure cleanliness.
  - Establish links to ecotourism initiatives and alternative energy initiatives.
  - Promote information technology application.
  - Make available credit facilities.
- Nurture the small and medium enterprises sector in Mastung and skill development for men and women (credit, feasibilities, links with Small and Medium Enterprise Development Authority, Balochistan Rural Support Programme, Export Promotion Bureau, economic incentives, training, alternative energy sources) ensuring that impact on environment is assessed and mitigated:
  - Tourism.
  - Alternative energy (heating stoves, solar powered water heaters etc). Wind data and feasibility studies for Mastung for energy development in remote rural areas through dispersed application of alternate energy sources including biogas, solar panels, solar thermal and wind.



- Exploiting minerals. Marble and chromite products.
- Poultry farming and livestock.
- Repair of household equipment.
- Machinery maintenance and repair.
- Installation and maintenance of high efficiency irrigation systems.
- Handicrafts including woollen carpets, rugs and other woollen articles; wood work, knitting, sewing.
- Cultivation of MAPs.
- Cold storage, fruit grading and packing, low grade fruit use, and preparation of preserves.
- Strategy to encourage vocational education in Mastung. (Organise technical training of the labour force, considering the local, provincial, national and foreign market requirements. Create these opportunities in technical centres and vocational training institutes, on the job, as well as in more developed areas of the province; encourage, catalyse and facilitate opening of standard vocational education institutions and technical training centres in the public sector and the private sector).
- Targets for value addition in Mastung for traditional economic activities, with a special focus on livelihoods for which women bear the burden of responsibility (e.g. livestock).
- Pilots with NGOs/CSOs and private sector.
- Maintain and use natural/archaeological/historical sites with proper guides and information, offering tour packages for archaeological visits, cultural activities and natural sites in Mastung. These cultural assets and other tourism resources will be preserved, interpreted and promoted for tourism:
  - Interpretation and promotion of tourism assets.
  - Facilitating No Objection Certificates for visits.
  - Selecting and training individuals as guides and linking them with national and international companies.
  - Prioritizing community-based tourism.
- Mastung District Government will lobby with GoB to:
  - Establish an industrial estate; district market for fruits; establish a special fruits and flowers facilities at Quetta airport.
  - Improve law and order.
  - Design an economic plan that takes into account dwindling water resources and degraded rangelands; create economic incentives for technology intensive and environmentally friendly investments; create an adaptation plan for water intensive industries.
  - Provide alternatives to child labour.
  - Improve the capacities in the provincial government for promoting tourism in the province.
  - Request Pakistan Tourism Development Corporation to conduct a comprehensive survey of the potential tourist attractions in Mastung and develop a plan (including the private sectors and communities).
  - Preserve cultural properties and natural areas for promoting their use for tourism. Encourage the private sector to develop tourist facilities including lodges and eating-places.
- Improve the marketing system including exclusion of intermediaries through enactment and enforcement of law; create legal links between Mastung and the Afghan and Iranian markets.

- Improve farm to market roads in Mastung.
- Encourage and support the private sector to establish a cold storage in Mastung.
- Improve the quantity and quality of agricultural machinery in Mastung.
- Limit apple cultivation in Mastung to the areas where chilling requirements are met by the climatic conditions and where water resources are not depleted.
- Improve gender inequity in employment.

#### Division of labour by gender in the livestock sector

Exclusively Men	Exclusively Women	Shared Tasks
<ul style="list-style-type: none"> <li>● Marketing</li> <li>● Breeding</li> <li>● Slaughtering</li> <li>● Purchasing and transportation</li> <li>● Purchasing medicines</li> <li>● Field grazing</li> </ul>	<ul style="list-style-type: none"> <li>● Milking and feeding</li> <li>● Processing by-products</li> <li>● Fodder management</li> <li>● Caring of sick livestock</li> <li>● Hand suckling of young</li> <li>● Processing local herbal medicines</li> <li>● Dung management</li> </ul>	<ul style="list-style-type: none"> <li>● Fodder collection</li> <li>● Decision-making</li> <li>● Type/number of animals to buy or sell</li> <li>● Birthing</li> </ul>

#### Box 14: Mastung mines and minerals strategy

Lobby and work with the GoB:

- Tap mines and minerals in a sustainable and environmentally friendly way to improve income and diversify livelihoods in Mastung; use mines and minerals to support ecotourism (for e.g. abandoned sights) in Mastung.
- Completion of the geological survey in Mastung especially of mineral rich areas with modern equipment and techniques; preparation of feasibility reports; arrest the practice of gross under reporting of production of minerals.
- Most of the minerals from Mastung are exported in raw form with no value addition, limiting the employment and income generation opportunities. Measures will be adopted to develop this area.
- Introduce technology for improving efficiency and quality of extracted materials initially of celestite and fluorite and then other minerals from Mastung.
- Attract national and foreign investors to Mastung.
- Promote large scale commercial mining in Mastung.
- Improve marketing and trade networks in Mastung. Often mine owners do not get a fair price due to distantly located markets.
- Introduce Mastung specific targets and identify indicators to monitor them.
- Introduce a comprehensive training package in Mastung for the workers in the mining sector (and potential workers) and local entrepreneurs in mining:
  - Organize training for mine workers particularly on occupational health and safety issues.
  - Improve workers' safety and occupational health conditions in mines.

- Take measures to effectively address social security needs of workers.
- Phase out the consumption of traditional mining methods which are inefficient and wasteful.
- Minimise damage to animal life, landscape, soil erosion, and silting of streams which could occur from untreated mines.
- Improve air and noise pollution management.
- Lobby for the establishment of the Mineral Investment Facilitation Authority.
- Disseminate research and other information on Mastung.
- Computerise records; engage proactively with the private sector (retailers, value addition industries, mining etc) as relevant to Mastung.
- Implement the recommendations in the National Mineral Policy (1995).
- Introducing a Geographic Information System at the Directorate General of Mines and Minerals in Quetta as relevant to Mastung.
- Monitor production and increase royalty by improving the auction system for Mastung.
- Conduct environmental monitoring of the mining areas and operations in Mastung.
- Issue guidelines to the mining industry in Mastung to effectively manage their waste.
- Improved transparency in decisions related to concessions and leases issued for mines etc in Mastung.

#### Box 15: Mastung energy strategy

Adequate and regular supply of power is crucial for living and livelihoods including mechanization of agriculture, modernization of mining, poultry farming, ecotourism, value addition to agriculture and livestock products, water and sanitation, and efficient running of health facilities and educational institutions in Mastung.

