

Urban Policy Unit – Provincial Land Use Plan (PLUP) Planning and Development Department Government of Khyber Pakhtunkhwa

> Final Land Use Plan of District Mardan



MESSAGE FROM ADDITIONAL CHIEF SECRETARY PLANNING & DEVELOPMENT DEPARTMENT

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The Land Use Plan of District Mardan is a component plan of Provincial Land Use Strategy for Khyber Pakhtunkhwa. The plan at work is an in-depth study encapsulating all sectors of physical, socio-cultural, environment and economy in spatial context. The plan also takes into account issues and constraints related to Land Use Planning in the District and accordingly suggest a more harmonized balanced and sustainable use of land and other natural resources.

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Provincial Land Use Plan

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ABBREVIATIONS AND ACRONYMS

| <u>Term</u> | Description |
|----------------|--|
| ADB | Asian Development Bank |
| ADP | Annual Development Program |
| BHU | Basic Health Unit |
| Cantt | Cantonment |
| CIDA | Canadian International Development Agency |
| dB | Decibels (Unit of Sound) |
| EPA | Environmental Protection Agency |
| GIS | Geographical Information System |
| GT Road | Grand Truck Road |
| HHs | Households |
| Kms | Kilometers |
| КР | Khyber Pakhtunkhwa |
| DLUP | District Land Use Plan |
| M1 | Motorway Islamabad-Peshawar Section |
| MC | Municipal Corporation/Committee |
| NRM | National Reference Manual |
| MCC | Manual Classified Count |
| O-D Survey | Origin-Destination Survey |
| OFWM | On-Going Water Management |
| PCU | Passenger Car Unit |
| РЕРА | Pakistan Environmental Protection Agency |
| РНА | Provincial Housing Authority |
| ppm | Particles per Million |
| PVDA | Peshawar Valley Development Authority |
| R ² | Coefficient of Determination used in Regression Analysis |
| ROW | Right of Way |
| SME | Small and Medium Enterprises |
| SMEIDA | Small and Medium Industrial Development Authority |
| UC | Union Council |
| WHO | World Health Organization |

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND AND RATIONALE:

In the past, Master Plans of Cities/Towns in Khyber Pakhtunkhwa were prepared in isolation from their hinterland, which was a piecemeal and isolated effort, and thus did not achieve the desired results. The Provincial Government, taking cognizance of the situation, decided to carry out development of all areas of the province by adopting an integrated and holistic Land Use Planning approach.

Land Use Plan is envisaged as a policy document for an integrated, coordinated, systematic planning and uniform spread of development activities. It also aims at generating employment for the rural and sub-urban population reducing rural-urban migration. It would help in establishing hierarchy of settlements and development of satellite, intermediate, secondary and industrial towns as focal points for future to cater for the rural areas and small towns.

The Land Use Plan will help to induce a sustainable development, optimize exploitation of land and physical resources, enhancing provincial income, increase overall activity and balanced distribution of infrastructure and services. The Land Use Plan will be a tool to provide guidance to Provincial Government, Urban Policy Unit, District Governments and TMAs for undertaking integrated and coherent development programs.

1.2 PLUP INTRODUCTION:

- i. To provide broad framework for District Spatial Plans and to resolve inter-District planning issues.
- ii. To establish a planned hierarchy of settlements and an integrated and systematic growth of trunk infrastructure and services in the province.
- iii. To provide guidelines for the emerging developments corridors.
- iv. To suggest parameters for reducing migration to big urban centers.
- v. To determine a need for new towns at feasible location.
- vi. To provide guidelines for the proper development of rural areas.
- vii. To provide a broad guideline to the nation building departments/ agencies for undertaking integrated and coherent development program at the provincial level.

1.3 SCOPE AND OBJECTIVES OF DISTRICT LAND USE PLAN:

Planning has different levels such as national, provincial, regional, District and local. These are not necessarily sequential but correspond to the levels of government at which decisions about land use are taken. Planning at national level is more economic in nature, but at lower levels such as urban or local, spatial aspects become more prominent.

Different kinds of decision are taken at each level, where the methods of planning and kinds of plan also differ. For effective and rational decision-making Interaction between the different levels of planning in any planning process is required. The flow of information should

be in both directions. At each successive level of planning, the degree of detail needed increases, and so too should the direct participation of the local people. Planning at different levels needs information at different scales and levels of generalization.

At national level, planning is vastly concerned with allocation of resources and achieving some urban goals. legally national planning does not involve the actual allocation of land for different uses, but the establishment of priorities for projects of national level.

Regional planning deals with the efficient land-use placement of activities, infrastructure, and settlement growth across a larger area of land than an individual city or town. Under Regional Planning, areas covered and specific administrative set-ups vary widely from country to country. Thus, regional planning encompasses entire an administrable unit, or may be more than

District Land Use Plan deals with efficient placement of broad, District-level Land Uses and zoning for the sustainable growth of a District as a whole. It differs from the urban structure plans in many ways. A District can have more than one urban area and hundreds of villages and the District Plan has to consider these all. Besides, the nature of Land Uses at District level are not commonly found in an urban area, such as largescale agriculture, rangeland, forestry, livestock, fishery etc. As against District Plan, the focus in urban plans is identification of issues and solutions for Central Business District, neighborhood planning, urban municipal services etc.

Despite the above however, it is important that while preparing urban plan, it should establish linkages with the District Plan. Urban Plan should be prepared within the broad framework provided by the District Plan, such as future urban growth direction, conserving prime agricultural land, avoiding flood prone areas, considering broad road network proposed in District Plan etc.

one administrable unit. Regional Plan and District Plan both, however, are equally "regional" in nature. A 'region' in planning terms can be administrative or at least partially functional, and is likely to include a network of settlements, rural areas and other uses.

Urban Planning deals with the specific issues of city planning, and urban plans (Master plans or structure plans) are prepared within the broad realm provided by District Land Use Plan. It is concerned with the use of such parcel of land and provide a detailed framework to guide and ensure their orderly development.

In the lowest rung of Land Use Planning are local plans or action plans which are prepared within the framework of urban plans, just as urban plans or rural plans are prepared within the framework of District/Regional Plans.

1.4 PLANNING PARADIGM

In the traditional planning paradigm, usually separate spatial plans are prepared for urban and rural areas, while the District Land Use Plan of Mardan is a shift from the traditional planning paradigm where spatial plans for urban and rural areas were prepared simultaneously. The Land Use Plan principally emphasizes on two major planning techniques which are; projections according to existing scenarios encompasses the sectors of housing, infrastructure, transportation, commercial, industry and recreational activities and the analysis & proposals for such sectors to improve the living standards of populace of Mardan. The Land Use Plan provides both long term broad policy guidelines and short-term specific project proposals for cohesive development of the area. The implementation of the plan will reduce regional disparities and will ensure the balanced development of both urban and rural areas in the District.

1.4.1 SECTROAL COVEREAGE

The sectors covered in the Land Use Plan of Mardan are listed as under:

Urbanization and hierarchy of human settlement, Demography, Agriculture and livestock, Trade, Commerce and Industries, Mines, Minerals and Energy, Communication (Road, Rail and airways, postal services and Telegraphs), Health and Education, Tourism, Sports and Entertainment including historical and religious places, libraries, museum, zoo and open spaces, security, graveyards, Housing, Water (surface and ground water resources), District economy. For preparation of the District Land Use Plan of Mardan (2019-39) tall these sectors were thoroughly analyzed and mapped using modern techniques of GIS and Remote Sensing.

1.5 THE PROJECT AREA:

Mardan is bound by Malakand Division towards North-West, District Buner towards North-East, District Nowshera towards South-East, District Swabi towards East and District Charsada towards South-West. The District lies from 34° 05' to 34° 32' North latitudes and 71° 48' to 72° 25' East longitudes. The total area of the District is 1,632 square Kilometres. Mardan is the second largest city after the Peshawar in the Khyber Pakhtunkhwa Province.

Mardan District may broadly be divided into two parts, North-Eastern hilly area and South Western plain. The entire Northern side of the District is bounded by the hills.

The South-Western half of the District is mostly composed of fertile plain with low hills strewn across it. It is gradually accepted that this plain once formed the bed of a lake, which was gradually filled up by the load of the river flowing into from the surrounding hills. From the

foothills the plain runs down at first with a steep slope, which carried the rainwater to the lower levels and ultimately to the Kabul River.



Figure 1-1: District Mardan with Context of Peshawar Valley and KP

1.6 CLIMATE

1.6.1 Historical Perspective of Range and Monthly Distribution of Temperature

Mardan District has severe climatic conditions with hot summers and cold winters. Winter in Mardan starts in mid-November and ends in late March. The coldest months are December and January. The lowest minimum temperature recorded for the month of January is -4°C and the mean minimum temperature recorded for the month of January, the coldest month is 2.1°C. Summer months in District Mardan are May to September. The highest maximum temperature recorded is 49.5°C for the month of June and the mean maximum temperature is also recorded in the month of June, which is 40.2° C. The maximum temperature in summer generally surpasses 45 °C during the hottest month and the minimum temperature goes below 1 °C during the coldest month. Range and monthly distribution of temperature from the past 10 years (2000-2010) for District Mardan, is shown in Table 1.1

1.6.2 Monthly Distribution of Humidity

The average humidity in District Mardan is not very high. Under the influence of the western disturbance and monsoon rainfall it rises locally. The Maximum relative humidity ranges from

56% to 94%, while the minimum relative humidity ranges from 33 to 56 percent during the year. The monthly distribution of humidity shown in the following Table 1.1.

1.6.3 Prevailing Wind Direction Around the Year:

Wind is one of the most highly variable meteorological elements, both in speed and direction. It is influenced by a wide range of factors, from large scale pressure patterns to the time of day and the nature of the surrounding terrain. The maximum surface wind speeds vary during the year ranges from 32 to 94 knots, while the mean Wind speed during the year ranges from 1.7 to 7.6 Knots. The direction of the Wind is usually variable as clear from the following table. In the winter season the direction of the wind has mostly in SW, W and NW directions, where as in the summer season the wind direction is recorded also in SE and NE along with other directions. The following Table 1.1 show the mean wind speed and direction in District Mardan.

| Table 1-1: Climate of Mardan District ¹ | | | | | | | | | | | | | |
|--|---------|---------|---------|-------|----------|---------|-------|-------|---------|----------|----------|---------|--------|
| Parameters/Months | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
| Highest Max. | 26.5 | 29.5 | 34.1 | 42.5 | 47.5 | 49.5 | 46.1 | 43.5 | 39.5 | 38 | 32.5 | 27 | 39 |
| Lowest Min. | -1.5 | -1.5 | 3.5 | 7 | 12.5 | 15.5 | 19.5 | 20.5 | 14 | 0.5 | -0.5 | -4 | 8 |
| Mean Max Temp (C°) | 18 | 20.2 | 26.3 | 32.2 | 37.7 | 40.2 | 38.1 | 35.6 | 35 | 31.8 | 25.3 | 20.1 | 31 |
| Mean Min Temp (C°) | 2.1 | 5.9 | 10.9 | 15.5 | 20.7 | 24.5 | 26 | 25.2 | 21.7 | 14.6 | 7.4 | 3 | 15 |
| Mean Temp (C°) | 10 | 12.2 | 17.2 | 22.7 | 28.2 | 33.2 | 32.3 | 31 | 28.8 | 23.2 | 16.2 | 11 | 23 |
| Mean Rain Fall (mm) | 43.7 | 93.7 | 54.9 | 53.5 | 20.9 | 32.5 | 143.3 | 148 | 44.3 | 18.3 | 13.7 | 27.7 | 58 |
| Mean R/H %MAX | 90 | 86 | 80 | 69 | 56 | 56 | 69 | 78 | 78 | 83 | 89 | 94 | 77 |
| Mean R/H %MIN | 50 | 51 | 47 | 41 | 33 | 36 | 50 | 56 | 52 | 48 | 53 | 56 | 48 |
| Mean wind speed (knots) | 2.9 | 4.4 | 4.1 | 5.2 | 5.4 | 7 | 7.6 | 6.3 | 4.7 | 2.5 | 1.7 | 1.9 | 5 |
| Mean wind Direction | sw/w/nw | sw/w/nw | sw/w/nw | NW/NE | NW/NE/SE | NW/E/SE | NE/SE | NE/SE | NE/E/SE | NW/NE/SE | SW/NW/NE | sw/w/nw | NW |

1.7 GEOLOGY

Mardan District consist mainly of a north-eastern hilly part and south-western plain area. The plain area of Mardan is comprised of alluvial cover of hundreds of meters thickness while the mountainous area consists of the rocks of Shewa Shahbazgarhi. Which can be divided into Acidic and basic rocks. Acidic rocks are microporphyry, porphyritic granite, aegirine riececkite porphyry, riececkite gneiss. The acidic rocks are intruded by basic rocks such as metagabbro, metadolorite and local quartz monozonite. Minerals in the basic rocks include hastingsite,

¹ Metrological Department P.A.F Academy Risalpur, 2001-10.

clinopyroxene, orthopyroxene, biotite and epidote while the acidic rocks have orthoclase, plagioclase and ferromagnesian minerals. Along with acidic and basic rocks, the three types of microstructure observed in the area are i) deformation structure ii) recovery structure and iii) recrystallization structure. It can be estimated from the structure and texture that the rocks had undergone intense cataclization/and or mylonization in the past. The origin of Shewa Shehbazgarhi is of igneous nature. It was suggested that catacalsite and metagabbro can be dated to Precambrian times and subduction phenomena. However, the origination of gneisses microgranite could be related with intrusion of basic magma, or either to tectonic activity. The rocks classified of small outcrop south of Shahbazgarhi into acidic dykes, gneissose microgranite, metagabbro, lamprophyric dykes and cataclastic types. In the east of Mardan, Salkala Formation, Tanowal Formation and Ambela Granitic Complex are present towards Swabi District. Salkala Formation has sulfide mineral seems while Ambela Granite Complex is a batholithic mass comprising of granites, alkali granite, quartz syenites and basic dykes.



Map 1-1: Location Map of District Mardan

1.7.1 Geology of District Mardan²:

About 70% of District Mardan constitutes Quaternary Alluvium these are unconsolidated deposite of gravel, sand, silt and clay. The remaining 30% of District in constitute of Kashala, Nikanai Ghar and Saidu formation undivided from the Mesozoic Era and from the Paleozoic Era it has Marghuzar and Duma formation undivided, Shewa, Ambela and Warsak Complexes undivided and Paleozoic Rocks undivided.

Quaternary Alluvium: Unconsolidated deposite of gravel, sand, silt and clay.

Kashala, Nikanai Ghar and Saidu formation undivided: Kashala Fm comprises calc. Garnet schist, schistose marble, marbel and calcareous phylitie; Nikanai Ghar Fm consisting of calcite marble, dolomitic marble and minor phyllite; Saidu Fm comprising graphic phyllite and schist with minor calcite marble. Age to middle Mesozoic.

Marghuzar and Duma formation undivided: Comprises amphibolite hornblende schist, biotite schist, garnetiferous schist, green schist, schistose marble, phlogopite marble, dolomitic marble, tremolite marble and metapsammite. Age Premain to late Carboniferous.

Shewa, Ambela and Warsak Complexes undivided: The Shewa complex comprises alkaline microgranite and porphyry, intruded by dolorite. Ambela complex contain syenite, nepheline syenite, alkali granite and mnor carbonatite. Intruded by dolorite and tourmaline pegmatites. Age 279 to 315 Ma. The Warsak complex consist of microporphyry, porphyritic granite, riebeckite, granite gneiss and intruded by basic rocks.

Paleozoic Rocks undivided: Jafar Kandao fm; Argillite, limestone, argillaceous and calcareous quartzite. **Lowara Mena fm;** Phyllite and phyllitic slate with beds of fossiliferous limestone, carbonaceous shale and dolorite dykes. **Warsak Metamorphic complex;** Quartz mica schist, garnet mica schist, amphibolite schist with hydrothermal quartz veins.

² Extracted form Geological Map of N.W.F.P Pakistan 2006, Geological Survey of Pakistan.



Map 1-2: Geological Map of District Mardan³

³ Extracted form Geological Map of N.W.F.P Pakistan 2006, Geological Survey of Pakistan.

1.7.2 Seismic Conditions of Mardan District:

Regarding seismicity in the District, Mardan lies in Zone 2A of minor damage zone corresponding to PGA (Peak Ground Acceleration) value of 0.0667g to 0.1g. Small magnitude earthquake, less than 4.5 have occurred near the city of Peshawar, but no earthquake of magnitude greater than 5.0 has occurred in close vicinity of Peshawar and none has occurred within the Peshawar Valley.

Expected epicenters cannot be predicted at any particular place. However, earth quakes can occur at active fault/thrust lines because energy is continuously stored during the movements of earth along the fault/thrust lines. The only active faulting in the southern Peshawar basin is Uch-Khattak fault, above the Panjal-Khairabad Thrust (PKT) which is in area across the Attock-Cherat range. Therefore, this active fault could be the future (with no time frame) epicenters of earth quakes in this region.⁴

⁴ Final District Studies Report Peshawar (Resivsed) January, 2013.



Map 1-3: Seismic Zone of District Mardan⁵

⁵ Naqash, M. T., Matteis, G. D., & Luca, A. D. (2012). Critical overview on the seismic design of steel Moment Resisting Frames. 45th IEP Convention. ResearchGate.

1.8 ENVIRONMENT:

The high rate of industrialization, unplanned urbanization, and heavy load of transportation and retarded rate of awareness /education in masses generally caused increase in pollution of air, water and soil. Industry is the main source of pollution in Mardan like other cities. The marble industry is the major water consumer and polluter industry. Besides, the major source of pollution is the poisonous & hazardous emissions from sugar mills in District Mardan.

This section describes the environmental pollution particularly parameters of water, air and noise pollution. In order to take relative measurements of these parameters, the spot values of pollution indicators have been considered and compared with the permissible NEQs.

1.8.1 Air Quality

Air samples were tested at 29 different locations in Mardan. Table below shows the minimum, maximum and mean values of air parameters for 29 air samples for Mardan. Comparison with National Environmental Quality Standards (NEQs) for ambient air are also shown.

| S No | Daramatara | | NEOc | | | |
|--------|-----------------------------------|-------------------|------|-------|-------|------|
| 5.110. | Parameters | Units | Min | Max | Mean | NEQS |
| 1 | Carbon Monoxide (CO) | mg/m ³ | 2.0 | 8.5 | 4.6 | 10 |
| 2 | Nitric Oxide (NO) | ug/m ³ | 4.7 | 51.7 | 22.2 | 40 |
| 3 | Nitrogen Oxide (NO ₂) | ug/m³ | 69.6 | 150.4 | 113.6 | 80 |
| 4 | Sulfer Dioxide (SO ₂) | ug/m³ | 21.5 | 68.1 | 39.2 | 120 |
| 5 | Particulate Matter | ug/m ³ | 40.0 | 80.0 | 55.7 | 15 |
| | (PM _{2.5}) | | | | | |

| Table | 1-2: | Air | Qua | lity |
|-------|------|-----|-----|------|
|-------|------|-----|-----|------|

Comments

- The mean value of CO level at all sampling points of Mardan city is within the NEQs limits. Individual values at some locations are higher than NEQS limits. High vehicular traffic concentration at these points may be the main reason. The main source of CO emissions are vehicles. Those locations are following:
- College Chowk Bicket Gunj
- Bazar Katlang Chungi
- The mean value of NO₂ is above NEQ_s limits. When the NO₂ exceed from a certain level can cause lungs irritation and weaken the body's defense against respiratory system and assists in formation of photo chemical smog.
- The PM_{2.5} level at all sampling points exceeded the NEQ_s level. The biggest impact of particulate air pollution on public health is understood to be from long-term exposure to PM_{2.s} (10-15 years), which increases the age-specific mortality risk. Exposure to high concentrations of PM_{2.s} can also exacerbate lung and heart disease.

1.8.2 Drinking Water

Sixty-five drinking water samples were collected from Mardan. For each sample 25 different quality parameters were tested. The results of 65 drinking water samples are shown in the Table and their statistical analysis is also shown in the same table.

| Table 1-3: Mean Results of 65 Drinking Water Samples for Mardan | | | | | | | |
|---|----------------------------|-----------|------------|------------|------------|------------|--|
| Sr. Parameters | | Units | | NEOs | | | |
| No. | Min | | Max | Mean | NEQS | | |
| 1 | рН | | 7.29 | 8.77 | 7.92 | 6.5-8.5 | |
| 2 | TDS | mg/L | 225 | 944 | 448.80 | <1,000 | |
| 3 | Temp | | 11.9 | 25.1 | 18.75 | | |
| 4 | Electrical Conductivity | uS/cm | 450 | 1857 | 898.32 | | |
| 5 | Taste | | Acceptable | Acceptable | Acceptable | Acceptable | |
| 6 | Odour | | Acceptable | Acceptable | Acceptable | Acceptable | |
| 7 | Color | TCU | ٢15 | ،15 | (15 | | |
| 8 | Turbidity | NTU | 0.04 | 3.45 | 0.56 | ۶، | |
| 9 | NH ₄ | mg/L | 0.003 | 0.09 | 0.03 | | |
| 10 | NO ₂ | mg/L | 0.01 | 0.35 | 0.08 | ‹3 | |
| 11 | NO ₃ | mg/L | 0.8 | 58 | 11.10 | ≤50 | |
| 12 | Ca Hardness | mg/L | 54 | 390 | 167.83 | <500 | |
| 13 | Chlorides | mg/L | 1.2 | 242.4 | 40.71 | <250 | |
| 14 | Sulphate | mg/L | 11 | 233 | 68.14 | | |
| 15 | Iodine | mg/L | BDL | BDL | BDL | | |
| 16 | тос | mg/L | 0.18 | 0.32 | 0.24 | | |
| 17 | Flouride | mg/L | 0.021 | 1.56 | 0.14 | ≤1.5 | |
| 18 | As | mg/L | 0.0004 | 0.01956 | 0.00 | ≤0.05 | |
| 19 | Fe | mg/L | 0.1072 | 1.1982 | 0.64 | | |
| 20 | Mg | mg/L | 11.32 | 97.385 | 28.45 | | |
| 21 | Mn | mg/L | 0.0007 | 0.0046 | 0.00 | ≤0.5 | |
| 22 | Na | mg/L | 12.75 | 128.816 | 33.97 | | |
| 23 | К | mg/L | 0.91 | 19.878 | 6.12 | | |
| 24 | ТС | MPN/100ml | 0 | 90 | 9.32 | 0 | |
| 25 | FC | MPN/100ml | 0 | 26 | 2.26 | 0 | |

Comments

- The TDS at all sampling points is within the NEQS limit.
- The Turbidity and NO₂ at all sampling points are within the NEQS limit.
- The mean level of NO₃ at all sampling points is within the NEQS but at some location level is exceeded. These are locations are:
 - Neher Chowk, Fazal Colony
 - Bazar-e-Shaheedan site 2
- Calcium hardness at all sampling points is within the NEQs limit.
- Chlorides are also within the NEQs at all sampling points.
- The mean value of fiouride is within the limit except one location, which is Akbar Colony
- The mean value of Arsenic is within the NEQs
- The mean value of Manganese is within the NEQs
- At many places FC was detected. It shows fecal contamination. Hence bacteriological quality is not as per NEQS.

Impacts of high levels of Water pollutants

• Total Dissolved Solid (TDS) is a measurement of inorganic salts, organic matter and other dissolved materials in water. The amount of TDS helps us to classify the water i.e fresh water, brackish water, saline water or hyper saline water. There are no health impacts of high TDS, however, due to bitter taste it is difficult to drink.

Turbidity

• High turbidity can significantly reduce the aesthetic quality of water. It has no health impacts.

Nitrogen Dioxide (NO₂)

- High concentration of nitrate can cause a disease "Methemoglobinemia⁶"
- High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women.

Calcium Hardness

• There are no health-based impacts of higher Ca hardness.

Chlorides

• Higher chlorides impart taste to drinking water. There are no health-based impacts.

Fluorides

• Higher levels of fluorides (> 1.5 mg/L) result is mottling of teeth and make the teeth brittle.

⁶ Methemoglobinemia is a blood disorder in which an abnormal amount of methemoglobin, a form of hemoglobin is produced. Hemoglobin is the protein in red blood cells that carries and distributes oxygen to the body.

lodine

• Exposure to high iodine concentrations in drinking water has detrimental effects on the intelligence of children.

Arsenic

- Arsenic in drinking water causes bladder, lung and skin cancer, and may cause kidney and liver cancer.
- Arsenic harms the central and peripheral nervous systems, as well as heart and blood vessels, and causes serious skin problems.

1.8.3 Noise Level:

The noise levels at different sampling points in Mardan are given in the Table 1-4 below:

| Table 1-4: Noise Level of Different Samples for District Mardan | | | | | | |
|---|------------------------------|---------------|--------------|--|--|--|
| S.No. | Location | Noise (dB(A)) | NEQs (dB(A)) | | | |
| 1 | Rashakai Chowk | 63.0 | 65 | | | |
| 2 | Nawa Kali Chowk | 70.0 | 65 | | | |
| 3 | Mahabat Abad Phatak | 68.0 | 65 | | | |
| 4 | Sheikh Mattoon | 65.0 | 65 | | | |
| 5 | Naway Adda Chowk | 64.0 | 65 | | | |
| 6 | Charsadda Chowk | 60.0 | 65 | | | |
| 7 | Dosehra Chowk | 61.0 | 65 | | | |
| 8 | College Chowk | 73.0 | 65 | | | |
| 9 | Bicket Gunj Bazar | 70.0 | 65 | | | |
| 10 | Pakistan Chowk | 68.0 | 65 | | | |
| 11 | Mir Afzal Khan Bazar | 65.0 | 65 | | | |
| 12 | Shaheedan Bazar | 66.0 | 65 | | | |
| 13 | Topu Chowk | 71.0 | 65 | | | |
| 14 | Bank Road | 69.0 | 65 | | | |
| 15 | Malakand Chowk | 66.0 | 65 | | | |
| 16 | MuqamChowk | 77.0 | 65 | | | |
| 17 | Katlang Chungi | 70.0 | 65 | | | |
| 18 | New Sarak Bazar | 72.0 | 65 | | | |
| 19 | Baghdada Bazar | 69.0 | 65 | | | |
| 20 | Shankar Main Rd Chowk | 70.0 | 65 | | | |
| 21 | Naher Chowk & Par Hoti Chowk | 69.0 | 65 | | | |
| 22 | Par hoti chowk | 65.0 | 65 | | | |
| 23 | Toru Chowk | 71.0 | 65 | | | |

| Table 1-4: Noise Level of Different Samples for District Mardan | | | | | | |
|---|-------------------|---------------|--------------|--|--|--|
| S.No. | Location | Noise (dB(A)) | NEQs (dB(A)) | | | |
| 24 | Kashmir Manday | 69.0 | 65 | | | |
| 25 | Gaju Khan Bazar | 62.0 | 65 | | | |
| 26 | Police Line Chowk | 72.0 | 65 | | | |
| 27 | Khwaja Ganj Bazar | 68.0 | 65 | | | |
| 28 | Shamsi Rd | 68.0 | 65 | | | |
| 29 | Chato Chowk | 71.0 | 65 | | | |
| | Mean 68.0 | | | | | |
| | Minimum | 60.0 | | | | |
| | Maximum | 77.0 | | | | |

Remedies/Control Measures:

Following remedies must be applied:

- Proper legislation on roads to use EPA approved vehicles
- Avoid horns especially near school, colleges, hospitals etc.
- Construction of sound-proof rooms for noisy machines in industrial and manufacturing installations must be encouraged.
- Noise producing industries, airports, bus and transport terminals and railway stations to be sited far from where living places.
- Vegetation (trees) along roads and in residential areas is a good way to reduce noise pollution as they absorb sound.

1.8.4 Industrial Pollutants Areas

There are different types of industries such as Marble, Sugar, tobacco and medicine etc. These industries are mostly situated in Nowshera-Mardan road. The effluent of these industries contributes to different types of pollution such as air, noise, water. Most of the marble factories are located on the bank of Nowshera-Mardan road. The white powder of marble factories discharges directly to the canals without any proper treatment procedure. Waste water of marbles and chips factories contain harmful chemical which directly effects aquatic life, pollute the surrounding environment for residence, and poison the agriculture land which is irrigated through these canals.

The Sugar and Tobbaco industries situated near to residential and commercial areas which causes air and water pollution. There is no proper discharge pattern of effluents from these industries. The bad smell of these effluent can irritate the local peopal and cause diseases.



Map 1-4: Environment Quality Samples Map of District Mardan

1.8.5 Constraints:

In Mardan, the increased number of vehicles without proper testing, factories established without proper planning, smoke and dust on the roads has created an atmosphere which is neither acceptable to human life nor climate friendly. The industrial units are scattered over a vast area with greater concentration in and around the city. Industrial emissions from chimneys are also a source of air pollution in these areas. The increased number of brick kilns situated in the province particularly in Mardan has almost doubled the level of air pollution mainly due to the use of large amount of unauthorized fuel. Massive burning of solid waste and domestic activities are also contributing air pollution. Some specific environment-related constraints are:

- i. Small and medium-size industries which rely on urban locations to maintain profitability operating illegally and are making it more difficult to control them for maintaining labor safety and environmental standards.
- ii. Banning new industries in urban areas exacerbates the phenomenon of increasing number of under or unemployed workers forced into the informal sector.
- iii. Shortage of funds required for taking curative actions required is the main constraint to reduce pollution
- iv. Urban based workers have to be transported to and from their homes to far-flung industrial sites therefore to eliminate the potential automobile pollution the industrial zones need to be provided with the residential blocks for the workers
- v. Training and measuring equipment need to be provided to highway police to enable them to enforce smoke emission standards.
- vi. The problems caused by the untreated discharge of effluent from the existing major industrial concerns ask for an efficient effluent collection system and a common effluent treatment plant for the industrial estate.
- vii. One of the major issues is to adopt a carrot and stick policy to educate people and investors and institutions to reduce waste and pollution, and at the same time to levy fines on those who violate environmental regulations and pollute environment.

1.8.6 Government Programme (ADP 2016-2017)

On-Going Programs:

- Establishment of three Divisional Offices of EPA Khyber Pakhtunkhwa, at Mardan, Kohat and Bannu.
- Environmental Trainings for line departments at provincial and District levels.
- Establishment of Climate Change Cell for Multilateral Environmental Agreements in EPA.
- Updation of Revised Environmental Profile of KP.
- Promotion of Applied Research on Environment through Academic Institutions in Khyber Pakhtunkhwa
- Activity Based Capacity Building of EPA in Khyber Pakhtunkhwa
- Strengthening of EPA Monitoring Through Geographic Information System (GIS).

1.8.7 Existing Laws and Policies

Before the Eighteenth Amendment was enacted, the subject of "environmental pollution and ecology" appeared in the Concurrent List, allowing both federal and provincial assemblies to frame laws governing natural resources and environmental management. With the enactment of the Eighteenth Amendment, the Concurrent Legislative List has been abolished. As a result, the provinces now have exclusive jurisdiction to frame laws on the environmental pollution and ecology.

One immediate consequence of this new state of affairs is that the federal PEPA 1997 now applies only to the Islamabad Capital Territory and those areas not included in any province, but autonomous administration unit.

Updation of Environmental Profile of Khyber Pakhtunkhwa (KP), 2017

Government of Khyber Pakhtunkhwa (KP) through consultants undertook "Updation of Revised Environmental Profile of Khyber Pakhtunkhwa compiled in year 2008". The objective was to document the current state of the environment. The Report includes both primary and secondary data. For primary data, five environmental parameters were selected including air, drinking water, and Noise).

The report briefly explains the significance and need of updation of environmental profile, and locations in each of the seven divisional headquarter from where primary data was collected. International guidelines and practices, were adopted during sampling and testing. Test results obtained were compared with National Environmental Quality Standards (NEQS). These have already been explained in earlier section.

Khyber Pakhtunkhwa Environmental Protection Act, 2014

Following the Eighteenth Amendment the Khyber Pakhtunkhwa EPA noted that proper procedures are required for implementing the environmental policy and pollution control protocols. Accordingly, Khyber Pakhtunkhwa Environmental Protection Act was enacted in 2014. The salient features of the Act are:

- The Act provides for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development in Khyber Pakhtunkhwa
- Ensure enforcement of the Khyber Pakhtunkhwa Environmental Quality Standards;
- Establish standards for the quality of the ambient air, water and land, by Notification;
- Establish systems and procedures for surveys, surveillance, monitoring, measurement, examination, investigation, research, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment in various sectors;
- Carry out and conduct environmental monitoring and implementation of environmental approvals provided in this Act;
- Issue licenses for the consignment, handling, transport, treatment, disposal, storage, handling or otherwise dealing with hazardous substances;
- Certify laboratories as approved laboratories for conducting tests and analysis and one or more research institutes as environmental research institutes for conducting research and investigation for the purposes of this Act;
- Identify the needs for and initiate legislation in various sectors of the environment;
- Provide guidance and technical assistance to the relevant Federal and Provincial Government Agencies in the management of natural and environmental incidents and disasters;
- Render advice and assistance in environmental matters including such information and data available with it as may be required for carrying out the purposes of this Act:
- Promote public education and awareness of environmental issues through mass media and other means including seminars and workshops;
- Enter into contracts, execute instruments, incur liabilities and do all acts or things necessary for proper management and conduct of its business;

1.8.8 Recommendations:

- i. Zoning for various urban, industrial and commercial land uses should be enforced to improve air quality and to avoid conflicts between different sectors.
- ii. The organic farming should be promoted to reduce surface water pollution and to maintain the life of the soil for the immediate and future generations.
- iii. The process of establishing land use zone should incorporate through consultations with all the affected communities and stakeholders otherwise may likely to have serious social and economic constraints.
- iv. Industrial zones must have labour colony to accommodate the workers coming from other cities. This will reduce the use of automobile and the congestion arised from it use.
- v. Land use legislation and fiscal policy are the main tools to address industrial and residential sources of air pollution.
- vi. Coordination amongst Provinces: Guidelines issued by respective Provincial EPA for specific sectors should be assessed, amended if necessary, and adopted as uniform standard policy.
- vii. Requirements for the implementation of multilateral environmental agreements must be included in the provincial environmental laws, and a mechanism for report development.
- viii. Procedures need to be simplified; clarified or refined (for example, procedures related to environmental protection orders (EPO), environmental impact assessment (EIA), Environmental Protection Agencies (EPA).
 - ix. Role of police, enforcement responsibility of EPA officers.
 - x. Penalties need to be re-assessed and revised based on the environmental impact of offences rather than the type of offence. The purpose of administrative penalties needs to be clarified and delegated solely to the provinces.
- xi. Environmental quality and emissions standards must be uniform, and no variations should be permitted with respect to geographical area unless it is to strengthen the standards. The relevant provisions must be amended.

1.9 FLOODS

Almost every year the frequency of monsoon rains increases, because of this the province of Khyber Pakhtunkhwa suffers from more severe flash floods. Floods of 2010 are among the worst disasters that have hit Pakistan in recent history. The Province of Khyber Pakhtunkhwa was the most affected. The deadly water surge started from the mountainous North while the peculiar terrain of Province gave this surge an enormous force which ultimately resulted in total destruction of whatever stood in its path. The damage due to 2010 floods in District Mardan is presented in the table below:

Flash floods tend to occur more in recent years owing to changing weather pattern and are characterized by near absence of early warning cover to warn vulnerable communities.

Around 31,340 acres of area of District Mardan has been affected due flood. Out of which 12,348 acres is highly flood prone area

| Table 1-5: Impact of Flood in Mardan District ⁷ | | | |
|--|--------|--|--|
| No. of affected Villages | 182 | | |
| Total House hold in affected area | 36,145 | | |
| Houses destroyed | 1,629 | | |
| Houses damaged | 2,650 | | |
| HH in need of assistance | 6,541 | | |
| Population in need of assistance | 61,600 | | |
| Total affected Livestock Population | 31,949 | | |
| a. Dead | 164 | | |
| b. Affected | 31,785 | | |

while 18,992 acres face low level flood. It has affected around 7 Union councils, which includes Shahbaz Garhi, Garyala, Charguli, Bala Garhi, Mohib Banda, Kot Daulat Zai and Garhi Daulat Zai.

⁷ Initial Assessment of Flood affected areas in Khyber Pakhtunkhwa (KP) July –August 2010



Map 1-5: Flood Map of District Mardan

1.9.1 Short-Term and Long-Term Plans

Reasons and Justifications

The shortfalls in 2010 Flood Response were the following:

- Inadequate flood protection arrangements
- Inadequate flood warning arrangements
- Encroachments
- Lack of preparations and Coordination (Provincial Departments and Districts)
- Non-observance of Early Warning by General Public
- Reduced Water Storage and Regulatory Capacity.

To overcome or minimize the damages caused by floods, the following short term and long-term measures are suggested⁸:

Short-Term Plans

- i. Early warning system through WAPDA and Irrigation Department regarding flooding.
- ii. Pakistan Metrological Department flood forecasts/warnings and weather forecasts.
- iii. Flood warning by the Local Administration and community-based mechanisms.
- iv. Removal of Encroachments.
- v. Re-construction of irrigation channels.
- vi. Repair and maintenance of Drainage System.
- vii. Restoration of Damage flood protection works.
- viii. Improvements in flood mitigation measures over River Swat and its tributaries.

Long-Term Plans:

- i. To receive real time information about water levels, a network of community level organizations and community volunteers be organized in the catchment areas.
- ii. Arrangements for quick broadcasting of flood warning by Revenue Department and Irrigation Department.
- iii. Establishment of observation posts by Irrigation Department in the likely flood areas.
- iv. Civil Defense Staff and volunteers should be made fully functional.
- v. Evacuation centers should be earmarked with the assistance of education department.
- vi. For sensitive buildings and record, each Department should prepare its own Standard Operating Procedures.
- vii. Health Department should formulate comprehensive health response plans.
- viii. Works and Services Department should keep strict vigilance on the roads and bridges and initiate necessary measures whenever required.
- ix. The encroached areas, particularly along waterways and flood-prone areas should be identified and requisite measures taken for their removal.