In Mastung, major sources for light are electricity, gas and kerosene oil while major sources for fuel are firewood, animal dung, gas, LPG cylinders and electricity. The use of cow dung as fuel reduces the quantity of manure, essential for agricultural production. The large scale cutting and removal of vegetation for firewood is resulting in deforestation and devegetation in Mastung with several other implications including soil and water erosion, reduced water recharge, and dwindling biodiversity. Major issues faced in Mastung are:

- Load shedding of electricity.
- Inflation and high prices that limit the volume of trade.
- Quetta Electricity Supply Corporation to improve power supply.
- Establishing the industrial estate by implementing the plan developed in the medium term.
- Agricultural tube wells suffer the most from load shedding of and fluctuation in electricity.
- Limited availability and high cost of LPG cylinders.
- Inefficient use and wastage of electricity and gas.

The Energy Plan for Mastung will include a long-term environmental and economic perspective and appropriate energy goals:

- Conserving energy with efficient use and reducing transmission losses.

- Extending and expanding the supply of natural gas to other big settlements in Mastung.
- Promoting the use of coal briquettes for cooking and heating in areas where the supply of natural gas will take considerable time and effort.
- Promote, with subsidy, alternate energy development including off-grid solar photovoltaic, wind energy for rural electrification; solar thermal for heavy load, especially for dispersed application; and biogas for cooking and heating.
- Introduce metering of electric-run tube wells and adopt a slab tariff on the power consumed. Alternately, shift the subsidy on power supply to tube wells, to the procurement and use of efficient irrigation systems e.g. to the use of high efficiency irrigation systems e.g. bubbler, drip and sprinkler, land levelling, water management, rain water harvesting and spate irrigation etc.
- Promote efficient use of energy (tuning of vehicles, tube wells, efficient cooking stoves, energy saver bulbs etc.)
- Promote the use of and arrange regular supply of LPG cylinders.
- Create the culture of user charge payment including for electricity and gas.
- Extend the supply of natural gas in Mastung to big villages at short distances from the existing gas pipeline.
- Increase the number of CNG stations and the use of CNG for vehicles in Mastung.
- Improve electricity transmission lines to Mastung to reduce line losses.
- Promote the use of coal briquettes for cooking and heating in areas where piped gas is not going to be available in the medium term in Mastung. Reduce the use of fuel-wood to reduce pressure on the natural vegetation in the wild lands and forests by using fuel-efficient stoves and alternatives such as coal and coal dust bricks (available in Harnai and Quetta districts).

### Box 16: Hazarganji-Chiltan National Park

The Hazargani-Chiltan National Park, which lies in districts Mastung and Quetta, was established in 1980, on 15,555 hectares to protect the Chiltan Markhor. The Park located at 29°59'N 66°24'E, at an altitude ranging from 2,021 to 3,264 meters, is 20 km south-west of Quetta. It was created on the site of two forest management areas that had been extensively degraded due to overgrazing and the usage of trees and shrubs for fuel. The Management Plan prepared by WWF was submitted to GoB in 1997. The park is a protected area managed by the Balochistan Forest and Wildlife Department. It is particularly attractive in the spring when wild tulips and other flowers abound.

Amongst the flora of Hazarganji-Chiltan National Park are some 225 species of plants. Prominent are: pistachios, juniper, wild olives, wild ash and wild almonds. Many shrubs including wild fig, barberry, wild cherry, makhi provide food and shelter to the foraging animals and birds. Many medicinal herbs are also found in one park.

The Park is home to:

- Reptiles - Monitor lizard, Russell's viper, Saw scaled viper and Spiny tailed lizard
- Birds - Houbara bustard, Griffon vulture, Egyptian vulture, Honey buzzard, Laggar falcon, Peregrine falcon, Kestrel, Indian sparrow hawk, Scops owl, Common cuckoo, European bee-eater, Chakor partridge, See-see, European nightjar, Long-billed pipit, Orphean warbler, Variable wheatear, Blue rock thrush, Stonechat, Lichtenstein's desert finch and many other song birds.

- Mammals - the Chiltan wild goat or Markhor (T), Suleiman Markhor (T), Urial sheep (Gad) (V), Indian wolf (R), Striped hyena (V), Leopard(?), Caracal (T) Jackal (C), Red fox (C), Porcupine (C) and Desert hare (C).<sup>1</sup>

The Hazarganji Chiltan National Park is one of the most outstanding national parks in Pakistan. It has the only population of Chiltan Markhors, Pakistan's National Animal, in the world. It is easily accessible from Quetta City and attracts many visitors. Tourist facilities include markhor and wildlife watching, a museum, picnic spots and rest houses. The best time of the year to visit the park is from March to September. There is a splash of colour during the spring season when most of the plants including the wild tulips are in full bloom. The park is already popular among nature lovers, students, scientists and researchers. The place also has cultural significance. Hazarganji literally means 'a thousand treasures' and according to legend the mountains hide over a thousand buried treasures.

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1 T=Threatened, V=Vulnerable, C=Common, ?=Unknown



## 8. Implementation



**T**he Mastung District Government has initiated the implementation of recommendations and measures in the IDDV. The Mastung IDDV will be treated as a living document.

1. The Mastung District Government will be responsible for reviewing and updating the document and for leading the implementation process. An officer will be assigned this task.
2. Detailed sector specific plans will be prepared leading to a district plan (with budget).

**Figure 13: Iterative process**



**Step One**  
IDDV



**Step Two**  
Detailed sector  
specific plans



**Step Three**  
District plan  
with budget

## Steps and process

The IDDV is an important planning tool, serving not only as a road map for sustainable development but also as a symbol of political commitment, and a reflection of the will of the people.

In the absence of democratic representation at the district level the IDDV can still in part ensure effective, efficient and equitable public sector services.

Monitoring and evaluation is the essential for course correction of strategic directions and regulating service delivery. For this purpose it needs to address the following:<sup>49</sup>

1. Is the IDVV an effective tool?
2. Are services efficient?
3. Are services equitable?
4. Are targets likely to be achieved?

A simple three-step approach will be used for implementing the IDDV.

- ❖ **Step One:** preparing sector wise action plans based on livelihood diversification, social sector, natural resource, agriculture

and livestock and M&E. Strategies for gender, landuse, energy, mines and minerals, disaster mitigation and preparedness; and culture and recreation will also be prepared. The Mastung District Government will coordinate and prepare these plans/strategies jointly with appropriate line departments and sections on a simple template which will include the following:

- a. Baseline data;
- b. Sector specific indicators;
- c. Sector specific targets;
- d. Mapping available resources;
- e. Priority reform areas for policies, Rules, Regulations and procedures;
- f. Priority investment areas including human resources, systems, management and infrastructure;
- g. Financial implications of above; and
- h. Tasks spelt out in terms of short, medium and long term (following government budgetary cycle).