⁸ Source: Monsoon Contingency Plan – 2011, Provincial Disaster Management Authority, KP, June, 2011, Page 17.

1.9.2 Integrated Approach in Flood Management

- i. Flood management plays important role in protecting people and their socio-economic activities in flood plains from flooding. The development in the river basins has been closely linked with successful implementation of flood control projects. In the past, exposure to flood risks has been handled largely through structural measures. However, strategies that rely largely on structural solutions unfortunately alter the natural environment of the river, which may result in loss of habitats, biological diversity and ecosystem productivity.
- ii. Further, structural approaches are bound to fail the moment an extraordinary or unforeseen event occurs. These traditional approaches, where the risks are merely transferred spatially, are likely to generate conflicts and inequities. Environmental degradation has the potential to threaten human security, including life and livelihoods, and food and health security. This realization has recently led to calls for a paradigm shift from traditional flood management to Integrated Flood Management. Need more comprehensive detail to explain the author point of view.
- iii. Integrated Flood Management (IFM) is a concept that addresses issues of human security against flood risks and sustainable development within the framework of Integrated Water Resources Management (IWRM). Such an integrated approach to flood management can play an important role in sustainable development and poverty reduction. Integrated Flood Management aims at minimizing loss of life from flooding while maximizing the net benefits derived from flood plains.

1.9.3 Flood Management

Surface water storages (large, medium & small dams), flood embankments and flood flows retention basins, is a traditional approach to attenuating flood peaks. Water storage attenuate floods by slowing the rate of rising waters, by enhancing the time it takes for the waters to attain high level and evade the synchronization of flood peaks, hence, lowering the peak level in the downstream areas. Such storages reservoirs serve multiple purposes i.e. storage of water mainly for irrigation water supplies, hydropower generation including flood management. Storage Reservoirs have to be used in an appropriate combination with other structural and non-structural measures.

Seemingly self-evident, but regularly overlooked in practice, is the need to make flood management a part not only of the planning and design, but also of the operation of reservoirs. Releases of surplus water from reservoirs at the time, when rivers in the downstream areas experiencing high flood flows can create risks, therefore, careful operation of reservoirs can minimize the loss of human life and damages to property due to properly managed releases. In this context transboundary cooperation is indispensable.

Flood embankments are most likely to be appropriate for floodplains that are already intensely used, in the process of urbanization, or where the residual risks of intense floodplain use may be easier to handle than the risks in other areas i.e. (Landslides or other disturbances).

Land-use control is generally adopted where intensive development on a particular floodplain is undesirable. Providing incentives for development to be undertaken elsewhere may be more effective than simply trying to stop development on the floodplain. Where land is under development pressure, however, especially from informal development, land-use control is less likely to be effective. Flood protection or construction of houses at high elevation is most appropriate where development intensities are low and properties are scattered, or where the warnings times are short. In areas prone to frequent flooding, protection of the infrastructure and the communication links from floods can reduce the debilitating impacts of flood on the economy.

Flood Forecasting & issuance of timely warnings are complementary to all forms of intervention. A combination of timely, clear & accurate warning messages with a high level of community awareness gives the best level of preparedness for self-reliant action during floods. Public education program/awareness campaign is crucial to the success of warnings intended to preclude a hazard from turning into a disaster. Evacuation is an essential constituent of emergency planning, and evacuation routes may be upward into a flood refuge at a higher elevation or outward, depending upon the local circumstances. Outward evacuations are generally necessary where the depths of water are significant, where flood velocities are high and where the buildings are vulnerable. Successful evacuations require planning and awareness among the population of what to do in a flood emergency. Active community participation in the planning stage and regular exercises to assess the viability of the system help ensure that evacuations are effective. The provision of basic amenities such as water supply, sanitation and security in areas where affectees gather is particularly important in establishing a viable evacuation system.

The floods may be managed through the following actions by different Departments/agencies⁹:

| Table 1-6: Department-wise Flood Management Measures Required | | | |
|---|--|--|--|
| Departments | Flood Management Measures Required: | | |
| Irrigation Department | Establishment of Flood Emergency Cell Encroachments to be removed with the assistance of DCO, TMA, and C&W Department. | | |
| Communication and Works Department. | Establishment of Flood Emergency Cell When required, available machinery should be prepositioned in vulnerable areas. | | |
| Transport Department | When needed, Transport Department should coordinate for evacuation of affected population in an orderly manner. The Regional Transport Authorities should coordinate with respective DCOs for needful arrangements. | | |
| Health Department | When required, the Department should establish a Health Emergency Preparedness and Response Cell. The Department should carry out detailed planning with District officials; and District level health plans should be in place well before the monsoon season. | | |
| Food Department | • The Department should keep a stock of wheat for population that may be affected by floods. | | |

⁹ Source: Adapted from: Monsoon Contingency Plan – 2011, Provincial Disaster Management Authority, KP, June, 2011.

| Table 1-6: Department-wise Flood Management Measures Required | | | |
|---|---|--|--|
| Departments | Flood Management Measures Required: | | |
| Information Department | FM radio stations should be established for advance warnings and to sensitize the public as soon as flood warnings are received. These stations should guide the public about nearby safer places, food stuff, health care facilities, health tips and other precautionary measures. The Department should also arrange press briefings/press conferences. | | |

1.9.4 Constraints and Recommendations

There are many lessons to learn from the flood catastrophe in Pakistan and especially in KP. Some of the vital constraints include:

- i. Lack of attention to watershed management. Massive deforestation had taken place in KP, resulting in increased surface runoff and siltation in major reservoirs;
- ii. Non-professional flood management by provinces. Machinery, adequate stone reserve stock and sand bags etc, at vulnerable sections of flood embankments were not available. Evacuation routes, emergency shelters, war rooms were not properly planned;
- iii. Lack of capacity of NDMA and PDMAs
- iv. Inadequate budget allocation for maintenance of existing flood protection infrastructures and new flood works;
- v. Institutions at Provincial and District levels were not adequately prepared to cope with such unprecedented floods in the context of global climate changes.

Mardan District administration should take measure to deal with disaster and protect people from future catastrophic flood disasters and increase the resilience of infrastructure, economies and communities including better emergency warning and evacuation systems, better flood protection for key infrastructure and plans to help communities recover once the waters recede. To prevent future catastrophic flood disasters, the following recommendations are made:

- i. Identification of flood release channels/escape channels to desert areas/off channel storages that would provide major reduction in flood peak discharge in main rivers.
- ii. Flood Plain Mapping/Zoning all along the flood prone water bodies and its tributaries for restricting/prohibiting by law permanent settlements in high and medium flood risk areas (Districts to enact laws);
- iii. Review and revision of the design criteria and discharge capacities of bridges/ communication infrastructure and flood protection bunds keeping in view the bench marks of 2010-floods;
- iv. Identification of low flood risk areas for future cities, towns and villages, industrial areas etc.
- v. Mutual support insurance system on provincial-wide basis to support recovery for infrastructure and affectees.

vi. Public awareness and capacity development of the citizens through DRR (Disaster Risk Reduction) Plan.

1.10 WATER RESOURCES

Water is the life blood of the planet and of critical importance for all socio-economic development. Need to be defined in a correct way. Water is centered to human need equitable growth and development. It is one of the key drivers of sustainable economic growth through contribution to activities such as agriculture, manufacturing, mines, energy and transportation. It contributes to social activities such as productive use of water within the households (poverty alleviation), water for drinking, Sanitation and health. It should therefore be managed in a manner that is sensitive to and supportive to the many competing demands that is place on it. Further, the management activities should not compromise the requirement of the future as well as ecological requirements. Based on these elements water should be center to the integrated planning and development processPoint is not clear. (Confrence, 2012)

1.10.1 Water Resources in District Mardan

Mardan District may broadly be divided into two parts, North-Eastern hilly area and south western plain. The entire Northern side of the District is bounded by the hills. In the District, the highest points in these hills are Pajja or Sakra, 2056 meters high and Garo or Pato, 1816 meters high. The southwestern half of the District is mostly composed of fertile plain with low hills strewn across it. It is gradually accepted that this plain once formed the bed of a lake, which was gradually filled up by the load of the river flowing into from the surrounding hills.

From the foothills the plain runs down at first with a steep slope, which carried the rainwater to the lower levels and ultimately to the Kabul River.

The main source of irrigational water in Mardan District is the canals; the upper Swat canal irrigates most part of the District and lower Swat canal irrigates south-western part of the

| Table 1-7: Canals in Mardan District | | | | |
|--------------------------------------|---------------------|-------------------------|--|--|
| Name of water Body | Discharge Cusecs | Length in Kilometers | | |
| Main Canal | 949 | 6.66 | | |
| Disty No 7 | 25 | 4.27 | | |
| Disty No 8 | 454 | 21.19 | | |
| Koragh Branch | 94 | 14.96 | | |
| Sheikh Yususf Minor | 32 | 5.78 | | |
| Maho Dheri Minor | 28 | 4.53 | | |
| Disty No 9 1, 2 &3 | 535 | 44.17 | | |
| Kalpani Disty (KD) & 1 & 2 | 257 | 33.75 | | |
| Total Discharge 2354 Cusecs | | | | |

District. The other sources are tube wells and lift irrigation (DCR, 1998). The main drainage system comprises of surface drains which also provide water for irrigation; particularly the Kalpani Nullah, and eight canals, and tube wells which draw ground water from the Aquifer (Table 19.1). The aquifer is fed and recharged by the rainwater close to the hills.

Generally, streams flow from north to the south. Most of the streams drain into Kabul River. Kalpani, an important stream of the District Mardan rises in the Baizai and flowing southwards join Kabul River. Other important streams which join Kalpani are Baghiari Khawar on the west and Muqam Khawar, coming from Sudham valley and Naranji Khawar from the Narangi hills on the left.

1.10.2 Sediment Load and Its Effect on Agriculture

District Mardan is a part of Peshawar basin, most of its land is agricultural. It has one of the world's best irrigation systems, which were laid down by the British government during British Rule on subcontinent (1857-1947). Mardan District has quaternary fanglomerates along the margins of the basin while the central part of the basin is generally covered with fluvial micaceous sand, gravels and lacustrine deposits. On the basis of varying lithologies, the quaternary sediments, covered soils and hosting aquifers of the basin are classified as piedmont, floodplain and lacustrine sediments, soils and aquifers respectively.

The aquifers of the District Mardan is generally categorized as alkaline earth fresh water with high contents of alkalis but in certain areas small input of alkaline freshwater has also been noticed. Among the physical parameters, pH of the water of this basin varies from acidic (pH = 4.5) to alkaline (pH = 10.1) while the EC and TDS are generally within the permissible limit with elevation in certain areas of the basin. In most parts of the basin both surface and ground waters have cations (Ca, Mg, Na, K) and anions (i.e., SO4, Cl, HCO3) within the permissible limit. However, in certain areas of the basin these cations and anions have high concentrations and could be considered hazardous.

1.10.3 Quality of Water in Mardan District

The water quality in Mardan varies with the seasons. During May to July the concentration of light elements and turbidity increases due to low precipitation, similarly during November – February the concentration is relatively high, however during monsoons and March rains the dissolved elements get diluted. During a study by the Water Aid and Ms. Nida Gul (M Phill Thesis) it was investigated that the water from old tube wells with rusted and relatively outlived pipes is contaminated by the effluent in the surface water sources. In a recent study conducted in 2011 it was found that the deep ground water is of relatively good quality.

The minimum, maximum and average ADD values for trace and heavy elements in shallow ground water were as following; Fe from 0.00 to 4.39E-02mg/kg-day with average value of 3.00E-03mg/kg-day, Mn from 0.00 to 2.11E-03mg/kg-day with average value of 5.00E-04mg/kg-day, Cu from 6.7E-02 to 7.00E-03mg/kg-day with average value of 7.00E-03mg/kg-day, Pb from 0.00 to 8.00E-04mg/kg-day with average value of 7.00E-05mg/kg-day, Zn from 0.00 to 1.13E-01mg/kg-day with average value of 1.90E-02mg/kg-day, Ni from 0.00 to 5.00E-04mg/kg-day with average value of 1.00E-03mg/kg-day, with average value of 2.00E-05mg/kg-day with average value of 1.00E-04mg/kg-day, with average value of 2.00E-05mg/kg-day, Cd from 0.00 to 1.00E-04mg/kg-day, with average value of 2.30E-05mg/kg-day and As from 0.00 to 2.00E-04mg/kg-day with average value of 2.30E-05mg/kg-day. For Mardan District results of tests conducted by several organizations, including Nida Gul were reported in her MPhil Thesis in 2011. These tests indicate the HQ of trace and heavy elements in the shallow ground water.

The HQ values of these elements were found as; Fe from 0.00 to 17.57 with average value of 1.20, Mn from 0.00 to 0.01 with average value of 0.00, Cu from 0.00 to 1.82 with average value

of 0.19, Pb from 0.00 to 0.22 with average value of 0.02, Zn from 0.00 to 0.37 with average value of 0.06, Ni from 0.00 to 0.02 with average value of 0.00, Cr from 0.00 to 0.00 with average value of 0.00, Cd from 0.00 to 0.23 with average value of 0.04, As from 0.00 to 0.70 with average value of 0.07. Majority of trace and heavy elements were found with HQ values <1, indicating no risk as suggested by USEPA approach (1999). However, 7% of samples from the shallow ground water were showing high risk due to HQ values >10 for Fe. Similarly, 7% samples were recorded with HQ value >1- <5 for Cu, indicating low risk in accordance with USEPA approach 1999.

The cancer risk values were calculated only for Arsenic in shallow ground water samples. It ranged from 0.00 to 1.10E-04 with average value of 3.47E-05. According to USEPA approach 1999 these values indicate low cancer risk.

In the Water Quality map of 1.6, shows level of contamination has been categorized as high, moderate and low:

- High Contamination: Minerals, Ecolis & FF, above WHO limits.
- Moderate Contamination: Water having moderate levels of nitrates, phosphates, & sulphates, +10% of WHO limits
- Low Contamination: With low levels of Feacal forms E-colai, +5% of WHO limits
- Very Low Contamination: Below the WHO limits



Map 1-6: Level of Water Contamination Map of District Mardan

1.10.4 Ground Water

A substantial amount of groundwater is being abstracted for different uses in the area through tube wells. The total amount of abstraction from the area through water wells varies as during a dry spell it increases while in summers when the rivers are full the dependence on the well water reduces.

The groundwater is available mostly at the optimum depth for economic exploitation for various uses by the local inhabitants. The shape of groundwater table generally follows the surface topography. The discharge from the groundwater reservoir in District Mardan occurs mainly through existing water wells and outflow to rivers and evapo-transpiration water table is near to the ground surface. The water table in the District rises during rainy season (January – March and July and August) and declines during dry season (October to December) when the groundwater abstraction is higher (WAPDA, 2008).

There are eight canals in the District, the canal irrigated land is served through water courses. An appreciable amount of water is percolating to groundwater from irrigation application and channel loses.

There are three major aquifer systems:

- i. Phratic (water table) aquifer system and
- ii. Confined (artesian) aquifer system,
- iii. Flood plains, streams aquifer. Water table in the aquifer is found to a depth of 30-60 meters below ground surface and is mainly composed of coarse sand and gravels.

Hydraulic conductivity in the basin ranges from 30-60 m/day and average specific yield is 12%. Water table elevation varies considerably in the area. It ranges from less than 100 m in the southern portion to more than 1500 m in the mountainous north (in relation to the mean sea level).

The main sources of recharge to the aquifer are precipitation, seepage from rivers, surface storage reservoirs, and irrigation networks. The drilled wells are commonly used for irrigation, industrial and domestic purposes. Drilled wells range in depth from 50 to 150 m.

The water quality in the City of Mardan was tested by the PCRWR and municipal authorities, by obtaining water samples from 31 tube wells; these samples have been tested for chemical and other contamination. The presence of higher oxygen demanding pathogens and the possibility of biological activities, and the COD value was found to be much above the permissible limit. The water samples from dug wells were also tested and the tube well samples were found to be less polluted then the shallow wells.

The test results depict that water from some of the tube wells located close to the water drains which carry waste water as well were polluted with heavy concentration of magnesium and calcium. Results also show that water at few locations was not potable. Treatment of water at the municipal level is needed and shall be introduced on priority.

1.10.5 Existing and Ongoing Programs

Integrated development strategy 2014-18 take the following measures for water resources:

- Bringing more arable land under cultivation will not only redress the food deficiency of the province but would also improve the socio-economic conditions of KP's residents.
- To irrigate the balance area of 4.443 million acres there is a dire need to develop new water sector infrastructure, such as building new major canal systems, the construction of small dams for water harvesting and the construction of small irrigation channels. New water canals including the Siran Right Bank Canal and an extension of Pehur High Level Canal are underway.
- Seepage losses need to be minimized by lining Kacha (uncemented) irrigation channels.
- Coordinated water management by farmers needs to be promoted.
- Water-saving crops like fruit, vegetables and pulses need to be introduced more widely.

1.10.6 Constraints

Higher physical water productivity and economic water productivity reduce poverty in two ways.

- i. Targeted interventions enable poor people or marginal producers to gain access to water or
- ii. Use of water more productively for nutrition and income generation.

During 2010 floods the analysis of the Disaster Management Authority and that of various technical committees indicated that the Motorway Bridge built by the National Highway Authority created a bottle neck by restricting the width of the river to 500 feet. This obstacle of restricted width was one of the reasons for backlog off water creating heavy floods, which resulted in loss of life property and assets.

All the industrial units in the Mardan District discharge their effluents directly into surface water and the seepage taking from the effluents as well as other anthropogenic activities impair the quality of surface and ground water, making them unfit for irrigation and drinking purposes. So, the treatment of the effluents before disposal into surface drains should be practiced in all industrial premises to safeguard better water.

1.10.7 Recommendation

Industrialists, domestic and commercial users of water are completely ignorant of the quality issues. The District government shall adopt following measures to monitor the quality of water.

• The existing irrigation and water supply systems in the peri-urban areas of the District shall be improved and institutionalized by upgrading the system. To this end; technical study, feasibility studies shall be carried out for small schemes.

- As shallow ground water sources have been reported with relatively high values of different parameters so, it is suggested that the old dug wells and hand pumps should be renewed or replaced with deep ground water wells.
- Proper salinity control programs should be adopted throughout the whole District to reduce salts content in soils and their seepage to ground water sources.
- Fertilizers and other agro chemicals should be used properly in agricultural fields so that accumulation of various hazardous elements can be avoided.
- Monitoring of water of the District Mardan in regard to environmental health risk assessment should be performed regularly in future.
- The wastage of water resources and unnecessary exploitation of ground water is indiscriminately in vogue.
- A comprehensive water quality management program be established and implemented.
- In order to safeguard quality of water both the industries and municipal waste water shall be treated before disposal into surface drains should be practiced in all industrial premises of the country.
- Canals shall be properly concreted; to reduce the contamination load of the sediments in the river and to reduce water logging in the District.
- Technical coordination committee and other stakeholders like universities, and engineering institutions shall be invited to discuss and approve designs of all projects related with water contamination and usage.
- The GoKP shall develop a major campaign to raise public awareness of the environment and include following:
 - Support the studies to determine the volume of flows in the rivers and tributaries
 - Introduce a system of providing water to the industries through a collective system
 - Assess the need for incentives to industries to comply with EPA effluent disposal regulations.
 - Determine the needs for legislation for regulation of industrial development, enforcement of standards and water abstraction licensing.
 - Implement the national water quality monitoring program.
 - Execute the public awareness campaign on the environment
 - Support municipal and industrial waste water control measures.
 - Enact new legislation where required.

1.11 FOREST

1.11.1 Distribution of Forest Land

Before proceeding further, it seems pertinent to define legal classifications of forests, which are as below:

i. Reserved Forests:

The forests under the control of Forest Department which have been declared as Reserved Forests under Khyber Pakhtunkhwa Forest Ordinance 2002 and are generally without rights and privileges.

ii. Protected Forests:

The forests which have been declared as protected forests under the provision of the Forest Act 1927 and have some rights and concessions of grazing, grass cutting of dry/wind fallen tree for domestic fuel wood consumption.

iii. Unclassed Forests:

The public forest lands under the control of Forests Department which are neither reserved forests nor protected forests and are known as Unclassed Forests.

iv. Resumed Lands:

These are private lands taken over by the Government under various land reforms and martial law regulations and managed by the Forest Department.

v. Guzara & Community Forests:

These are forest areas which are the joint property of villagers or owned by the individuals and are managed by the Forests Department.

Table 21.1 shows distribution of land in Khyber Pakhtunkhwa and District Mardan. The gross area under forests in the Province is 2,882,994 acres, out of which major forests are protected forests (40.20%) and Guzara forests (23.81%). The details are given in Table 21.1.

District Mardan is essentially devoid of any worthwhile forest land. There is only 3351 acres of land under forests, all of which is resumed land. Resumed lands are private lands taken over by the Government under various land reforms and martial law regulations and managed by the Forest Department. In terms of percentage, forest area in District Mardan is 0.11% of the total forest area in the Province.

| Table 1-8: Distribution of Forest Land (2015-2016)10 Area in Acres | | | | |
|--|--------------------|-----------------|--|--|
| Forest Type | Khyber Pakhtunkhwa | District Mardan | | |
| Reserved Forest | 232157 | 0 | | |
| Protected Forest | 1163276 | 0 | | |
| Resumed Forest | 90271 | 3,351 | | |
| Unclassed Forest | 259960 | 0 | | |
| Section 38 ¹¹ | 19183 | 0 | | |
| Communal | 122944 | 0 | | |
| Guzara Forest | 688123 | 0 | | |
| Private plantation | 1767567 | 88378 | | |
| Miscellaneous | 307080 | 0 | | |
| Total | 4650561 | 91,729 | | |

1.11.2 Forest Type – District Mardan

In District Mardan, the forest area is spread mostly towards east-north part of the District in the hilly area. Total area under forests in District Mardan is 3,351 acres that is resumed land only, i.e. private lands taken over by the Government under various land reforms and regulations and managed by the Forest Department.

| Table 1-9: Distribution of Forest Land (2015-2016) ¹² | | | |
|--|---------------|-------|--|
| Forrest Type | Areas (Acres) | %age | |
| Resumed Land | 3,351 | 3.65 | |
| Private Plantation | 88,378 | 96.35 | |
| Total | 91,729 | 100 | |

¹⁰ Khyber Pakhtunkhwa Development Statistic 2017

¹¹ Section 38 forest area are privately owned lands voluntarily and temporary put under the control of forest Department for the conservation and preservation of soil and vegetables.

¹² Khyber Pakhtunkhwa Develop



Map 1-7: Existing Forest Map of District Mardan

1.11.3 Forest versus Environment¹³

God created this planet with utmost balance and made it a source of survival for mankind and other creatures living in it. Almighty decorated it with deep oceans, high mountains; snowcapped peaks, vast deserts and lush green fields and covered it with Ozone layer to protect it from the dangerous rays coming from sun to make it livable for its dwellers. But the haphazard interventions of man in the nature for the sake of development disturbed the ecological balance by the emission of greenhouse gases in enormous quantity and destroying the Ozone layer.

A report of the International Panel on Climate Changes says that in the past two decades the quantity of carbon has doubled resulting in 3.2 to 9.7 degree increase in the global temperature. The report warns that due to global warming, some glaciers are melting with a speed of 30 meter per year and till 2035, major glaciers are apprehended to disappear from this planet. Experts forecast that melting glaciers will ultimately raise sea level and major cities of the world may come under water.

General Secretary of United Nations has cautioned that, if this situation remains unchanged, 1.8 billion people will be forced to live in such areas where there will be acute shortage of waterand

till 2025, 2/3 of the world population will face water scarcity problems. A report of WHO discloses that 5 million people are falling prey to climatic diseases each year while 150,000 die due to it. Similarly, 60,000 persons suffer from skin diseases due to ultra violet rays every year.

Ironically, the most advanced and self- claimed civilized nations of the world are more responsible for environmental violations. The USA is emitting 40 percent of greenhouse gases alone, while G-8 countries are producing 70 percent of it. Perhaps it is time to take collaborative steps to check the alarming speed of environmental degradation. The developed countries must sense their duty and ensure measures to control emission of greenhouse gases. But the developing countries should not overlook their endangered future and must plan for rectification of the environment in their jurisdictions. Such countries are adversely affected by climate changes as they are already deprived of the mechanism needed for the maintenance of the environment. Negligence of these nations towards environment can lead them to catastrophe because they don't have enough resources to avoid the threat. A tangible step to slow the speed of environmental degradation and minimize the negative effects of climatic changes is massive plantation. Plants play a vital role in protection of environment and have multiple advantages beside beautification. They purify air, prevent wind storms and protect soil erosion. Beside these functions, trees emit oxygen and maintain climate at a balancing point. A big size tree can provide oxygen sufficient for 36 infants, while 10 big size trees produce cooling equal to the cooling generated by a one-ton Air Conditioner. Trees also minimize air pollution, reduce noise and decrease the unpleasant smell by absorbing rotten substances from the drains.

Planting a tree is a virtue as the Holly Prophet (PBUH) has termed tree plantation as "Sadqa" and has ordered his followers not to cut fruit bearing trees in the occupied territory in war

ment Statistic 2017

¹³ Section 38 forest area are privately owned lands voluntarily and

times. The saying of the Holly prophet indicates the degree of importance Islam gives to plantation.

Spring and monsoon are two suitable seasons for the plantation of saplings. Monsoon is favorable season for plantation in all parts of the province except Chitral. There is enough humidity in the atmosphere in this season which enables sapling to establish its roots in the new environment. But one must note that this season is only favorable for saplings raised in tubs and not for bare root plants. Therefore, special care should be given to the earth ball of the sapling and it must not be disturbed during plantation to ensure its survival. Only planned and organized plantation can bring best results. Therefore, before initiating plantation, the nature of plants should be determined. That is, what sorts of saplings are needed on which terrain? Whether plants are needed for commercial needs or beautification? Besides, environmental purposes are also focused upon.

A few points should be kept in mind while chalking out plan for plantation. Plants must be carefully selected according to the climatic conditions of the area where the sapling are to be planted. Similarly, while determining plantation of fruit or commercial plants, priority should be given to plants which are grown abundantly in that area. Such plantation will stable local market and pave way for its export to national and international market as well.

Trees are also a sound source of income generation. Quick growing trees, largely used in industries can prove useful for this purpose. Experts advise plantation of trees like poplar, sesame and simal. Its market is wide as the wood of these trees is used in sports goods manufacturing, match industry, shoes making, plywood, chip board and furniture. Mulberry can be a source of income in rural areas as it is useful for silk production.

After selection of plants according to needs and climatic conditions is done, the crucial phase of shifting it to the plantation site is started. Plants should always be procured from the nearest satiation to shift it easily at low cost without any sort of harm to it. Experts consider nurseries developed by cultivators themselves as most suitable for this purpose. In case self-raised nurseries are not available, stock developed by Forest Department can prove a better source for acquisition of saplings.

A number of tips may not be ignored while choosing saplings for plantations. The length of the selected sapling should be at least one foot and the stump must be double in length than its roots. Similarly, Collar (The point where stump and root join with each other) should be strong and roots must be thick enough Plantation of too small, doubled stump or saplings with yellow leaves should be avoided.

Before saplings are shifted to the plantation site, necessary arrangements must be ensured to plant it quickly. At the first step a two feet deep pit with the same width should be dug out for placing the sapling in it. Experts advise larger size of pit in hilly areas. Distance among the ditches and rows should be according to the nature of the plants to allow it to flourish well. After

preparation of pits, soft soil and composite fertilizer should be deposited along the sides of the pits to fill it promptly after the sapling is placed in it.

Any sort of negligence can harm the sapling and endanger its survival. The sapling must be irrigated one night before uprooting it and the earth ball should not be disturbed during the process of uprooting and shipment. The sapling should be uprooted in such quantity which can be planted easily on that day. If the sapling has been grown in a plastic bag, the bag should

be removed carefully before planting it. Cloudy weather is considered most suitable for plantation. The sapling should be kept straight in the ditch and the ditch must be filled with soft soil and fertilizer up to collar of the sapling. The soft soil should be pressed watered promptly after it is filled.

The phase of protection of the plant is started just after the stage of plantation is over. There are a number of enemies of the sapling which include animals, insects, children, flood water and storms. Proper care and attention is essential to enable the plant to develop in the new atmosphere to contribute in beautification and recertification of the environment.

Mass plantation is imperative to overcome environmental problems. In order to cope up with environmental issues, banks of canals, sides of water reservoirs and other suitable places places must be used for plantation. Yards of the houses, open places, hilly slopes and barren land should be covered with trees in plantation season to enhance the forest covered area.

Unfortunately, forests cover 79.699 million hector areas in the country, constituting hardly 5 % of the total areas. Experts advise that at least 25 % of the total area of a country must be covered with forests. In Pakistan per capita forest areas is 0.037 acres while in the developed countries this ratio is one hector per capita. Forests cover 17% of the area of KHYBER PAKHTUNKHWA, including 2.5 % area covered by trees grown in cultivable fields. The existing forest covered area is not sufficient to meet national needs and to cope with environment hazards. There is a dire need for increasing this area by massive plantation.

The current year has been declared as National year of Environment and that is why the KP Forest Department has chalked out a comprehensive plan for mass plantation. Under this plan 5.682 million saplings of different species will be planted with the help of defense forces, institutions, civil Government departments, educational society and farmers during this season in various parts of the province. Arrangements for sensitization of the community and provision of technical assistance to cultivators are also made. Similarly, Asher plantation (Collective plantation) will be arranged in collaboration of the District administration and farmers at local level. Similarly, saplings raised in tubs in various field nurseries in the province are available at Rs.2 each for general public and at the rate of Rs1.50 each for provincial departments.

1.11.4 Ongoing Programs

Billion Tree Tsunami project aims to turn the tide on land degradation and loss in the mountainous, formerly forested KP province in the Hindu Kush mountain range. The campaign simultaneously helped KP province fulfil its 348,400 hectare commitment to the Bonn Challenge – a global effort to bring 150 million hectares of deforested and degraded land into restoration by 2020 and 350 million hectares by 2030. This marks the first Bonn Challenge pledge to reach its restoration goal.

"The project is naturally restoring a previously deforested landscape, which will assist in meeting present and future needs and offers multiple benefits for climate adaptation and mitigation in a very climate-vulnerable province," says Muhammad Tehmasip, Project Director of the Billion Tree Tsunami.

The following areas is select by the billion-tree tsunami for plantation in District Mardan.



Map 1-8: Planation Map of District Mardan

1.11.5 Constraint and Recommendation:

District Mardan has a little amount of area under forest, most of the hilly part in District is range land as show above in the map ----. Existing forest area is 624-hectare wile 7143-hectare area is considered as range land. Mardan has a wide potential of species like flora and fauna. The present flora of the irrigated areas is exotic. The common trees are mesquite, ber, different species of acacia and jand. The most common shrubs are tarmariax, articulata, spands, akk, small red poppy, spera, pueghambrigul, drab grass, spera, eamelthorl and pohli chaulai etc. the range land is proposed for future orchard and plantation as show in the Map 1.9 The District has a variety of fauna comprising the following

- Snake
- Mongoose
- Jackal
- Wild Goat
- Pheasant
- Mule

The range land of District Mardan is proposed for fruit orchard and tree plantation which will increase the scenic beauty of the area and in wide range it will contribute to reduce climate change and global warming. Wild life is proposed near the sangu village in tahsil katlang of District Mardan. Which will increase our wild life productivity and will also serve as a recreational area for residence of katlang, and Buner.



Map 1-9: Proposed Map Planation, Wildlife and Fruits Orchard of District Mardan

1.12 ECONOMIC DEVELOPMENT

Land is a finite physical entity in terms of its topography and spatial nature; a broader integrative view also includes natural resources: the minerals, water, geology and the soils biota that the land comprises. The Land Use spatially occurs horizontally and can change only in terms of location, area, zoning and type of use; while the resources which have been studied under 21 different sectors and grouped into four broad categories are liable to change with technology, time, demand and exploitation of resources. The resources and investment in infrastructure can vary, resulting in a vertical growth.



Figure 1-2 District Land Use Plan and Economic Development

The District Land Use Plan for District Mardan is based on exhaustive data collection, situation analysis, and extensive stakeholder discussions, for drawing inferences of more than twenty different sectors that have been grouped under four categories (refer fig). For economic development the District land resources are used in ways that take advantage of all these sectors; more over by examining all uses of land in an integrated manner, it makes it possible to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with spatial Land Use and land resources, thus helping to achieve the objectives of sustainable economic development. The essence of the integrated approach finds expression in the coordination of varied sectors planning and management activities concerned with the various aspects of Land Use and land resources.

More specifically the economic development of the District needs a holistic approach by different levels of governments and departments and a coordinated informed effort for adapting and adopting the agreed objectives of economic growth and development. This will include but not limited to the following:

1.12.1 Economic Development in the Physical Context

Climate in the District is discussed in details in District Studies Report; climate in general has an impact on economy of a region as it influences the decision making for location and type of industries and agriculture and other Land Uses. As explained earlier since the climate is not harsh, its impact on Land Use and economic development will be minimal.

About 85% of the District Mardan is underlain by recent alluvium. These include recent river, stream, flood plain and lake deposits and belong to the Pleistocene age group. These are classed into the following four types: i.e. Stream beds, Fan deposits, Alluvium and Lacustrine deposits. Apart from these, about 15% of the area of the District is covered by other rock types. These rocks are typically revealed in the outcrops that stretch in a belt that roughly divides the District into two along a NE-SW stretch. Few of these rocks are located along the North-Eastern and Eastern corner of the District.

The environmental problems both in the urban area and the peri-urban area are quite pronounced pollution of surface and subsurface water, air and noise pollution that emerge from lack of implementing EPA Act and siting of non-compatible Land Uses, non-availability of proper sanitation system, burning of waste, improper disposal of hazardous waste and haphazard traffic. It is recommended that the environmental management shall be recognized as a high priority sector and propose to establish environmental accountability. It is also recommended that the department responsible for industrial and municipal wastewater and waste disposal shall be encouraged and mandated to recognize their responsibility for environmental management. Environment is a cross cutting theme and indirectly and directly impacts economic and social sectors, investment in this sector by adopting proper Land Use and mitigating hazards will have a multiplier effect on the economy.

Floods have direct impact on economy of a region as it results in damage to property, life and assets. Around 166 square kilometers of area of District Mardan was affected due floods in 2010. It has affected around 7 Union councils and 182 villages. The affected union councils included Shahbaz Garhi, Garyala, Charguli, Bala Garhi, Mohib Banda, Kot Daulat Zai and Garhi

Daulat Zai. Total households in the affected area were more than 36,000. Thus, in the Land Use Plan, area liable to flooding has not been proposed for habitation purposes. This will result in minimizing the adverse effect on economy, thus contributing to economic growth.

| Table 1-10: Flood Prone Area in Mardan | | | | |
|--|-----------------------------|--|----------------------------------|--|
| Flood Prone Area (Sq. km) | % of Total District Area | Affected Villages (2010 floods) | Total HHs in Affected Area | |
| 166 | 10% | 182 | 36,145 | |

The details of damages due to flooding in District Mardan are given in Section 1.8 above as well as in Chapter 4 of District Studies Report.

Water logged area in District Mardan is around 440 square kilometers, which is about 27% of the total District area. Government of KP initiated partnership and participatory programs for reclaiming waterlogged area and land affected by sodality and salinity. Since the impact of water logging and salinity is a direct reduction in agricultural activity and thus income; a two prong approach has been recommended i.e. participatory approach where through the extension program farmers shall be educated in adopting proper drainage and alternative cropping to increase their income; also the programs like On-Farm Water Management (OWFM) and the Rural Support Program(RSP) have shown remarkable success in terms of

reducing water logging and salinity and increasing agricultural incomes for farmers, contributing to economic development.

1.12.2 Economic Development – The Social Context

Demographic sector i.e., the population its composition by age and gender and its spatial spread along a time series is one of the basic factors affecting both the Land Use and economic growth. Demographic growth and economic growth are inversely interlinked; the higher the population growth the lower the economic growth. Additionally, education, training level of skills, labor force, and the proportion of dependent population are some of the factors that affect Land Use and economy.



Figure 1-3: Demography and Land Use

Under Land Use Plan of Mardan, proper demographic projections have been made for the District for next 20 years using different forecasting models such as regression analysis, extrapolation and cohort-survival methods.

Based on the 2017 census the population of District Mardan is 2.373 million, likely to increase to about 4.7 million in the year 2039. The proposals for economic development in context of housing, education health and industry are given below:

One of the vital factors of the social context is housing; as it impacts both the Land Use, and employment, generating in construction industry and service industry. Holistic approach has been used for locating residential areas in the Land Use Plans. All factors that affect housing demand and supply such as land values, proximity to urban services, availability of transportation linkages, employment opportunities, availability of construction materials and technology; health and education faculties have been considered. Prime agricultural land has been reserved for farming only and conversion of such land to housing and other urban uses is proposed to be prohibited. The housing demand during 2019-2024 and 2024-2039 will be 61264 and 313000 respectively, while the current housing backlog is 271329. The total housing required for the next 20 years, including the existing backlog, is estimated to be 397716 housing units. This will generate economic activity both during land development and construction as well as employment in education, health, commerce and transportation.

The Land Use Plan and Education sector is vital to the continued evolution of the community. Access to quality educational opportunities within convenient access boosts the chances for

success of a Land Use Plan. The educational opportunities in Mardan will reduce migration towards larger urban centers, and will also attract many new residents and businesses in the District. The Land Use Plan encourages education sector to establish new institutions that provide people with the skills they need for the changing job market.

| Table 1-11: Literacy Rate in Mardan | | | | | |
|-------------------------------------|---------------------|--|--|--|--|
| Literacy Participation Rates | | | | | |
| Ratio | Primary Middle High | | | | |
| 36.45 63.49 33.05 25.8 | | | | | |

The educational facilities serve both the local and District population and even wider area for higher and special education. The accompanied economic activities are direct employment for teaching and other jobs and indirect economic activities for serving large segments of population in and around the universities, technical colleges, medical colleges and training institutes. Additionally, it also generates economic activities in the field of transportation, and small business of stationers, computers and other accessories. Finally, the trained and skilled youth in Mardan District will ultimately serve the province and the nation, thereby generating higher household, regional and national income.

The Land Use for health is spatially spread at two tiers, the local or micro level health centers which are located close to the residential areas, and in the rural areas, and the hospitals which

work at District, regional and even provincial level for indoor and out-door facilities. There is a strong linkage between health and economic sustainability; healthier population is productive and contributes substantially

| Table 1-12: Health Facilities in Mardan | | | | | |
|--|----|---|----|---|-----------------------------------|
| HospitalsDispensariesRHCsBHUsOthersNo. of Beds/1000 population | | | | | No. of Beds/1000 population |
| 8 | 18 | 4 | 49 | 4 | 0.75 |

towards the economy of a region. This will also result in providing jobs for educated youth as well as generate small business activities for the health sector such as medical shops, labs and small private clinics etc.

In Mardan District industries are established mostly along Takht Bhai Road and Nowshera Road. There is a Small Industrial Estate on Nowshera Road having 338 plots. Industries have been established over 99 plots, of which 89 are operational and 10 are closed. Besides, there are 172 industries along roads, of which 152 are operational. Under the District Land Use Plan, a new industrial area for Mardan is proposed on Charsadda Road, and a small industrial estate near Takht Bhai. The Industrial sector has a direct linkage with economic development, income and employment. Industries create direct jobs; and as such this Land Use is income generating both through direct job creation, movement of goods and services and related

imports/exports and trading. The location and area of land under this use thus directly contributes to the economy.

Mardan Land Use Plan also focuses on trade & commerce, as it is the major income and employment-generating sector, and a large proportion of population of all ages directly or indirectly depends on it. Trade and commerce at present is widely spread, intermixed with residential areas and scattered along roads and streets. A new trade zone has been proposed towards West of Mardan Urban area, located North of Charsadda Road and East of Ring Road. By virtue of its location and linkages, the proposed site for Trade/Commercial center will become the future hub of commercial activities in District Mardan. It will generate employment and income directly and indirectly thus contributing to the economic development of the region and the province.

Recreational facilities and open spaces contribute to the health and environment of a community; which in turn indirectly impacts economic development. The decreasing recreational facilities and open spaces are a cause of concern. The pressure on land is increasing because of competing Land Uses. The main recreational places in District Mardan are Pir Sattar Park, Azakhel Park, Amir Muhammad Park, Piran Daga Park, Tooti Park, Company Bagh and Ghulam Nabi Park

A Recreational Park has been suggested opposite to proposed Trade Centre, East of Ring Road. Besides Takht Bhai has an archaeological site, which initially was a Zoroastrian complex which, after the later arrival of Buddhism was then converted into a Buddhist monastic complex. It is dated to the 1st century BC. The complex is regarded by archaeologists as being particularly representative of the architecture of Buddhist monastic centers from its era. It was listed as a UNESCO World Heritage Site in 1980. A 'Heritage Park' has thus been proposed at the site, which will attract more local and foreign tourists, thus boosting the local economy.

1.12.3 Physical Infrastructure and Economic Development

Infrastructure is a key ingredient for productivity and growth. Conceptually, physical infrastructure may affect aggregate output in two main ways: first, directly because infrastructure services enter production as an additional input, and second, because they raise total factor productivity by reducing transaction and other costs thus allowing a more efficient use of conventional productive inputs. Four sectors i.e. Water Supply& Sewerage; Traffic and Transport, Power and Telecommunications have been grouped under physical infrastructure.

Most of District Mardan has piped water supply systems, which is underground and does not show as a zone in the Land Use, however the waterworks and OHRs and surface reservoirs take up some land, but that too is so negligible when considered at the District level. The major Land Use in this sector is the open drains and the treatment works for sewage and disposal stations. The condition and efficiency of the WASH system has a direct linkage to the economic development. Enhancing the quality and quantity of water, and collection and treatment of municipal and industrial waste water in accordance with the KP environmental Act 2014 has been recommended by the consultants. The improved infrastructure of WASH will have direct impact on the economy of the region, as good quality water will contribute to health of the citizens and be available for businesses and industries. Adequate disposal of the wastewater will on one hand result in reduction in pollution and contamination of surface and subsurface water, while on the other it will impact health by reduction in water borne diseases. Transportation network in an area influences Land Use and development trends and thus the obvious need of integrating transportation and Land Use proposals. Effective road network and proper management of transport system play major role in the efficient functioning of a habitat. One of the main objectives of Land Use Plan at District level is to increase the capacity of existing roads, opening up new area for development, and decentralization and traffic management in the inner city.

The main transport infrastructure in District Mardan is provided by several links to various highways including the Motorway (M-1), Nowshera Road, Malakand Road, Charsadda Road and Swabi Road.

A major problem being faced by Mardan is that main inter-city roads such as roads coming from Nowshera, Malakand, Charsadda and Swabi converge in the urban area of Mardan causing immense traffic problems, although through traffic gets diverted on the existing ring road, which to some extent eases the traffic flow on inner urban roads. The Land Use Plan also proposes widening of existing intra-city roads and mesh of new roads in the area proposed for future urbanization.

The impact of the proposed roads and creation of a planned extension of Mardan will result in efficient movement of goods and passengers providing inter-city and intra-city linkages, which will directly contribute to the economy of the region and result in enhanced regional income. This strategy will also generate income by creating employment during construction and later in the transport sector as for drivers, cleaners, managers, maintenance workers, gas stations, repair shops and a host of other activities.

Power sector is an important part of District Land Use Plan Mardan, to provide systematic planning and to coordinate development activities for next 20 years for rural and urban population. Electric power sector in Mardan such as transmission and distribution are managed by PESCO (Peshawar Electric Supply Company).

Power generation capacity in District Mardan is 71 MW, whereas average demand is 93 MW and peak demand is 116 MW. Based on average demand, the shortfall is 22MW or 31%. There is a need to launch a large-scale expansion program to use the renewable Hydro Electric Potential for power generation.

At present due to shortage of electricity power outages are frequent and sometimes last more

than 12 hours in day. This affects both the productivity at the personal and District level. The government or the public sector needs to augment power on priority. It is suggested that small scale coal gasification plants can be installed to add to existing power generation. There is a need to encourage and popularize the solar

| Table 1-13: Power Generation in Mardan | | | |
|--|-------------------|-----------|--|
| Power Generated | Average Demand | Shortfall | |
| 71 MW | 93 MW | 22 MW | |

power plants at District and local level. The available infrastructure of transmission lines and grid stations should be repaired and upgraded to reduce technical losses. The power has a direct linkage with economic development and once improved and made sustainable the economy of the area will grow.

The process for planning and developing telecom services have to be in line with Land Use Planning strategies, so that regulations related to radio frequency engineering standards can be used as illustrative planning tool that coincides with the underlying zoning. Co-relating Land Use Planning with telecom infrastructure protects aesthetics and property values by helping

in controlling the number of future sites that are located in an area. There is a total of 40 telephone exchanges in District Mardan with 34,357 connections. The installed capacity of broadband connections is 10,614. Other telecom services in Mardan include PTCL V Phone (Wireless) and DSL. Telecom assets are a special class of IT assets that require an accurate inventory for effective financial management.

1.12.4 Economic Development – District Resources

Urbanization is often considered to have negative impacts on agriculture; for instance, from the loss of agricultural land to urban expansion and an urban bias in public funding for infrastructure, services and subsidies. However due consideration has been given to this aspect in the District Land Use Plan and prime agricultural land in the District, wherever possible has been retained for agricultural Land Use, with recommendations to prohibit any urbanization related activity in that area.

Total Cultivable Area in District Mardan is 999.26 Sq. Km, which is 61% of the total District area.

More than 75% of rice in Peshawar Valley is produced in District Mardan. The District is also at the top in production of wheat and maize, and second in production of sugar cane, only slightly behind District

| Table 1-14: Crop Production in Mardan | | | | | |
|--|-------|-------|---------|------|--|
| Crops Wheat Maize Sugar Cane Rice | | | | | |
| Production in metric tons (2016- 2017) | 87418 | 89232 | 1339397 | 3191 | |

Charsadda. Thus, District Mardan has a comparative advantage in agricultural production, and this advantage can be further enhanced by the following measures:

- Those farmers who have made their own tube wells their water channels should be lined by concrete to decrease the water loses and fuel consumption and increase their profitability.
- The area which is still culturable waste should be enabled for cultivation through land reclamation, leveling, irrigation etc.
- Modern methods of irrigation such as drip, sprinklers or tickle irrigation systems should be incorporated or additional water reservoirs should be started.
- Farm to market transportation system should be improved so that the farmers are able to bring their goods to the market easily.

These interventions will result in higher farm income and economic growth of the District and the Province.

The District has a potential of increasing the value of livestock. Livestock in the District comprise of cattle (39%), followed by goats (32%), buffaloes (18%) and sheep (8%); While 3% of the livestock is camels, horses, mules and donkeys. Additionally, there are 375 poultry farms 105 fish farms in District Mardan, all privately owned.

The livestock sector in Khyber Pakhtunkhwa, despite having great potential for poverty alleviation, has not developed on commercial lines because of paucity of funds, capacity and technology constraints. Another important benefit of livestock is the best utilization of the passive woman labor force which makes more than 50% of national population. Besides the

above some Non-Governmental Organizations are also working for improvement of the socioeconomic status of the livestock farmers. The product of livestock especially goats both slaughtered and live are mostly exported to Afghanistan and Middle East, this potential shall be exploited to increase the provincial income and economic development of the region.

The main source of irrigational water in Mardan District is the canals; the upper Swat canal irrigates most part of the District and lower Swat canal irrigates South-Western part of the District. The other sources are tube wells and lift irrigation. Water table in the aquifer is found to a depth of 30-60 meters below ground surface and is mainly composed of coarse sand and gravels. For economic development and increase in rural income the government of KP under the existing irrigation and agricultural system is committed to increasing productivity for poverty alleviation and greater economic benefits. To this end programs are being initiated for increasing yield and value of crops and reducing farm inputs especially water. By increasing the productivity of water, the GoKP will on one hand achieve higher agricultural income as a means of intensifying agricultural production, while on the other hand this program will result in reducing environmental degradation. The existing water resource delivery system is inequitable and unpredictable, and many schemes demonstrate a marked absence of proper planning. In many areas, tube wells have been installed without assessing the underground water situation.

In mining, mainly marble (26,653 metric tons) and limestone (753,091 metric tons) are extracted in the District of Mardan. Other minerals such as dolomite, granite and barite are also extracted. Minor minerals i.e., sand, bajri and gravel are also extracted from small streams and rivers banks. Mable cutting and polishing units are working at various places of the District Mardan. Uncut Marble and tiles are sent to Islamabad and Punjab province through different private companies operating in Mardan. The economic contribution of the mining sector in Mardan District can be significant and needs to be institutionalized and enhanced in terms of trained manpower and extraction.

Though the Province is very rich in the forest resources, but in Mardan District there are hardly any, except for some scatters. A tangible step to slow the speed of environmental degradation and minimize the negative effects of climatic changes is massive plantation. Plants play a vital role in protection of environment and have multiple advantages beside beautification. Spring and monsoon are two suitable seasons for the plantation of saplings. Monsoon is favorable season for plantation. It is suggested that highway forestry should be encouraged by planting trees along the highways and roads, this will have a two-prong effect, and reducing pollution and increasing forest cover in the District. These economic benefits of such an approach will be direct as well as indirect by reducing diseases related to air and noise pollution, and minimizing adverse effects of floods.

CHAPTER 2: LAND USE DISTRIBUTION

2.1 GENERAL

General misuse and mismanagement of our agricultural land resources, i.e. soil and water, is the single most important factor responsible for continued land degradation and stagnation

of yields. Present use of the land resources is not adapted to the potential of the land and its conservation requirements. It is rather determined by the owner's needs and local trends.

There is thus a dire need that an unbiased and sound plan be prepared at District level that can guide the implementing agency in rationalization of all Land Uses and objective planning and formulation based on the potential and requirements of the land resource. Preparation of District Land Use Plan will satisfy this need and promote a potential-based use of the land for maximum land resource conservation.

It will provide a scientific basis to rationalize Land Uses so as to ensure conservation of the resources. The optimum utilization of land is, in fact, the main objective of the Land Use Plan.

More specifically, objectives of the Plan are:

- Scientific utilization of land resources based on District land resource inventory and quantitative land evaluation through field research.
- Proposing necessary changes in the current Land Use system to promote conservation of the land resources.
- Identifying tracts of degraded farmland and suggesting economically viable and practical measures for their rehabilitation.

There is no known example of Land Use distribution at District level, with which Mardan can be compared. In fact, even at urban level, there is wide variation in the proportions of Land Uses. However, comparing Land Use distribution of urban area of Mardan with other urban areas brings out the diversity of functions. This has been done in Section 2.2.2.

2.2 JUSTIFICATION FOR LAND USE DISTRIBUTION

The purpose of Land Use distribution is to compare the existing distribution with the desired distribution in an area, to identify the shortcoming/dearth of a particular Land Use/s or its excess, and accordingly take corrective measures where ever needed or possible. However, it needs to be considered that unlike housing scheme or industrial estate, at District or City level, there is no 'standardized' distribution of Land Uses. The proportions of Land Uses at city level are the resultants of past and present socio-economic forces. But in many cases, in urban areas of similar population sizes, market/institutional forces throw up common and widely recognized patterns of land distribution. Despite this, it is important to be aware of the pervasive power of market processes, so that limitations to the scope of planned interventions are understood.

The proportions of land under various uses vary according to the scale under consideration. Obviously, a small residential scheme will be predominantly occupied by dwelling units, an industrial estate by various types of factories, while at urban level; both will be reflected in a certain mix. Recommended Land Use distribution for the above categories is given below:

| Table 2-1: Land Use Distribution in Housing Scheme ¹⁴ | | | |
|--|-------------|-------|--|
| S. No. Land Uses Percentage | | | |
| 1 | Residential | 45-52 | |

¹⁴ ibid, Page 301, Table 10.1.

| 2 | Commercial | 2-3 |
|---|---|--------|
| 3 | Education, Health & Other Community Facilities | 7.5-10 |
| 4 | Roads/Streets | 25-30 |
| 5 | Open Spaces | 5-7.5 |
| 6 | Others | 2-5 |

| Table 2-2: Land Use Distribution in Industrial Estates ¹⁵ | | | |
|--|------------------------------------|------------|--|
| S. No. | Land Uses | Percentage | |
| 1 | Factory Plots | 60-65 | |
| 4 | Roads | Up to 20 | |
| 5 | Open Spaces | Up to 20 | |
| 6 | Administrative and Other Buildings | 5-10 | |

| Table 2-3: Land Use Distribution at Town/City Level (500,000+ Population) ¹⁶ | | | |
|---|--------------------------------|------------|--|
| S. No. | Land Uses | Percentage | |
| 1 | Residential | 24-32 | |
| 2 | Industrial | 2-15 | |
| 2 | Commercial | 1-2 | |
| 3 | Institutional | 3-8 | |
| 4 | Arterial Circulation/Terminals | 13-20 | |
| 5 | Recreational Open Spaces | 2-5 | |
| 6 | Graveyards | 0.5-3.5 | |
| 7 | Vacant | 9-45 | |

2.3 EXISTING LAND USE DISTRIBUTION – DISTRICT MARDAN

Total area of District Mardan is 1633.7 square km, comprising of the following three Tehsils:

- Mardan Tehsil
- Takht Bhai Tehsil
- Katlang Tehsil

¹⁵ ibid, Page 90, Table 5.6.

¹⁶ ibid, Page 305, Table 10.2.

Of the above, Mardan Tehsil is 925.8 square kilometers, or about 57% of the total District area, Takht Bhai Tehsil is 404.8 square km or 25% of the total District area, while Katlang Tehsil is around 303.1 sq. km or 18% of the total area. Land Use Distribution in the District is given in Table 2.4.



Figure 2-1: Broad Land Use Distribution of District Mardan

2.3.1 Land Use Distribution in Overall District

The maximum area in District Mardan is under Agriculture category (71.71%), followed by the shurbs and grass land (14.88%), Residential areas(8.57%), water bodies (1.21%), forest (1.06%), transportation i.e. main roads/railway/terminals (0.90%), Graveyard (0.41%) and Industries, railwayroads 0.03% and vacant land (0.07%) and others.

The area and their percentages are given in Table 2.4. The distribution is graphically illustrated in Figure 2.2 and Map 2.1.

| Table 2-4: Land UseDistribution of District Mardan | | | | |
|--|----------------|----------------|------------------------|--|
| S. No | Land use class | Area in Sq. km | Area in Percentage (%) | |

| 1 | Agriculture | 1171.87 | 71.71 |
|----|-----------------|---------|-------|
| 2 | Forest | 17.34 | 1.06 |
| 3 | Fruit orchards | 19.07 | 1.16 |
| 4 | Graveyard | 6.72 | 0.41 |
| 5 | Industry | 0.55 | 0.03 |
| 6 | Railway | 0.55 | 0.03 |
| 7 | Residential | 139.43 | 8.57 |
| 8 | Roads | 15.31 | 0.92 |
| 9 | Shrubs/Grass | 243.28 | 14.88 |
| 10 | Stadium/Grounds | 0.32 | 0.01 |
| 11 | Vaccant Land | 1.22 | 0.07 |
| 12 | Water Bodies | 19.87 | 1.21 |



Figure 2-2: Land Use Distribution of District Mardan


2.3.3 Land Use Distribution in Mardan Tehsil

The Mardan Tehsil comprises the area of 925.81 square kilometer. The maximum area in this Tehsil consist of agriculture which is 612.25 square kilometer or 66% followed by the vacant land (10.17%), range land (7.3%), settlements/villages (6.2%), forest (4.14%), urban residentiary (1.99%), transportation i.e. road, bus/truck terminals, railway station (1.36%), bushes/scrubs (1.2%), water bodies (1.17%) and other Land Uses have been less than 1% in total Mardan Tehsil area.

Statistics about Land Uses in Mardan Tehsil are given in Table 2.5 and illustrated graphically in figure 2.5.

| Table 2-5: Land UseDistribution of Mardan Tehsil, District Mardan | | | | | | | |
|---|-----------------|---------------|------------------------|--|--|--|--|
| S. No | Land use class | Area in Sq.km | Area in Percentage (%) | | | | |
| 1 | Agriculture | 619.99 | 67.62 | | | | |
| 2 | Forest | 7.72 | 0.84 | | | | |
| 3 | Fruit orchards | 13.32 | 1.45 | | | | |
| 4 | Graveyard | 3.47 | 0.38 | | | | |
| 5 | Industry | 0.51 | 0.06 | | | | |
| 6 | Railway | 0.32 | 0.04 | | | | |
| 7 | Residential | 83.24 | 9.08 | | | | |
| 8 | Roads | 10.56 | 1.15 | | | | |
| 9 | Shrubs/Grass | 164.85 | 7.98 | | | | |
| 10 | Stadium/Grounds | 0.15 | 0.02 | | | | |
| 11 | Vaccant Land | 1.06 | 0.12 | | | | |
| 12 | Water Bodies | 11.64 | 1.27 | | | | |



Figure 2-3: Land Use Distribution in Mardan Tehsil Area



Map 2-2: Existing Land use Map of Mardan Tehsil

2.3.4 Land Use Distribution in Takht Bhai Tehsil

The Takht Bhai Tehsil comprises the area of 404.83 square kilometer. The maximum area in this Tehsil consist of agriculture which is 335 square kilometer or 84.27% followed by the residential area of (7.55%), shrub and grass land (1.88%), transportation i.e. roads, terminals (0.89%), water bodies (1.09%), fruit orchards (1.05%) and other.

The area and their percentages are given in Table 2.6. The distribution is graphically illustrated in Figure 2.4.

| Table 2-6: Existing Land Use Areas- Takht Bhai Tehsil | | | | | | |
|---|-----------------|---------------|------------------------|--|--|--|
| Sr. No. | Land Use | Area (Sq. Km) | Area in percentage (%) | | | |
| 1 | Agriculture | 335 | 84.27 | | | |
| 2 | Forest | 2.46 | 0.62 | | | |
| 3 | Fruit orchards | 4.18 | 1.05 | | | |
| 4 | Graveyard | 2.01 | 0.5 | | | |
| 5 | Industry | 0.03 | 0.02 | | | |
| 6 | Railway | 0.21 | 0.05 | | | |
| 7 | Residential | 38 | 9.55 | | | |
| 8 | Roads | 4 | 0.89 | | | |
| 9 | Shrubs/Grass | 7.46 | 1.88 | | | |
| 10 | Stadium/Grounds | 0.17 | 0.04 | | | |
| 11 | Vaccant Land | 0.15 | 0.04 | | | |
| 12 | Water Bodies | 4.35 | 1.09 | | | |



Figure 2-4: Land Use Distribution in Takht Bhai Tehsil Area



Map 2-3: Existing Land use Map of Takht Bhai Tehsil

2.3.5 Land Use Distribution in Katlang Tehsil

The Katlang Tehsil comprises the area of 303.17 square kilometer. The most area in this tehsil consists of agriculture land which is 204 square kilometer or 68.23% followed by the Shrubs/Grass land (22.11%), residential (5.26%), forest (2.08%), fruit orchards (0.49%), water bodies (1.23%), roads (0.17%) and graveyard (0.40).

Statistics about Land Uses in Katlang Tehsil are given in Table 2.7 and illustrated graphically in Figure 2.5.

| Table 2-7: Existing Land Use Areas- Katlang Tehsil | | | | | | | |
|--|-------------------|---------------|------------------------|--|--|--|--|
| Sr. No. | Land Use | Area (Sq. Km) | Area in Percentage (%) | | | | |
| 1 | Agriculture | 204 | 68.23 | | | | |
| 2 | Forest | 6.23 | 2.08 | | | | |
| 3 | Shrubs/Grass Land | 66.02 | 22.11 | | | | |
| 4 | Fruits Orchards | 1.5 | 0.49 | | | | |
| 5 | Residential | 15.72 | 5.26 | | | | |
| 6 | Roads | 0.51 | 0.17 | | | | |
| 7 | Graveyard | 1.20 | 0.40 | | | | |
| 8 | Water bodies | 3.68 | 1.23 | | | | |



Figure 2-5: Land Use Distribution of Katlang Tehsil Area



Map 2-4: Existing Land use Map of Katlang Tehsil

2.3.6 Land Use Distribution in Mardan Urban Area

Current urban area of Mardan is obviously different from that reported in 1998, as substantial sprawl has taken place over the last 15 years. The following methodology has used to assess the current urban area of Mardan.

- The current urban area was determined by closely studying the base map/satellite image, and determining the current urban sprawl. The boundary of urban area was thus marked, and its area calculated.
- The urban area was marked considering the Physical feature i.e. water bodies, roads and UC boundaries in which the substantially urbanized/urbanizing area fell (even though such area is not entirely urbanized).

| Table 2-8: Existing Land Use Areas- Mardan Urban Area | | | | | | | |
|---|---------------------------|---------------|--------|--|--|--|--|
| Sr. No. | Land Use | Area (Sq. Km) | %age | | | | |
| 1 | Urban Residentiary | 18.16 | 33.92% | | | | |
| 2 | Agricultural Related | | | | | | |
| 2.1 | Agriculture | 30.62 | 57.21% | | | | |
| 2.2 | Forest | 0.01 | 0.02% | | | | |
| 2.3 | Bushes/ Scrubs | 0.002 | 0.004% | | | | |
| 3 | Trans | portation | | | | | |
| 3.1 | Roads/Railways | 1.61 | 3.00% | | | | |
| 3.2 | Terminals | 1.61 | 3.00% | | | | |
| 4 | Community facilities | | | | | | |
| 4.1 | Main Education Facilities | 0.27 | 0.50% | | | | |
| 4.2 | Main Health Facilities | 0.22 | 0.41% | | | | |
| 4.3 | Public/Community Uses | 0.05 | 0.09% | | | | |
| 4.4 | Parks/Recreational Places | 1.04 | 1.94% | | | | |
| 5 | Industry | 0.7 | 1.31% | | | | |
| 6 | Commercial | 0.28 | 0.52% | | | | |
| 7 | Graveyard | 0.09 | 0.17% | | | | |
| 8 | Water Bodies | 0.4 | 0.75% | | | | |
| Total 53.53 100.00% | | | | | | | |

Total urban area thus delineated works out in Mardan to be 53.53 square km, of which Urban Residentiary area is 18.44 square kilometers or about 34.45 % of the total urban area. As already stated, Urban Residentiary area is pre-dominantly residential area and also includes the local level facilities i.e. education, health, religious, local roads, shops etc.

Transportation category includes urban roads & railways, terminals i.e. (bus/truck terminals and railway stations). The area under transportation uses is 1.67 square kilometers, i.e. about 3.12 % of the total urban area.



Map 2.5: Existing Urban Area Land Use of District Mardan

CHAPTER 3: POPULATION – CURRENT AND FORECASTS

3.1 PAST GROWTH TRENDS: PROVINCE VS DISTRICT MARDAN

Inter-census growth rates of the Province and District Mardan (from 1951 to 2017) are given in Table 3.1. It is clear from the Table that since 1961, the population growth rate in the Province has been declining. It was 3.6% during the period 1961-72, reduced to 3.3% during 1972-81, and further declined to 2.8% during 1981-1998 while a slight increase of .09 occur during the period of 1998-2017.

In case of District Mardan, the growth rate has been declined from the year 1951 to 1981, while a slight increase of 0.43 occur from 1981-1998. The growth rate of the District is significantly reduced to 2.58 during the plan period of 1998-2017. The growth rateduring 2017-19 is 2.90% provincial and 2.71% District.

| Table 3-1: Past Growth Trends | | | | | | |
|-------------------------------|--|------------------------|--|--|--|--|
| | Average Annual Growth Rate (%) | | | | | |
| Inter-Censual Period | Province ¹⁷ | District ¹⁸ | | | | |
| 1951-1961 | 2.3% | 3.03% | | | | |
| 1961-1972 | 3.6% | 3.23% | | | | |
| 1972-1981 | 3.3% | 2.81% | | | | |
| 1981-1998 | 2.8% | 3.01% | | | | |
| 1998-2017 | 2.89% | 2.58% | | | | |
| 2017-2019 | 2.90% Except of Merged District of FATA | 2.71% | | | | |

3.2 MIGRATION

There are two main causes of population growth:

- Natural Increase
- Migration
 - Conventional Migration
 - Transient Migration

¹⁷ Source: Handbook of Population and Housing Census, 1998 Census, Pakistan, Page 1, Table 1.

¹⁸District Census Report, 1998, Page 25, Table 2.1.

3.2.1 Conventional Migration

Estimates of the magnitude of migration during 1998-2017 of District Mardan have been made by the following method:

National growth rate during 1998-2017 was applied on 1998 population to estimate expected population in the District Mardan in 2017, assuming uniform natural increase. When these figures are compared with actual population as recorded in 2017

| Table 3-2: District Population – Migration Vs. Natural increase | | | | | | |
|---|----------|----------------|--|--|--|--|
| 2017 Census | 2373061 | (i) | | | | |
| 2017 (using National G.R@2.4% during 1998-2017) | 2291142 | (ii) | | | | |
| 1998 Census | 1460,000 | (iii) | | | | |
| Additional Population (1998- 2017) | 913061 | (i)-(iii)=(iv) | | | | |
| Migration | 81919 | (i)-(ii)=(v) | | | | |
| Natural Increase | 831142 | (iv)-(v) | | | | |

census, the difference is the contribution of net migration. Migration is never unidirectional, but there is no way (short of migration census) to assess inward and outward movements separately. But the net migration figure is a robust assumption.

The overall national growth rate during the period 1998-2017 was 2.4%. Using this growth rate, the population of District Mardan in 2017 is calculated to be 2,291,142. The actual 2017 census population of the District was 2,373,061, implying a net in-migration of 81919. The additional population during 1998-2017 was 913061, of which, as already stated, migration component was 81919 (9%) and the remaining 831142(91%) was caused by natural increase.

3.2.2 Transient Migration

Transient migration in context of Mardan District refers to analysis of mobility due to several factors which are shaped due to natural disasters and disturbances resulting from armed conflicts. These are described in the sections below:

Afghan Refugees

UNCHR conducted census of Afghan refugees in May 2011 and reported that there are 31,284 Afghan families residing outside regular camps in District Mardan, and their total population is 144,204. The family size thus works out to be 4.6. Most of them are living in Mardan I & III.

IDPs due to Border Disturbances

There are no camp-based IDPs in District Mardan. However, IDPs living outside camps are about 90,000, constituting 17,961 families¹⁹.

Flood Affectees/Earthquake Impact

At present there are no displaced persons living in Mardan due to flood effect or earthquake of 2005.

The summary of transient population in District Mardan is given in Table 3.3.

Comparing the above with District Mardan's assessed population for 2019, it is estimated that transient population is around 8% of the District's regular population.

¹⁹ Source: Chief Coordinating Officer, Provincial Disaster Management Authority, Mardan.

| Table 3-3: Transient Population | | | | | | |
|---------------------------------|----------------------|-----------------------|--|--|--|--|
| Transient Population | Number of Persons | Number of Families | | | | |
| Afghan Refugees | 95,459 ²⁰ | 17,859 | | | | |
| Internally Displaced Persons | 84 | 14 | | | | |
| Affectees of Flood/Earthquake | | | | | | |
| Total | 95,543 | 17,873 | | | | |

3.3 POPULATION FORECASTS

An estimate number of future populations has been derived for the next 20 years using different forecasting models. These include:

- Regression Analysis
- Extrapolation
- Cohort-Survival Method

The estimates under the three forecasting models have been averaged to avoid uncertainty with growth rate and achieve more accuracy. The estimates under the three forecasting models and the recommended population for different years are presented in Table 3.4.

| Table 3-4: Population forecast for plan period (2019-2039) | | | | | | |
|--|---------|-----------|-----------|--|--|--|
| YEAR | URBAN | RURAL | DISTRICT | | | |
| 2017 | 439,325 | 1,933,736 | 2,373,061 | | | |
| 2019 | 458,240 | 2,045,296 | 2,503,451 | | | |
| 2024 | 509,289 | 2,361,747 | 2,871,036 | | | |
| 2029 | 578,354 | 2,835,575 | 3,413,929 | | | |
| 2034 | 643,222 | 3,347,535 | 3,990,757 | | | |
| 2039 | 715,567 | 4,033,464 | 4,749,031 | | | |

3.4 **POPULATION DENSITY**

Even more alarming than the population growth trends in District Mardan is its spiraling population density figures, which highlight the demographic dilemma that confronts the District. As of Census-2017, the population density in Mardan was at 1454.08 persons/ sq. km, compared to 409.59 persons/sq. km in the Province. The current population density of District Mardan is 1533.98 persons/sq. km, it is estimated to double up-to 2909.95 persons/sq. km at the end of the plan period. The detail is represented in Table 3-5

²⁰ Includes those living in District Swabi. There are no separate figures available for District Mardan.

| Table 3-5: Population Density (Sq. Km) of District Mardan and Khyber Pakhtunkhwa ²¹ | | | | | | | |
|--|--------------------|-------------------------------------|--|--|--|--|--|
| Voor | Population Density | Population Density (Persons/Sq. Km) | | | | | |
| Year | Province | District | | | | | |
| 2017 | 409.59 | 1454.08 | | | | | |
| 2019 | 432.85 | 1533.98 | | | | | |
| 2024 | 470.24 | 1759.21 | | | | | |
| 2029 | 496.94 | 2091.87 | | | | | |
| 2034 | 539.86 | 2445.32 | | | | | |
| 2039 | 570.52 | 2909.95 | | | | | |



Figure 3-1: Population density

²¹ Density is calculated from population forecasts for plan period (2019-2039).



The Age-Sex distribution of population in the year 2017 is shown in the pyramid below²².

Figure 3-2: Age-Sex Distribution of District Mardan

²² In terms of percentages, the age-sex distribution remains stable and does not significantly change over a period of time; the distribution is based on 1998 census.

CHAPTER 4: REGIONAL PLANNING CONTEXT

Regional planning deals with the efficient placement of land-use activities, infrastructure, and settlement growth across a larger area of land than an individual city or town as against urban planning which deals with the specific issues of city planning. A 'region' in planning terms can be administrative or at least partially functional, and is likely to include a network of settlements and character areas. In the context of Land Use Planning encompasses the entire Peshawar Valley comprising of the administrative five Districts i.e. Peshawar, Mardan, Nowshera, Charsadda and Swabi.

Regions require various Land Uses; protection of farm land, cities, industrial space, transportation hubs and infrastructure. Regional planning is the science of efficient placement of infrastructure and zoning for the sustainable growth of a region. Regional planning can address region-wide environmental, social, and economic issues which may necessarily require a regional focus.

Regional Plans direct certain levels of development to specific cities and towns in order to support and manage the region depending on specific needs.

The essential components of regional planning include the following:

- Hierarchy of Settlements.
- Growth trends and sphere of Influence of urban settlements with in the Region.
- Reducing pressure on Urban Centers.
- Establishing development corridors, new towns, and planning for rural areas.

All these aspects in the context of Peshawar Region are discussed below:

4.1 HIERARCHY OF SETTLEMENTS:

4.1.1 Objectives of Hierarchy of Settlements:

The overall objective of establishing hierarchy of settlements is to describe and understand the existing structure of the network of settlements (cities and towns) in Peshawar Valley as a key consideration in the formulation of development strategies and projects. Structure is determined by the functions and roles of the settlements.

Major objectives of the Settlement Hierarchy are as below:

- Accommodate and promote the development of linkages and infrastructure servicing of these Towns.
- Accommodate and promote proper planning and sustainable development in their environs
- Promote the role of these towns as economic, social and cultural centers for the surrounding areas
- Promote growth in smaller towns to allow for balanced and coordinated development throughout Peshawar Valley.
- Promote linkages between larger and smaller towns in order to distribute the resulting influence throughout the region.

• Promote the strengthening of towns as employment and service centers and as attractive residential centers

4.1.2 Hierarchy of Settlements and Land Use Planning

For Land Use Planning, it is important to determine the hierarchy of settlements. It helps to achieve objectives of the Project in order to set out a clear order of preference for the location of different developments. The larger cities having higher threshold population will need higher order services to serve their own as well as their threshold populations; and vice versa. Peshawar for example, being the provincial headquarter and the most populous city of the province, has or needs higher order facilities than Charsadda. In District Charsadda, Charsadda town needs higher order facilities than its smaller urban centers such as Utmanzai or Tangi; and such smaller urban centers need more facilities than the surrounding villages.

The hierarchy of settlements in case of Peshawar Valley has been determined on basis of following criteria:

- Population
- Location (e.g. lying within Peshawar Valley Development Corridor or not)
- Number of beds per thousand population
- Number of universities
- Availability of airport
- Administrative status of settlement (i.e. District or Tehsil headquarter).

Scoring for each of the above was done as below:

| Table 4-1: Characteristic-wise Distribution of Score | | | | | | |
|---|---------------------------------------|--|--|--|--|--|
| Characteristic | Score | | | | | |
| Settlement Population | 1 for every 100,000 population | | | | | |
| Location with respect to Peshawar Valley | Inside: 2 | | | | | |
| Development Corridor | Outside: 0 | | | | | |
| | < 0.3 beds/1000 population: 1 | | | | | |
| Number of hospital beds per thousand population | 0.3 to 1 bed/thousand population: 3 | | | | | |
| | > 1 bed/1000 population: 5. | | | | | |
| | One score per university. | | | | | |
| Number of universities | If the number of universities exceeds | | | | | |
| | 10, they get a maximum score of 10. | | | | | |
| Availability of airport | Airport available: 3 | | | | | |
| | Airport not available: 0 | | | | | |
| Administrative status of settlement (i.e. District or | District Headquarter: 2 | | | | | |
| Tehsil headquarter). | Tehsil Headquarter: 1 | | | | | |

The score for each District was then added, and based on aggregate score, ranking was done, as shown in Table 4.1.

| Table 4-2: Hierarchy of Settlements Score-wise | | | | | | | | | |
|--|--------------------------------------|---------------|----------------------------------|--|---------------------------|---------|---------------------------------------|----------------|-----------|
| Settlements | Population S Population (2019) | core Score | Location (inside/Outside RDC) | Number of Hospital Beds/1000 Population | Number of Universities | Airport | Administrative Status (DHQ/THQ) | Total Score | Hierarchy |
| Peshawar | 1,928,475 | 19.28 | 2 | 2.83 | 15 | 1 | 2 | 42.11 | 1 |
| Mardan | 457,049 | 4.57 | 2 | 1.02 | 4 | 0 | 2 | 13.59 | 2 |
| Swabi | 155,185 | 1.55 | 2 | 2.09 | 3 | 0 | 2 | 10.64 | 3 |
| Takht Bhai | 155,538 | 1.56 | 2 | 0.86 | 0 | 0 | 1 | 5.42 | 8 |
| Charsadda | 132,737 | 1.33 | 2 | 1.66 | 1 | 0 | 2 | 7.99 | 5 |
| Nowshera | 122,070 | 1.22 | 2 | 1.01 | 3 | 0 | 2 | 9.23 | 4 |
| Shabqadar | 111,759 | 1.12 | 2 | 1.03 | 0 | 0 | 1 | 5.15 | 10 |
| Pabbi | 84,357 | 0.84 | 2 | 1.37 | 0 | 0 | 1 | 5.21 | 9 |
| Jahangira | 59,907 | 0.6 | 2 | 0 | 0 | 0 | 1 | 3.6 | 12 |
| Торі | 56,002 | 0.56 | 2 | 0.94 | 1 | 0 | 1 | 5.5 | 7 |
| Risalpur Cantt | 53,449 | 0.53 | 2 | 0 | 0 | 0 | 0 | 2.53 | 14 |
| Aman Garh Industrial Area | 57,630 | 0.58 | 2 | 0 | 0 | 0 | 0 | 2.58 | 13 |
| Tordher TC | 51,227 | 0.51 | 0 | 0 | 0 | 0 | 0 | 0.51 | 17 |
| Zaida MC | 41,657 | 0.42 | 0 | 0 | 0 | 0 | 0 | 0.42 | 18 |
| Tangi | 35,665 | 0.36 | 2 | 2.35 | 0 | 0 | 1 | 5.71 | 6 |
| Utmanzai | 35,293 | 0.35 | 2 | 0 | 0 | 0 | 0 | 2.35 | 15 |
| Akora Khattak | 30,225 | 0.3 | 2 | 1.73 | 0 | 0 | 0 | 4.03 | 11 |
| Nawan Killi | 30,087 | 0.3 | 2 | 0 | 0 | 0 | 0 | 2.3 | 16 |
| Cherat Cantt | 5,875 | 0.06 | 0 | 0 | 0 | 0 | 0 | 0.06 | 19 |

The result of this exercise is given in the Table 4.2 below:

4.1.3 Conclusions:

Peshawar is the primate city of Khyber Pakhtunkhwa. In other words, it is disproportionately larger than any other town or city in the urban hierarchy. The sheer size and activities of Peshawar becomes a strong pull factor, bringing additional residents to the city and causing the primate city to become even larger and more disproportional to smaller cities in the Province. Being a primate City, Peshawar is different from Mardan, Nowshera and Charsada in terms of population, area of influence and services provided.