- ❖ **Step Two:** merge plans to arrive at a detailed strategy and budget.

- ❖ **Step Three:** align finances and allocations to strategy and budget.

**Figure 14: Mismatch between Priorities in Mastung District and provincial allocations**



Source: Government of Balochistan - PSDP

<sup>49</sup> These may include the following areas: Translation of provincial policies, strategies and priorities; Building on existing systems and capacity (civil society, private sector etc); System for monitoring and evaluating services; Creation of baseline information; District wise sector specific plans reflecting priorities and opportunities; Inter-sectoral coordination; People centred-planning and coordination and identification of district development priorities, match between priorities and budgetary allocations.

To achieve the immediate short-term targets of the IDDV the Mastung District Government will:

1. Create an enabling environment for:
  - Urbanisation and increasing population density; and
  - Institutions, communities, the private sector, civil society organisations, academia and the media to participate fully in the development process.
2. Strengthen:
  - The natural resource base, curbing and where possible reversing degradation, and promoting sustainable development.
3. Develop and promote:
  - Alternative and sustainable livelihoods aimed at poverty reduction, while at the same time reducing the degradation of natural resources; and
  - Focus on the agricultural and mining industries. Work with fruit and vegetable farmers to see how their income can be increased and how sericulture can be introduced. Explore other new value added sectors.
4. Create capacity by:
  - Establishing linkages with training and education facilities at the provincial and national level to develop human resources;
  - Opening new marketing and information dissemination channels; and
  - Learning from the experiences of community-based initiatives elsewhere in the country.
5. Mainstream:
  - Gender concerns and eliminate gender disparities. Adapt to social changes in society, particularly brought in by globalisation, while preserving positive cultural values, norms and traditions;
  - Equity;
  - Climate change;
  - Public participation in planning of GoB's programmes and projects; and
  - Transparency and dissemination of information.

## Financial allocations

There is a significant variance between provincial allocations and district priorities but also intra-sectoral allocations are highly inequitable.

Mastung District is committed to prioritising O&M over capital expenditure and to ensuring financial feasibility of services before undertaking capital investments.

Donors can be approached to support the programmes, projects and priorities in the IDDV. Donors and international agencies, which have been supporting programmes and projects in Balochistan include UNDP, ADB, WB, EKN, USAID, Global Environment Facility, EU, UNICEF, JICA, Kuwait Fund, CIDA, DFID, FAO, IUCN, WWF.

The Mastung District Government is going to work with the GoB proactively on the following priority areas:

- Data and information
- Accuracy of data pertaining to the district;
- Ensuring accuracy of the Population Census; and
- Ensuring accuracy of the District Map.

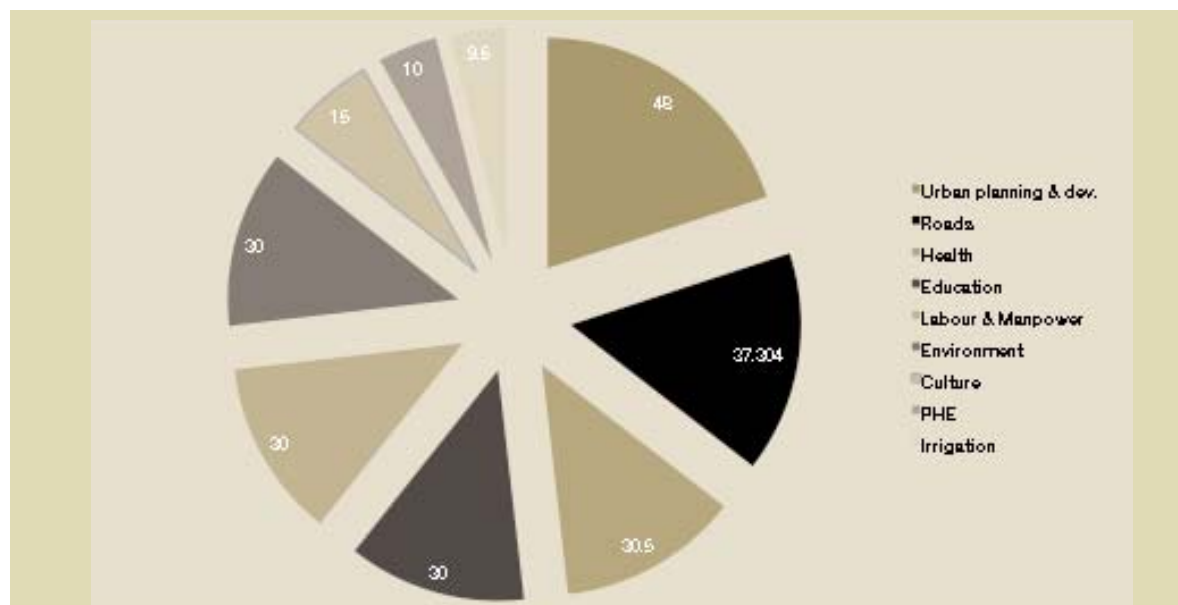
The GoB's data sets need to be made consistent and accurate. For example the difference of 39,100 hectares in the total area of the district needs to be reconciled and the remaining area needs to be surveyed using satellite images and ground-truthing.

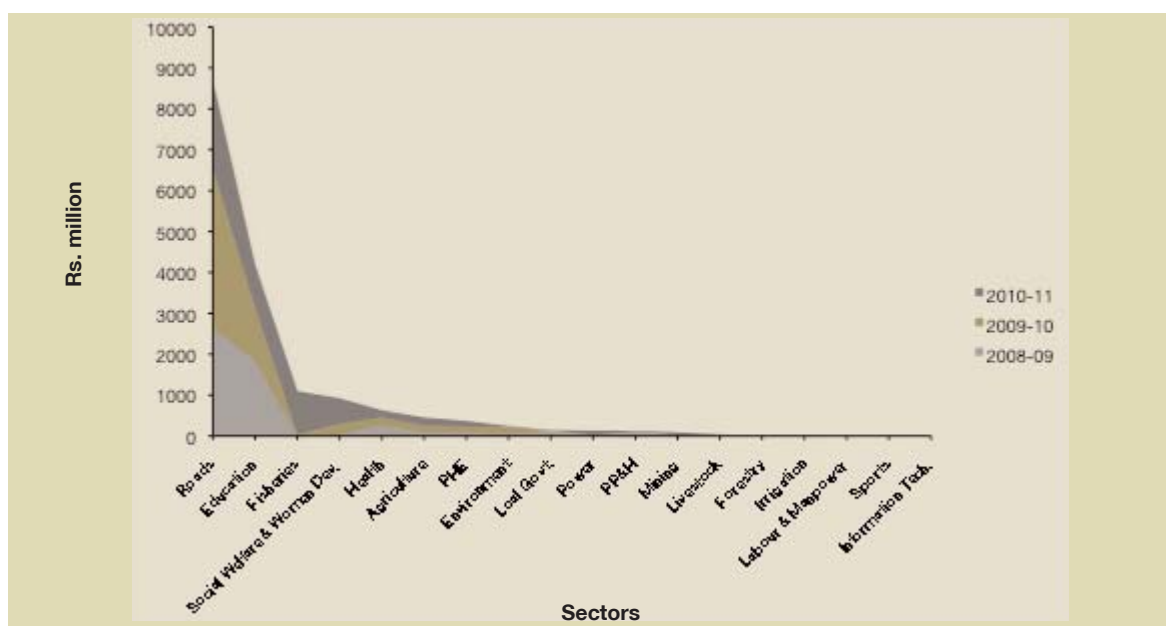
Mastung District Government will lobby for maps that represent the exact area of the district, tehsil-wise and mauza-wise; their notification in the gazette; and dissemination to relevant agencies for planning. It will priorities the following areas in collaboration with GoB:

1. Improve the law and order and reduce insecurity and threat to life and assets:
  - a. Work on compliance and enforcement of law;
  - b. Ensure security of schools; and
  - c. Arrest the erosion of harmony among ethnic groups.

2. Build a human resource system that is:
  - a. Performance based;
  - b. Curbs absenteeism of public sector staff;
  - c. Reduces vacant posts in the public sector;
  - d. Extends duration of posting; and
  - e. Enforces sanctions and penalties.
3. Formulate a capacity building plan for Mastung District Government:
  - a. Develop and train district government staff;
  - b. Raise awareness on gender, climate change, poverty; and
  - c. Introduce internet, emails and electronic system in the district government.
4. Introduce a comprehensive regulation and monitoring system:
  - a. Enforce Rules, regulations and procedures;
  - b. Simplify bureaucratic procedures at the district level;
  - c. Coordinate between departments;
  - d. Address corruption and negligence (including shifting the balance of allocations away from capital expenditure to O&M);
5. Support the disaster mitigation and preparedness strategy:
  - a. Negotiate incentives for the implementation of the provincial disaster risk management plan;
  - b. Hold disaster management and seismic briefings/trainings;
  - c. Establish a system of preparedness for reducing the losses, managing disasters including drought and rehabilitation;
  - k. Agree on an emergency drinking water plan for citizens and livestock;
  - m. Collate and disseminate reliable data on temperature, precipitation, run-off, recharge, soil moisture and ground water; and
  - o. Establish a drought emergency fund at the provincial and national levels.
6. Support the district in mainstreaming gender, poverty and climate change:
  - a. Conduct a malnourishment analysis of women, children, disabled and other vulnerable groups;
  - b. Review laws that are systematically violated (inheritance law, including
- e. Pilot a Citizen Police Liaison Committee; and
- f. Establish a Public Grievance Redressal System.

**Figure 15: PSDP allocations (2008-09, 2009-10)**



**Figure 16: Sectoral PSDP allocations (2008-09, 2009-10, 2010-11) for Balochistan**

Source: Government of Balochistan PSDP (2008-09, 2009-10, 2010-11)

- trading of women under the *jirga* system etc);
  - c. Raise awareness on laws related to women's rights e.g. The Protection Against Harassment of Women at Workplace Bill 2010 and the Prevention of Domestic Violence Act 2008;
  - d. Work with the federal government and GoB on empowering women especially through BISP; and
  - e. Create incentives for female teachers and female doctors to work in the district.
- 7. Support the district education plan by prioritising:
  - a. Training of teachers; introducing incentives for further studies; encouraging teachers to compete for federal government managed scholarships and training opportunities; provide transport and accommodation for remote areas; review eligibility criteria for teachers, (relaxing the age limit for teachers);
  - b. Increase non-salary allocation of operational expenses; increase allocations for travel for monitoring staff;
  - c. Improve infrastructure in functional schools and health facilities; upgrade single teacher schools into multi teacher schools;
- d. Introduce the subject of governance, sustainable development, environment and gender; and
  - e. Build a Women's Degree College.
- 8. Support the district health plan:
  - a. Arrest communicable diseases, particularly managing the transmission of diseases across the porous Pakistan-Afghanistan border; and
  - b. Improve capacity of health department staff particularly for preventive health care and mental health.
- 9. Support the district water and sanitation plan:
  - a. Ensure investments are made as per a strategic plan; and
  - b. Priorities O&M expenditure.
- 10. Support the district natural resource management plan:
  - a. Phase out the subsidised flat rate of electricity for tube wells;
  - b. Subsidise the farmers practicing rain-fed farming and those using diesel pumps;



- c. Incentivise groundwater recharge by adopting water conservation interventions;
  - d. Shift the subsidy, on power supply to tube wells, to the procurement and application of efficient irrigation systems;
  - e. Expand the management plans of protected areas, and promote the re-introduction of species that have been endangered and wiped out;
  - f. Strengthen GoBs staff in the districts in the following areas: conducting scientific surveys and studies, wildlife inventory, resource planning, management and assessment for in-situ conservation and sustainable employment of protected areas and species, communication and awareness raising, social mobilisation and community participation;
  - g. Ensure the compliance and enforcement of wildlife, forest and environmental laws; and
  - h. Seek support to raise awareness on the current and potential social, economic, environmental and cultural value of biodiversity, wildlife and protected areas (the low provincial funding, due to low political will and consequent low priority for wildlife, has remained a significant constraint).
11. Support the implementation of the district agriculture and livestock plan:
- a. Coordinate between Livestock, Rangelands and Forest Department for new programmes and projects;
- b. Coordinate with the Provincial Disaster Management Authority for information on climate change, particularly droughts; and
  - c. Assess the health of livestock and poultry in the district including nutrition/low feed due to over grazing and number of livestock.
12. Support the district livelihood diversification plan:
- a. Identify openings by sectors and skill sets, with a special focus on women and the poor;
  - b. Create incentives for the private sector to provide technical education including to women;
  - c. Develop Mastung as a satellite of Quetta with strong commercial and trade links;
  - d. Improve economic competitiveness by reducing cost and reliability of energy;
  - e. Lobby with the Quetta Electricity Supply Corporation to improve electricity;
  - f. Promote, pilot, demonstrate and subsidise alternative energy sources;
  - g. Promote efficient application of energy;
  - h. Promote the use and supply of LPG cylinders; and
  - i. Promote CNG stations for vehicles.
13. Lobby for a greater share from the provincial pool.