Figure 4-1: Hierarchy of Urban Settlements in Greater Peshawar Region

The above analysis indicates that Peshawar (the primate City) and Mardan (Category 1 settlement) have greater area of influence than settlements lower in hierarchy. Similarly, Category 2 settlements (Swabi, Takht Bhai, Charsadda, and Nowshera) have wider catchment area than Category 3 settlements, and so on.

4.2 GROWTH TREND OF URBAN SETTLEMENTS:

According to 1998 census report, there were 21 urban settlements in the greater Peshawar region. In 1981 however, there were 17 urban settlements in the valley, as four settlements

| Table 4-3: Urban Settlements Growth Rates | | | | | | |
|---|------------|------------------------------|--------------|-------------|-------------|--|
| | | | Population (| Growth Rate | | |
| Districts | Tehsil | Urban Settlements | 1998 | 2017 | (1998-2017) | |
| | Town-l | Peshawar MC | 910,807 | 1893361 | 3.93 | |
| | | Peshawar Cantt | 68,740 | 70741 | 0.15 | |
| Peshawar | Town-ll | | | | | |
| i condwar | Town-III | Peshawar Univ. TC | 3,269 | 5940 | 3.19 | |
| | Town-IV | | | | | |
| | Mardan | Mardan MC | 238,629 | 351733 | 2.06 | |
| Mardan | Waruan | Mardan Cantt | 7,297 | 6871 | -0.32 | |
| | Takht Bhai | Takht Bhai MC | 49,202 | 80721 | 2.64 | |
| | Nowshera | Nowshera MC | 56,576 | 83567 | 2.07 | |
| | | Nowshera Cantt | 33,237 | 36564 | 0.5 | |
| | | Aman Garh Industrial Area TC | 21,476 | 38624 | 3.14 | |
| Nowshera | | Risalpur Cantt | 31,416 | 36653 | 0.81 | |
| NUWSHEId | Dabbi | Cherat Cantt | 2,527 | 2265 | -0.57 | |
| | Paddi | Pabbi MC | 31,153 | 55255 | 3.06 | |
| | labangira | Jahangira MC | 31,115 | 52839 | 2.83 | |
| | Janangira | Akora Khattak MC | 19,530 | 32883 | 2.78 | |
| | Guahi | Swabi MC | 80,157 | 123412 | 2.3 | |
| | SWaDI | Zaida MC | 22,656 | 31949 | 1.83 | |
| Swabi | Торі | Торі МС | 30,458 | 52983 | 2.96 | |
| | Razzar | Nawan Killi TC | 18,082 | 26161 | 1.96 | |
| | Lahor | Tordher TC | 27,861 | 41420 | 2.11 | |
| | Charsadda | Charsadda MC | 87,218 | 114565 | 1.45 | |
| Charcadda | Shabqadar | Shabqadar MC | 55,439 | 91857 | 2.69 | |
| Cildi Sduud | Tangi | Utmanzai MC | 24,848 | 30747 | 1.13 | |
| | rangi | Tangi MC | 25,346 | 33012 | 1.4 | |

in that year did not have urban status. These included University Town in District Peshawar, and Topi MC, Zaida MC and Tordher MC in District Swabi. Since 1981, significant urbanization has taken place; existing urban settlements have grown and new urban settlements have sprung up. For example, in the context of Peshawar, newly urbanized (or to be urbanized) areas include Hayatabad Township, Regi Model Town and a number of private developments. However, these are relatively new developments and their populations cannot be compared in time-series context.



Figure 4-2: Growth Rates of Urban Settlements in Peshawar Valley

| Table 4-4: Growth Pattern of Urban Settlements in Peshawar Valley | | |
|---|----------------------------|--|
| Urban Settlements | Growth Rate (1998-2017) | Settlements with Growth Rate Differences |
| Peshawar MC | 3.93 | |
| Peshawar Univ. TC | 3.19 | Above 3 and |
| Aman Garh Industrial Area TC | 3.14 | Below 4 |
| Pabbi MC | 3.06 | |
| Mardan MC | 2.06 | Above 2 and Below 3 |
| Takht Bhai MC | 2.64 | |
| Nowshera MC | 2.07 | |
| Jahangira MC | 2.83 | |
| Akora Khattak MC | 2.78 | |
| Торі МС | 2.96 | |
| Tordher MC | 2.11 | |
| Shabqadar MC | 2.69 | |
| Swabi MC | 2.3 | |
| Peshawar Cantt | 0.15 | |
| Mardan Cantt | -0.32 | |
| Nowshera Cantt | 0.5 | |
| Risalpur Cantt | 0.18 | |
| Cherat Cantt | -0.57 | Below 2 and Above -1 |
| Zaida MC | 1.83 | |
| Nawan Killi TC | 1.96 | |
| Charsadda MC | 1.45 | |
| Utmanzai MC | 1.13 | |
| Tangi MC | 1.4 | |



Map 4-1: Hierarchy of Urban Settlements in Peshawar valley

Note: The radii of circles correspond to population sizes of settlements (Radii Not to Scale)

4.3 CENTERS AND ITS SPHERES OF INFLUENCE:

The sphere of influence of a settlement describes the area that is served by a settlement, for a particular function. Its sphere of influence for different functions may cover vastly different areas. For instance, a supermarket may attract people from a 20-KM radius, whilst a leisure activity, such as going to the city park may attract them from far further away.

The larger a settlement, greater its sphere of influence as it has a wider range of services and functions to attract people to go there. This is shown in the diagram below. A small village may only have a village store selling the daily newspaper and food such as bread and milk. People will only travel the shortest distance they need to buy these products. They are described as being convenience goods. In other words, something that can be bought easily and for the same price all over the place.

A larger town would have a wider sphere of influence because it would have shops and services that are more specialized, and so people would be willing to travel further to avail them. The range of service describes the maximum distance that someone would be willing to travel to obtain that good or service. The threshold population of a good or service is the minimum number of people needed to allow that service or facilities to be successful. The more specialized an activity or service will require a higher threshold population. The same applies to settlements as given in the diagram below.



Figure 4-3: Centers and their Spheres

Gravity models measure the pulling power of competing locations, whether cities, shopping centers or towns and the influence this has on the customers that reside within the boundaries. Models identify a boundary line, called the breaking point, at which customers that reside within the boundaries, either one side or the other of the line. Calculations can specify a particular breaking point or point of maximum pull between two settlements.

Breaking point between two urban settlements can be calculated by the formula:

The breakpoint from A = $\frac{\text{Distance from center A to center B}}{1 + \sqrt{\text{(population B/population A)}}}$

Boundary line of area of influence an urban settlement can then be drawn by a smooth line joining all the breaking points.

The sphere of influence or service areas of urban settlements in Peshawar Valley, using the above methodology has been calculated and shown in the figure below.



Map 4-2: Services Areas of Urban Settlements

4.4 REDUCING PRESSURE ON LARGE URBAN CENTERS:

Development is a two-pronged strategy, based on the classical debate of efficiency Vs. equity. Focusing on efficiency, there is a need to identify 'development corridors' in the region where returns against investments made would be maximum; and in these corridors private sector would also be interested to invest. These corridors are thus 'investment zones', encompassing cities as well rural areas. Thus, these will benefit not only urban areas, but also rural settlements which lie in it; resulting in better rural development and hence help to retard migration flows to urban areas. In fact, these development corridors will also have a spill-over effect even outside these corridors.

To efficiently reduce migration pressure on larger urban centers, there is an emergent need to establish new towns at feasible locations. This will however not help unless these are coupled with adequate employment opportunities and other necessary facilities, which make them attractive for the people to live in, and can restrain them to move towards bigger urban centers.

The third factor to reduce migration is sustainable rural development, in which each District should be divided into a number of 'Rural Growth Zones', each zone to comprise of few union councils, and within each zone a centrally located village would act as 'Rural Growth Centre', which will have better inter-village road connectivity as well as access to the nearest main road, provision of basic facilities such as good healthcare, quality education, provision of

adequate infrastructure and physical improvement of villages including village streets and houses.

To sum up, the parameters for reducing migration to bigger urban centers are as below:

- Identification of Development Corridors
- Establishment of New towns at appropriate locations with employment opportunities
- Sustainable rural development.

These are elaborated in subsequent sections.

4.5 **REGIONAL DEVELOPMENT CORRIDOR (RDC):**

Regional Development Corridor (RDC) is a major project of Greater Peshawar Region being proposed under the KP Land Use Project. Development corridors are described as transport (or trade) corridors with under-utilized economic potential in their environs, the development of which would be explored through spatial planning and development projects. They are therefore, seen as a means of prioritizing and promoting inter-related infrastructure and large-scale economic sectoral investments in defined geographic areas and optimize the use of existing infrastructure and resources. RDC can become the framework and platform for comprehensive and integrated development in the Region. RDC needs to be given great importance as well as active promotion.

RDC will be of great significance to the development of Peshawar Valley which will provide new opportunities, new vision as well as new impetus to the developmental activities. It will effectively promote the economic and social development of the valley. The construction of RDC will enhance connectivity and integration of developmental efforts of the five Districts, which is in the fundamental interests of the people.

As a large and systematic project, which covers 2019-2039, RDC needs joint and unremitting efforts by the provincial government, companies and all social sectors of KP. In the process of its construction, there is a need for scientific planning, step by step implementation, consensus among Districts through consultation, mutual benefit and win-win results, as well as ensuring quality and safety. Greater Peshawar Region should agree to make a list of prioritized or early harvest projects as well as the long-term plan for RDC. The prioritized or early harvest projects mean the projects which will be completed before 2024, and others by 2039. RDC is a vision with the long-term planning up to 2039.

The central role of the RDC would include establishment of new towns, special economic zones including industrial estates, and transportation infrastructure. Besides, there can be projects in the fields of financial services, science and technology, tourism, education, poverty alteration and city planning, etc.

To promote the establishment of RDC, the provincial Government needs to set up a RDC Committee, under which there would be a number of working groups for projects till 2024, long-term planning, transportation infrastructure, new townships and special economic zones.

Efforts are to be made to improve the livelihood of the local people, particularly the construction of educational, medical, and vocational institutes. Although hydro-electric projects will be located outside RDC framework, feasibility studies will have to be conducted for Solar and wind Power Projects in the proposed corridor.

Efficient, fast transportation network is of vital importance to the economic development. The existing transportation system of Peshawar should be upgraded on priority basis through systematic planning and link it with Annual development plan (ADP). New routes can be proposed to increase accessibility and avoid congestion. At the same time, feasibility study needs to be conducted for upgrading railway network in the Grater Peshawar Region. (Grater Peshawar region circular Railway)

The RDC aims to benefit the economic and social development of all regions in Khyber Pakhtunkhwa and provide effective inter-District connectivity. With the implementation of various projects, RDC will play an increasingly important role in promoting the economic development and uplifting living standard across different parts of of the Province. These projects will help boost employment and tax collection, strengthen the provincial road connectivity, promote economic development as well as improve people's living standard.

The proposed development corridor encompasses the area between GT Road and Motorway, and well beyond it to cover Mardan-Charsadda Road.

It is important that the identified corridors should be able to generate densification activities, and efforts to stimulate SMEs in the proposed corridors. It is also important to establish an appropriate legal and institutional framework before the project gets rolling.

It needs to be ensured that no speculation is generated around the corridor with unrealistic expectations for the communities involved which may not be fulfilled in terms of anticipated investments in certain areas of the corridor. The proposed corridors may generate notable successes in private sector investments into regional infrastructure development, industrial development and natural resources exploitation. To get maximum benefit from CEPAC, these corridors should be linked with CEPAC. This will help the provincial government to attract both national and international investors.

The corridor approach represents an understandable and reasonably objective way to prioritize regional infrastructure projects, stimulate investments into productive capacity and achieve economic densification.





Map 4- 4: Peshawar Valley Development Corridor

4.6 ESTABLISHMENT OF SATTELLITE, INTERMEDIATE, SECONDARY, AND INDUSTRIAL TOWNS – THE EMERGING SCENARIO:

There are many classical theories developed over last two centuries to explain the reasons behind the distribution patterns, size, and number of cities and towns in a region. However, in real life due to so many factors it is not possible to determine hierarchy of settlements based on hypothetical models. Hierarchy of settlements can be determine based on the level of services provided and their population sizes.

The analysis and inferences drawn in earlier section regarding hierarchy of settlements provides solid basis to establish satellite, intermediate, secondary and industrial towns as focal points for future to cater for the rural and small towns. Before doing so however, it seems appropriate to provide a brief description of different kinds of towns, as given below:

4.6.1 Satellite Towns:

A satellite town or satellite city is a concept in urban planning that refers essentially to smaller urban areas which are located somewhat near to, but are mostly independent of larger metropolitan areas. The large urban center in greater Peshawar region has a great potential for establishment of both new satellite town as well as execution of existing satellite town like Hayatabad and Ragilalma in Peshawar and sheik Maltoon in Mardan. The extinction of both Hayatabad and Sheik Maltoon is highly describe and required of the boundaries of these two town are not immediately extended. The uncontrolled urban growth will create land like conditions around these towns and will have a negative environmental impact on these towns. Due to unplanned growth around these satellite towns that will disrupt, these disturb the municipal services in these areas also. In future these residents will face multiple problems.

4.6.2 Intermediate Towns:

Intermediate towns perform social and economic functions that are important for regional development, functioning quite reasonably. The intermediate towns are important not merely because of their size, but because of the services they render to the hinter land. As services centers, these towns can provide public, social, commercial and personal service not only to its own population but also to the surrounding rural hinterlands

In fact, Intermediate towns can also offer better facilities in social services i.e., health and education, than large and small cities. They become stopping-off points for migrants who might otherwise go directly to the big cities, but the big cities have no more carrying capacity to accommodate more population.

4.6.3 Secondary Towns:

Secondary towns serve as trading centers for agricultural and other primary goods. They also serve as centers for providing economic and social services to the rural populations, particularly the rural poor. Secondary towns play important role in reducing poverty in both rural and urban areas and in redirecting rural-urban migration from mega-cities. Rural-urban migration is not only inevitable but also desirable as it allows labor to move to sectors of the economy where it can be more productive. However, rural-urban migration to mega-cities may be undesirable as it may contribute to the diseconomies of scale of these cities. Hence the role of secondary towns is important to control the above.

4.6.4 Industrial Towns:

An industrial town is described as the one with predominant industrial economic base and where workers live within walking-distance of their places of work. The term also implies the ways in which economic specialization arises through clustering in a particular industry-zoned urban area. Firms in industrial towns get benefits of aggloments and economize their cost of production to better compete in the national and international market. (Due to scarcity of resources in research and development)

The Economic zones/Industrial Towns that have been approved by the Provincial Government are described below:

4.7 ECONOMIC ZONES:

Three Economic Zones have been approved by the Government, the details of which are as below:

4.7.1 Rashakai Economic Zone:

Rashakai Economic Zone is spread over an area of about 1,000 acres of land and is located on M1 motorway at Mardan interchange and links to CPEC through Burhan interchange. Due to its central position in the Province, it is envisaged to be an imminent trade hub. The Economic Zone will also host an IT Park of 100 acres in collaboration with the Board of ITKP. The strength of this zone is its strategic location by being connected to Districts and a resource pool which has a predominent investment favorability for industries in fruit & food packaging, textile and auto manufacturing. Further expansion of around 5,000 acres is also under consideration.

4.7.2 Jalozai Economic Zone:

This economic zone is spread over an area of 257 acres. It will be a strategic location for small and medium enterprises. The economic zone connects to GT Road through a link road of about 15 KMs from Pabbi. The industrialists of Jalozai Economic Zone will have readily available trained human resource due to its location in the center of a settled area, which also has a long-established industrial tradition. It will have access to plenty of natural resources and agricultural products.

4.7.3 Nowshera Economic Zone:

It spreads over an area of 100 acres and is situated on GT Road. The zone is located at a distance of about 50 Kms from Peshawar near Mardan interchange on Islamabad-Peshawar motorway section.

4.8 NEW TOWNS:

New towns can be used as economic 'Growth Poles' for regional level Land Use Plans such as the five Districts of Peshawar Valley. New towns in Peshawar Region will exert a positive impact on the economy and lead to a sustained increase of production and of incomes of the region. However, for a new town to be functional and act as a growth pole, it must have some basic industry, education, health and physical concentration of activities with strong backward and lateral linkages. New towns located in older urbanised regions like Peshawar, will also help to revitalize blighted or decaying areas and may infuse life in the area by the creation of dynamic new types of employment and up to date amenities.

New towns are also needed in the region for the purpose of 'Decongestion' of large cities like Peshawar and Mardan. These will help to ease pressure on such bigger urban centers and achieve a more sub-regional distribution of jobs, homes, amenities and transport. This can be a successful strategy for controlling growth in the fringe areas of larger cities. Although in KP and rest of the Country, new housing schemes and townships within urban areas primarily cater for the needs of upper strata of society, but the trend needs to be rationalized. New towns in Peshawar Valley in particular and in KP as a whole, can be built primarily to resettle the urban poor from overcrowded central areas of larger urban centersto permit the renewal of central city areas.

New towns are also planned for rural population to prevent further encroachment on limited prime agricultural land by urban extensions. It is thus important that new towns should be built on land which is unsuitable or poor for agricultural production. Another rationale for creation of such towns can be deliberate concentration of the population of scattered hamlets or villages to facilitate/economize the provision of adequate amenities and services.

New towns are a form of urban planning designed to relocate populations away from large cities by grouping homes, hospitals, industry and cultural, recreational, and shopping centers to form entirely new.

A typological distinction can be made between new towns with a 'predetermined location' and new towns where the optimal location can be chosen among several potential sites. In the first category, the site is fixed by the need for proximity to location bound resources such as mines, sources of energy, or land suitable for specific agricultural development. The second category would include towns built as service centers of development regions and new towns created for the decongestion of existing cities or the reorganization of metropolitan areas.

Industrial towns in 'Isolated Locations' are created to exploit such natural resources as iron, coal, oil, etc. In developing countries most new towns belong to this type since economic development is given priority over social development objectives such as the decongestion of overcrowded urban centers. Isolated new towns can also serve as foci of scattered settlements.

4.9 ENTERTAINMENT CITY:

There a huge potential of developing an 'Entertainment City' near Charsadda Interchange on M1. Spread over around 5,000 kanals, it has ideal location, being located between River Kabul and River Jindi. The site is mostly barren and thus agricultural land will not be affected. Entertainment City will be a hub of recreational facilities at regional level.

4.10 PROPOSED NEW TOWN OF THE PHA:

New Townships that are already being planned/considered by Provincial Government include Mega City and Jalozai Scheme in District Nowshera and a Sports City in District Peshawar.

Mega City spread over 50,000 kanal is a project of Provincial Housing Authority. The site is located near Kernel Sher Khan Interchange on Peshawar - Islamabad Motorway. Preliminary feasibility study of the project has been completed and approved.

The Jalozai site is also located in District Nowshera on main Cherat Road, approximately 8 km from main GT Road near Jalozai industrial estate. Total area of scheme is 8905 kanals, while the number of plots is 8,044.

4.11 OTHER FEASIBLE LOCATIONS FOR NEW TOWNS:

Feasible location for a new town requires detailed studies.

The following three new Towns are proposed in Peshawar Valley at the indicated locations:

- Tangi Model Town, District Charsadda
- Takht Bhai Extension Town in District Mardan
- New Topi in District Swabi.

Tangi Town is located at a distance of 22 kilometers from north of the District capital of Charsadda; while Charsadda is about 28 Kms from Peshawar. Charsadda has one of the most fertile lands in KP. There are three rivers flowing in Charsadda: The River Jindi, the Kabul River, and the Swat River; these rivers are the main sources of irrigation for Charsadda. The three rivers then merge and join the Indus River.

The main agriculture produce of Charsadda are; Tobacco, Sugarcane, Sugar beet, Wheat and Maize. Vegetables include Potato, Tomato, Cabbage, Brinjals, Okra and Spinach. Among orchards; Apricot, Citrus, Plum, Strawberry and Pears are famous. Strawberry, Sugarcane and Tobacco are cultivated abundantly.

Charsadda is also famous for Foot Wearing, Cloth Wear and Fishery that contribute a lot towards the District economy. Hundreds of people are involved in making Foot Wear. There are more than 500 footwear manufacturing units that have also started making handmade shoes, bags, belts and small leather accessories but the most popular and highly produced item is footwear (Peshaware Chapal). As already stated, cloth wear manufacturing is also an attractive business for the people of Charsadda.

Being close to Peshawar metropolis and hence under its shadow effect, Charsadda has not developed industrially as it should have, particularly for agro-based industry. Besides, being close to Peshawar it has many locational advantages. Charsadda also function as a satellite town of Peshawar most people commute daily from Charsadda to Peshawar and back

increasing traffic load. Further, people who can afford, tend to build houses in Peshawar causing its sprawl and related issues. A well-planned town near Tangi with required urban facilities and services in District Charsadda will help to control this trend and also provide impetus to the District (and hence regional) economy.

4.11.1 Takht Bhai Extension Town:

As the name suggests, is a planned extension of the existing Takht Bhai Settlement in District Mardan. The existing urban settlement of Takht Bhai is the fastest growing urban settlement in Peshawar Region; its growth rate was 5.98% during the period 1981-1998. It is the highest rate among all urban settlements of the region. It is also the second largest settlement of District Mardan, after Mardan City. Takht Bhai is situated 15 km from Mardan on Swat-Malakand Road. In 1908/9 the ancient Buddhist history was discovered in the mountains.

Some of the possessions of the Buddhist houses and buildings have been taken away illegally. The population is expanding and new houses are being built in and around Takht Bhai. If ignored for a few more years, the tourist and historic attractions will disappear. The authorities need to draw a boundary line, so stop further encroachments. There is a need for a new township at an appropriately located site near Takht Bhai, along with appropriate living environment, along with tourist rest houses and restaurants where people can relax before and after they embark for the on-wards mountain journey. This will reduce pressure on Mardan City, and will also help to develop Northern part of Mardan District, as Takht Bhai will become a growth pole for this part of the region.

4.11.2 New Topi in District Swabi:

Topi Town lies in the Eastern part of District Swabi. It is located to the West of Tarbela Dam, the world's largest earth filled dam, which is also the largest hydroelectric generation project in Pakistan.

Topi is home to Ghulam Ishaq Khan Institute of Engineering Sciences and Technology (GIKI), one of the premier technical universities of Pakistan. Gadoon Amazai Industrial Estate, is also a few kms North-East of Topi. All these key Land Uses i.e. Tarbela dam, GIKI, Gadoon Amazai Industrial Estate and the geographic location of existing Topi settlement justify a well-planned New Town (New Topi) adjacent to existing Topi settlement.



CHAPTER 5: THE LAND USE PLAN

5.1 OVERVIEW:

There was always a felt need for provincial land use policy for Land Use Planning and optimum utilization of land resources. The Land Use Plans for the five Districts are building blocks towards that end.

At present there is no framework or a policy relating to land use and therefore, in the matters of location and acquisition ad-hocism prevails. Government in one department takes certain decisions, which is negated by another department, behind most of which the confrontationist situation is the question of land. There being no Land Use policy within whose framework different departments can decide their projects, contradictory views are taken by different departments, at the root of which is the question of land use.

Locating non-agricultural activity on land best suited for agriculture would not be permitted within the framework of the District Land Use Policy. To decide about location, therefore, land use policy is of vital importance. Under the policy, appropriate land resources would always be available where necessary for development, and the logic of appropriate land use would apply.

Land is required for various kinds of activities including roads, railway tracks, airports, city expansion, industrial location, mining, afforestation, etc. The District Land Use Policy, and ultimately a Provincial Land Use Strategy would zealously guard the land for the Land Use which has been designated under the Plan, and their conversion to other use would be rationalized. Land also required for grazing, but un-controlled grazing will convert the pasture into a barren unfortunately many of grazing areas have been eliminated.

The Land Use Plan have taken a holistic view of land as a resource and each parcel of land has been assigned to a designated use with compromising the competing uses. For example, prime agriculture land will not be used for urban development or industrialization.

Provincial Land Use Plan is envisaged as a policy document for an integrated, coordinated and systematic planning and uniform spread of development activities and employment to the rural and sub-urban population close to home and reduce pressure on larger cities like Peshawar. It aims at establishing hierarchy of settlements and developments of satellite, Intermediate, Secondary and Industrial Towns as focal points of future to cater the rural areas and small towns. It will also provide guidance to nation building departments/agencies, Urban Policy Unit, District Governments/TMAs for undertaking integrated and coherent development programs through holistic planning.

The Consultants have conducted surveys of twenty-one different sectors as per Terms of Reference, formulating appropriate plans to achieve the specified objectives, including protection of prime agricultural land, transport driven residential and commercial development, allocating spaces for vertical, residential and mixed development zones, and allocating suitable land for agriculture.

Population and Land Use Planning are highly correlated with each other. District Peshawar is located roughly in the center of the Province, and prior to beginning of disturbances in the region in 1980s, Peshawar sustained and provided access to mountains and other tourism resorts further North. Sustainable development is constrained now-a-days not only by the

scarcity of natural resources, but also by the quality and quantity of human resources. The population aspects are therefore vital and have been incorporated in the District Land Use Plan.

The provision of housing particularly to low income groups is an important aspect of Land Use Planning. Demarking appropriate are for housing in the Land Use Plan is based on proximity to urban services, employment opportunities, cost of infrastructure, and restrictions on conversion of prime agricultural land to housing and other urban uses. The provision of shelter is a basic human right and Land Use Plan consider the provision of low-cost housing to all segments of society as a basic need. The Land Use Plan has identified appropriate areas for filling gaps in the existing housing requirements and further needs of the District population. There is a need to promote full range of housing in all communities, including initiating a cooperative effort from the beginning of the planning process and based on situation, recommend minimizing regulations and generating adequate financing, in an attempt to make housing more affordable and available to all income groups.

Education plays a vital role in the social and economic development of any community. The relationship between Land Use Planning and educational facilities location plays a positive role. Access to quality educational opportunities within convenient access will boost the chances for success of a Land Use Plan. The educational opportunities in Peshawar have attracted many new residents and businesses. There is a wide range of educational opportunities available in the District. However, the Land Use Plan encourages education sector to establish new institutions that provide people with the skills they need for the changing job market. Higher educational facilities that serve wider areas, much beyond the administrative boundaries of District, have therefore been located with convenient access, without causing traffic bottlenecks for the areas in vicinity.

All social sectors in Land Use Planning are important, but health in particular needs to be emphasized as in the context of Land Use Planning, it is a sustainability issue. The link between health and sustainability is so apparent that many people do not always understand the way in which human health is affected by the shape, form, design and function of the communities in which people livened more comprehensive detail for the role of health facilities inn landuse plan.

Land Use decisions affect the physical development of communities, and also profoundly impact the health of people who live and work there. There is a strong correlation between healthy eating habits and physical activity with rising rates of obesity, diabetes, heart disease, asthma and other health issues. A growing body of evidence points to development practices and Land Use patterns as a major contributing factor in many illnesses, particularly when such practices and patterns discourage physical activity, restrict access to healthy foods and disproportionately expose neighborhoods to environmental pollutants that exacerbate health conditions such as asthma. Traditionally, in the context of Land Use Planning in Khyber Pakhtunkhwa (and for that matter in the Country as a whole), health has not been given due to priority. That needs to be changed, as there is important link, as described above, between health, built environment and Land Use.

The Land Use Plan will facilitate in determining how much of job-producing land should be preserved for the future, and to preserve existing industrial land for industrial and job-generating purposes. The information will also help to determine nature and viability of current and future industrial uses, the ability to mix different uses, the transit-dependency
and/or employment characteristics of the local labor force, although some areas may seem to have the same amount of residential or other uses in industrial zones, the impact may not be the same. Other aspects are industrial location, compatibility with surrounding Land Uses particularly housing and agriculture, industrial waste discharge, and industrial zoning with respect to present and potential industries, depending on their types, level of pollution, and traffic attracted/generated.

The decreasing recreational facilities and open spaces are a cause of concern. The pressure on land is increasing because of competing Land Uses. The Land Use Policy therefore stresses the need for reserving recreational spaces against many competing demands for land.

The Departments including Provincial Housing Department and KP Urban Policy Unit in consultation with planners, administrators, environmentalists, agricultural scientists, local people and NGOs should monitor the plans for land use development and review it periodically after every 5 years, in accordance with the changing socio-economic needs of the time. District Land Use Plans are a new concept in KP as well as the entire Country, and initially it may be difficult to introduce changes in the existing land use pattern, but with steady long-range planning and appropriate public information system, the Land Use proposals are not difficult to achieve.

5.2 FRAMEWORK FOR DISTRICT SPATIAL PLAN AND BROAD GUIDELINES TO UNDERTAKE THE PROJECT:

The Government of Khyber Pakhtunkhwa is committed to a sustainable future. Initiating District Land Use Plans is an important initiative of the Provincial Government to make Mardan an attractive place to live and work. The Government is seeking to steer growth and change the Districts in ways that are economically, socially and environmentally sustainable.

District Land Use Plans are meant to improve the integration of Land Use and transport planning. The Land Use Plan will help government agencies to improve public facilities and services. The Plan identifies locations for different Land Uses at most suitable locations and directions, which will guide the implementing agency in rationalizing all Land Uses and objective planning and formulation based on the potential and requirements of the land resources. Preparation of District Land Use Plan (DLUP) will promote a potential-based use of the land for maximum land resource conservation. It will also ensure sustainable use of resources for use for the coming generation. The optimum and guided utilization of land is, in fact, the main objective of the Land Use Plan.

District Land Use Plan is road map of sector strategies, subtly integrated, and derived from analysis of surveys and consultations with different stakeholders. District Land Use Planning is more than just long-term planning, where objectives are set for a specific period of time; it is more pro-active, based on anticipated changes in the years to come, thus making corrective alterations in the Plan after appropriate intervals, and involving various stakeholders at different levels of planning process, that may steer the City District Government, Provincial Housing Authority/PMU, Urban Policy Unit, Development Authority and urban local councils in a focused direction.

Broadly, goals of Land Use Plan are to address the major challenges facing District Mardan. The urban areas and villages in the District should maintain their character and vitality. The growth opportunities should be supported throughout the District, and not just in the urban areas. At the same time however, there should be minimum adverse impacts on agricultural land, and public services.

Urbanization has far-reaching effects on agricultural lands. The process of urbanization usually triggers the growth of urban housing, infrastructure, city-specific land-use forms such as recreational areas/stadiums, and public facilities etc. which further diminish cropland around the cities. Urbanization is inevitable but the importance of agriculture cannot be ignored. There is thus a need on the part of the Government as well as social responsibility to preserve this natural gift. Agriculture should remain a vital part of life in the District, without compromising industrial development and planned urban growth. Thus, growth benefiting the agricultural economy and agro-based industry is strongly encouraged.

Comprehensive District level decision-making approaches are needed to explore future expansion alternatives and promote growth patterns that are economically viable and environmentally sustainable. Keeping in view all the factors affecting future urban expansion within the District, the most optimum growth direction/s have been identified.

This Chapter attempts to elaborate the strategy, based on planning rationale, availability of suitable land and linkages with surrounding settlements. Subsequently, Land Use proposals have been based on this analysis.

District Mardan lies towards North of Peshawar Valley, bound by District Charsadda in the West, District Swabi in the East and District Nowshera towards South. The District has two main urban settlements i.e. Mardan City and Takht Bhai.

Mardan city is located towards Southern part of the District, and lies at the confluence of many inter-city roads, which converge/pass through Mardan urban area. These include Nowshera Road, Charsadda Road, Malakand Road and Swabi Road. Mardan City has been expanding in all directions, particularly along Nowshera Road and Malakand Road. The growth along Swabi Road and Charsadda Road has been relatively lesser. Takht Bhai lies towards Western part of the District and towards North-West of Mardan City. The town is located on Malakand Road (NH 45).

Like other District, future Land Use policy for Mardan should derive from the fact that much of Mardan's distinct character is its diversity of Land Uses, and its physical, economic and cultural characteristics. Complete segregation of Land Uses, particularly in the inner areas is neither possible nor desirable. However rampant Land Use conversions, which impede easy flow of traffic and a non-amenable living environment for the local residents must be controlled.

To implement the Land Use Plans for the five Districts, there is a need to form a regional body such as Peshawar Valley Development Agency (PVDA), which can not only implement the plans for each of the five Districts, but do so in a coherent and integrated way, and also resolve the inter-District planning issues which may arise during the plan implementation process. At present there is no regional body which can provide framework for the implementation of Land Use Plans and take up development projects of regional level for valley as a whole. Different projects are being launched or are on-going in the five Districts of Peshawar Valley.

Thus, to oversee and coordinate the activities of these projects, it is important to create an agency such as PVDA, which may be established in the Urban Policy Unit KP. A senior officer may be assigned the duties of Chief, PVDA. To assist the Chief and coordinate the activities, a

number of Deputy Chiefs may be drawn from sectoral departments. The officials should represent their respective departments and provide guidance where necessary.

The abundance of local planning authorities without an apex body at regional level contributes to the emergence of complex problems such as unclear roles, overlapping functions and responsibilities not fully discharged. These activities impact the growth and development in the region. With no definite policy at the Provincial level, the government employs ad-hoc measures in response to physical development problems. The Plans are articulated poorly as the processes involved are not properly followed due to existence of many planning authorities with few qualified Town Planners, and lead to little impact in promoting efficient urban and regional development.

Every planning authority has a specific task it performs in ensuring that proper planning is achieved. The proposed PVDA is expected to implement the District Land Use Plans of the 5 Districts while the local government planning authorities such as Peshawar Development Authority, Mardan Development Authority, Provincial Housing Authority, Sarhad Development Authority etc are empowered by law to carry out specific planning roles. PVDA is not meant to take over their roles, but ensure that all plans are prepared within the framework of District Land Use Plans.

Planning authorities have the responsibility of approving planning schemes and the administration of various town and country planning laws and also empowered to declare any area a planning area within their jurisdiction, after making adequate investigation about it from PVDA. Lack of linkage between the local authorities and the regional authority such as PVDA leads to the negligence, as the problem is not really addressed, leading to haphazard development.

The Land Use Plan will help government agencies to improve public facilities and services. The Plan identifies locations for different Land Uses at most suitable locations and directions, which will guide the implementing agency in rationalizing all Land Uses and objective planning and formulation based on the potential and requirements of the land resource. Implementation of District Land Use Plan (DLUP) will promote potential-based use of the land for maximum land resource conservation. It will also ensure sustainable use of resources for use for the coming generation. The optimum and guided utilization of land is, in fact, the main objective of the Land Use Plan.

5.3 THE GROWTH DIRECTION:

The urban area of District Mardan, like all other urban areas, needs to expand to cater for the future population. Besides, currently most of the social facilities, institutions and amenity areas are concentrated in the existing urban area; provision has to be made for similar facilities in the peri-urban area which is likely to be urbanized over the next 20 years i.e. the duration of plan period.

The expansion however needs to be guided in the right directions because of the following reasons:

• Urbanization has far-reaching effects on agricultural lands. The process of urbanization usually triggers growth of urban housing, infrastructure, city-specific land-use forms

such as recreational areas/stadiums, and public facilities etc which further diminish cropland around the cities.

- There is thus a need on the part of the Government and the civil society to preserve this valuable natural gift i.e. agricultural land.
- Based on Consultants findings, the agricultural land in the District has been divided into three classes i.e. Class 1, Class 2 and Class 3 (Figure 5.1).
 - Class 1: Agricultural areas which are irrigated and productive; highly valuable not recommended for Land Use change.
 - Class 2: Agricultural areas which are productive but water logged
 - Class 3: Agricultural areas which are though productive, but are rain-fed; Land Use may be changed for future urbanization.

District Mardan has very fertile agricultural land. As seen in Chapter 2, more than 71% of area in the District is under agriculture, and most of it is good quality agricultural land. However, because of a number of factors which are explained in subsequent sections, some of the agricultural land, which is suitable for urban development, will have to be utilized for future urbanization.