*See Annex 1: Data Tables for more details.*

**Box 17: Mastung M&E plan**

The Mastung M&E Plan will include:

- Baseline indicators for all sectors.
- Indicators to measure the effectiveness of the IDDV.
- Indicators to monitor progress in the implementation of the IDDV.
- Qualitative and quantitative data.
- Documenting and dissemination good practices and lessons learnt.
- Pilots with NGOs or CBOs and the private sector e.g. participatory monitoring.

**Box 18: Mastung culture and recreation strategy**

Sports and social activities, especially youth related activities include cricket, football, volleyball, wrestling, cycle and motorbike racing, and singing and dancing. The middle aged and elders enjoy folk dancing. *Eid-ul-Fitar* and *Eid-ul-Azha* are celebrated as the main festivals of religious and cultural importance. Currently, there is very little in terms of sports facilities and resources or other healthy social and cultural activities. Women have almost no opportunities outside of their homes.

The goals of the cultural strategy for Mastung include preserving, developing, promoting and using cultural assets, folklore, songs, music, handicrafts, *urs*, *melas*, other cultural events, food, etc.; establishing and connecting local arts and cultural organizations to the public across Mastung, Balochistan and Pakistan; and promoting economic development.

The strategy will identify and document cultural heritage resources including archaeology, built-up historical properties, sports, handicrafts, festivals (cultural, religious and historical), folklore, music, songs, cuisine and natural resource management. It will:

- Develop facilities and promote cultural activities to make the district enjoyable for local people and tourists alike.
- Establishing a Mastung museum to display all aspects of the culture and history of Mastung.
- Launch domestic tourism efforts gradually, expanding it in time to foreign tourism.
- Traditional handicrafts including embroidery work on *kameez* and *shalwar* of children and women, on caps, on bed and pillow covers, etc. sheep wool sweaters can be marketed. The Social Welfare Department initiated a training programme for women to improve and popularise traditional handicrafts. International donors have provided some financial assistance through local NGOs for training women in this area. This should be supported in the future.

# Annexes



## Annex 1: Data tables

### Housing and settlement:

**Table-1. Construction material used in Roofs in Mastung district (1998)**

Material Consumed In	Housing Units
RCC/RBC	407
Cement/Iron Sheets	829
Wood/Bamboo	18,066
Others	1,145

Source: Mastung District Census Report (1998)

**Table-2. Construction material used for outer walls in Mastung district**

Material	Housing Units
Baked Bricks/Blocks/Stones	1,767
Un baked Bricks/Earth Bound	16,198
Wood/Bamboo	1,587
Others	895

Source: Mastung District Census Report (1998)

### Climatic conditions in Mastung:

**Table-3. Average monthly rainfall and maximum and minimum temperature Kalat and Quetta stations – average of 13 years (1983-1995)**

Months	Avg. Rainfall Kalat	Avg. Rainfall Quetta	Max. T- Kalat	Min. T- Kalat	Max. T- Quetta	Min. T- Quetta
January	55	58.8	9.4	-3.8	11.3	-1.7
February	48	46.3	12.1	-1.9	13.1	-0.1
March	37	68.5	16.3	1.9	18.2	4.3
April	15	38.8	21.7	6.2	24.4	8.5
May	6	5.39	27.2	10.3	30.6	13.6
June	3	0.3	31.3	13.3	35.4	17.8
July	31	19.4	32.3	16.4	35.9	20.5
August	14	23.9	31.4	14.8	34.2	19
September	2	6.8	28.4	9.4	31.6	12.7
October	0	2.7	22.9	3.7	25.1	5.5
November	3	3.5	17.4	-0.9	20.7	1.7
December	19	33.8	12.8	-3.6	14.1	-0.6

Source: Pakistan Meteorological Department, Karachi (no additional information)

**Table-4. Month wise average rainfall in Quetta district for 2008 and 1961–2004**

Months	Mean Max (1961-04)	Mean Max (2008)	Mean Min (1961-04)	Mean Min (2008)
January	11.3	7	-2.3	-2.7
February	13.6	13.1	-0.6	-3.4
March	18.8	24.2	3.9	4.3
April	25.4	26.5	11.2	8.3
May	30.9	33.3	12.3	12.5
June	35.4	37.6	17	20.6
July	36.2	37.2	20.4	22
August	35.3	34.8	18.6	16.8
September	31.7	32.1	14.6	12.4
October	25.7	28.4	5	6.1
November	19.7	20.3	0.4	-0.3
December	14.3	16.5	-2	-1
Avg.	24.9	25.9	8.2	7.9

Source: Bureau of Water Resources, Development Statistics (2008-09)

**Table-5. Relative humidity, daily sunshine and ETo for Quetta district (1961-2004)**

Month	Relative Humidity (%)	Daily Sunshine (hrs)	ETo (mm/d)
January	58	6.3	2.39
February	55	7.3	3.23
March	51	7.6	4.77
April	43	8.4	7.04
May	33	10.7	9.79
June	28	9.9	10.82
July	34	9.5	10.46
August	35	9.4	9.19
September	32	9.5	8.14
October	32	9.7	6.11
November	41	7.6	4.11
December	50	7.5	2.74

Source: Water Requirements of Major Crops for Different Agro-climatic Zones of Balochistan (2006)



**Table-6. Average monthly wind speed data of district Quetta for 1961-2004**

Month	Wind speed
January	339
February	413
March	493
April	524
May	573
June	511
July	499
August	418
September	419
October	383
November	352
December	302
Average	435

Source: Water Requirements of Major Crops for Different Agro-climatic Zones of Balochistan (2006)

## Education:

**Table-7. Trend of enrolment of boys and girls in Mastung district 2008-09**

	Boys	Girls
Kachi	4,396	2,882
Pakki	2,549	1,691
2	2,111	1,288
3	1,684	1,038
4	1,394	829
5	950	631
6	756	382
7	701	321
8	624	319
9	421	254
10	432	273

Source: BEMIS (2008-09)