As already stated, and shown in the map, most of the agricultural land in the District is of good quality, except for Eastern part of the District (class 2) and agricultural land in South-Eastern corner of the District (class 3).

The following important factors have also been considered for Land Use Planning of District Mardan:

- A part of area towards East of the District is flood-prone, mostly consisting of 7 union councils, which include Shahbaz Garhi, Garyala, Charguli, Bala Garhi, Mohib Banda, Kot Daulat Zai and Garhi Daulat Zai, and also because of frequent inundation by Kalpani Khawar. Thus, new human habitations in these directions must be discouraged.
- At present expansion is taking place haphazardly along inter-city roads in leap-frog fashion, leaving fertile agricultural land trapped between these linear developments. Such trapped areas ultimately develop into slums. It is therefore important that guided development must be encouraged in compact form.
- Most of the public and private housing developments are taking place towards South of the District, along Nowshera Road.
- In view of the above rationale, it is suggested that future urban expansion should take place towards South of the District, between Charsadda Road and Nowshera Road, and also towards East of Nowshera Road. The future urbanizing area should remain within Southern segment of ring road, so that future urban development takes place in a compact manner to achieve economies of scale and avoid unnecessary land wastage.

Based on the above rationale, the potential growth areas of District Mardan are shown in the map below:



Map 5-1: Potential and Constraints Map for Future of District Mardan



Map 5-2: Proposed Land Use Map of District Mardan

5.4 Proposed Land Usemap of District Mardan for Plan Period (2019-39)

In order to make our cities liveable and sustainable the future planning is important to accommodate peopal and provide facilities to build a healthy socities. For this purpose, the District Mardan Land Useplan for a period of 20 years were proposed according to the District population. The projection was carried out according to current population growth rate. The proposed land use of District Mardan as shown in Map 5.2 shows the following recommended plan for the plan period of 2019-2039. Proposed roads were provided to accommodate future and present traffic within District and congested urban centre of the city. District zones were provided to tackle the future population with planned growth and for better services provision in these zones. The detail of these zones with area are shown graphically. Due to rapid urbanization of urban area in Mardan it is necessary to provide basic facilities for the current as well as future population. For this purpose, differen propsed civic services were suggested to tackle the future population of urban areas in the District. Environmental degradation are going in our Mardan hard surfaces are replacesed green surfaces. For the preservation of future wild life and increase forestry of the District is also proposed. A green belt of about one kilometre is proposed in the outer part of the ring road to discourage the future growth of the city in precious agriculture land and unplanned expansion of District Mardan. In order to accommodate the future population and fulfill the current housing backlog the total area for the housing were proposed within the ringroad. For the improvent of horticulture sector in the District the fruit orchards were also proposed.

5.4 EXTENT OF SPATIAL GROWTH (2019-2039):

Assessing extent and direction of spatial growth of Mardan to cater for the growing population over the next 20 years is vital for formulating a realistic Land Use Plan. This section therefore attempts to determine the land required in urban and rural areas of the District for the plan period.

Spatial growth of Mardan over the plan period depends on future housing demand, transportation network, new commercial areas, industry, major health, educational and recreational facilities etc. These aspects are described in this section.

5.4.1 Population Densities:

The total area of District Mardan is about 1,634 sq. km, of which about 53.53 sq. km (3.3%) is categorized as Mardan Urban. Table 5.1 below shows Population densities of urban and rural area in District Mardan.

| Table 5- 1: Gross Population Densities | | | | | | | |
|--|------------------------------|---|---|--|--|--|--|
| Location | Population Area (2019) | | Population Density (Persons per Sq. Km) | | | | |
| Urban Area | 458,240 ²³ | 53.53 ²⁴ Sq. Km (13,222 acres) | 8,560 persons per sq. km (34.6 persons per acre) | | | | |
| Rural Area | 2,045,296 ²⁵ | 1,580.17 Sq. Km (390,302 acres) | 1,294 persons per sq. km (5.2 persons per acre) | | | | |
| District Total | 2,503,536 ²⁶ | 1,633.7 ²⁷ Sq. Km (403,524 acres) | 1,532 persons per sq. km (6.2 persons per acre) | | | | |

It is clear from the above Table that the current urban density is 34.6 persons per acre (PPA) in Mardan City. This is not a high figure and does not call for much reduction in urban density for decongestion; there is however a need for segregating non-compatible and traffic-attracting Land Uses from inner city. Such steps will result in better living environment for the residents.

5.4.2 Urban Boundary 2019 – 2039:

As the population of Mardan City continues to grow, its urban boundary needs to be re-defined. The existing urban area is around 53.53 sq. km, to which about 30.06 Sq Km, would be added, as calculated below. The gross urban area by the end of plan period would thus be around 83.59 sq km.

- Urban Population, Mardan City (2019) = 458,240²⁸
- Urban Area (2017) = 53.53 sq. km²⁹.
- Current Population Density = 8,560 persons/sq. km.
- Additional Urban Population (2019-2039) =257,327³⁰
- Future Area required = Additional Population/Density = 257,327/8,560 = 30.06 sq. km.

²⁶ Source: District Studies Report Mardan, KP Land UseProject, Chapter 6, and Table 6.15.

²³ Urban Population of Mardan City of 2019 was projected using 1998-2017 population density.

²⁴Ref. Chapter 2, (Land UseDistribution) of this Report

²⁵ Obtained by subtracting urban population from the total District Population.

²⁷ Calculated from approved base map of District Mardan

²⁸ Source: Table 5.1

²⁹ Source: Chapter 2, Table 2.5.

³⁰ Source: Table 5.7.



Map 5-3: Urban Area in 1998, 2017 and 2037 of District Mardan

5.4.3 Union Councils to Urbanize by 2039:

The criterion for envisaged urbanization by the year 2039 is not entirely density-based, but also stems from the proposed Land Use strategy. Future densities will be driven by the proposed Land Uses in a particular direction, even if the current densities over there are relatively lower than elsewhere, but expansion in that direction otherwise is desirable. Thus, the proposed trunk infrastructure in a particular direction, future housing, new commercial & industrial areas, health, education & recreational areas, major road network etc will attract population there, resulting in enhanced densities.

As already stated, the current urban area of Mardan is spread over 53.53 square km, and the area required for additional urban population during the period 2019-2039 would be 30.06 sq. km. The urban boundary of Mardan by the year 2039 would thus encompass 53.5+30.06=83.59 sq. km. The currently rural/semi-rural UCs which would urbanize by 2039 are 12, as given in Table 5.2. Except for Charguli and urban UCs, all of the remaining 10 UCs would urbanize partially, as the areas of UCs are quite large.

| Table 5 | - 2: UCs Likely to Urbanize ³¹ by 2039 |
|---------|---|
| Sr. No | Name of UC |
| 1 | Charguli |
| 2 | Mohib Banda |
| 3 | Urban |
| 4 | Mohabat Abad |
| 5 | Toru |
| 6 | Mayar |
| 7 | Chak Hoti |
| 8 | Mardar Rural |
| 9 | Chamtar |
| 10 | Maho Dheri |
| 11 | Khazana Dheri |
| 12 | Kot Daulat |

³¹ Except Maira Surizai Payan and Chamkani which will urbanize completely, the remaining 18 UCs will urbanize partially.

5.5 HOUSING:

Adequate shelter for all has been recognized as basic human right at the UN habitat conference 1996. The housing situation of Pakistan has deteriorated and being one of the major pillars of macro economy, government need to ensure adequate housing to all its citizen through proper planning and management, indicative, motivationNeed explanation for this content. Special emphasis would be given to micro finance to low income communities.

5.5.1 Housing Shortage/Backlog

The main facets that need to be considered for assessing housing backlog include population, existing number of families, household size and the current housing stock. The population of District Mardan in the year 2019 is given in Table 5.3. The Table shows required number of Houses in the District (assuming family size of 6), and those currently available). The difference between the two is the current housing shortage. Based on statistics in the Table, the current housing backlog in District Mardan is 271329 units.

| Table 5- 3: Current Housing Backlog in District Mardan | | | | | | | | | |
|--|--|--------|--------|--|--|--|--|--|--|
| Population ³² | Population ³² Housing require ³³ Housing stock ³⁴ Housing backlog | | | | | | | | |
| 2,503,451 | 417242 | 195913 | 271329 | | | | | | |

5.5.2 Existing Housing Stock:

Existing housing stock in Mardan consist of 60076 Kacha units in which 7986 are located in urban jurisdiction and 52090 in rural area. The number of Pacca houses in the District is 130524 in which 41073 are positioned in urban area and 89451 in rural area, while the mix houses is 5314 in which 1100 is situated in urban and 4214 in rural areas.

| Table 5- 4: Existing Housing Stock in District Mardan | | | | | | | | | |
|---|-----------------------|-------|------------------|--------|-----------|--------|------|--------|--|
| Voor | | 19 | 998 | Ť | 2016-2017 | | | | |
| rear | kacha | Pacca | Mix | Total | kacha | Pacca | Mix | Total | |
| Urban | 8082 | 25402 | 25402 1141 34625 | | 7986 | 41073 | 1100 | 50158 | |
| Rural | 74540 | 59193 | 9193 4730 138463 | | 52090 | 89451 | 4214 | 145755 | |
| Total | Total 82622 84595 587 | | 5871 | 173088 | 60076 | 130524 | 5314 | 195913 | |

³² Population census 2017 projection to current year of 2019.

³³ Housing required @ 6 household size

^{34, 4} Existing housing stocks 2016-17 . Development S tatistics Report

5.5.3 House Hold Size and Density:

In 1998 density per square kilometer is 894, which increase upto 1,454 & 1532 in 2017 & 2019. An increase of 638 person occur in the period of 21 years. The house holds size of District increase from 8.4 in 1998 to 12.1 in 2017 while HH size gradually increase up to -.6 percent in 2019.

| Table 5- 5: Density & HH size of District Mardan | | | | | | | | | | |
|--|--|------|--|--|--|--|--|--|--|--|
| Year | ear Density (per SQ km) Household size | | | | | | | | | |
| 1998 ³⁵ | 894 | 8.4 | | | | | | | | |
| 2017 ³⁶ | 1,454 | 12.1 | | | | | | | | |
| 2019 ³⁷ | 1532 | 12.7 | | | | | | | | |

5.5.4 In-fill Development

i) Public Sector Housing Schemes

Sheikh Maltoon Town is the only public-sector housing scheme in Mardan, and has three phases. Phase IV is also consideration by Mardan Development Authority. The plot size distribution in Sheikh Maltoon Town is given in Table 5.5. The total number of plots in all the three phases is 5,253 of various categories, of which 2,780 plots are in Phase-I, 1,961 plots in Phase-II and 512 plots in Phase-III. Most of the plots in Phase-I are of 1 Kanal and 10 marlas, Phase-II also has 5 Marla plots, while most of the plots in Phase-III are 3 marlas (about 54%). The details are given in Table 5.5.

| Tab | Table 5- 6: Numbers and Sizes of Plots in Sheikh Maltoon Town | | | | | | | | |
|-----------|---|-------|-----------------|-------|-----------------|-----------|--|--|--|
| | Pha | se-l | e-I Phase-II | | | Phase-III | | | |
| Plot Size | No. of Plots | % | No. of Plots | % | No. of Plots | % | | | |
| 1 Kanal | 1,230 | 44.24 | 551 | 28.09 | 77 | 15.04 | | | |
| 10 Marla | 1,046 | 37.63 | 416 | 21.21 | 82 | 16.01 | | | |
| 7 Marla | 0 | 0 | 560 | 28.57 | 0 | 0 | | | |
| 6.5 Marla | 504 | 18.13 | 0 | 0 | 0 | 0 | | | |
| 6 Marla | 0 | 0 | 0 | 0 | 79 | 15.43 | | | |
| 5 Marla | 0 | 0 | 434 | 22.13 | 0 | 0 | | | |
| 3 Marla | 0 | 0 | 0 | 0 | 274 | 53.52 | | | |
| Total | 2,780 | 100 | 1,961 | 100 | 512 | 100 | | | |

³⁷ 2019 Projected

³⁵ 1998 census report of Tahsil Mardan

³⁶ 2017 census of District Mardan

ii) Approved Private Housing Schemes

The approved housing schemes in private sector in Mardan are as below:

- i. Gulberg Model Town
- ii. Sheikh Shahzad Model Town
- iii. Mardan Town opposite Sheikh Maltoon Town
- iv. Bismillah Town.
- v. Mardan Housing Project.

Land use Distribution in private housing schemes is presented in Table 5.6 while the number and sizes of plots in the private housing schemes are given in Table 5.7.

| | Table 5- 7: Land Use Distribution in Private Housing Scheme | | | | | | | | | |
|----------------|---|-------|------------------------------|-------|----------------------|-------|----------------------|-------|---------------------------|-------|
| Land uses | Gulberg Model Town Phase-I | | Sheikh Shahzad Model Town | | Mardan Model Town | | Bismillah Town | | Mardan Housing Project | |
| | Area (Kanals) | % | Area (Kanals) | % | Area (Kanals) | % | Area (Kanals) | % | Area (Kanals) | % |
| Residential | 144.38 | 56.4 | 317.22 | 69.56 | 119.63 | 77.45 | 270.08 | 59.02 | 738 | 54.1 |
| Roads/Streets | 67.24 | 26.28 | 65.14 | 14.28 | 29.82 | 19.31 | 117.63 | 24.18 | 383.85 | 28.18 |
| Commercial | 12.94 | 5.01 | 22.8 | 5 | | | 21.01 | 5 | 68.1 | 5 |
| Parks | 18.11 | 7.07 | 31.92 | 7 | 4.27 | 2.76 | 29.42 | 7 | 96.79 | 7.11 |
| Mosques | 2.13 | 0.83 | 2.75 | 0.64 | 0.74 | 0.45 | Public Buildings: | | Public Buildings: | |
| Dispensary | 1.97 | 0.78 | 5.3 | 1.16 | | | | | | |
| Girls School | 1.63 | 0.64 | | | | | 11.76 | 2.79 | 47.86 | |
| Boys School | 1.4 | 0.55 | 1.75 | 0.38 | | | | | | 3.51 |
| Welfare Centre | 0.48 | 0.18 | | | | | | | | |
| Shadi Hall | 0.48 | 0.18 | | | | | | | | |
| Graveyard | 5.17 | 2.2 | 9.12 | 2 | | | 8.4 | 2 | 27.4 | 2.01 |
| Total | 255.93 | 100 | 456 | 100 | 154.46 | 100 | 458.3 | 100 | 1362 | 100 |

| | Table 5-8: Numbers and Sizes of plots in Private Housing Scheme | | | | | | | | | |
|-----------|---|-------|------------------------------|---|------------------|----------------------|-----------------|-------|---------------------------|------|
| Plot Size | Gulberg Model | | Sheikh Shahzad Model Town | | Mardan N Towr | Mardan Model Town | | Town | Mardan Housing Project | |
| | No. of Plots | % | No. of Plots | | No. of Plots | % | No. of Plots | % | No. of Plots | % |
| 2 Kanal | 0 | 0 | | | | | 0 | 0 | 78 | 7.39 |
| 1 Kanal | 47 | 1.72 | | Inder review, not yet vet finalized | 199 | 41.03 | 412 | 39.05 | | |
| 10 Marla | 1,131 | 41.35 | | | 176 | 36.29 | 565 | 53.56 | | |
| 9 Marla | 4 | 0.15 | Under revie | | 0 | 0 | 0 | 0 | | |
| 8 Marla | 4 | 0.15 | not yet | | 0 | 0 | 0 | 0 | | |
| 7 Marla | 626 | 22.89 | finalized. | | , | | 63 | 12.99 | 0 | 0 |
| 6 Marla | 16 | 0.58 | | | | | 19 | 3.92 | 0 | 0 |
| 5 Marla | 855 | 31.26 | | | | | 28 | 5.77 | 0 | 0 |
| Irregular | 52 | 1.9 | | | | | | 0 | 0 | 0 |
| Total | 2,735 | 100 | | | | | 485 | 100 | 1,055 | 100 |

iii) Un-Approved Private Housing Schemes

Unapproved private housing schemes in Mardan are as below. These are small schemes, ranging in area from 25 kanals to 80 kanals:

- Faisal Town: 45 kanals
- Shadman: 80 kanals
- Saleem Town: 25 kanals

5.5.5 National Housing Policy:

The high population growth, combined with difficulties in governance and inadequate investment in urban development has resulted in uncontrolled and unplanned growth of cities and towns, a deterioration in urban environment and deficiency in all forms of services. The problems are particularly pronounced for urban poor as they suffer to a great degree because of overcrowding and deprivation in infrastructure and services. These problems are exacerbated by both political refugees and migrants in search for economic opportunity. The absence of large scale flexible institutional financing over all phases of housing development, land development, construction, bridge and mortgage financing are both cause and effect of the under-developed housing delivery system. The Policy has been prepared with a practical approach to achieve the following aims and objectives:

• To provide enabling strategy, capacity-building and institutional development aiming at empowering all stake holders, particularly local authorities, the private sector, non-

Governmental organizations and community-based organizations, to play an effective role in shelter and human settlements planning and management.

- To introduce a strategy that would combine community participation and institutional strengthening in support of the development of a commercially based system of housing finance for land and house purchase; house construction improvement and upgrading. In addition, innovative approaches to collateral and screening of eligible households for incremental housing finance and home improvement credits which are compatible with the affordability limits of moderate and low-income households, would be introduced.
- To improve the housing conditions of the low-income population, through development capacity building and institution of new ideas, such as reduced housing standards, appropriate technology, incremental housing development, community participation and squatter-settlement regulation.
- To upgrade existing towns and cities with better city planning through improvement of infrastructure, creation of employment opportunities and affordable housing under a phased program, giving higher attention to those cities and towns which are comparatively more productive and efficient and require lower investments.
- To provide for an effective institutional capacity building frame work responsive to the grass roots devolved powers, to minimize general disparities and imbalances, not only between urban and rural areas but also between various income groups.
- Long term solution for housing lies in this sector, which should be a High Priority for economic development. It should not be considered as an area parasitic upon other economic activities but as an instrument of economic and cultural development. This sector can lend support in achieving all the key national goals including employment, economic growth and promotion of market-oriented economy and higher levels of public and private savings.
- To make the Government as a catalyst and facilitator in case of land policy, financial policy, improvement of katchi abadis and slums, research and development and institutional development.

5.5.6 Housing demand of projected population in the District:

According to 2017 census report current population of the District is 2373016 with 2.58 growth rate which is projected for the plan period of (2019-2039) and then housing demand is calculated with 6 household sizes. In the first five year from 2019-2024, the additional projected population is 367,585 which required 61264.17 houses, while from 2024-2039 additional population is 1877995 with the demand of 312999 units.

| | Table 5-9: Housing Demand for Additional Population in the District Mardan | | | | | | | | |
|------|--|-----------------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|
| | District | Additional Population | | | | Housing Demand | | | |
| Year | Population | 2019- 2024 | 2024- 2029 | 2029- 2034 | 2034- 2039 | 2019- 2024 | 2024- 2029 | 2029- 2034 | 2034- 2039 |
| 2019 | 2,503,451 | | | | | | | | |
| 2024 | 2,871,036 | 367585 | | | | 61264.17 | | | |
| 2029 | 3,413,929 | | 542,893 | | | | 90482.17 | | |
| 2034 | 3,990,757 | | | 576,828 | | | | 96138 | |
| 2039 | 4,749,031 | | | | 758,274 | | | | 126379 |
| | Total | | 224 | 5580 | | | 3742 | 63.3 | |

5.5.6 Net Housing Demand in the District

Based on calculations in earlier Sections, the summary of findings and net housing demand is given below:

Demand (2019-2039) :

| • | District Housing Dem | d for Additional Population : 374263.3 houses ³⁸ | |
|---|----------------------|---|----|
| • | Current Backlog | : 271329 houses ³⁹ | |
| • | Gross Demand | : 374263.3+271329 = 645592.3 – (/ | A) |

Potential:

- Plots in public sector (phase I&II of Sheikh Maltoon Town) : 2,473
- Plots in Private housing schemes : 4,275
- Total available plots/potential : 2,473+4,275= 6,748 (B)
- Net Housing Demand at District Level (2019-2039) = A-B= 645592.3-6,748= 638844.3

³⁸ Source: Table 5.3.

³⁹ Source: Table 5.4

5.5.7 Housing demand urban Rural split:

The housing demand in the District over the next 20 years is 791505. The demand for urban and rural areas is shown separately in the Table. During the period 2019-2024, there is a demand of about 8508 plots in urban area, while in the same period the demand in rural areas would be about 52742. The statistics for the subsequent 15 years (2024-2039) and for the entire plan period (2019-2039) are given in Table 5.10.

| | Table 5-10: Housing Demand Urban-Rural Split | | | | | | | |
|---------------|--|--------------|---------|---------|--------|--------|--|--|
| Veer | Add | itional Popu | lation | Housing | Demand | Tatal | | |
| rear | Urban | Rural | Total | Urban | Rural | TOLAI | | |
| 2019- 2024 | 51049 | 316,451 | 367500 | 8508 | 52742 | 61250 | | |
| 2024- 2039 | 206278 | 1,671,717 | 1877595 | 34380 | 278620 | 313000 | | |
| Total | 257327 | 1988168 | 2245095 | 42888 | 331362 | 374250 | | |

5.5.8 Area Requirements:

Considering Population density as 8 houses per acre, all values (number of plots) in Table 5.10 are divided by 8 to get Area required for housing in Acres. For the total housing demand (additional for next 20 years plus current backlog), gross area required is 46781 acres (326.5 Sq. km), of which 5361 acres (37.21 sq km) is in urban area and 41420.5 acres (289.2 sq. km) in rural areas (Table 5.11). The Table also gives split of areas required in urban and rural areas.

| Table 5-11: Area Required for Housing (Hectare) | | | | | | | | |
|---|--------|---------|-------|--|--|--|--|--|
| Time Devied | | Area | | | | | | |
| Time Period | Urban | Rural | Total | | | | | |
| 2019-2024 | 1063.5 | 6593 | 7656 | | | | | |
| 2024-2039 | 4297.5 | 34827.5 | 39125 | | | | | |
| TOTAL | 5361 | 41420.5 | 46781 | | | | | |

5.5.9 Proposed Locations for New Housing Areas

The new housing is proposed as in-fill development in Mardan's urban boundary of 2019, as well as along Swabi Road towards North-East and along Kalakand Road towards North-West of Mardan urban area. Thus, as per land use strategy, most of the future housing developments are proposed towards North-East and North-West. Expansion has not been proposed towards East to avoid Kalpani Khawar which usually gets inundated in rainy season. Similarly, area further East is also prone to flooding.

5.6 TRAFFIC AND TRANSPORTATION

5.6.1 Existing Situation

Accessibility is prerequisite for organizing all kinds of social or economic activities. This makes transport a core of development planning, cutting across every element of socio-economic system. Transport plays a crucial role in generating growth by facilitating both domestic and international trade, and by increasing access to other social infrastructures such as schools, hospitals, parks and so on. Transport investment has potential to raise social return to both public and private capital and also significantly contributes to lowering cost of production. The quality of transport infrastructure and level of services is therefore among the key factors that determine the overall efficiency of an economy. This Chapter describes the traffic and transportation network in District Mardan, and what needs to be done to alleviate the problems of this sector.

The main transport infrastructure in District Mardan is provided by a Railway Station (operated by Pakistan Railways), a National Highway (N45) and links to several highways including Motorway (M1), Grand Trunk Road (N5), and the Karakoram Highway (N35), enabling road, rail and air connections (through nearby Bacha Khan International Airport, Peshawar - served by all Pakistani airlines and till recently some foreign airlines) to all Pakistani cities as well as some gulf countries.

5.6.2 Roads and Bridges

Motorway – M1

The M1 stretch of Motorway connects Peshawar with Islamabad, and joins M2 at Islamabad Interchange as a continuation of Motorway network. Emanating from Peshawar Ring Road, it moves in an Eastern direction, crossing over the Kabul River. From here it passes through Mardan, Risalpur, Rashakai and Swabi before crossing the Indus River. It leaves Khyber-Pakhtunkhwa province and enters into Punjab, in which it passes through Attock, Burhanand Hasan Abdal. The whole stretch of the M1 consists of 6 lanes with a number of rest areas along the route.

The M1 is a motorway in Khyber-Pakhtunkhwa and Punjab, Pakistan. It is 155 km long, with 108 km in Khyber-Pakhtunkhwa and the remaining 67 km in Punjab. It has become a vital link to Afghanistan and Central Asia and is expected to take much traffic off the highly used N5. It is part of Pakistan's Motorway Network.

National Highways

Pakistan has a nationwide network of national highways that are distinct from its motorways. The main difference between the two is that, unlike motorways, national highways are not controlledaccess or limited access. As in the case of motorways, Pakistan's National Highway Authority is responsible for all national highways

Provincial Highways & Roads

In Mardan District, there are about 302.218 KMs Provincial Highways and Roads, as per data reported by Communication & Works Department Peshawar. These include 291.428 KMs high type and 10.790 KMs low type of highways & roads.

Secondary Roads

In the District Mardan, total 65 Secondary roads have been reported by Communication & Works Department Peshawar. This type of roads is third category of roads, denoted as 'D' by C & W Department. Total of the roads is over 439.55 Kilometers, Right of Way ranging from 18 ft to 100 ft, Black Top width from 12 ft 60 ft and Shoulder width from 2 to 6 meters. Details regarding these road names, length, right of way, carriageway and shoulder width are given in the District Studies Report of Mardan.

Access Roads

A total of 104 Access roads has been reported in District Mardan by Communication & Works Department. This type of roads is fourth category of roads, denoted as 'A' by C & W Department, and include local and farm to market roads. Total length of the roads is over 403 Kilometers, Right of Way ranging from 18 ft to 40 ft, Black Top width from 12 ft 24 ft and Shoulder width from 2 to 6 meters.

It may be mentioned that actual ROW is never constant throughout the length of any highway/ road. It is a revenue matter and varies for different segments of roads. Instead, carriageway width or number of lanes is much important to assess their traffic capacity.

Bridges

The District has 89 bridges as reported by Communication & Works Department. Details regarding road name, bridge name, width, length and height are given in the District Studies Report of District Mardan.



Map 5-4: Existing Transport Network of District Mardan

5.6.3 Vehicles Registered in District Mardan

Total 69,326 vehicles are registered in District Mardan whereas 67,049 are reported to be on-Road. Evidently, the vehicles plying in the District are lesser than those registered here. This is true for all categories of vehicles except motor cycles/ scooters, as seen in the Table5.12.

| Table 5- 12: Motor Vehicles Population in District Mardan ⁴⁰ | | | | | | | |
|---|------------------------|-------|---------------------|-------|--|--|--|
| Vehicle Type | Registered Vehicles | % age | Vehicles On Road | % age | | | |
| Vehicles Motor Cycle/Scooters | 37,699 | 54 | 39,494 | 59 | | | |
| Motor Cars/Jeeps/Taxi | 14,402 | 21 | 12,423 | 19 | | | |
| Buses/Mini Buses | 1,519 | 2 | 1,312 | 2 | | | |
| Motor Cabs Rickshaws | 197 | 0 | 193 | 0 | | | |
| Public Carrier Trucks | 2,221 | 3 | 1,614 | 2 | | | |
| Other Vehicles (Tractors, Private Trucks, Dumpers, Ambulances, Cranes, Water Tankers, Delivery Vans & Pickups) | 13,288 | 20 | 12,013 | 18 | | | |
| Total | 69,326 | 100 | 67,049 | 100 | | | |

The projected vehicles in District Mardan for next 10 and 20 years, based on average annual growth rate of 3.5% for last 10 years are respectively estimated at 97,791 and 137,944 total vehicles, as seen in the Table 5.13 below:

| Table 5- 13: Projected Motor Vehicles in District Mardan for Next 10 & 20 Years | | | | | | | |
|---|--------|------|--------|---------|--|--|--|
| Vehicles Type | 2011 | %age | 2021 | 2031 | | | |
| Motor Cycle/Scooters | 37,699 | 54 | 53,178 | 75,013 | | | |
| Motor Cars/Jeeps/Taxi | 14,402 | 21 | 20,315 | 28,657 | | | |
| Buses/Mini Buses | 1,519 | 2 | 2,143 | 3,022 | | | |
| Motor Cabs Rickshaws | 197 | 0 | 278 | 392 | | | |
| Public Carrier Trucks | 2,221 | 3 | 3,133 | 4,419 | | | |
| Other Vehicles (Tractors, Private Trucks, Dumpers, Ambulances, Cranes, Water Tankers, Delivery Vans & Pickups) | 13,288 | 19 | 18,744 | 26,440 | | | |
| Total | 69,326 | 100 | 97,791 | 137,944 | | | |

⁴⁰ Provincial Excise & Taxation Department KP

5.6.4 Traffic Surveys

a. Traffic Volumes

In order supplement to above information and to have first hand data on traffic volume and nature, fresh traffic counts - Manual Classified Counts (MCC) were conducted by the Consultants, on primary roads of District Mardan at entry and exit points, along with Origin-Destination surveys. In order to compliment above traffic data including first hand data about nature and volume of traffic, fresh Manual Classified Counts (MCC) were conducted on primary roads of District Mardan at entry and exit points. The survey was conducted on hourly basis, from 7 AM to 7 PM in January, 2013.

Analysis of the data obtained shows that the peak hours on different roads were as follows:

- Nowshera Road: 10-11 AM
- Swabi Road: 9-10 AM
- Mardan Road: 4-5 AM
- Malakand Road: 9-10 AM.

Table 5.14 summarizes the existing traffic volume (in-coming and out-going) on the four primary roads of District Mardan:

| Table 5- 14: Traffic Volume on Primary Roads in District Mardan ⁴¹ | | | | | | | |
|---|-----------|------------------|------------|----------------|------------------|--------|--|
| S. No. | Direction | Nowshera Road | Swabi Road | Mardan Road | Malakand Road | Total | |
| 1 | In-Coming | 14,524 | 5,272 | 4,541 | 6,304 | 30,641 | |
| 2 | Out-Going | 12,832 | 4,957 | 4,378 | 6,920 | 29,087 | |
| | Total | 27,356 | 10,229 | 8,919 | 13,224 | 59,728 | |
| | % | 45.80 | 17.13 | 14.93 | 22.14 | 100 | |

⁴¹ Field Surveys by the Consultants, January 2013.



Figure 5-1: Traffic Volume on Primary Roads in District Mardan

The detailed statistics are presented in the District Studies Report. Following are the main inferences:

- i. Total Traffic volume on the four primary roads of District Mardan (in-coming plus outgoing) is 59,728 vehicles, of which maximum volume is on Nowshera Road (about 46% of total flow, both ways), followed by Malakand Road (22%), Swabi Road (17%) closely followed by Mardan Road (about 15%). The vehicles include all modes of traffic including motor Cycles/ Scooter, Car/Jeep, Wagons/Mini Buses, Buses, pickups, trucks, and tractor trolleys.
- ii. In terms of modal split, 28% of the total traffic volume (on all four primary roads, both ways) comprises of cars/jeeps, followed by motor cycles (23%), wagons/mini buses (17%) and around 10% pick-up trucks. Other modes are relatively much less.
- iii. Of the total cars/jeeps, about 36% ply on Nowshera Road, 24% on Malakand Road,21% on Swabi Road and 19% on Mardan Road.
- iv. Among the motor cycles/scooters, about 40% ply on Nowshera Road, 22% on Mardan Road, and 19% each on Swabi Road and Malakand Road.
- v. Of the total wagons/mini buses about 57% ply on Nowshera Road, followed by Malakand Road (20%), Swabi Road (15%) and Mardan Road (9%).
- vi. The trend for large buses is roughly similar to wagons/mini buses. Of the total, most large buses (62%) travel on Nowshera Road, followed by 27% in case of Malakand Road, 9% on Swabi Road and less than 3% on Mardan Road.

| Table 5-15: Mode-Wise Traffic Volume on Primary Highways in District Mardan | | | | | | | |
|---|--------------------|------------------|------------|----------------|------------------|--------|--|
| Vehicles Type | Direction | Nowshera Road | Swabi Road | Mardan Road | Malakand Road | Total | |
| | In-Coming | 2,550 | 1,597 | 1,766 | 1,480 | 7,393 | |
| | Out-Going | 2,801 | 968 | 1,175 | 1,175 | 6,119 | |
| Motor Cycle/ Scooter | Total | 5,351 | 2,565 | 2,941 | 2,655 | 13,512 | |
| F | % | 39.60 | 18.98 | 21.77 | 19.65 | 100.00 | |
| | In-Coming | 3,030 | 2,130 | 1,884 | 2,401 | 9,445 | |
| | Out-Going | 3,007 | 1,366 | 1,411 | 1,717 | 7,501 | |
| Car/ Jeep / Taxi | Total | 6,037 | 3,496 | 3,295 | 4,118 | 16,946 | |
| | % | 35.62 | 20.63 | 19.44 | 24.30 | 100.00 | |
| | In-Coming | 2,905 | 571 | 340 | 638 | 4,454 | |
| Wagons/Mini Bus/ | Out-Going | 2,924 | 912 | 544 | 1,395 | 5,775 | |
| Medium Bus (12 to | Total | 5,829 | 1,483 | 884 | 2,033 | 10,229 | |
| 20 seats) | % | 56.99 | 14.50 | 8.64 | 19.87 | 100.00 | |
| | In-Coming | 859 | 114 | 34 | 255 | 1,262 | |
| Large Bus (over 20 | Out-Going | 678 | 109 | 31 | 417 | 1,235 | |
| seats) | Total | 1,537 | 223 | 65 | 672 | 2,497 | |
| - | % | 61.55 | 8.93 | 2.60 | 26.91 | 100.00 | |
| | In-Coming | 1,701 | 302 | 204 | 678 | 2,885 | |
| Pickup/ Truck (open | Out-Going | 941 | 665 | 840 | 915 | 3,361 | |
| back) | Total | 2,642 | 967 | 1,044 | 1,593 | 6,246 | |
| | % | 42.30 | 15.48 | 16.71 | 25.50 | 100.00 | |
| | In-Coming | 1,356 | 176 | 105 | 323 | 1,960 | |
| | Out-Going | 1,052 | 403 | 122 | 553 | 2,130 | |
| Truck (2 Axle Rigid) | Total | 2,408 | 579 | 227 | 876 | 4,090 | |
| - | % | 58.88 | 14.16 | 5.55 | 21.42 | 100.00 | |
| | In-Coming | 790 | 130 | 52 | 216 | 1,188 | |
| | Out-Going | 614 | 369 | 82 | 315 | 1,380 | |
| Truck (3 Axle Rigid) | Total | 1,404 | 499 | 134 | 531 | 2,568 | |
| Ī | % | 54.67 | 19.43 | 5.22 | 20.68 | 100.00 | |
| | In-Coming | 609 | 16 | 6 | 75 | 706 | |
| Articulated Truck (4, | Out-Going | 228 | 27 | 4 | 99 | 358 | |
| 5, 6 or more Axles) | Total | 837 | 43 | 10 | 174 | 1,064 | |
| | % | 78.67 | 4.04 | 0.94 | 16.35 | 100.00 | |
| | In-Coming | 724 | 236 | 150 | 238 | 1,348 | |
| Taratan Tarillar | Out-Going | 587 | 138 | 169 | 334 | 1,228 | |
| Tractor Trolley | Total | 1,311 | 374 | 319 | 572 | 2,576 | |
| | % | 50.89 | 14.52 | 12.38 | 22.20 | 100.00 | |
| Total all Vehicles | In-Coming | 14,524 | 5,272 | 4,541 | 6,304 | 30,641 | |
| Total all Vehicles | Out-Going | 12,832 | 4,957 | 4,378 | 6,920 | 29,087 | |
| | Both Sides | 27,356 | 10,229 | 8,919 | 13,224 | 59,728 | |
| rotar all vehicles | % | 45.80 | 17.13 | 14.93 | 22.14 | 100.00 | |
| Source: F\ield Surveys b | y the Consultants, | January 2013. | | | | | |



Map 5-5: Traffic Volume (No. of Vehicle and PCUS) on Primary Roads - District Mardan

b. Level of Service

To determine level of service against traffic carrying capacity of these roads, maximum traffic flows during peak hour have been converted into equivalent passenger car units (PCUs).