**Table-8. Education statistics of Mastung district**

Level	Gender	Education Institutions (2008-09) No.	Enrolment (2008-09) No.	Teaching Staff (2007-08) No.
Primary	Boys	201	8,459	339
	Girls	93	5,258	161
	Total	294	13,717	500
Middle	Boys	21	3,662	255
	Girls	11	1,844	135
	Total	32	5,506	390
High	Boys	11	3,897	238
	Girls	7	2,806	152
	Total	18	6,703	390
Total	Boys	233	16,302	832
	Girls	111	10,023	448
	Total	344	26,325	1,280
Private Schools	Male	2	48	0
	Female		104	7
	Total		152	7
Intermediate College (2007-08)	Male	0	269	0
	Female	1	240	18
	Total	1	509	18
Degree College (2007-08)	Male	1	68	41
	Female	0	111	0
	Total	1	179	41
Professional College (2008-09)	Male	1		
Cadet College				

Source: BEMIS (2008-09)

**Table-9. Comparison – enrolment in Mastung district**

Enrolment	2002	2008	%age change
Boys	14,807	16,302	10.10
Girls	7,618	10,023	31.57
Total	22,425	26,325	17.4

Source: BEMIS (2008-09)

## Health:

**Fig-10. Prevalent (priority) diseases reported in Mastung district for 2008**

Diseases	Under 1 yr	1-4 yr	Over 5 yr	Total
Diarrhoea	2,749	5,034	8,784	16,567
Dysentery	1,556	3,701	7,957	13,214
ARI	4,814	10,335	23,116	38,265
Fever	3,249	7,596	23,033	33,878
Cough	319	456	1,300	2,075
Dog bite	0	0	2	2
Scabies	84	446	1,734	2,264
Total-Priority Diseases	12,771	27,568	65,927	106,266
Total-All Diseases	13,763	35,812	158,970	208,545

Source: BHMIS (2008-09)

**Table-11. Number of patients affected by priority and all other diseases in Mastung district (2008)**

Diseases	Under 1	1 to 4	Cases 5 & Over	Total
Priority Diseases	12,771	27,568	65,927	106,266
All Diseases	13,673	35,812	158,970	208,455

Source: BHMIS (2008-09)

## Population:

**Table-12. 1998 and projected population in Mastung district**

Year	Population
1998	164,645
2001	178,000
2004	191,000
2011	222,000
2021	269,000

Source: District Census Report Mastung District (1998);  
National Institute of Population Studies Projections (2010)

## Water:

**Table-13. Surface and groundwater balance of Pishin Lora (in an average year)**

Billion m <sup>3</sup>	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 (2008)

## Forests:

**Table-14. Forests in Mastung district**

S. No.	Sand dune Plantation/ Forests	Area (acres)
<b>Sand dune plantations</b>		
1.	Shamsabad Sand Dune Plantation	5,500
2.	Pitha Bagh Sand Dune Plantation	435
3.	Band Shelter Belt Area	85
4.	Eidgah Sand Dune Plantation	50
5.	Pringabad Sand Dune Plantation	5, 600
6.	Teri Sand Dune Plantation	560
	<b>Subtotal</b>	<b>12, 230</b>
<b>Forests</b>		
1.	Sheikh Wasil PF	2, 120
<b>Total Forest and Plantation area</b>		<b>14, 350</b>

Source: Balochistan Forest & Wildlife Department (2010)

## Agriculture:

**Table-15. Area and fruit production in Mastung district (2008–09)**

Fruits	Area (ha)	Prod (Tonnes)	Yield (Kg/ha)
Almond	102	231	2406
Apple	7760	51793	9349
Apricot	2749	6152	11247
Grapes	1435	6745	9042
Peach	1047	5137	8167
Plum	945	7003	10208
Pear	10	65	6500
Pomegranate	1	12	12000
Cherry	80	129	2688
Pistachio	117	62	2296
Others	308	1740	5800

Source: Agricultural Statistics of Balochistan (2008–09)

**Table-16. Comparison of crops for the years 2007-08 and 2008-09**

	Area (ha)	Prod (tonnes)
Rabi Crops (2007-08)	13,906	44,820
Rabi Crops (2008-09)	7,277	28,211
Kharif Crops (2007-08)	18,008	133,683
Kharif Crops (2008-09)	17,500	158,506
Total (07-08)	31,914	178,503
Total (08-09)	24,777	186,717

Source: Agricultural Statistics of Balochistan (2007-2008 and 2008-09)

**Table-17. Area, production and average yield of rabi crops in Mastung district**

Crops	Area (ha)	Prod (tonnes)	Avg. Yield (kg/ha)
Wheat (07-08)	11,965	21,043	1,759
Wheat (08-09)	5,995	9,812	1,637
Barley (07-08)	53	71	1,340
Barley (08-09)	43	54	1,256
Cumin (07-08)	870	326	375
Cumin (08-09)	610	254	416
Masoor (07-08)	4	3	750
Masoor (08-09)	3	2	667
Vegetable (07-08)	593	8,432	14,219
Vegetable (08-09)	228	3,410	14,956
Sunflower (07-08)	66	72	1,091
Sunflower (08-09)	48	52	1,083

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



**Table-18. Area, production and average yield of all kharif crops in Mastung district (2007-08 and 2008-09)**

	Area (ha)	Prod (tones)	Avg. Yield (kg/ha)
Moong (07-08)	2	2	1,000
Moong (08-09)	2	2	1,000
Fruits (07-08)	14,532	78,976	5,435
Fruits (08-09)	14,554	79,069	5,433
Onion (07-08)	2,230	35,320	15,839
Onion (08-09)	2,004	40,080	20,000
Potato (07-08)	25	190	7,600
Potato (08-09)	12	175	14,583
Vegetables (07-08)	200	0	0
Vegetables (08-09)	147	1,043	7,095
Melons (07-08)	33	0	0
Melons (08-09)	29	342	11,793
Chillies (07-08)	15	0	0
Chillies (08-09)	13	18	1,385
Coriander (07-08)	22	12	545
Coriander (08-09)	16	9	563
Garlic (07-08)	4	28	7,000
Garlic (08-09)	3	21	7,000

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

**Table-19. Agricultural machinery in district Mastung (2008-09)**

	Govt.	Private	Total
T. Wells (Electric)	0	2,549	0
T. Wells (Diesel)	0	0	0
Tractors	3	378	381
Threshers	2	105	107

Agricultural Statistics of Balochistan (2008-09)

## Livestock:

**Table-20. Livestock population in Mastung district (2006)**

	No.
Sheep	466,894
Goats	334,906
Cattle	8,628
Asses	6,770
Camel	2,802
Buffalo	456
Mule	121
Horse	85
Poultry	218,682

Source: Balochistan Livestock Census (2006)