Of the total traffic volume in peak hour, more than 53% PCUs are on Nowshera Road, followed by Malakand Road (23%), Swabi Road (15%) and Mardan Road (9%) (Table 5.16)

Traffic flows on peak hours on primary roads have been converted to PCUs so that level of service against traffic carrying capacity of the roads can be determined, as would be seen in next paragraph.

| Table 5- 16: Maximum Hourly Traffic Flow on Primary Roads, District Mardan ⁴² | | | | | | | | | |
|--|-------|----------|----------|---------|--------|----------|----------|---------|---------|
| | | Nowshe | era Road | Swab | i Road | Marda | an Road | Malaka | nd Road |
| Vehicles Type | Equi. | Hr 4, 10 |)-11 AM | Hr 3, 9 | -10 AM | Hr 10, (| 04-05 PM | Hr 3, 0 | 9-10 AM |
| | | Veh | PCUs | Veh | PCUs | Veh | PCUs | Veh | PCUs |
| Motor Cycle/ Scooter | 0.33 | 727 | 239.91 | 321 | 105.93 | 327 | 107.91 | 256 | 84.48 |
| Car/ Jeep / Taxi | 1 | 602 | 602 | 379 | 379 | 333 | 333 | 484 | 484 |
| Wagons/Mini Bus/Medium Bus (12 to 20 seats) | 1.5 | 754 | 1131 | 167 | 250.5 | 56 | 84 | 287 | 430.5 |
| Large Bus (over 20 seats) | 4 | 274 | 1096 | 58 | 232 | 2 | 8 | 87 | 348 |
| Pickup/ Truck (open back) | 4 | 321 | 1284 | 108 | 432 | 163 | 652 | 167 | 668 |
| Truck (2 Axle Rigid) | 4 | 327 | 1308 | 89 | 356 | 7 | 28 | 106 | 424 |
| Truck (3 Axle Rigid) | 4 | 212 | 848 | 56 | 224 | 9 | 36 | 117 | 468 |
| Articulated Truck (4, 5, 6 or more Axles) | 4.5 | 142 | 639 | 14 | 63 | 0 | 0 | 21 | 94.5 |
| Tractor Trolley | 4.5 | 173 | 778.5 | 51 | 229.5 | 29 | 130.5 | 91 | 409.5 |
| Total | | 3,532 | 7,926 | 1,243 | 2,271 | 926 | 1,379 | 1,616 | 3,411 |
| % | | | 52.89 | | 15.15 | | 9.20 | | 22.76 |

⁴² Estimation/ Conversions by the Consultants

| Table 5-17: Standard Levels of Service (Traffic Flow on Roads) | | | | | | | |
|--|-----------------------------|-----------------------------------|--|--|--|--|--|
| Service Levels | Operation Conditions | Density Range (PCU/ Hour/Lane) | | | | | |
| А | Free Flow | 0 - 660 | | | | | |
| В | Reasonably Free Flow | 666 – 1080 | | | | | |
| С | Stable Flow | 1086 – 1560 | | | | | |
| D | Approaching Unstable Flow | 1566 – 2100 | | | | | |
| E | Unstable Flow | 2106 – 2700 | | | | | |
| F | Forced Flow | > 2700 | | | | | |

For determining the existing level of service of roads under the given traffic flow and other conditions, following standards of traffic density ranges have been adopted. Level of service is qualitative measure describing operational conditions within a traffic stream. Its different levels are tabulated below:

Accordingly, following are the existing levels of service delivered by primary roads of District Mardan under the given conditions of traffic flow, roads, etc. It has been estimated that Nowshera Road is offering the poorest level of service, followed by the Malakand Road. On both of these roads, traffic flow is approaching unstable level (Table 5.18):

| Table 5- 18: Level of Traffic Flow on Primary Roads, District Mardan ⁴³ | | | | | | | | |
|--|--------------------|---------------|-------|--------------|---|------------------------------|--|--|
| Primary Roads | Operation Hours | Total PCUs | Lanes | PCU/ Lane | | Level of Traffic Flow | | |
| Nowshera Road | 10-11 AM | 7926.4 | 4 | 1981.6 | D | Approaching to Unstable Flow | | |
| Swabi Road | 09-10 AM | 2271.9 | 2 | 1136 | С | Stable Flow | | |
| Mardan Road | 04-05 PM | 1379.4 | 2 | 689.7 | В | Reasonably Free Flow | | |
| Malakand Road | 09-10 AM | 3411 | 2 | 1705.5 | D | Approaching to Unstable Flow | | |

b. Origin-Destination Surveys

Traffic Origin-Destination Survey was conducted during January 2013, on primary highways of Mardan District, at boundaries and entry/ exit points. The roads included Nowshera Road, Swabi Road, Mardan Road and Malakand Road. The survey was single day based and covered mainly peak hours of traffic flow.

Following is the summary of inferences of O-D survey:

i. A total of 478 vehicles were interviewed of which 31% were cars/jeeps, followed by 16% in case of wagons/mini buses and a similar percentage of pick-ups, about 11% large buses, and 22% trucks of different categories.

⁴³ Traffic Analysis by the Consultants.

- ii. Most of the vehicles interviewed for origin/destination were on Nowshera Road (38%), followed by 32% on Malakand Road, 21% on Swabi Road and 9% on Charsadda Road.
- iii. Of those who originated from Mardan, about 31% were destined for FATA, around 20% for Swabi, about 18% for Nowshera, 13% for Charsadda and about 11% for Peshawar.
- iv. Of those whose destination was Mardan, 25% were coming from FATA, about 22% from Swabi, about 17% from Nowshera, 15% from Peshawar and 11% from Punjab/Islamabad. Detailed statistics are given in O-D Tables, Chapter 14 of District Studies Report Mardan.

5.6.5 Rail Network

The total railway route kilometrage in KP is about 228, all of which is broad gauge. In the five Districts of Peshawar Valley, the track lengths are as below:

- Peshawar: 31 kms
- Mardan: 51 kms
- Nowshera: 72 kms
- Charsadda: 15.5 kms
- Swabi: 0 kms

Mardan railway station, spread over 75 acres, remained closed for passenger traffic for many years. The last passenger train, which was a special train, arrived on September 15th, 2009. Most of area under the railway station has been leased out for different purposes. The regular train was briefly re-started in January 2010. Month-wise number of passengers is given in Table 5.19.

| Table 5- 19: Number of Railway Passengers44 | | | | | | |
|---|------------------|--|--|--|--|--|
| Months, 2010 | Total Passengers | | | | | |
| January | 381 | | | | | |
| February | 1762 | | | | | |
| March | 2645 | | | | | |
| April | 1986 | | | | | |
| May | 1138 | | | | | |
| June | 947 | | | | | |
| July | 1026 | | | | | |

⁴⁴ Pakistan Railways, Peshawar Division



Map 5- 6: Rail Network in Peshawar Valley

5.6.6 Air Network

There is no airport in District Mardan. There are six civil airports in the province but the main and only international airport is Peshawar Airport (Bacha Khan International Airport), serving the entire Province. It is maintained by Civil Aviation Authority which oversees and regulates all aspects of civil aviation in Pakistan.

5.7 TRANSPORTATION PROPOSALS

Effective road network and proper management of transport system play major role in the efficient functioning. One of the main objectives of Land Use Plan at District level is to increase the capacity of existing roads, opening up new area for development, and decentralization and traffic management in the inner city.

5.7.1 Improvement of Mardan-Malakand Road

Analysis of traffic surveys reveal that of the total traffic volume on the four primary roads of District Mardan (in-coming plus out-going), maximum volume after Nowshera Road is on Malakand Road (22% of total flow). The vehicles include all modes of traffic including motor Cycles/ Scooter, Car/Jeep, Wagons/Mini Buses, Buses, pickups, trucks, and tractor trolleys.

Origin-Destination surveys reveal that of those who originated from Mardan, maximum (about 31%) were destined for Malakand, and those whose destination was Mardan, 25% were coming from the above area.

This road is gateway to Swat and Northern areas, and is of tremendous value to further promote tourism in the region, and therefore it is of utmost importance that it should be upgraded. The segment of this road from Mardan to Takht Bhai is of great importance, particularly because of archeological sites in the areas which already attract many tourists, and with improved access and facilities in the area, the flow of tourists can further be increased, enhancing local economy.

5.7.2 Improvement of Mardan-Nowshera Road

As seen earlier, total traffic volume on the four primary roads of District Mardan (in-coming plus out-going) is 59,728 vehicles, of which maximum volume is on Nowshera Road (about 46% of total flow, both ways). Thus, about half of traffic load is on Nowshera Road. Results of O-D surveys show that of the total vehicles originating from Mardan, about 18% were destined for Nowshera, and of those whose destination was Mardan, 17% were coming from Nowshera.

Besides, as seen in Table 5.16, traffic on Mardan-Nowshera Road is approaching unstable level. There is thus an urgent need to improve/upgrade this road.

5.7.3 Improvement of Takht Bhai-Katlang-Mardan Road

It is important to link tehsil headquarters for administrative, economic and social reasons, and to open up the lagging areas of the District. A road currently exists, but is not in good shape and is proposed to be improved/upgraded.

5.7.4 Improvement of Existing Mardan Ring Road

Mardan has a Ring Road around it providing fairly high level of interchangeability to and from all the radial (primary) roads. This can be further improved provided the intervening junctions are well designed (involving grade separation where feasible) to ensure uninterrupted smooth flow of the inter-city as well as local traffic.

5.7.5 Proposed Inner Ring Road

The existing Ring Road is at considerable distance from the existing urban area. The proposed new developments are adjacent/close to Mardan City to achieve urban contiguity. Series of concentric roads intersected by inter-city radial roads provide more efficiency than a single ring road. An inner ring road has thus been proposed nearer to the urban area. This will increase efficiency of traffic flow, reduce congestion, and provide better access to proposed developments such as new industrial estate, proposed trade centre and civic zone etc.

5.7.6 Improvement of Cordon Junctions

It has been observed that peak hour traffic at cordon junctions and other junctions of primary and secondary urban roads get choked and cause traffic problems. It is therefore suggested to enlist, study and improve all such junctions throughout the District, preferably through grade separation where feasible.

5.7.7 Reducing Congestion in Central Urban Area

One of the major problems being faced by Mardan is that all main inter-city roads converge in the urban area of Mardan causing immense traffic problems, as inter-city traffic mingles with the local traffic. Nowshera Road enters the District (and Mardan City) from South, Charsadda Road from West, Malakand Road from North-West, and Swabi Road from the East. Besides a number of other smaller roads also pass through Mardan urban area. Thus the traffic jams on urban roads are significant. The improvement/extension of Ring Road proposed earlier will thus help to reduce congestion as all the through traffic will be diverted, and will move to their destinations via the Ring Road rather than passing through the urban area.

Relocation of Whole Sale Market, Fruit & Vegetable Market, is also recommended from inner city to outer area so as to ensure smooth traffic flow and better transport services.

5.7.8 Widening of Inter-City Radial Roads

The problems identified above can be solved by eased by widening existing radial roads, which are:

- i. Mardan-Nowshera Road
- ii. Mardan-Charsadda Road
- iii. Mardan-Malakand Road

The widening and improvement of above roads will also improve the linkages between Mardan and surrounding Districts, as well as settlements within the District such as Takht Bhai and larger villages. The above roads need to be widened and kept free from all types of permanent and mobile encroachments. From transportation perspective, all main settlements in the District need to be seen in holistically and linkages between one another need to be strengthened. This will also help to decrease the traffic load in urban areas of Mardan and also increase efficiency of District road network.

5.7.9 Shifting of Traffic-Generating Land Uses

The major traffic generating activities in the inner-city areas, such as transport terminals, wholesale commercial activities, administrative areas, and higher-level educational institutions etc. may be gradually shifted to suitable locations as proposed in the Land Use Plan. But shifting is a slow and difficult process, and can only be done with consent of all stakeholders.

There is a need to chalk out and implement workable policy for establishment and improvement of Private Passenger Transport Stands and Goods Forwarding Agencies. Relocation of General Bus Stand and Truck Stand for smooth traffic flow is also proposed as shown in the Plan.



Map 5-7: Proposed Road Network in District Mardan

5.9 TRADE ZONE AND COMMERCIAL AREAS

5.9.1 Distribution of Commerce and Trade Centers:

Mardan is the second largest city of Khyber Pakhtunkhwa, a major trade and commerce center and plays a vital role in the economy of the province. The District has trade and commerce linkages at international, national and regional levels.

At international level, grapes, apples and tiles are imported, mainly from Afghanistan and China while Mardan's exports to foreign countries include tobacco and marble. At national level, incoming commodities from other parts of the Country (Punjab & Sindh) include fruit and sanitary ware. Out-going good to different parts of the Country include fruit, sugarcane, tobacco, sugar and marble.

At regional level, commodities brought to Mardan include variety of fruit such as citrus fruit, apple and peach. These are mainly brought from Swat, Chitral and Peshawar. The goods sent from Mardan to other parts of the Province include plum, sugar cane, sugar and tobacco. The details are shown in Table 5.20.

| Table 5- 20: Trade and Commerce Linkages of Mardan at International, National and Regional Levels | | | | | | | | |
|---|---|--|--|--|--|--|--|--|
| LEVEL | IN-COMING COMMODITIES | OUT-GOING COMMODITIES | | | | | | |
| INTERNATIONAL | Grapes (China, Afghanistan) Apples (Afghanistan) Tiles (China) | Tobacco Marble | | | | | | |
| NATIONAL | Citrus Fruit (Punjab) Bananas (Sindh) Water melon (Punjab) Guava (Punjab) Tiles (Punjab, Karachi) Sanitary ware (Lahore, Gujranwala) | Fruit (Plum, Peach) Sugarcane Tobacco Sugar Marble | | | | | | |
| REGIONAL | Citrus Fruit (Swat) Apple (Swat, Chitral) Peach (Swat, Peshawar) | Plum Sugarcane Tobacco Sugar | | | | | | |
| SUB-REGIONAL/LOCAL | Vegetables Water Melon | | | | | | | |

5.9.2 Services Area of Commerce and Trade Centers in Mardan:

Trade and Commerce in Khyber Pakhtunkhwa is a major income and employment-generating sector, and a large proportion of male population of all ages directly or indirectly depends on small scale commerce and trade. As Mardan is the second largest city of Khyber Pakhtunkhwa, a major trade and commerce center and plays a vital role in the economy of the province. The District has trade and commerce linkages at international, national and regional levels.

Commercial and Trade Centers:

The main trade and commercial centers of Mardan are:

- i. Bank Road
- ii. Khawja Ganj Road
- iii. Sarfaraz Ganj Road
- iv. Parhoti Road and
- v. Younas Stadium, Sabzi Mandi Road.

Bank Road is the main commercial hub of Mardan, where electronics, cloth and sports goods are sold. Khawja Ganj Road is also a big commercial centre. Several cereal crops, vegetables and fruits are produced in Mardan, but some are also imported from other Provinces. Sugarcane and tobacco are the intra-provincial exports of District Mardan. There are two sugar mills namely Mardan sugar mill and Premiere sugar mill which have a big contribution towards production of sugar in the Province.

Because of market forces, rapid Land Useconversions are taking place, particularly from residential to commercial. This is creating multifarious problems including traffic congestion, pollution, delays, inefficient energy consumption, and loss of community character. The relationship between uses such as residential, commercial, industrial, institutional, educational and recreational, and the intensity of each use, directly impacts the City's character and quality of life. Any Land Useconversion thus deserves thorough review by the concerned planning agency, whichever is relevant for a particular location.

Mardan has few city-levels planned commercial centers with adequate parking. Generally, Land Usepattern in Mardan is mixed and commercial activities take place in many residential areas and along main roads. This trend is more pronounced in densely populated residential areas where ground floor is used for commercial purposes and subsequent floors for habitation. This is particularly true for inner areas of Mardan.



Map 5-8: Commercial Zones and Markets in District Mardan
Service Area:

Data/information regarding service area of Mardan for trade and commerce was collected through field surveys, and has already been presented in Section 11.1.

One of the methods for assessing the service area of a Town is by applying the well-known Gravity Model. The gravity model takes into account the population size of two places and their distance. Since larger places attract people and commodities more than smaller places and places closer together have a greater attraction, the gravity model incorporates these two features. It helps to draw boundary of the tributary area of a city or delineate its functional region, using the distance between the settlements and population of each settlement. Larger a city, the larger would be its trade area. Two cities of equal size have a trade area boundary midway between the two cities. When cities are of unequal size, the boundary lies closer to the smaller city, giving the larger city a larger trade area.

$$BP = \frac{\frac{\text{distance between}}{\text{city a and b}}}{1 + \sqrt{\frac{\text{pop. b}}{\text{pop. a}}}}$$
BP is distance from city a to breaking point

The formula shown is used to find the breaking point (BP) between two cities. One can determine the complete trade area of a city by determining the BP between multiple cities and then joining the breaking points by a smooth line. Based on the above methodology and statistics given below, the tributary area of Mardan is shown in the Figure below.

| Table 5-21: Parameters to Determine Service Area of Mardan under Gravity Model | | | | | | | |
|--|---------------------------|------------------------------|---------------------|--|--|--|--|
| Cities | City Population (2019) | Distance from Mardan (Km) | Breaking Point (Km) | | | | |
| Mardan | 458,240 | | | | | | |
| Peshawar | 2100970 | 63.1 | 32.79 | | | | |
| Swabi | 288748 | 47.4 | 25.77 | | | | |
| Charsadda | 1702715 | 28.6 | 12.93 | | | | |



Figure 5-2: Trade and Service Area of District Mardan as Determined Through Gravity Model

Current Commercial Area Gap:

The current commercial area gap has been calculated as below:

- Urban Population (2019): 458240
- Commercial Area required (@0.5 acres/1000 persons)⁴⁵= 229.12 acres
- Current area under commercial land use: 0.28 sq. km = 69 acres⁴⁶
- Commercial area deficiency: 229.12-69=160.12 acres

It is clear from the above that by the end of plan period, the total commercial area requirement would include 229.12 acres to meet the current deficiency, and 357.7 acres to meet the future requirement. The total would be thus 229.1+357.7 = 587.8 acres.

5.9.3 Distribution of Dry Ports/Export Processing Zones in Mardan:

Dry Ports:

There is no dry port in District Mardan. Therefore, in the context of dry port, details such as export/import of various goods/commodities, service area, locational aspects and foreign exchange component etc do not apply.

In the Country as a whole, there are six dry ports running under the management of Pakistan Railways:

- Lahore Dry Port Established in :1973
- Karachi Dry Port Established in :1974
- Quetta Dry Port Established in :1984
- Peshawar Dry Port Established in :1986
- Multan Dry Port Established in :1988
- Rawalpindi Dry Port Established in :1990

In addition to the above, there are four Dry Ports established and running under the management of private sector.

- Sialkot Dry Port Established in :1986
- Faisalabad Dry Port Established in :1994
- Pak-China Sust Dry Port
- NLC Dry Port at Thokar Niaz Beg Lahore
- NLC Dry Port at Quetta

⁴⁵ Source: Environment and Urban Affairs Division, Govt. of Pakistan, National Reference Manual on Planning and Infrastructure Standards, Page 307, Table 10.4 (adapted)

Export Processing Zones⁴⁷:

There is no Export Processing Zone in Mardan. In this context therefore, details such as export/import of various goods/commodities, service area, locational aspects and foreign exchange component etc do not apply.

There are four operational export processing zones in the Country, i.e.:

- Karachi
- Risalpur
- Sandak
- Sialkot
- Duddar

Risalpur Export Zone is a Joint Venture between Sarhad Development Authority (SDA) and Export Processing Zones Authority. It is located on Nowshera-Mardan and is spread over 92 acres, providing 137 plots of different sizes.

5.9.4 Impact of Trade and Commerce on Economy:

Global recession adversely affected exporting countries including Pakistan. Exports from Pakistan declined to US\$ 17.8 billion as compared to previous year's exports of US\$ 19.1 billion. Imports also witnessed a relative decline and fell by 13% as Pakistan's imports during 2008-09 stood at US \$ 34.9 billion as compared to US \$ 40.4 billion in 2007-08.

During 2008-9, the export of Textiles, which account for around 54% of Pakistan's total exports, dropped from US\$ 10.6 billion to US\$ 9.6 billion. The major losers in this regard were Readymade Garments, which dropped by 21.7%, Cotton Yarn, which dropped by 15%, Bed linen, which dropped by 10.2%, Art Silk & Synthetic Textiles, which dropped by 22.1% and Cotton Fabric by 4.0%. The exports of finished leather and leather manufacturers dropped from US\$ 1.1 billion to US\$ 0.8 billion registering a drop 24.5%. The Rice exports have registered an impressive growth from US\$ 1.84 billion to US\$ 1.99 with an increase of 8.2%. Engineering goods also registered an increase of 26.1% from US\$ 211.3 to US\$ 266.4 million. In this regard, the major contributors have been the specialized machinery, transport equipment, electric fans etc. Taking a long-term view of Pakistan's export performance over the last ten years, Pakistan's share in the global market, according to WTO data, has declined by more than 1/3 to 0.13% in 2009 from 0.21 % in 1999.

Khyber Pakhtunkhwa's share of Pakistan's total GDP has historically comprised 10.5%, although the province accounts for 11.9% of Pakistan's total population. The part of the economy that Khyber Pakhtunkhwa dominates is forestry, where its share has historically ranged from a low of 34.9% to a high of 81%, giving an average of 61.56%. Currently, Khyber Pakhtunkhwa accounts for 10% of Pakistan's GDP, 20% of Pakistan's mining output and since 1972, it has seen its economy grow in size by 3.6 times.

⁴⁷ Export Processing Zone Authority: http://www.epza.gov.pk/location.html

After suffering for decades due to the fallout of the Soviet invasion of Afghanistan, today they are again being targeted for totally a different situation of terrorism. Agriculture remains important and the main cash crops include wheat, maize, Tobacco (in Swabi), rice, sugar beets, as well as various fruits are grown in the province. Some manufacturing and high-tech investments in Mardan has helped improve job prospects for many locals, while trade in the province involves nearly every product. The bazaars in the province are renowned throughout Pakistan. Numerous workshops throughout the province support the manufacture of small arms and weapons of various types. The province accounts for at least 78% of the marble production in Pakistan.

The economy of Punjab is largely based on agriculture and industry. Punjab has the largest and fastest growing economy in the country compared to other provinces and administrative units. Punjab's economy has quadrupled since 1972. Its share of Pakistan's GDP was 54.7% in 2000 and 59% as of 2010. It is especially dominant in the Service & Agriculture sectors of the Pakistan Economy. With its contribution ranging from 52.1% to 64.5% in the Service Sector and 56.1% to 61.5% in the Agriculture Sector. It is also major manpower contributor because it has largest pool of professionals and highly skilled (Technically trained) manpower in Pakistan. It is also dominant in the Manufacturing sector, though the dominance is not as huge, with historical contributions raging from a low of 44% to a high of 52.6%. In 2007, Punjab achieved a growth rate of 7.8% and during the period 2002-03 to 2007-08, its economy grew at a rate of between 7% to 8% per year, and during 2008-09 grew at 6% against the total GDP growth of Pakistan at 4%.

Sindh has the second largest economy in Pakistan. Its GDP per capita was \$1,400 in 2010 which is 50 per cent more than the rest of the nation or 35 per cent more than the national average. Historically, Sindh's contribution to Pakistan's GDP has been between 30% to 32.7%. Its share in the service sector has ranged from 21% to 27.8% and in the agriculture sector from 21.4% to 27.7%. Performance wise, its best sector is the manufacturing sector, where its share has ranged from 36.7% to 46.5%. Since 1972, Sindh's GDP has expanded by 3.6 times. Endowed with coastal access, Sindh is a major centre of economic activity in Pakistan and has a highly diversified economy ranging from heavy industry and finance centred in and around Karachi to a substantial agricultural base along the Indus. Manufacturing includes machine products, cement, plastics, and various other goods. Agriculture is very important in Sindh with cotton, rice, wheat, sugar cane, bananas, and mangoes as the most important crops.

The economy of Balochistan is largely based upon the production of natural gas, coal and minerals. Agriculture and livestock also dominate the Baloch economy. Horticultural development is a fairly recent, yet growing phenomenon. Other important economic sectors include fisheries, mining, manufacturing industries, trade and other services being rendered by public and private sector organizations in the province. Limited farming in the east as well as fishing along the southern Arabian Sea coastline are other forms of income and sustenance for the local populations. Due to the tribal lifestyle of many people, animal husbandry is important, as are trading bazaar found throughout the province. Though the province remains largely underdeveloped, there are currently several major development projects in progress in Balochistan, including the construction of a new deep-sea port at the strategically important town of Gawadar. The port is projected to be the hub of an energy and trade corridor to and from China and the Central Asian republics.

5.9.5 Work Force:

Both in 1998 as well as in 1981, the work force in trade and commerce is categorized as "Major Division 6 – Wholesale and retail trade and restaurants and hotels".

The categorisation of workforce in this sector is not as skilled, semi-skilled, unskilled and managerial, but as self-employed, employee (Govt), employee (private), employer and unpaid family workers. Based on the given criteria, the percentages of workforce in trade and commerce, in the years 1981 and 1998 are presented in the graph. Most prominent changes have been in self-employed category, which have increased from around 74% in 1981 to about 84% in 1998. The percentage of unpaid family workers on the other hand has decreased from 11% in 1981 to only around 2% in 1998. Comparative statistics about other categories of work force are presented in the graph.



Figure 5-3: Work Force in Trade and Commerce⁴⁸

 ⁴⁸ Source for 1981: District Census Report of Peshawar, 1981, Page 61, Major Division 6.
 Source for 1998: District Census Report of Peshawar, 1998, Page 144, Industrial Division 6.

5.9.6 Future Plan:

Future Land Use policy for Mardan should respect the fact that much of Mardan's distinct character lies in its diversity of landuses, and its physical, economic and cultural characteristics. Complete segregation of landuses, particularly in the inner areas is neither possible nor desirable. However rampant Land Useconversions, which impede easy flow of traffic and a non-amenable living environment for the local residents must be controlled. Congestion is not the only curse of indiscriminate Land Useconversion. It also puts further pressure on the already overburdened infrastructure and public services. Commercial areas are of course part and parcel of any human habitat. Planned commercialization itself is not bad; it is the indiscriminate conversion of landuses which should be controlled.

Commercial activities of higher order like wholesale markets and trade centers are presently fragmented, located in different parts of the City. A separate, properly planned Commercial Zone for Mardan will maximize the aggregate convenience of traders and the inhabitants. By providing such a Centre, the present Central Business District of Mardan and the inner city can be decongested, and the residents can avoid areas of traffic clogging.

The Site for Trade/Commercial Zone is proposed along Charsadda Road West of Mardan urban area, lying between the existing outer ring road and the proposed inner ring road. With roads all around, the site has easy access for all concerned, including retailers, wholesalers and customers.

Future Commercial Area Requirement:

The proposed Commercial Zone will cater for all kinds of clientele, and attract, city and local trade. It will include wholesale markets which are usually associated with bulk disposal of grains, fruits, vegetables, meats, and will also have large warehousing and storage facilities.

As is clear from the Table5.22 that about 25.5 acres of commercial area will be required during the first years of plan period (2019-2024), and about 103.13 acres during the subsequent 15 years. The total requirements of commercial area thus, during the entire plan period will be 128.6 acres.

| Table 5- 22: Commercial Area Required in Mardan (2017-37) | | | | | | |
|---|-----------------------------------|------------------------|--|--|--|--|
| Year/Period | Urban Population ⁴⁹ | Commercial Area | | | | |
| 2019 | 458,240 | Required | | | | |
| 2024 | 509,289 | persons) ⁵⁰ | | | | |
| 2039 | 715,567 | personsy | | | | |
| Additional Urban Population (2019-2024)) | 51,049 | 25.5 Acres | | | | |

⁴⁹ Urban Population of Mardan City in 2017 projected for the respective years using 2017-1998 urban growth rateof 2017.

⁵⁰Source: Environment and Urban Affairs Division, Govt. of Pakistan, National Reference Manual on Planning and Infrastructure Standards, Page 307, Table 10.4 (adapted).

| Additional Urban Population (2024-2039) | 206,278 | 103.13 Acres |
|---|---------|--------------|
| Total Additional Urban Population (2019-2039) | 257,327 | 128.6 Acres |

5.9.7 Constraints:

In District Mardan there is a great potential to enhance District's income manifold by allocating more land and financial resources to local business and trade to meet local demands and develop export-oriented production in KP.

Mardan would have to depend more heavily on safety and security of people and assets for the desired rapid commercial growth. Businesses and commerce shall be evolved and developed like the other developed countries. To this end the skill improvement, and increase in efficiency with which new processes are adopted. To this end the flow of information, better infrastructure, availability of funds and quality inputs, and investor/entrepreneurs' managerial capabilities shall be streamlined. Empirical evidence shows that suitable commercial, financial, economic and trade policies directly influence the productivity and economic growth.

Some of the major constraint to sustainable development of commerce and trade are listed below:

- i. Lack of properly planned and developed land
- ii. Threat due to terrorism and absence of emergency disaster response, like fire fighting, and emergency exits, as such many lives assets and property has been damaged during recent terrorists' attacks.
- iii. Large fluctuation in prices and rates of products and services
- iv. Frequent Power outages
- v. Uncontrolled inflation
- vi. No standardization for specifications of products
- vii. Lack of quality standards
- viii. Lack of adequate and proper Car Parking area
- ix. Absence of loading and unloading bays
- x. Lack of solid and liquid waste disposal.
- xi. Life threatening mix of petrol pumps, CNG stations, hotels, restaurants and motels
- xii. Mixed and conflicting Land Useof education, health, residential small industry and commercial landuse.
- xiii. Absence of basic facilities for the customers like toilets, rest areas, lockers etc.
- xiv. Lack of fire fighting safety and security system
- xv. Mix of hazardous and non-hazardous commercial uses.

5.9.8 Recommendations:

It is recommended that the Provincial Government should formulate policies to encourage private sector investors to strengthen the trade and commerce sector. To this end the provincial and local government may adopt following:

Availability of infrastructure

- Transportation network
- Water supply and drainage
- Solid waste collection and disposal
- Electricity
- Communication links

Availability of developed and secured land

- Properly zoned for different type of trade and commerce by size and type
- Security and peaceful environment

Upgrade Quality of Human resources

- o Skilled
- o Unskilled
- Managerial

Capital – on easy terms; availability of finances for

- o Initial capital for investment
- Running capital

Environmental Issues'

- Mitigation of pollutants
- Air pollution Gaseous emission
- o Waste Water
- o Noise
- Solid waste
- o Odours
- Aesthetics
- Effective disposal of recyclables, and other wastes

Social environment,

- Availability of
 - schools,
 - Commercial areas & markets, both for workers & for the products
 - housing
 - Congregation/Religious places Mosques etc
 - Community facilities

- Hospitals. Clinics
- Entertainment areas in close vicinity to the industrial area
- Open spaces parks and play grounds
- Efficient Transport system

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5.10 PUBLIC AND COMMUNITY FACILITIES

5.10.1 Proposed Civic Zone

The Civic Zone is proposed along Nisata Road towards its South, close to existing Mardan Urban Area. Apart from Nisata Road, it also has the two ring roads towards its West and East. The Civic Zone is proposed to have offices, public buildings, higher order health and education facilities, libraries, Jamia Mosque, a mini sports complex, banks, police station and post office etc.

5.11 EDUCATION

Vertical hierarchy is a basic feature in the delivery of formal education. It may be visualized as a pyramid, its base comprising of many hundreds of primary schools, while at the top may be a few universities providing specialized education to much lesser number of post graduate students. Specialized institutions such as universities are virtually limited to metropolitan cities. According to National Reference Manual for Planning & Infrastructure Standards⁵¹ a unit at each level is fed by a catchment comprising 3-7 facilities of the next lower level. The next lower level in case of universities is Degree Colleges, which presently are 15 in District Mardan. Educational statistics in the District, including number of different institutions, enrolment and teaching staff are given in the Table below:

| Table 5- 23: Educational Statistics in District Mardan (2015-2016) ⁵² | | | | | | | | | |
|--|--------|-----|-----------|---------|---------|----------------|-------|-------|-------|
| Institutions | Number | | Enrolment | | | Teaching Staff | | | |
| motications | Total | М | F | Total | м | F | Total | М | F |
| Primary | 1,448 | 828 | 620 | 270,944 | 161,608 | 109,336 | 5,895 | 3,552 | 2,343 |
| Middle | 189 | 86 | 103 | 76,871 | 45,899 | 30,972 | 1,139 | 560 | 579 |
| High | 152 | 85 | 67 | 33,005 | 20,264 | 12,741 | 2,041 | 1,347 | 694 |
| Higher Secondary | 48 | 26 | 22 | 4,790 | 2,627 | 2,163 | 1,154 | 739 | 415 |
| Colleges | 15 | 9 | 6 | 7,910 | 5,613 | 2,297 | 372 | 225 | 147 |

⁵¹ Source: Environment and Urban Affairs Division, Govt. of Pakistan, National Reference Manual on Planning and Infrastructure Standards, Section 6.1.2, Page 102.

⁵² Development Statitics of Khyber Pakhtunkhwa 2017

5.11.1 Educational Institutions in Private Sector

The total number of private primary schools in the Province is 2,127⁵⁴. Since the number of Districts is 25, the average number of primary schools per District works out to be about 86, as against 170 in District Mardan. Thus,

the number of private primary schools in the District is about twice than the District average. Total students enrolled in these schools are23624. The number of private middle/high/higher secondary schools is 187, while the gross enrolment in these institutions is 73,921.

| Table 5- 24: Number and Enrolment in Private Institutions ⁵³ | | | | | |
|---|---------------------------|-----------|--|--|--|
| Level | Number of Institutions | Enrolment | | | |
| Primary Schools | 170 | 23,624 | | | |
| Middle/High/Higher Secondary Schools | 187 | 73,921 | | | |

Literacy Ratio

A person was treated as literate in 1998 Census if he could read newspaper or a journal of the same standard and could write a simple letter in any language. The literacy is measured as the ratio, in percentage, of literate population to corresponding population aged 15 years and over. The Adult literacy ratio in Mardan District in 2014-2015 was 45%.

Participation Rates

Participation Rate is defined as the total enrolment, divided by the population of the age-group, which corresponds to a specific level of education. Participation rate is calculated by only that part of the enrolment which corresponds to the age-group of the level

| Table 5- 25: Participation Rates in the District (2016-2017) ⁵⁵ | | | | | | |
|--|-------|-------|--------|--|--|--|
| Schools | Total | Male | Female | | | |
| Primary | 64.83 | 73.92 | 54.85 | | | |
| Middle | 33.79 | 38.30 | 28.77 | | | |
| High | 27.56 | 32.06 | 22.54 | | | |

considered. The age-group of the population eligible for primary stage education is 5-9 years.

At primary level, the participation rate in District Mardan for both sexes is around 64.83 (73.92 for males and 54.83 for females). At middle level the participation rates in the same order are around 33.79, 38.30 and 28.77. At high schools, the overall participation rate is 27.56, while that for males and females is 32.06 and 22.54 respectively (Table 5.25)

⁵³ Source: Bureau of Statistics, Planning & Development Department, Govt. of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Development Statistics, 2016, Page 126, Table 102 and Page 125, Table 94.

⁵⁴ http://www.kpese.gov.pk/Downloads/School%20Statistics/Primary%20Schools.pdf

⁵⁵ Development Statistics of KP 2018, Page 135, Table 108.

Student Teacher Ratio:

| Table 5- 26: Student/Teacher Ratio | | | | | | | |
|------------------------------------|---|--|--|--|--|--|--|
| Primary School | Primary School Middle School High School High Secondary | | | | | | |
| 46 68 17 5 | | | | | | | |

5.11.2 Colleges and Institutes:

| | Table 5- 27: District Mardan Colleges | | | | | | |
|-------|---|--|--|--|--|--|--|
| S.No. | Name of College | | | | | | |
| 1 | Suffa Hi Tech Girls College Defence Baghdada Mardan | | | | | | |
| 2 | Islamia Girls College Muqam Baghdada Mardan | | | | | | |
| 3 | Defence College for Girls Muqam Baghdada Mardan | | | | | | |
| 4 | The Mardan Model College for Girls Nsr Road Mardan | | | | | | |
| 5 | The Mardan Model College for Boys Nsr Road Mardan | | | | | | |
| 6 | The Fazal Haq College Nistta Road Mardan | | | | | | |
| 7 | Ansi Degree College for Boys Nsr Road Mardan | | | | | | |
| 8 | Mardan Instute Of Learning System Sector, B Sheikh Maltoon | | | | | | |
| 9 | Service Public College Shamsi Road Mardan | | | | | | |
| 10 | Mit Model College Malakand Road Muqam Mardan | | | | | | |
| 11 | The Frontier Model College Toru Mardan | | | | | | |
| 12 | Tufai Shaheed College Prc Cantt Mardan | | | | | | |
| 13 | Danish Public College Gujar Garhi Mardan | | | | | | |
| 14 | Takht Bhai College for Women Takht Bhai Maradan | | | | | | |
| 15 | Iqra College Swabi Road Parhoti Mardan | | | | | | |
| 16 | F.G. Inter College for Boys Mardan Cantt | | | | | | |
| 17 | The Eastren College Shamsi Road Mardan | | | | | | |
| 18 | F.G. Girls Inter College Mardan Cantt | | | | | | |
| 19 | Ghazali College for Women Muqam Baghdada Mardan | | | | | | |
| 20 | Sher Shah Suri College Canal Road Mardan | | | | | | |
| 21 | Sudhum Science College Rustam Mardan | | | | | | |
| 22 | Mardan College of Management Science Muqam Bghdada Mardan | | | | | | |
| 23 | Al-Muslim College Nsr Road Irum Colony Mardan | | | | | | |
| 24 | Pak College Swabi Road Parhoti Mardan | | | | | | |
| 25 | Tameer Seerat College Mohib Road Parhoti Mardan | | | | | | |
| 26 | The Quaid Azam College for Boys Mohib Road Parhoti Mardan | | | | | | |
| 27 | Taj Inter College Kohi Road Katlang Mardan | | | | | | |
| 28 | Frontier Comprehensive College Malakan Road Shergarh Mardan | | | | | | |
| 29 | Success Educationsystem Swabi Parhoti Mardan | | | | | | |
| 30 | Saif Memorial College the Mall Mardan | | | | | | |
| 31 | Quaide Azam Girls College Police Line Mardan | | | | | | |
| 32 | Learners College Shahbaz Garhi Mardan | | | | | | |
| 33 | Imst College for Boys Koragh Chowk By Pass Mardan | | | | | | |
| 34 | The Professor College Shahbaz Garhi Mardan | | | | | | |

| Table 5- 27: District Mardan Colleges | | | | | |
|---------------------------------------|---|--|--|--|--|
| S.No. | Name of College | | | | |
| 35 | Peshawar Model Degree College (Boys) Nisatta Road Mardan | | | | |
| 36 | Peshawar Model Degree College (Girls) Nisatta Road Mardan | | | | |
| 37 | Mis College for Boys Charsadda Road Mardan | | | | |
| 38 | Sultan Muhammad Memorial College Takkar Road Takht Bhai | | | | |
| 39 | Iqra Girls College Garhi Kapura Mardan | | | | |
| 40 | Fatima Girls College Mena Bazar Lund Khwar Mardan | | | | |
| 41 | The Leads Campus College Bagh Irum Mardan | | | | |

5.11.3 Universities

District Mardan has the following universities:

- i. Abdul Wali Khan University Mardan (2009)
- ii. Women University Mardan (2016)
- iii. Agricultural University, Peshawar, Sub-campus Mardan
- iv. University of Engineering. & Technology, Mardan

5.11.4 Constraints

- i. Literacy in Khyber Pakhtunkhwa Pakistan rose from 16.7 in 1981 to 37.30 in 1998 and further to 37.30 in 1998. But it is still considerably lesser than the national average, which in the same order was 21.7, 26.2 and 45 respectively⁵⁶.
- ii. When compared with the provincial figures, the literacy in District Mardan in 1998 was marginally higher the provincial average i.e. 48.27 in District as against 37.3 in the Province (Tables 8.14 and 8.15 above).
- iii. Participation rate in District Mardan is lower than the provincial average at primary, middle and high levels. The provincial average at primary level is 63.52 as against 57.69in the District. For middle and high, the statistics in the same order are 27.95 as against 27.7 and 22.06 as against 21.50in the Province. This is true for male as well as female participation⁵⁷.
- iv. Expanding and modernizing vocational and tertiary education, better access, teaching and research are needed at the tertiary level to equip graduates with the high-level skills needed to build a knowledge economy.
- v. Improving education quality and governance: These challenges call for improvements in governance and greater accountability on the part of education service providers. This requires:
- vi. Continued government commitment to education and policy reforms.
- vii. Capacity building in institutions delivering education services.