**Table-21. Cattle breeds and numbers in Mastung district (2006)**

	Male	Female	Total
Foreign/Cross Breed	720	2,300	3,020
Others	470	1,528	1,998
Bhag Nari	197	1,072	1,269
Kankraj	0	982	982
Lohani	0	314	314
Gabrali	20	244	264
Achai	172	78	250
Red Sindhi	90	71	161
Dhanni	0	157	157
Rojhan	40	40	80
Sahiwal	61	10	71
Thari	0	30	30

Source: Balochistan Livestock Census (2006)

**Table-22. Number of buffaloes by sex, age and breed in Mastung district (2006)**

Breed	Male	Female	Total
Others	20	283	303
Kundhi	54	34	88
Nili/Ravi	3	47	50
Azakhale	0	15	15

Source: Balochistan Livestock Census (2006)

**Table-23. Sheep breeds and numbers in Mastung district (2006)**

Breed	Male > 1 yr	Female > 1 yr	Young < 1 yr	Total
Balochi	11,280	71,010	49,593	131,883
Damani	759	18,125	10,707	29,591
Rakhshani	385	9,269	4,736	14,389
Kachhi	40	6,345	3,006	9,391
Harnai	445	3,491	1,994	5,930
Kaghani	30	476	233	739
Bibrik	20	607	51	678
Balkhi	91	223	273	587
Waziri	10	142	20	172
Lohi	0	81	81	162
Kooka	0	101	0	101
Buchi	10	51	20	81
Hasht Nagri	20	0	29	50

Source: Balochistan Livestock Census (2006)

**Table-24. Goat breeds and numbers in Mastung district (2006)**

Breed	Male > 1 yr	Female > 1 yr	Young < 1 yr	Total
Chappar	2,848	21,837	6,742	31,427
Barbery	927	4,145	1,028	6,100
Lehri	126	2,021	225	2,372
Teddy	197	1,294	210	1,701
Beetal	0	559	81	640
Pateri	305	121	72	498
Kamori	82	363	40	485
Jatan	0	339	9	348
Kaghani	9	90	244	343
Nachi	0	167	0	167
Daira Din Panah	0	99	0	99
Damani	0	48	0	48

Source: Balochistan Livestock Census (2006)

**Table-25. Sheep and goats by size of herd in Mastung district (2006)**

Size	Sheep	Goats
1-5	1,716	5,616
6-15	17,188	38,153
16-30	33,818	55,064
31-50	32,020	40,422
51-75	22,244	37,318
76-100	23,231	21,018
101-150	17,455	20,973
151-200	8,697	14,277
201-350	16,981	68,304
> 351	293,544	33,760

Source: Balochistan Livestock Census (2006)

**Table-26. Number of cattle by sex, age and size of herd in Mastung district (2006)**

Size	Male > 3yr	Female > 3 yr	Total > 3 yr	Male < 3 yr	Female < 3 yr	Total < 3 yr
01-02	110	728	838	344	102	446
03-04	121	899	1,021	171	81	252
05-06	-	218	218	10	10	20
07-10	61	863	924	279	157	436
11-15	271	560	831	45	62	107
16-20	-	392	392	0	0	0
21-30	238	1,020	1,258	76	97	173
31-50	15	146	161	59	278	337

Source: Balochistan Livestock Census (2006)

**Table-27. Milk cows and buffaloes in Mastung district (2006)**

Size	Milk Cows	Milk Buffaloes
01-02	940	-
03-04	697	-
05-06	444	-
07-10	579	-
11-15	741	-
16-20	392	-
21-30	506	263
31-50	-	-
> 50	1,214	-

Source: Balochistan Livestock Census (2006)

**Table-28. Buffaloes and calves by size of herd in Mastung district (2006)**

Size	Buffaloes > 3 yr	Calves < 3 yrs
01-02	35	0
03-04	50	20
05-06	0	0
07-10	0	0
11-15	0	0
16-20	0	0
21-30	263	0
31-50	79	8
> 50	0	0

Source: Balochistan Livestock Census (2006)

**Table-29. Number of sheep by breed in Mastung district (2006)**

Breed	Male > 1 yr	Female > 1 yr	Young < 1 yr	Total
Balochi	11,280	71,010	49,593	131,883
Damani	759	18,125	10,707	29,591
Rakhshani	385	9,269	4,736	14,389
Kachhi	40	6,345	3,006	9,391
Harnai	445	3,491	1,994	5,930
Kaghani	30	476	233	739
Bibrik	20	607	51	678
Balkhi	91	223	273	587
Waziri	10	142	20	172
Lohi	0	81	81	162
Kooka	0	101	0	101
Buchi	10	51	20	81
Hasht Nagri	20	0	29	50

Source: Balochistan Livestock Census (2006)

**Table-30. Goat improved breeds and their numbers in Mastung district (2006)**

Breed	Male > 1 yr	Female > 1 yr	Young < 1 yr	Total
Chappar	2,848	21,837	6,742	31,427
Barbery	927	4,145	1,028	6,100
Lehri	126	2,021	225	2,372
Teddy	197	1,294	210	1,701
Beetal	0	559	81	640
Pateri	305	121	72	498
Kamori	82	363	40	485
Jatan	0	339	9	348
Kaghani	9	90	244	343
Nachi	0	167	0	167
Daira Din Panah	0	99	0	99
Damani	0	48	0	48

Source: Balochistan Livestock Census (2006)



**Table-31. Veterinary coverage and other factors regarding sheep and goats in Mastung district (2006)**

Veterinary Coverage	Sheep	Goats
Vaccinated	138,238	197,337
Fallen Sick	33,864	55,392
Treated	33,035	52,217
Slaughtered On Eid-ul-Azha	5,380	7,691
Slaughtered On Eid-ul-Azha	4,231	5,839
Sold Out	9,931	16,315
Died	4,830	9,079
Purchased	5,604	10,601
Born	244,300	126,859

Source: Balochistan Livestock Census (2006)

**Table-32. Veterinary coverage and other factors regarding cattle and camel in Mastung district (2006)**

Veterinary Coverage	Cattle	Camel
Vaccinated	1,812	172
Fallen Sick	458	101
Treated	448	101
Slaughtered On Eid-ul-Azha	5	0
Slaughtered On Eid-ul-Azha	31	0
Sold Out	107	0
Died	486	1,123
Purchased	191	0
Born	983	101

Source: Balochistan Livestock Census (2006)

## Poultry:

**Table-33. Number of domestic poultry birds by size of flock in Mastung district (2006)**

Size	Cocks	Hens	Chicken	Total
1-10	2,084	11,116	2,174	15,374
11-25	10,469	44,553	60,910	115,932
26-50	5,322	34,142	35,753	75,217
51-75	253	3,827	2,854	6,934
76-100	142	2,024	1,253	3,419
100-200	117	1,419	176	1,712

Source: Balochistan Livestock Census (2006)

## Mines and Minerals:

**Table-34. Mining concessions and area granted in Mastung district (2009)**

S.#	District/Minerals	Prospecting Licences		Mining Leases		Total	
		Number	Acres	Number	Acres	Number	Acres
	<b>Total</b>	<b>20</b>	<b>58,970.52</b>	<b>1</b>	<b>6,663.55</b>	<b>21</b>	<b>65,634.07</b>
1.	Celestite	1	286.13	0	0	1	286.13
2.	Clay	1	230.41	0	0	1	230.41
3.	Fluorite	2	2,919.07	1	6,663.55	3	9,582.62
4.	Iron Ore	2	50,417.59	0	0	2	50,417.59
5.	Lime Stone	10	3,331.19	0	0	10	3,331.19
6.	Marble	4	1,786.13	0	0	4	1,786.13

Source: Balochistan Directorate General of Mines and Minerals (2010)

## Provincial Finance:

**Table-35. Actual PSDP allocation (original) for 2008-09, 2009-10 and 2010-11 for Mastung district (Rs. in million)**

	2008-09	2009-10	2010-11
Roads	97.019	42.235	37.304
Urban planning & dev.	-	92	48
Education	23.462	-	30
Health	-	-	30.5
Labour & Manpower	-	-	30
Environment	-	-	30
Culture	-	-	15
PHE	-	-	10
Irrigation	-	-	9.5

Source: Balochistan PSDP (2008-09, 2009-10 and 2010-11)

**Table-36. Actual PSDP allocation (original) 2010-11 for Mastung district (Rs. In million)**

	Rs. (Million)
Urban planning & dev.	48
Roads	37.304
Health	30.5
Education	30
Labour & Manpower	30
Environment	30
Culture	15
PHE	10
Irrigation	9.5

Source: Balochistan PSDP (2010-2011)

**Table-37. Actual Sector PSDP allocations (original) combined for 2008-09, 2009-10 & 2010-11 for Mastung district (Rs. In million)**

	Rs. (Million)
Roads	176.558
Urban planning & dev.	140
Education	53.462
Health	30.5
Labour & Manpower	30
Environment	30
Culture	15
PHE	10
Irrigation	9.5

Source: Balochistan PSDP (2008-09, 2009-10 and 2010-11)

**Table-39. Sectoral PSDP allocation (2008-09, 2009-10 and 2010-11) for Balochistan (Rs. In million)**

Sectors	2008-09	2009-10	2010-11
Roads	2,656.19	3,887	2150
Education	1,840.191	1,313.759	1,036.151
Fisheries	0	41	1,058
Social Welfare & Women Dev.	37.208	270	618.5
Health	272.142	183.575	175.38
Agriculture	90.602	170.461	193.834
PHE	91.381	138.634	140.339
Environment	51.482	164.227	30.1
Local Govt.	114.265	25.265	9.036
Power		20	115
PP&H	98.394	7	22.922
Mining	0	21	71.1
Livestock	17.422	20.284	5
Forestry	10	8	5
Irrigation	12.279	10	0
Labour & Manpower	8.194	10	0
Sports	-	-	15
Information Tech.	8.266	-	5

Source: Balochistan PSDP (2008-09, 2009-10, 2010-11)

## Annex 2: Vision 2030

**Economic Growth:** To build a nation whose development is measured by economic growth as well as quality of life enjoyed by its people.

**Society:** To evolve into a tolerant and productive society, which is at peace with itself and with the rest of the world, within a structure of sovereignty and security

**Rule of law:** To establish the rule of law as a bedrock principle impacting on all walks of life

**Role of the state:** To encourage freedom of enterprise and innovation in the market place together with state responsibility for the provision of basic services to all citizens, including education, health care, water and sanitation, shelter, and security under law

**Employment with special emphasis on women rights:** To make employment and employability, a central theme in economic and social policies, with special emphasis on the rights of women

**Poverty Reduction:** To eliminate absolute poverty and ensure social protection for the weak and the vulnerable

**Education:** To generate and absorb knowledge and harness technology for the good of all while promoting social sciences and humanities as an essential branch of knowledge;

**Economic stability:** To sustain an average growth of 7–8 per cent in the long term through effective investment and saving strategies while maintaining macro-economic 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 state and instruments of government in terms of participation, delivery of services, and good governance

**Demographic transition:** To maximise dividends from the demographic transition in the coming years, while avoiding the pitfalls

**Energy:** 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 unfavourable 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, 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 the gathering momentum in infrastructure and service sector

Source: Government of Pakistan, Planning Commission <<http://www.pc.gov.pk/chapterwise.html>> Accessed 9 October 2011

## Annex 3: Millennium development goals

### Goal 1: eradicate extreme poverty and hunger

Target 1.a: halve, between 1990 and 2015, the proportion of people whose income is less than \$1 a day

Target 1.b: achieve full and productive employment and decent work for all, including women and young people

Target 1.c: halve, between 1990 and 2015, the proportion of people who suffer from hunger

### Goal 2: achieve universal primary education

Target 2.a: ensure that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

### Goal 3: promote gender equality and empower women

Target 3.a: eliminate gender disparity in primary and secondary education, preferably by 2005, and at all levels of education no later than 2015

### Goal 4: reduce child mortality

Target 4.a: reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

### Goal 5: improve maternal health

Target 5.a: reduce by three-quarters the maternal mortality ratio

Target 5.b: achieve universal access to reproductive health

### Goal 6: combat HIV/AIDS, malaria, and other diseases

Target 6.a: have halted by 2015 and begun to reverse the spread of HIV/AIDS

Target 6.b: achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it

Target 6.c: have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

### Goal 7: ensure environmental sustainability

Target 7.a: integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources

Target 7.b: reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

Target 7.c: halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Target 7.d: by 2020, to have achieved a significant improvement by 2020 in the lives of at least 100 million slum dwellers

### Goal 8: develop a global partnership for development

Target 8.a: develop further an open, rule-based, predictable, non-discriminatory trading and financial system

Target 8.b: address the special needs of the least developed countries

Target 8.c: address the special needs of landlocked countries and small island developing states

Target 8.d: deal comprehensively with the debt problems of developing countries

Target 8.e: in cooperation with developing countries, develop and implement strategies for decent and productive work for youth

Target 8.f: in cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

Target 8.g: in cooperation with the private sector, make available the benefits of new technologies, especially information and communication

Source: United Nations Development Programme 2000; Millennium Development Goals <[www.un.org/millenniumgoals/goals](http://www.un.org/millenniumgoals/goals)> Accessed 6 October 2011



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