⁵⁶ KP Development Statistics, 2010, Page 127, Table 96.

⁵⁷ KP Development Statistics, 2010, Page 127, Table 96.

5.11.5 Short Term Education Plan (2019-2024)

It is estimated that during the short-term plan, the District Mardan requires 49 additional primary schools and 31 secondary schools. Tables below give requirements for urban as well as rural areas of District Mardan.

It is envisaged that primary and secondary schools will form part of the residentiary use. Their location has been broadly identified in terms of corridors, but exact location and space requirements, especially for primary schools would be governed by the detailed planning and designing of the relevant areas.

| Table 5-28: Additional Primary Schools Required in Short-Term Plan (2019-2024) | | | | | | | |
|--|--------------------|--------------------|---|--|---|-----------------------------------|--|
| District Area | Population 2019 | Population 2024 | Additional Population (2019-2024) | No. of Primary Schools Required (Boys) | No. of Primary Schools Required (Girls) | Aggregate Land required (@1 | |
| Urban | 458240 | 509289 | 51049 | 7 | 6 | acre/PS) | |
| Rural | 2045296 | 2362065 | 316769 | 176 | 132 | | |
| Total | 2503536 | 2871354 | 367818 | 183 | 138 | | |

| | Table 5- 29: Additional Secondary Schools Required in Short-Term Plan (2019-2024) | | | | | | | |
|------------------|---|--------------------|---|--|---|-----------------------------------|--|--|
| District Area | Population 2019 | Population 2024 | Additional Population (2019-2024) | No. of Primary Schools Required (Boys) | No. of Primary Schools Required (Girls) | Aggregate Land required (@4 | | |
| Urban | 458240 | 509289 | 51049 | 2 | 2 | acre/SS) | | |
| Rural | 2045296 | 2362065 | 316769 | 26 | 26 |] | | |
| Total | 2503536 | 2871354 | 367818 | 28 | 28 | | | |

| Table 5- 30: Additional Colleges Required in Short-Term Plan (2019-2024) | | | | | | | |
|--|--------------------|--------------------|---|--|---|-------------------------------|--|
| District Area | Population 2019 | Population 2024 | Additional Population (2019-2024) | No. of Primary Schools Required (Boys) | No. of Primary Schools Required (Girls) | Aggregate Land required | |
| Urban | 458240 | 509289 | 51049 | 0 | 0 | acre/College) | |
| Rural | 2045296 | 2362065 | 316769 | 1 | 1 | | |
| Total | 2503536 | 2871354 | 367818 | 1 | 1 | | |

5.11.6 Long-Term Education Plan (2024-2039)

It is estimated that during the Long-term plan, the District Mardan require 251 additional primary schools, 157 secondary schools and 5 colleges. Tables below give requirements for urban as well as rural areas of District Mardan.

It is envisaged that primary and secondary schools will form part of the residentiary use. Their location has been broadly identified in terms of corridors, but exact location and space requirements, especially for primary schools would be governed by the detailed planning and designing of the relevant areas.

College is proposed to be provided with balanced distribution over the city, corresponding with the distribution of population. The sites for these institutions should be scrupulously reserved, no matter how long these may take in actually being built.

| Table 5- 31: Additional Primary Schools Required in Long-Term Plan (2024-2039) | | | | | | | | |
|--|--------------------|--------------------|---|--|---|-----------------------------------|--|--|
| District Area | Population 2024 | Population 2039 | Additional Population (2024-2039) | No. of Primary Schools Required (Boys) | No. of Primary Schools Required (Girls) | Aggregate Land required (@1 | | |
| Urban | 509289 | 715567 | 206278 | 28 | 25 | acre/PS) | | |
| Rural | 2362065 | 4034775 | 1672710 | 929 | 697 |] | | |
| Total | 2871354 | 4750342 | 1878988 | 957 | 722 | | | |

| Table 5- 32: Additional Secondary Schools Required in Long-Term Plan (2024-2039) | | | | | | | | |
|--|--------------------|--------------------|---|--|---|-----------------------------------|--|--|
| District Area | Population 2024 | Population 2039 | Additional Population (2024-2039) | No. of Secondary Schools Required (Boys) | No. of Primary Schools Required (Girls) | Aggregate Land required (@4 | | |
| Urban | 509289 | 715567 | 206278 | 9 | 7 | acre/SS) | | |
| Rural | 2362065 | 4034775 | 1672710 | 135 | 135 | | | |
| Total | 2871354 | 4750342 | 1878988 | 144 | 142 | | | |

| Table 5- 33: Additional Colleges Required in Long-Term Plan (2024-2039) | | | | | | | | |
|---|--------------------|--------------------|---|--|---|-------------------------------|--|--|
| District Area | Population 2024 | Population 2039 | Additional Population (2024-2039) | No. of Colleges Required (Boys) | No. of Primary Schools Required (Girls) | Aggregate Land required | | |
| Urban | 509289 | 715567 | 206278 | 1 | 1 | (@15 acre/College) | | |
| Rural | 2362065 | 4034775 | 1672710 | 1 | 1 | acie, conegej | | |
| Total | 2871354 | 4750342 | 1878988 | 2 | 2 | | | |

5.11.7 Proposed locations of Future Educational Institutions

Primary schools should obviously be within existing or planned housing areas which they will be serving. These should be within easy walking distance of houses, away from the busy roads. Secondary schools should have good access by car and safe access by foot. These should not be located along busy roads carrying fast traffic. Primary and secondary schools are residentiary uses and their exact location can be marked at the detailed planning stage of proposed housing areas. Higher Educational institutions such as degree and post graduate colleges/universities may be located in the proposed Civic Zone, which will accommodate higher level educational institutions.

| | Table 5- 34: Locational Guidelines for Educational Institutions ⁵⁸ . | | | | |
|---------|---|---|--|--|--|
| Sr. No. | Educational Institutions | Locational Guidelines | | | |
| 1. | Primary School | Close to existing or planned housing areas which they will be serving. Within easy walking distance of houses. Generally located centrally in a residential mohalla, away from the busy roads. Catchment area for urban schools: 0.5-1 km. Catchment area for rural schools: 2.2 kms. | | | |
| 2. | Secondary School | Should have good vehicular access and safe access by foot. Away from schools of opposite gender. Away from major busy roads carrying fast traffic. Be located on roads with good linkages to their catchment area. Catchment area for urban schools: 1.25-2.45 km. Catchment area for rural schools: 5-10 kms. | | | |
| 3. | Inter College | Catchment area for urban schools-Boys: 2.75-4 km. Catchment area for rural schools-Boys: 10-15 kms. Catchment area for urban schools-Girls: 3.25-5 km | | | |
| 4. | Degree College | • Large city. | | | |
| 5 | University | Metropolitan City surroundings. | | | |

Following are the proposed guide lines for location of educational institutions:

⁵⁸ Source: Environment and Urban Affairs Division, Govt. of Pakistan, National Reference Manual (NRM), Chapter 6, Section 6.1 (adapted).



Map 5-9: Educational Institutes in District Mardan

5.12 HEALTH:

5.12.1 Distribution of Health Institutions:

A health institution is defined as an institution which provides health services, curative and preventive to all specific classes of the public as outdoor/indoor patients. There is a hierarchy of health institutions as defined below⁵⁹:

Hospital

It is defined as a health institution having 10 or more than 10 beds. However, this definition is not valid where Government has named an institution differently, e.g. Rural Health Centre.

Dispensary

It is a health institution having less than 10 beds.

Rural Health Centre (RHC)

A Rural Health Centre provides medical cover to a population of 10,000 to 50,000 persons. A rural health center may have up to 25 beds with laboratory, X-ray and Mino surgery. Rural Health Centers are linked through tehsil hospitals to District Headquarter Hospitals, which have all medical facilities.

Sub-Health Centre

3-4 sub-health centers are attached to a rural health center. However, existing sub-centers are gradually being converted into Basic Health Units.

Basic Health Unit (BHU)

Under the present concept, 4 Basic Health Units are linked to a Rural Health Centre. A BHU is provided to serve about 5,000 to 10,000 populations. It is responsible for comprehensive health care which, among other things, includes midwifery, child care, immunization, diarrhea diseases, malaria control, child spacing, mental and school health services within its areas.

The total number of hospitals in Khyber Pakhtunkhwa is 157, of which 8 hospitals (about 5%) are in District Mardan. Similarly, of the total 445 dispensaries in the Province, 17 dispensaries (about 4%) are in District Mardan. There are only 4 Rural Health Centers in the District. The details of distribution of TB Clinics, MCH centers, sub-health centers, Basic Health Units and clinics in the Province as well as in District Mardan are given in Table 5.35.

⁵⁹ Source: Bureau of Statistics, Planning & Development Department, Govt. of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Development Statistics, 2010, Page 142.

| Table 5- | Table 5-35: Distribution of Health Institutions: Khyber Pakhtunkhwa Vs District Mardan ⁶⁰ | | | | | | | | | |
|-------------------------|--|---------------------------------------|------|---------------|----------------|-----------------------|------|--------------------|--|--|
| | | Number of health Institutions in 2017 | | | | | | | | |
| Area | Hospitals | Dispensaries | RHCs | TB Clinics | MCH Centers | Sub-Health Centers | BHUs | Leprosy Clinics | | |
| Khyber Pakhtunkhwa | 157 | 445 | 92 | 33 | 55 | 23 | 767 | 25 | | |
| District Mardan | 8 | 17 | 4 | 1 | 2 | 0 | 49 | 1 | | |
| % in District Mardan | 5.10 | 3.82 | 4.35 | 3.03 | 3.64 | 0.00 | 6.39 | 4.00 | | |

5.12.2 Health Services Facilities in Private Sector:

In District Mardan private sector play a vital role in the provision of health facilities not only to the residence of Mardan but also to the other Districts of KP. The major hospital in private sector are:

- Khyber Hospital, Mardan
- Omeed ki Kiran Foundation, Mardan
- Behtar Zindagi Center Mardan
- Asif Medicare
- Adan Medical Center
- Anwar Medical Center

All these health service providing institute are located within the Urban limits of the city. Most of the institutions are poorley located without taking into considraiton any spatial planning standards or plan.

5.12.3 Major disease in last 2 years:

In 2016 and 2015, the major diseases reported in public hospitals were Fever, Sepsis and Asphxia. Fever, also known as pyrexia and febrile response, is defined as having a temperature above the normal range due to an increase in the body's temperature set-point. There is not a single agreed-upon upper limit for normal temperature with sources using values between 37.5 and 38.3 °C

⁶⁰ Source: Bureau of Statistics, Planning & Development Department, Govt. of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Development Statistics, 2016, Page 152.

(99.5 and 100.9 °F). This is more common in young children. Fevers do not typically go higher than 41 to 42 °C (105.8 to 107.6 °F).⁶¹

Sepsis is a life-threatening condition that arises when the body's response to infection causes injury to its own tissues and organs. Common signs and symptoms include fever, increased heart rate, increased breathing rate, and confusion. There also may be symptoms related to a specific infection, such as a cough with pneumonia, or painful urination with a kidney infection.⁶² Asphyxia or asphyxiation is a condition of severely deficient supply of oxygen to the body that arises from abnormal breathing. An example of asphyxia is choking. Asphyxia causes generalized hypoxia, which affects primarily the tissues and organs. There are many circumstances that can induce asphyxia, all of which are characterized by an inability of an individual to acquire sufficient oxygen through breathing for an extended period of time. Asphyxia cause coma or death.⁶³

⁶¹ https://en.wikipedia.org/wiki/Fever

⁶² https://en.wikipedia.org/wiki/Sepsis

⁶³ https://en.wikipedia.org/wiki/Asphyxia



Map 5-10: Health Facilities in District Mardan

5.12.4 Distribution of Beds:

Table 5.36 presents the distribution of beds in the Province as well as in the District health institutions. There are total of 17,993 beds in the province, of which more than 91% are in hospitals and 8.4% in rural health centers. In District Mardan also, about 91% of the total beds are in hospitals as against about 9% in RHCs.

It is deduced from the Table that in the year 2015, there were on average 3,208 persons per bed in District Mardan.

| Table 5- 36: Distribution of Beds in Health Institutions: Khyber Pakhtunkhwa Vs District Mardan ⁶⁴ | | | | | | | |
|---|------------------------|--------|-------|-------|------------|--------|--|
| ٨٢٥٦ | | | Total | | | | |
| 7.1.04 | Hospitals Dispensaries | | | RHCs | TB Clinics | iotai | |
| Khyber | No. | 16,403 | 26 | 1,502 | 62 | 17,993 | |
| Pakhtunkhwa | % | 91.16 | 0.14 | 8.35 | 0.34 | 100 | |
| District Mardan | No. | 752 | 0 | 74 | 0 | 826 | |
| | % | 91.04 | 0.00 | 8.96 | 0 | 100 | |

5.12.5 Patients Treated in Health Institutions: Indoor and Outdoor:

Table 5.37 shows that in the Province in the year 2015, about 19.6 million patients were treated in health institutions, of which about 98% were outdoor patients and around 2% were indoor patients. The former includes old and new cases.

In case of District Mardan, patients treated were about 3% Indoor and 97% in Outdoor.

⁶⁴ Source: Bureau of Statistics, Planning & Development Department, Govt. of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Development Statistics, 2016, Page 152.

| Table 5- 37: Patients Treated: Province Vs District Mardan ⁶⁵ | | | | | | | |
|--|-----|--------|--------------------------|----------|--|--|--|
| Area | | | Patients Treated in 2014 | | | | |
| | | Indoor | Outdoor ⁶⁶ | Total | | | |
| Khyber | No. | 497299 | 23128087 | 23625386 | | | |
| Pakhtunkhwa | % | 2.20 | 97.80 | 100 | | | |
| District Mardan | No. | 34127 | 1401111 | 1435238 | | | |
| | % | 2.3 | 97.7 | 100.00 | | | |

5.12.6 Existing Health Polices:

Sustainable Development Goals:

The Heads of State, Government and High Representatives, met at United Nations Headquarters in New York from 25th to 27th September, 2015 as the Organization celebrated its seventieth anniversary, they decided on that day a set of new global "Sustainable Development Goals".

In these Goals and targets, they set out a supremely ambitious and transformational vision. They predict a world free of poverty, hunger, disease and want, where all life can thrive. They visualized a world free of fear and violence. A world with universal literacy. A world with equitable and universal access to quality education at all levels, to health care and social protection, where physical, mental and social well-being were assured. A world where they reaffirm their commitments regarding the human right to safe drinking water and sanitation and where there is improved hygiene; and where food is sufficient, safe, affordable and nutritious. A world where human habitats are safe, resilient and sustainable and where there is universal access to affordable, reliable and sustainable energy.

They announced 17 Sustainable Development Goals with 169 associated targets which are integrated and indivisible. Never before have world leaders pledged common action and endeavor across such a broad and universal policy agenda.

In these 17 goals, Goal-3 is to "Ensure healthy lives and promote well-being for all at all ages".

Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development. Significant strides have been made in increasing life expectancy and reducing some of the common killers associated with child and maternal mortality. Major progress has been made on increasing access to clean water and sanitation, reducing malaria, tuberculosis, polio and the spread of HIV/AIDS. However, many more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues.

⁶⁵ Source: Bureau of Statistics, Planning & Development Department, Govt. of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Development Statistics, 2010, Table No. 127, Page 164.

⁶⁶ Outdoor patients include old and new cases.

Goal-3: Ensure healthy lives and promote well-being for all at all ages

- 3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.
- 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and underJ5 mortality to at least as low as 25 per 1,000 live births.
- 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
- 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
- 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.
- 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents
- 3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs.
- 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.
- 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
 - 3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate.
 - 3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.
 - 3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.
 - 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global

health risks.

National Health Policy:

The National Health Policy provides an overall national vision for the Health Sector based on "Health for All" approach. Under this approach, the national health policy aims to implement the strategy for protecting people against hazardous diseases, protecting public health, and upgrading curative care facilities. Under the new Health Policy, health sector investments are being viewed a part of the Government's Poverty Alleviation Plan. Priority attention has been accorded to the primary and secondary tiers of the health sector and good governance is seen as the basis for health sector reforms to achieve quality health care.

The key to the success of the new Health Policy lies in its implementation. This is not an easy task but is by no means impossible. The new Health Policy has outlined implementation modalities and has set targets and a time frame for each of the key areas identified that would be implemented over a 10-year period. These have to be implemented in partnership between the federal Ministry of Health and the provincial Departments of Health, and in close collaboration with the District health set-up under the Local Government structure. The private health sector would also be taken on board while implementing the key policy initiatives.

The health policy has developed a clear view of what is required to be done in key areas, and the measures to be taken to achieve the envisioned goals. The Policy provides guidelines to the Provinces while implementing plans in the health sector in accordance with their requirements and priorities. The Key Areas of National Health Policy are as below:

- Key Area No.1: To reduce Widespread Prevalence of Communicable Diseases (i.e. EPI cluster of childhood diseases, TB, Malaria, Hepatitis-B and HIV-AIDS.
- Key Area No.2: To address inadequacies in primary/secondary health care services. The main inadequacies are identified as the deficient state of equipment and medical personnel at BHU/RHC level. Absenteeism is common. At the District/tehsil level hospitals there are major shortcomings in emergency care, surgical services, and anesthesia and laboratory facilities. There is no referral system in operation.
- Key Area No. 3: To Remove Professional and Managerial Deficiencies in District Health System. The main deficiencies have been identified as the ineffectiveness of the District health office to supervise health services in a District. DHOs generally lack in essential qualifications and management skills. A large number of posts of male and female doctors and paramedics at the primary and secondary health facilities are vacant, as well as specialist positions in District and tehsil hospitals. Mega-hospitals are managed in an adhoc manner.
- Key Area No. 4: To promote greater gender equity in the health sector.
- Key Area No. 5: To bridge the Basic Nutrition Gaps in the target-population i.e. children, women and vulnerable population groups.
- Key Area No. 6: To correct urban bias in the health sector.

- Key Area No. 7: To introduce required regulation in the private medical sector with a view to ensuring proper standards of equipment and services in hospitals, clinics and laboratories as well as private medical college and Tibb/Homeopathic teaching institutions.
- Key Area No. 8: To create mass awareness in public health matters.
- Key Area No. 9: To Effect improvement in the Drug Sector with a view to ensuring the availability, affordability and quality of drugs in the country.
- Key Area No. 10: Capacity Building for Health Policy Monitoring in the Ministry of Health.

5.12.7 Constraints:

The emphasis in the past has been to increase the quantity of health-related services, i.e. number of doctors, rural health centers, basic health units etc. The numbers are important, but equally important is functionality of health centers. Most of these are not as functional as they should be, because of various factors such as shortage of medicines or staff, often both.

The above factors become constraints due to the following reasons:

- The zeal to meet the numerical target has compromised the quality and type of facility provided.
- The end result has been unmanned and unsupervised health services.
- The focus has been on quantity rather than quality and performance.
- While facilities have been provided in many areas, the absence of medical staff allocated to those facilities has made them less effective.
- There are weaknesses in managerial, administrative, and coordinating to ensure the efficiency of health delivery mechanism.
- The private sector in health is quite strong in District Peshawar, but week in rest of the Province.
- However, private sector has profit motive. There is at present no mechanism whereby the private sector can support efforts of the government in providing healthcare to those who cannot afford the higher private sector prices.

5.12.8 Recommendations and Conclusions:

- Health Sector needs to be emphasized as in Land Use Plans, as it profoundly impacts the health of people who live and work there.
- There is a need to focus attention towards developing broad policies and general strategies to improve community design and building practices and reverse the negative trends related to human health.
- There needs to be a clear view of what is required to be done in key areas, and the measures to be taken to achieve the envisioned goals. The National Health Policy provides guidelines to the Provinces while implementing plans in the health sector in accordance with their requirements and priorities.

- It is important to study the contribution of private sector in provision of health facilities. Of the total 172 hospitals in the Province, 80% are Government owned and about 20% are being run by private sector. In District Mardan however, there are six hospitals, 4 of which Govt.-owned and 2 of which Private owned. However, a number of Govt. sponsored health institutions are in the pipeline which will help to ease the current pressure on health facilities in Mardan.
- In the Province, more than 90% beds are in hospitals and 8.5% in rural health centers. In District Mardan 77% of the total beds are in hospitals as against 23% in other institutions. Comparing District with the Province, only 3.4% of the total beds in the Province are in District Mardan. There is thus a dire need to increase the number of beds in public as well as private health institutions.
- In the Province, about 91% of the beds are in government institutions as against 9% in private institutions.

5.12.9 Health Proposals for Short-Term (2017-2024):

i. Provision of Basic Health Units

The total number of UCs (urban as well as rural) in the District is 58 and having 49 BHUs.8 UCs are urban / urbanizing and remaining 50 UCs are rural. The 8 urban/urbanizing UCs are well-served with medical facilities, and are not dependent on BHUs. These lie in the Core of Mardan and include hospitals, medical centers and private health institutions. Thus, in the 8 urban UCs, BHUs are not required. In 50 rural UCs, 21 rural UCs are without any BHU, and thus need at least one BHU in each of these. While Remaining 29 Rural UCs have 1 or more BHUs each. The details of UCs with no BHU and recommended to have 1 BHU during 2017-2024 are provided in Table 5.38.

| | Table 5- 38: Rural Union Councils with Number of BHUs in District Mardan | | | | | | |
|--------|--|------------------|--|--|--|--|--|
| Sr. No | Rural UCs Vs BHUs | Number of UCs | Names of UC | | | | |
| 1 | UCs with no BHU | 21 | Pir Saddo, Narai, Parkho Dheri, Kati garhi, kot jhonger, Jahangir Abad, Saro shah, Mayar, Kandar, Chak Hoti, Mohib Banda, garhi Ismail zai, Toru, Garyala, Bazar, Babuzai, Gujrat, Mohabat Abad, Alo, Kharki, Kohi Barmol | | | | |
| 2 | UCs with 1 BHU | 17 | Jalala, Manday Baba, Mian Esa, Qasim, Shamozai, Rustam, Palo Dehri, Machai, Kata Kath, Bakshali, Sawal Dher, Babiani, Fatima, Seri Behlol, Kot Daulat Zai, Charguli. | | | | |

ii. Provision of Rural Health Centers (RHCs):

Based on population criteria of 1 RHC for 75,000 populations, a total of 30 RHCs are required by the end of short-term plan period. The existing number of RHCs is 7, entailing a net requirement of 24 RHCs in rural areas of the District Mardan.

The required number of RHCs may be provided preferably in a larger village/settlement for the short-term plan.

| Table 5- 39: Rural Health Centers Required in the Short-Term Plan | | | | | | |
|---|---|-----------------------------|--------------------------------|----------------------|--|--|
| Rural Population (2019) ⁶⁷ | Rural Population (2024) ⁶⁸ | RHCs Required in 2024 | Existing ⁶⁹ RHCs | Net Required by 2024 | | |
| 2,045,296 | 2,361,747 | 31 | 7 | 24 | | |

iii. Increasing Number of Beds:

Applying the national standard of 2 beds per 1000 persons, the gross number of beds required at the end of short-term period is 5,404, while the existing numbers of beds are 520. Thus additional 4,884 beds will be required by the year 2018. (Table 5.40)

| Table 5- 40: Number of Beds Required in the Short-Term Plan | | | | | | |
|---|----------------------|---------------------------------|---|----------------------------|--|--|
| Population (2019) | Population (2024) | No. of beds Required in 2024 | Existing Number of Beds ⁷⁰ | Net Required by 2024 | | |
| 2,503,451 ⁷¹ | 2,871,036 | 5742 | 826 | 4916 | | |

5.12.10 Health Proposals for Long-Term Plan (2024-2039)

i. Provision of Basic Health Units:

For the period 2024-2039, it is proposed that out of 50 rural union councils, each rural union council should have at least two BHUs. There are already UCs with 2 BHUs and they are likely to get urbanized till 2039 and will have better health facilities. However remaining UCs are recommended to have 2 BHUs in each during the long-term period are as below

⁶⁷ Source: Table 5.1 of this Report

⁶⁸ Section 5.41 of this Report.

⁶⁹ Source: KP Land Use Project, District Studies Report Peshawar, Chapter 9.

⁷⁰ Source: KP Land Use Project, District Studies Report, Peshawar, Chapter 9, Section 9.5, Table 9.4.

⁷¹ Source: District-wise Census Report, 2017

Table 5.41: Union Councils Proposed to have Two BHUs in the Long-Term Plan

Pir Saddo, Narai, Parkho Dheri, Kati garhi, Kot jhonger, Jahangir Abad, Saro shah, Mayar, Kandar, Chak Hoti, Mohib Banda, garhi Ismail zai, Toru, Garyala, Bazar, Babuzai, Gujrat, Mohabat Abad, Alo, Kharki, Kohl Barmol, Jalala, Manday Baba, Mian Esa, Qasim, Shamozai, Rustam, Palo Dehri, Machai, Kata Kath, Bakshali, Sawal Dher, Babiani, Fatima, Seri Behlol, Kot Daulat Zai, Charguli.

ii. Provision of Rural Health Centers (RHCs)

Based on population criteria of 1 RHC for 75,000 populations, a total of 54 RHCs will be required by the year 2039. During the short-term plan of first five years (2019-2024), 31 RHCs are proposed to be provided. If this proposal is implemented, 22 additional RHC will be required during 2024-2039.

| Table 5- 41: Rural Health Centers Required in the Long-Term Plan | | | | | | |
|--|---|-----------------------|--|----------------------------|--|--|
| Rural Population 2024 ⁷² | Rural Population 2039 ⁷³ | RHCs Required in 2039 | Existing RHCs in 2024 ⁷⁴ | Net Required by 2039 | | |
| 2,361,747 | 4,033,464 | 54 | 31 | 23 | | |

iii. Increasing Number of Beds:

Applying the national standard of 2 beds per 1000 persons, number of beds required for the additional population during the period 2024-2039 are 3756 (Table 5.49).

| Table 5- 42: Number of Beds Required in the Long-Term Plan | | | | | | | |
|--|----------------------------------|---|--|--|--|--|--|
| District Population (2024) | District Population (2039) | Additional Population (2024-2039) | Number of Beds Required During 2024-2039 | | | | |
| 2,871,036 | 4,749,031 | 1,877,995 | 3756 | | | | |

⁷² Source: Table 5.41 of this Report.

⁷³Table 5.44 of this Report.

⁷⁴ If short-term proposals for 2017-2024 are implemented.

5.13 INDUSTRY

5.13.1 Industrial Employment and Distribution by Type

There are total of 172 industrial units in District Mardan, of which 99 are in the small industrial estate which having 777 employments while 73 are outside, having 3805 employments (Table 5.50). of the total 99 industrial units in Small Industrial Estate, 82 units (more than 82.8%) are marble units.

| Table 5- 43: Number of Industry in District Mardan ⁷⁵ | | | | | | |
|--|--------------------------|------------|------|--|--|--|
| Sr. No | Particulars | Employment | | | | |
| 1 | Total No. of Units in | 00 | 777 | | | |
| T | Small Industrial Estate. | 99 | | | | |
| | Total No. of Units | | | | | |
| 2 | Outside Small Industrial | 73 | 3805 | | | |
| | Estate. | | | | | |
| | Total | 172 | 4582 | | | |

Heavy, medium and light industrial zones/small industries estates

Industries can be categorized in different ways, such as on the basis of capital investment, labor force employed or the extent and magnitude of pollution produced. In this chapter, industries in District Mardan have been categorized on the basis of labor force.

There is a total of 172 industrial units in Mardan, of which 20 are closed and 152 are operational. These 152 running units include a Textile (Mills Sector), employing a total of 2105 person, which is 45% of the total industrial labor in the District. Besides, there are 6 medium level industry units according to labor force per unit. On the basis of above criteria, the industrial units in District Mardan may be categorized as given in Table

| Table 5- 44: Categorization into Heavy, Medium and Small Industries ⁷⁶ | | | | | | | |
|---|---------------------|---------------------------|---------------------------|---------------------|---------------------------|--|--|
| Categories | No. of Employees | Nature of Industry | No. of Industrial Unit | No. of Employees | % with Total Employees | | |
| Heavy | More than 500 | Textile (Mills Sector) | 1 | 2105 | 45.940637 | | |
| Medium | 100-499 | Sugar, Cigarettes | 6 | 1106 | 24.137931 | | |
| Small | Less than 100 | Others | 165 | 1371 | 29.921432 | | |
| | Total | | 172 | 4582 | 100 | | |

⁷⁵ Directory of Industrial Establishments 2011

⁷⁶ Directory of Industrial Establishments 2011

Industrial Growth Pattern-Historical Perspective

The number of total industrial units in Khyber Pakhtunkhwa has been increasing since the year 2004 to 2010, except the year 2008-09 when there was a decline from 2254 in 2007-08 to 2207 in 2008-09. However, this is the total number of industrial units which include running as well as closed units (Table 5.51).

The Table also provides historical data for District Mardan giving total number of units, running units and closed units in the past number of years. In District Mardan, the running units have generally been on the increase since the year 2004-05. In the 2007-08, the numbers of running units however dropped to 134 from 150 in the previous year. Table 5.46 presents total, running and closed units as absolute numbers as well in form of percentage of provincial total.

| Table 5- 45: Total Number of Registered Industrial Units Running & Closed ⁷⁷ | | | | | | | | | |
|---|--------------------|-----------------|----------------|-----------------|-----------------|----------------|------------------------------------|-----------------|----------------|
| Year | Khyber Pakhtunkhwa | | | District Mardan | | | % District Mardan with Province | | |
| i cui | Total | Running Unit | Closed Unit | Total | Running Unit | Closed Unit | Total | Running Unit | Closed Unit |
| 2004-05 | 1967 | 1230 | 737 | 155 | 118 | 37 | 7.88% | 9.59% | 5.02% |
| 2005-06 | 2219 | 1479 | 740 | 180 | 144 | 36 | 8.11% | 9.74% | 4.86% |
| 2006-07 | 2236 | 1437 | 799 | 194 | 150 | 44 | 8.68% | 10.44% | 5.51% |
| 2007-08 | 2254 | 1552 | 702 | 170 | 134 | 36 | 7.54% | 8.63% | 5.13% |
| 2008-09 | 2207 | 1591 | 616 | 171 | 150 | 21 | 7.75% | 9.43% | 3.41% |
| 2009-10 | 2239 | 1701 | 538 | 173 | 152 | 21 | 7.73% | 8.94% | 3.90% |
| 2011 ⁷⁸ | | | | 172 | 152 | 20 | | | |

⁷⁷Source: Bureau of Statistics, Planning & Development Department, Govt. of Khyber Pakhtunkhwa, Khyber Pakhtunkhwa Development Statistics, 2007, Page 181, Table136 (For the years 2004-2005, 2005-2006 and 2006-2007). For years 2007-2008, 2008-2009 and 2009-2010, the source is Khyber Pakhtunkhwa Development Statistics, 2010, Page 192, Table 140.

⁷⁸ Directory of Industrial Establishments 2011

As already stated, there are total of 172 industrial units in District Mardan, of which 99 are in the small industrial estate while 73 are outside it. The details about types of industrial units in District Mardan are given in the Table below:

| Table 5- 46: Industrial Units and employment in District Mardan | | | | | | | |
|---|------------------------|-------------------------------|---------------------------------|--------------------------------|-------------------------------------|--|--|
| | | Number of Units | | | | | |
| Sr. No | Nature of Units | Small Industrial Estate | Outside Industrial Estate | Small Industrial Employment | Outside Industrial Employment | | |
| 1 | Sugar | 0 | 2 | 0 | 640 | | |
| 2 | Flour | 1 | 22 | 17 | 309 | | |
| 3 | Biscuits | 1 | 1 | 0 | 0 | | |
| 4 | Vegetable Ghee | 1 | 1 | 0 | 0 | | |
| 5 | Cold Storage | 1 | 2 | 3 | 21 | | |
| 6 | lce | 1 | 2 | 2 | 7 | | |
| 7 | Cigarettes | 0 | 4 | 0 | 466 | | |
| 8 | Textile (Mills Sector) | 0 | 1 | 0 | 2105 | | |
| 9 | Paper | 0 | 1 | 0 | 20 | | |
| 10 | Match | 2 | 2 | 100 | 0 | | |
| 11 | Soap | 0 | 3 | 0 | 37 | | |
| 12 | Rubber & Plastic Goods | 0 | 2 | 0 | 22 | | |
| 13 | Cement Based Ind: | 0 | 28 | 0 | 166 | | |
| 14 | Engineering | 0 | 1 | 0 | 0 | | |
| 15 | Other Metal Products | 3 | 1 | 0 | 12 | | |
| 16 | Furniture | 2 | 0 | 12 | 0 | | |
| 17 | Paper Packages | 3 | 0 | 14 | 0 | | |
| 18 | Arms | 1 | 0 | 0 | 0 | | |
| 19 | Marble | 82 | 0 | 621 | 0 | | |
| 20 | Gases | 1 | 0 | 8 | 0 | | |
| | Total | 99 | 73 | 777 | 3805 | | |

5.13.2 Future Industrial Area Requirement

The industrial area requirement in District Mardan has been calculated on the basis of additional population for the first 5 years of plan period (2019-2024) and subsequent 15 years (2024-2039). The anticipated industrial labor force in these periods was calculated on the basis of 5% participation rate and industrial area by applying the standard of 50 industrial workers per acre. The results are presented in the Table below. It is clear that over the entire plan period; 2245.5 acres would be required which includes 368 acres in the short-term (2019-2024) and 1878 acres in the long-term period (2024-2039).

| Table 5- 47: Future Industrial Area Requirements | | | | | | |
|--|---------------------------------------|--------------------------------------|----------------------|--|--|--|
| Parameters | Short-Term Plan Period (2019-2024) | Long-Term Plan Period (2024-2039) | Total (2019-2039) | | | |
| Additional Population | 367,585 | 1,877,995 | 2,245,580 | | | |
| Industrial labor force ⁷⁹ | 18379.25 | 93900 | 112279 | | | |
| Industrial Area Required ⁸⁰ | 368 Acres | 1878 Acres | 2245.5 Acres | | | |

5.13.3 Current Industrial Area Gap

The current industrial area gap has been calculated as below:

- District Population (2019): 2503451⁸¹
- Industrial Labor Force (@5% of above): 125172.5
- Industrial area required (@50 workers per acre) = 2503 acres
- Current Industrial area in the District: = 0.70 sq. km= 173 acres⁸²
- Industrial area deficiency: 2503 -173=2330 acres

It is clear from the above that till the end of plan period, the total industrial area requirement would include 2503 acres to meet the current deficiency, and 2245.5 acres to meet the future requirement. The total would be thus 2503+2245.5 = 4748.5 acres.

5.11.4 Proposed Industrial Location

New industrial estate is proposed between Charsadda Road and Nisata Road, and with existing ring road towards West and proposed inner ring road towards East. The site thus has strong road

⁷⁹ Pakistan Bureau of Statistics, Govt. of Pakistan, Labor Force Statistics 2008-2009, Table 21 (<u>www.pbs.gov.pk</u>); Labor force participation rate given is 7.46% for population of 10 years & above. Averaging it over the gross population, the participation rate comes out to be around 5%.

⁸⁰ Source: Environment and Urban Affairs Division, Govt. of Pakistan, National Reference Manual on Planning and Infrastructure Standards, Section 5.3.1.2, Page 89 (adapted @50 industrial workers per acre).

⁸¹ KP Land UseProject, District Studies Report Mardan, Chapter 6, and Table 6.14.

⁸² Chapter 2, Table 2.4 of this Report

linkages, facilitating easy access of raw material as well as finished products in all directions. The site has proposed trade zone in the North and proposed civic zone in the South.

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Map 5-11: category-wise Industries Map of District Mardan



Map 5-12: Industries Location Map of District Mardan

5.11.5 Constraints/Disparities in Mardan

Apart from locational disadvantages, high cost of working capital coupled with some other reasons, are apparently responsible for rendering vast majority of the Mardan industrial units to carry out operations much lower than their operational capacity.

High cost of financing/working capital and difficulties in obtaining improved technology, especially modern imported technology on the part of Mardan industrialists are some of the main reasons for rendering majority of the industrial units to carry out operations below their manufacturing capacity.

The locational disadvantage makes the Mardan-based industrialists to bear greater transportation cost to transport the imported raw material from the Karachi seaport.

This results not only in raising the overall cost of production in addition to reducing the competitive value of the Mardan products against the goods manufactured in Punjab and other parts of the country, the locational disadvantage has also been hampering products of the Province to access to bigger markets of the country.

There is only single planned small industrial estate in the Mardan; and none for medium and heavy industries in the District.

5.11.6 Review of Existing Laws/Policies⁸³

With more than 700 units closed or sick and less than 60,000 people employed in the industrial sector; and the changing international situation, it was a high point for the provincial government to adopt measures for the revival of sick units and create conducive environment for growth of industries.

After continuous interaction with the private sector especially Sarhad Chamber of Commerce and Industry, it was felt that the provincial government has to come forward for the relief and facilitation of the industrial sector.

In order to offset the location disadvantage some of the areas, which became part of the industrial policy, were considered crucial for rapid industrialization of the province.

In keeping with the new international realities and considering the private sector as engine of growth, the provincial government has embarked on a policy of facilitation.

It is evident that there is much more potential in the industrial sector of the province than has been exploited so far. The main resources of the province i.e. tourism, minerals and hydropower are yet to be fully tapped.

⁸³ District Studies Report Mardan

5.15 RECREATIONAL FACILITIES:

The decreasing recreational facilities and open spaces are a cause of concern. The pressure on land is increasing because of competing land uses. The planning agencies therefore, should stress the need for reserving recreational spaces against many competing demands for land.

5.15.1 Sports Facilities:

Mardan Sports Complex:

Mardan Sports Complex is a multiple purpose sports complex located in Sheikh Maltoon Town Mardan. It was constructed in 2006 by Mardan District government with the help of Government of Pakistan. Initially, facilities for cricket, football, basketball and volleyball were made available. The swimming pool facility was then built in 2011 at the cost of Rs.50 million while in 2016, the PTI led government of Khyber Pakhtunkhwa constructed an international standard hockey turf at the sports complex at the cost Rs.67.69 million.

Mardan Sports Complex currently hold sporting facilities for the following sports.

- Hockey Ground
- Football Ground
- Cricket Ground
- Alhletics track
- Boxing
- Swimming pool
- Indoor facilities for Badminton
- Table Tennis
- Judo, wushu and taekwondo

Apart from Mardan Sports Complex, there are some other sports facilities as well in Mardan, they are:

- i. College Cricket Ground, Situated in Abdul Wali Khan University.
- ii. College Hockey Ground, Situated in Abdul Wali Khan University.
- iii. PRC Golf Club
- iv. Younus Stadium
- v. Mardan Cricket Academy

5.15.2 Entertainment:

As already stated, under this category of Recreational Facilities include Hotels, Hill resorts, Cinemas, Arts councils and Theatres.

There are no hill resorts, arts councils and theatres in Mardan, though a few cinemas such as Nandara Cinema exist. The main facilities under this category are restaurants. There are 13 registered restaurants/hotels in the District have been obtained from the official publication prepared by "Directorate of Sports and Youth Affairs" and the details are given below:

- Al-Adress Hotel Bank Road Mardan
- Zaman Hotel & Restaurant Bank Road Mardan
- Idreesia Chargha House Judge Bazar Mardan
- Faran Restaurant, Mardan

- Wali Mohammad Chargha House Mardan
- Daster Khan Restaurant, M1 Motor Way Mardan
- Palace4 Restaurant Rashakai M1 Motor Way Mardan
- Tila Muhammad Restaurant Pakistan Chowk Mardan
- Sardar Cafe Pakistan Chowk Mardan
- Prince Hotel Chaply Kabab Mardan
- Shan Restaurant Nandara Cinema Mardan
- Ajab Khan Restaurant Opp. Distt. Hospital Mardan
- Falsteen Hotel & Restaurant Mardan

5.15.3 Historical Places:

Following are some of the historical places in District Mardan⁸⁴:

i. Shahbaz Garhi

Shahbaz Garhi is situated on Mardan Swabi road at a distance of 12 kilometer from Mardan. The emperor Baber in his book Tuzk-e-Babri has given reference of this monastery. It has also been stated that this village with the name of a famous religious person. In the ancient books the name of this village is Varshapura. In 7th century, a Chinese pilgrim Mr. Haven Sang, visited this monastery and recorded this polosha in his book. A servant of Tajit Singh, Mr. Moart saw this inscription in 1832 for the first time and made thirteen lines copy. Later on, Herd Duclus Assistant Commissioner Mardan stated that these words are of Khoroshti language.

ii. Kashmir Ghar

Kashmir Ghar is situated east of Katlang near village Babozai. Nearby by the wall of this monastery small broken sculptures are available, where the Hindu Pandits worshiped. There is also swimming pool which seems to be 'ashnan'.

iii. Sawal Dher

This site is situated at a distance of 4 kilometers in the south west of Jamal Garhi. Most of the sculptures of this monastery are presented in the Lahore Museum. It is the ancient city where a village Sawal Dher is now situated.

iv. Jamal Garhi

Jamal garhi is situated at 13 kilometers from the Mardan city and is connected by the metalled road. It is situated at the middle of the Takht Bhai and Shahbaz garhi at equal distance of 12 kilometers from each side. A company Sappers and Miners explored this site firstly. The Kharoshti inscription was discovered from this site, having main round stupa. Haven sang say nothing about this stupa, hostel, main stapes, court yard of many stupas and secret wall. The Chinese Pilgrim also say nothing about this important place. In 1836 Sikh General has made it Gandaparas. Kahamghum also explore this monastery in the 1876. Later on, in 1910-11 it has again has excavated.

v. Takht Bhai

Takht Bhai is situated on the Mardan Malakand Road at the distance of 15 kilometers from Mardan. The ancient Buddhist monastery is situated at the height of 5500 feet from the

⁸⁴ Source: District Census Report, 1998.

surrounding land. In 1908-9 Sandapora Kharoshti inscription and coins were discovered. This monastery has a large number of buildings, such as conference hall.

vi. Sari Behlol

The monastery is situated at Mardan Malakand Road at a distance of about 10 kilometers from Mardan. It is situated at a mount. According to the statement of Dr. Spooner, Dr. Arl-Strain, it is a big treasury of Gandahera Art. The 2/3 sculptures of Peshawar Museum have been taken from the Sari Beholo site. In the opinion of Archaeologists due to sudden fire burning here the sculpture remained preserved. Coins were also found from this site.

It is expedient to preserve premises of historical value in Khyber Pakhtunkhwa. Thus, no alteration/renovation, demolition or re- erection of any portion of a historical building should be affected without the prior permission in writing of the concerned Department of the Government.

Accordingly, the Provincial Government should make regulations in pursuance of the powers conferred by First Schedule, Part D, Clause iii (m), of KP (then NWFP) Local Government Ordinance, 2001.

5.15.4 Religious Places:

Masjids:

- Tableeghi Markaz
- Bilal Masjid
- Eid Gah
- Minar Masjid
- Masjid Hilal

Churches:

- Free Evengical Church
- Northern Diocese Church

Temples:

• Babu Mohallah Mandir

5.15.5 Museums:

Mardan Museum Mardan:⁸⁵

Mardan Museum was first established in the Town Hall in 1990 under the supervision of the then Commissioner Mardan Divisoin, Sahibzada Riaz Noor. The museum consisted of a single hall which displayed few Gandharan sculptures. In 2006 on the request of Provincial Government the District Government had provided a chunk of land for the construction of a new building of Mardan Museum. The building has been completed consisted of three Galleries and was inaugurated by Ameer Haider Khan Hoti, Chief Minister Khyber Pakhtunkhwa in 2009.

⁸⁵ Source: https://www.kparchaeology.com/front_cms/museum/museum_info/32

a. Gandhara Gallery

Mardan Museum has the most beautiful collection of Gandharan sculptures. Most of these sculptures come from the sites of Takht-i-Bahi, Jamal Garhi and Sahri Bahlol. These are the Previous birth (Jataka) stories of Buddha, life scenes of Buddha, Palace scenes, Individual images of Buddha and Bodhisattva, Bejeweled heads of Bodhisattva, Stucco heads of Buddha and Architectural elements.

b. Ethnological Gallery

The Ethnological Gallery represents the ethnic profile of the region. These include the traditional jewelry, household objects, weapons, embroidery works and musical instruments. There are wooden and leather stools and boxes. The jewelry exhibited includes earrings, ear pendants, finger rings, necklaces, torques, bangles, bracelets, head ornaments and shoulder ornaments in silver. The embroidery work displayed in the gallery includes shirts and shawls. Weapons displayed include swords, muzzle loaded guns and pistols, representing the culture and tradition of nineteenth and early twentieth century. Household objects in wood, stone, and metal includes spoons, bowls, trays, querns, samawar, tea pots and glasses etc. Others are decorated terracotta Kalo khanaibowls and modern dishes. The musical instruments are rabab, sitar, tabla, tambourine, flute, drum, pitcher and Harmonium.

c. Islamic Gallery

Islamic Gallery exhibits the manuscripts of eighth to thirteen century Hijri. These include the beautiful calligraphic specimens of Quran, religious texts and poetry etc. The language is mostly Arabic and Persian where the dominant calligraphic styles are Naskh and Nastalique.

5.15.6 Libraries:

Mardan Public Library

The Mardan Public Library has a total covered area of 31,000 sft. It is located in the heart of city and has a collection of more than 10,000 books. It provides services to the all public specially research scholars and students of Post Graduate College, which is situated opposite to the Public Library.

5.15.7 Open Spaces:

The existing main open spaces/parks in District Mardan are as following:

- Piran Daga Park
- Tooti Park
- Company Bagh
- Ghulam Nabi Park
- Ameer Muhammad Khan Park (Under construction)

The decreasing recreational facilities and open spaces are a cause of concern. Provision of spaces for active outdoor recreation is hindered by high land prices, pressure on land and high population densities in urban area. Thus, reserving land for recreational purposes has to be stressed against many competing demands for land.



Map 5-13: Recreational Facilities in District Mardan

5.15.8 Constraints:

- Lack of training facility to the staff of Directorate of Archives & Libraries.
- Lack of staff in the Preservation section and Computer Section.
- Lack of transport facility for the transportation of record.
- Air-conditioning of the Complex.
- Recent Achievements
- Establishment of Internet section with all integrated facilities.
- Addition of Magazines of International repute and Newspapers.
- Reduction of membership fee for the children.
- Provision of latest edition of books on all subjects.

5.15.9 Recommendations:

Archeological Park at Takht Bahi

Takht-i-Bahi (Throne of the water spring), commonly mispronounced as Takht-i-Bhai (Brother's throne), is a Parthian archaeological site of an ancient monastery in Mardan. The site is considered the among the most imposing relics of Buddhism in all of Gandhara, and has been "exceptionally well-preserved."

The Archeological Site should be developed into a world class Archeological Park as it is a tourist attraction not only for the Pakistani but also for foreigners. Restaurants and eateries should be provided near the park to provide the visitors with food. Among these restaurants there should be a few restaurants which would offer traditional food, in order to promote our culture. Hotels should be provided to facilitate the visitors from other cities and countries, one or two world class hotels should also be constructed having all the luxurious facilities.

Wildlife Park at Sangao

The District of Mardan has a variety of fauna mainly comprising of; Snakes, Mongooses, Jackals, Wild Goats, Pheasants, and Mules. To preserve the wildlife of District Mardan a Wildlife Park is proposed at the site of Sangao Village, Tehsil Katlang.

Sangao is a small village at the North-West end of the Katlang area. Its population is unknown but certainly very small. Towards the North East of the village there is a series of mountains arranged in a half circle. In the southern region of Sangao lies another village called Babozai. The next-door neighbor of the South West border is the Mian Khan village. These villages are so close that often people call them all by one name: Mian Khan-Sangao. Caves lie in the mountains of Sangao that contain ancient history. However, these caves have yet to be explored and are therefore of special interest to historians, explorers, and adventurers. Recently a new road has been constructed linking Sangao to Buner District. The road runs through the mountains of the village.

5.16 AGRICULTURE:

Mardan is the Intermediate city of Khyber Pakhtunkhwa. It was declared as a District in 1937 with the bifurcation of District of Peshawar. Swabi and Charsadda Districts were later carved out of District Mardan in the 1980s. District Mardan is now comprises of two tehsils i.e. Takht Bhai and Mardan. Most of its land is agricultural. It has one of the world's best irrigation systems, which were laid down by the British government during British Rule on subcontinent

(1857-1947). It was part of the ancient Gandhara Civilization. There are still remains of the Gandhara Civilization, scattered in different areas of Mardan.

The total area of Mardan is about 1,632 sq km. Malakand, Charsadda, Nowshera, Swabi and Buner Districts surround the District Mardan. Mardan District is hilly in the northeast, while the southwestern half is a fertile plain. Generally, streams flow from north to the south. Most of the streams drain into the Kabul River. The summer season is extremely hot. During May and June dust storms are frequent during the night. Most of the rainfall occurs in the months of July, August, December, and January.

Mardan is blessed with fertile agricultural land; therefore, most of the people are associated with agriculture. Main crops are Virginia tobacco, sugarcane and wheat. Commercial deposits of marble, Limestone, Dolomite and Granite also exist in Mardan District. Veins of a good quality of Topaz, being a valuable gemstone have been found in the hillocks of Shaheed Ghundai and Shamozai Katlang, Mardan. Besides agriculture and mining as major economic activities, Mardan is also famous for its three major potential clusters namely Light Engineering Cluster (Takht Bhai), Furniture Cluster (Mardan) and Handicrafts Cluster (Mardan).

Mardan is known as one of the best agricultural area in the country, with a suitable land for cultivation of sugar cane and tobacco and is therefore, rightly called the land of sugar cane and tobacco. Major crops grown in the area includes; maize, rice, jowar, sugarcane, ground nut (Kharif), wheat, barley, mustard (Rabi). Horticulture is one of the major potential sectors of Mardan. Major fruits produced there includes, plum, pear, persimmon, peach and orange. Other fruits being produced in Mardan include apple, apricot, leechi, mango and lemon.

5.16.1 Cultivation Area and Conversion Trends:

The major portion of this population i.e. about 83% is dwelling in rural areas putting a tremendous pressure on land resources. To cater for the livelihood needs of this mammoth population, the province possesses 10.17 million hectares of land. However, the cultivable area is 2.75 million hectares. Out of cultivable area only 1.8 million hectares is cultivated where as 1.08 million hectares is cultivable waste. Due to great diversity in climate and soils, Khyber Pakhtunkhwa grows over 42 crops; the major ones being wheat, rice, barley, maize, sugarcane, tobacco, rape & mustard, groundnut, pulses, vegetables and fruits. The major crops occupy nearly 90% of the total cropped area and play an important role in sustaining the living of the rural population.

According to the Crops statistics of Khyber Pakhtunkhwa, the total reported area of District Mardan is 162100 hectares, out of which according to the year 2015-16 the total cultivated area is 99926 containing the sum of net area sown and current fellow which is 72% of the total reported area (Table 17.1). Total cropped area in District Mardan in 2015-2016 is 118369 hectares containing the net sown area and that area which is sown more than once in a single year. In table 17.1, Column 2 shows total reported area, Column 3, 4, 5 shows cultivated area, Column 6,7 shows total cropped area, and Column 8,9,10,11 shows Un-Cultivated area. (Cultivated Area: that farm area which was sown at least once during the year under the report or for the year before). It is the sum of area Net Sown and Current Fallow. Net Sown is that cultivated farm area which was actually cropped during the year under report regardless of the number of crops raised and includes area under fruit trees for the same year, while Current Fallow is that cultivated farm area which was cropped neither during the census year nor in

the year before that. Cropped Area means the aggregate area of crops raised in a farm during the census year including the area under fruits trees. Culturable Waste is that form of farm area which has the potential for being cultivation after either land leveling or stone removal etc. Forest Area is that uncultivated farm area which is under forest. Area not available for cultivation means barren or mountainous land, area under roads, Canals, Rivers and all such areas which are not utilized for agriculture purpose.)

| | Table 5- 48: Area Under cultivation in District Mardan ⁸⁶ (hectares) | | | | | | | | | |
|---------------|---|--------|-------------|-------------------|--------|--------------------------------------|--------|---------------------|--------|---|
| | | Cu | ltivated A | rea | Croppe | d Area | | Un-Cultivated Area | | |
| Year | Reported Area | Total | Net Sown | Current fallow | Total | Area Sown More than Once | Total | Cultivable waste | Forest | Non- Available for cultivation |
| 2010- 2011 | 185576 | 125841 | 99502 | 26339 | 107554 | 28051 | 59735 | 5737 | 7933 | 46065 |
| 2011- 2012 | 169470 | 52528 | 25397 | 27131 | 49090 | 23693 | 116942 | 47129 | 9120 | 60693 |
| 2012- 2013 | 162101 | 100053 | 87862 | 12191 | 121865 | 34003 | 62048 | 5187 | 7920 | 48941 |
| 2013- 2014 | 162100 | 99977 | 85653 | 14324 | 122036 | 36383 | 62123 | 5188 | 7919 | 49016 |
| 2014- 2015 | 162100 | 99926 | 83865 | 16061 | 118369 | 34504 | 62174 | 5188 | 7920 | 49066 |
| 2015- 2016 | 162100 | 99926 | 83865 | 16061 | 118369 | 34504 | 62174 | 5188 | 7920 | 49066 |

5.16.2 Distribution of Area by Crops

Crops

Table 17.2 gives a comparative statement of distribution of area by crops in District Mardan. According to the crop statistics, 2015-16, the total areas occupied by tobacco crop were, 4123 hactare. Wheat ranks first in acreage and production among all food crops. In 2016 total area occupied by wheat was 44,123 hectares. In the same year, total area occupied by sugarcane was 30915 hectares. Rice is the second major staple food of the most people of Pakistan. In District Mardan the rice was sown on an area of 1863 hectare, while area under maize crop was 28,992 hectares.

⁸⁶ Bereu of statistic, P & D Department, Government of Khyber Pakhtunkhwa "Development statistic of Khyber Pakhtunkhwa 2017" and "Agriculture census 2010".

| Table 5- 49: Distribution of Area by Crops in District Mardan (Hectare) | | | | | | | | | | |
|---|-------|------------|-------------------------------|-------|------------|----------------------------------|-----------|------------|----------------------------------|--|
| | | 2013-2014 | ļ | | 2014-2015 | | 2015-2016 | | | |
| Туре | Area | Production | Yield per Hectare in KG | Area | Production | Yield per Hectare in KG | Area | Production | Yield per Hectare in KG | |
| Wheat | 43943 | 96350 | 2193 | 42397 | 80999 | 1910 | 44123 | 91004 | 2063 | |
| Maize | 30977 | 109963 | 3550 | 29229 | 94565 | 3235 | 28992 | 89651 | 3092 | |
| Rice | 1739 | 3078 | 1770 | 1772 | 3153 | 1779 | 1863 | 3321 | 1783 | |
| Jowar | 871 | 605 | 695 | 759 | 524 | 690 | 863 | 596 | 691 | |
| Sugarcane | 30552 | 1463746 | 47910 | 30689 | 1381285 | 45009 | 30915 | 1369273 | 44292 | |
| Rape seed & Mustard | 586 | 312 | 532 | 542 | 280 | 517 | 533 | 293 | 550 | |
| Cotton | 6 | 2 | 283 | 4 | 1 | 250 | 3 | 1 | 333 | |
| Tobacco | 3631 | 10755 | 2962 | 4123 | 12230 | 2966 | 4123 | 12230 | 2966 | |
| Barley | 1373 | 1170 | 852 | 1364 | 1129 | 828 | 1315 | 1053 | 801 | |

Vegetables

Total area under vegetables during 2014-15 was 2,397 hectares with a production of 31,324 tons. In 2015-16 the total area increases into 36165 with the production of 36165, the area of District Mardan are presented in Table 17.4 below.

| Table 5- 50: Distribution of Area by Vegetables in District Mardan (Hectare) | | | | | | | | | |
|--|-----------|------------|----------------------------------|-----------|------------|-------------------------------|-----------|------------|----------------------------------|
| | 2013-2014 | | | 2014-2015 | | | 2015-2016 | | |
| Vegetables | Area | Production | Yield per Hectare in KG | Area | Production | Yield per Hectare in KG | Area | Production | Yield per Hectare in KG |
| Rabi Vegetables | 1387 | 20140 | 14521 | 1301 | 18887 | 14517 | 1295 | 18846 | 14553 |
| Kharif Vegetables | 839 | 15247 | 18173 | 1096 | 12437 | 11348 | 1453 | 17319 | 11919 |
| Total | 2226 | 35387 | 32694 | 2397 | 31324 | 25865 | 2748 | 36165 | 26472 |

The total area occupied by Kharif fruits in 2010 was 1,820 hectares with a production of 17,975 tons, and Rabi fruits area was 339 hectares with a production of 4,180 tons. Kharif Fruits are presented in Table 17.5, while province-wise fruit production is presented in annex 2.

| | Table 5- 51: Distribution of Area by Fruits in District Mardan (hectare) | | | | | | | | |
|---------------|--|------------|----------------------------------|-----------|------------|----------------------------------|-----------|------------|----------------------------------|
| | 2013-2014 | | | 2014-2015 | | | 2015-2016 | | |
| Fruits | Area | Production | Yield per Hectare in KG | Area | Production | Yield per Hectare in KG | Area | Production | Yield per Hectare in KG |
| Rabi Fruits | 324 | 4121 | 12719 | 341 | 4268 | 12516 | 331 | 4286 | 12949 |
| Kharif Fruits | 1706 | 16781 | 9836 | 1534 | 15037 | 9802 | 1547 | 15102 | 9762 |
| Total | 2030 | 20902 | 22555 | 1875 | 19305 | 22318 | 1878 | 19388 | 22711 |

5.16.3 Water Management

According to the United Nations' "UN World Water Development Report", the total renewable water resources decreased from 2,961 m³ per capita in 2000 to 1,420 m³ per capita in 2005. A more recent study indicates an available supply of water of little more than 1,000 m³ per person, which puts Pakistan in the category of a high stress country. Using data from the Pakistani federal government's Planning and Development Division, the overall water availability has decreased from 1,299 m³ per capita in 1996-97 to 1,101 m³ per capita in 2004-05. In view of growing population, urbanization and increased industrialization, the situation is likely to get worse. Nevertheless, excessive mining of groundwater goes on. Despite a lowering water table, the annual growth rate of electric tube-wells has been indicated to 6.7% and for diesel tube-wells to about 7.4%. In addition, increasing pollution and saltwater intrusion threaten the country's water resources. About 36% of the groundwater is classified as highly saline.

| Table 5- 52: Type of Irrigation Use for Agriculture in District Mardan ⁸⁷ | | | | | | | | | | |
|--|--|-------|---------|--------|------------|------|-------------|-------|--|--|
| Veer Tetel Canals Terele Tube wells wells left runn Other | | | | | | | | Othor | | |
| Tear | Total | Govt | Private | Taliks | Tube wells | wens | Leit puilip | Other | | |
| 2013-2014 | 72769 | 66327 | 0 | 0 | 40 | 4385 | 950 | 1067 | | |
| 2014-2015 | 74270 | 66297 | 0 | 0 | 1579 | 4379 | 948 | 1067 | | |
| 2015-2016 | 2015-2016 74270 66297 0 0 1579 4379 948 1067 | | | | | | | | | |

The major chunk of cultivated land is rain-fed which constitute 49% of the cultivated area. This scenario resulted in a situation where 94% farms are now below the range of 12.5 acres, which is a subsistence farm level.

⁸⁷ Development Statistic of Khyber Pakhtunkhwa 2017

5.16.4 Agricultural Employment

There has been no provision in any of the three successive laws (1969, 2002 and 2008) allowing agricultural workers as they are not defined⁸⁸as an industry. All the successive labor laws, although notexplicitly, exclude agriculture but these also do not expressly cover this and seem to be excluding small agriculture workers like tenants, share croppers and self-employed from their definition.

Most of the people in rural area are farmers by profession. They are engaged either directly or indirectly in agriculture. Agriculture is the major source of employment

| Table 5- 53: Labor force in rural areas of the District ⁸⁹ | | | | | | | |
|---|--|--|--|--|--|--|--|
| Labor Force (All Areas) Labor force (Rural Areas) | | | | | | | |
| Both sexes Both sexes Male Female | | | | | | | |
| 304778 230645 226332 4313 | | | | | | | |

in rural area. Like other parts of Pakistan, the share of agriculture in employment has decreased over the years. Still it is larger than any other sector of the economy. According to the District census reports 1998 of Khyber Pakhtunkhwa the total Labor force involved in the District in various industries were 304778 out of which 230645 containing both sexes were working in rural areas. Table 17.9 shows labor force in rural areas of the District.

Agriculture labor is of three types i.e. family labor, casual hired labor and permanent hired labor. Small and marginal farms generally use family labor only. On large farms, the relative importance of family labor declines owing to (i) the need to supervise work done by hired labor, (ii) consideration of social status, and (iii) alternative employment opportunities for family members by virtue of their better education. Therefore, large farmers usually hire labor to cultivate their land and perform domestic activities, in most of the casual hired labor was mainly used in land preparation, sowing, hoeing/weeding, harvesting and picking of vegetables/fruits.

The problem of underemployment in agriculture is due to surplus labor. Farm size decreases over time due to division of land holdings. Many of small farmers do not have enough land to fully employ their labor hours. This leads to underemployment in agriculture. Measuring the level and trends in the hours worked is important to calculate the level of underemployment. The level of engagement of agricultural labor is linked with the farm size.

Permanent hired Labors According to the Farm Size

Some families having large land holdings employ permanent farm labor. They perform various farm and domestic activities. There is a positive relationship between farm size and permanent hired labor hours. Permanent hired labors are either on monthly or yearly basis. In District Mardan, the average permanent hired labor per farm per year is 27.00 ranging from 0 to 225.02 as indicating in Table 17.10.

⁸⁸http://www.wageindicator.org/main/documents/Labor_and_Employment_Law-A_Profile_on_Pakistan.pdf, Page 8.

⁸⁹ District Census Reports 1998 Census of Khyber Pakhtunkhwa

| Table 5- 54: Permanent Hired Labor Hours According to Farm Size | | | | | | |
|---|---|--|--|--|--|--|
| Farm Size (Hectares) | Permanent Hired Labor (Hours Per Farm Per Year) | | | | | |
| < 1 | - | | | | | |
| 1 TO < 2 | - | | | | | |
| 2 TO < 3 | - | | | | | |
| 3 TO < 4 | - | | | | | |
| 4 TO < 5 | - | | | | | |
| ≥5 | 225.02 | | | | | |
| All Farms | 27 | | | | | |

Engagement and Time Spent of Family Labor According to Farm Size

There is positive relationship between farm size and average working hours spent per adult unit per farm. Table 17.9 depicts engagement and time spent of family labor according to farm size. The size of family labor per farm increases with farm size. In District Mardan, the average size of family labor per farm is 2.40 units ranging from 1.47 to 3.50. As time spent per week on farm is concerned, in District Mardan, the average working hours spent per family laborer per week is 18.42 ranging from 7.69 to 36.47. Engagement and

| Table 5- 55: Engagement and Time Spent of family Labor according to Farm size | | | | | | | |
|--|-----------------|-------------------|--|--|--|--|--|
| Engagement of Family Labor and Time Spent Per Farm | | | | | | | |
| Farm Size | Adult units per | Working hours per | | | | | |
| | farm | adult unit/Week | | | | | |
| < 1 | 1.47 | 7.69 | | | | | |
| 1 TO < 2 | 1.87 | 12.73 | | | | | |
| 2 TO < 3 | 2.56 | 18.09 | | | | | |
| 3 TO < 4 | 3.17 | 22.89 | | | | | |
| 4 TO < 5 | 3.33 | 30.65 | | | | | |
| ≥5 | ≥5 3.5 36.47 | | | | | | |
| ALL FARMS | 2.4 | 18.42 | | | | | |

time spent of family labor according to farm size is presented in Table 17. 11.

Casual Hired Labor Hours According to Farm Size:

Small farms generally perform all the farming operations themselves. Medium and large farms hire casual labor at peak agricultural period like harvesting and threshing of crops, picking of vegetables/fruits and sometimes for land preparation, sowing of crops and hoeing/weeding. There is positive relationship between farm size and average casual hired labor hours per farm. Payment to casual hired labor is made in kind or cash or in both. Average casual hired labor hours per farm per week increases with farm size in the District. The average casual hired labor hours per farm per week are 9.55. It ranges from 3.09 to 31.95 hours per

| Table 5- 56: Casual Hired Labor Hours according to Farm Size | | | | | |
|---|----------------------|--|--|--|--|
| Farm Size | Average Casual Hired | | | | |
| (HA) | Labor Hours Per Farm | | | | |
| | Per Week | | | | |
| < 1 | 3.09 | | | | |
| 1 TO < 2 | 4.84 | | | | |
| 2 TO < 3 | 7.23 | | | | |
| 3 TO < 4 | 7.6 | | | | |
| 4 TO < 5 | 16.2 | | | | |
| ≥5 | 31.95 | | | | |
| All Farms | 9.55 | | | | |

week. Table 17.12 shows the casual hired labor hours according to farm size.

5.16.5 Influence of Urbanization on Agriculture

Table 17.13 gives the total cultivable area in District Mardan in the years 1997-98 and 2015-16. Cultivable area is the farm area which was sown at least once during the census year. It is the sum of Net Sown and Current Follow areas. The total cultivable area during 1997-98 was 112,790 hectares, which decrease to 99,926 hectares in 20155-16. Comparing cultivable area in 1997-98 with that in 2015-2016, the decrease of cultivated area over the period of 18 years has been 12864 hectares (111 acres), or an average of 714 hectares per year.

With in-flow of rural migrants to urban areas of District Mardan, there have been significant

changes in land utilization, cropping pattern and sources of irrigation. However, though Mardan being the Intermediate city of Khyber Pakhtunkhwa, significant urbanization is taking place as which has a huge effect on total crops production.

| As | already | sta | ated, | urbanizati | on | is | of | ten |
|-----|---------|-----|-------|------------|----|-----|----|-----|
| con | sidered | to | have | negative | im | pac | ts | on |

| 1997/98 – 2015/16 | | | | | | | |
|---|---|------|--------|--|--|--|--|
| Cultivable Area (hectares) | | | | | | | |
| Year | Total Column Net Current | | | | | | |
| | Total Column | Sown | Fallow | | | | |
| 1997-98 ⁹⁰ | 1997-98 ⁹⁰ 112,790 96,532 16,258 | | | | | | |
| 2015-16 ⁹¹ 99926 83865 16061 | | | | | | | |

agriculture; for instance, from the loss of agricultural land to urban expansion and an urban bias in public funding for infrastructure, services and subsidies. However, this has not been the case in District Mardan, because agricultural producers and rural consumers also rely on urban-based enterprises for a wide range of goods and services, including access to markets.

5.16.6 Constraints:

- Scarcity of irrigation water is a major constraint in District Mardan. A large part of agricultural area in District Mardan is rain-fed, due to which farmers face hurdles.
- The land tenure system of Mardan has created a chain of intermediaries in between the state and the tenants. The system, instead of being conducive to agricultural development, stands in the way of its progress.
- In some areas of District Mardan, especially in hilly regions, the upper fertile soil is being eroded by different natural agents of change. Thus, the fertility is poor and soils are becoming less productive.
- The marketing facilities for agricultural products in District Mardan are still far from satisfactory. Our cultivators cannot get just prices for their produce due to defective marketing organization. Moreover, the chain of middlemen between the producers and ultimate consumers take a heavy share of their produce. Thus, the cultivators do not take much real interest in increasing production.
- Due to lack of agricultural education and methods of modern research, the farmers of the District cannot control the various diseases of crops and attacks of pests and insects.
- Most of Mardan villages have no or poor farm to market road. So, farmers have to face innumerable hardships to sell their products.
- The farmers of Mardan are mostly un-educated and lack technical knowledge. They are unable to understand the modern scientific methods of agriculture and often remain ignorant of good means to protect and increase their yield. Their production is therefore low.

⁹⁰ District census report Mardan, 1998, section 1.2.1, Page 15.

⁹¹ Source: Khyber Pakhtunkhwa Development Statistics, 2017, Land uses

- Majority of farmers are poor and often live hand to mouth condition. Most of them are always under heavy burdens of debts. Due to lack of capital they cannot afford to purchase modern implements, Fertilizers, improved seed etc. Hence, they cannot attain the required standards.
- Most of the farmers of the locality are still stuck to the old traditions of their forefathers. The circumstances have compelled them to use the crude implements, because due to small holdings of land and poverty they are unable to acquire and use modern technology. That is why their yield is lower than that of other provinces of the country.
- Salinity control and reclamation project (SCARP) have reclaimed some areas from water logging and salinity but still a lot of water logged and saline areas prevail in the District Mardan.
- The small farmers are increasing in District Mardan like other Districts as the lands are dividing generation by generation. So, there are huge numbers of farmer who own less than 4 acres of land. These small farmers do not get credit facilities to purchase seeds, pesticides, fertilizers etc. The average yield of the District is much low than the required yield, as there is a huge gap between the productive yield and wanted yield.

5.16.7 Recommendations:

- Large part of the District is saline and water-logged. Tube-wells should be installed in the affected areas to decrease the salinity by reducing water table. Beds of new canals should be made of concrete to avoid water-logging. Reclamation of waterlogged and saline area should be cover through plantation of Eucalyptus and poplar trees. These measures should be taken on priority basis to avoid further deterioration of land.
- Improved sugarcane verities should be introduced in District Mardan so that their sugar content should be enhanced.
- Strawberry producers should be encouraged; Offseason vegetable farming should also be encouraged.
- More and more multinational companies should be encouraged in the District so that the farmers can get the best price.
- The payments from sugar mills to the farmers must be strictly regulated.
- The area located on the bank of river Kabul is rain-fed which is the most fertile and leveled area. It needs irrigation facility which can be easily provided from the river Kabul.
- The seed certification and fertilizer quality should be strictly checked and regulated by the FSC and Rd on regular basis.
- On farm training regarding new technology should be regulated.
- Competition among the farmers for best production should be encouraged.
- In rain-fed area those farmers who have made their own tube wells, will introduce with drip irrigation system in which water and agro chemical are directly delivered to the root zone of the plant.
- Large tracts of area of District Mardan is left uncultivated which can be used profitably by tree plantation.
- The water storage capacity is decreasing due to sedimentation. In order to increase production to meet food requirements of the locality, additional water has to be provided. The additional water reservoirs may therefore be started immediately.

- The agricultural yield can also be increased to a great extent by using fertilizers. The use of fertilizers should be provided on low prices because due to poverty and illiteracy the farmers hesitate to purchase the fertilizers. Also, organic sources of fertilizers should be introduced in the locality which can enhance soil fertility.
- The use of better seeds, fertilizers, pesticides and modern implements is not possible without adequate credit facilities for the farmers. The government has extended the existing credit facilities to a large extent. The commercial banks also grant loans to the farmers, but still there is a need for more facilities as our farmers are very poor. The commercial banks may be encouraged to provide credit to small farmers in addition to Zarai Tarqauati Bank.
- The farmers should be provided better quality seeds at the lowest price and at the right time. Better seeds will ultimately give better yield.
- Various plant diseases damage a large part of our crops. But our procedures should be simplified and various marketing facilities should be provided to the cultivators. Farmers have no effective control over them. Therefore, preventive and narrative measures should be taken.

As most of the villages of the District is located on a distant from the main markets, so the transportation system should be improved through roads.

- Development on agriculture land will be discourage and development zone or city growth will be identified toward barren land.
- Awareness program shall be introduced to familiar farmers with the advance seeds, fertilizer, and irrigation facilities.
- Infrastructure development shall be discouraged on agriculture land to conserve fertile agriculture land.



Map 5-14: Agricultural Map of District Mardan

5.17 FULES AND MINERAL

Mainly marble and limestone minerals are extracted in the District of Mardan. Other minerals such as dolomite, granite and barite are also extracted. There is no reported metallic or gemstones which are mined /exploited in this District.

Minor minerals i.e., sand, bajri and gravel are also extracted from small streams and rivers banks. Marble cutting and polishing units are working at various places of District Mardan. Uncut Marble and tiles are sent to Islamabad and Punjab province through different private companies operating in Mardan. Mineral production for the year 2015-2016 along with leases area of Mardan is given in Table 20.3

| | Table 5- 58: Mineral production along with lease area - Mardan | | | | | | | |
|---------|--|-----------------------|--|--|--|--|--|--|
| Sr. No. | Mineral | Leased areas in acres | Production in metric tons (2006-2007) | | | | | |
| 1. | Barite | 193.338 | 4590 | | | | | |
| 2 | Limestone | 1835.498 | 206701 | | | | | |
| 3 | Dolomite | 1164.071 | 2893 | | | | | |
| 4 | Marble | 15847.340 | 244573 | | | | | |
| 5 | Granite | 1371.684 | 5267 | | | | | |

5.17.1 Katlang Topaz

According to an estimate, there are 09 million carats of pink topaz in Katlang, Mardan. Though some believe Katlang's topaz is equivalent to its Brazilian variety in standard, but many rates of higher quality. According to local gem experts, Katlang topaz can fetch prices up to Rs20,000 per carat. Their prices increase with their weight and beauty. They say that at Katlang topaz of the quality of sapphire has also been found. Experts believe there are huge prospects for investment in this sector in terms of scientific mining and cutting and polishing of gemstones. Computer-aided designing and manufacturing courses for gems and jewelry workers should be organised which will add to their value and also increase investment in the sector.

The sector has a big potential but it is in the shambles and a large quantity of the precious and semi-precious stones is exported raw. Then there is illegal gems trade. As most of the precious stones exist in remote areas, there is an urgent need of infrastructure development.

Indiscriminate blasting and rough cutting spoils the precious mines and stones. Law and order situation, lack of modern cutting and polishing facilities and indifferent attitude of the government is hindering the opening of local training and purchase centers and creating problems for the gems sector.

5.17.2 Minerals mined/extracted from District Mardan

i. Dolomite

Dolomite is a carbonate mineral composed of calcium magnesium carbonate $CaMg (CO_3)_2$. The term is also used to describe the sedimentary carbonate rock dolostone.

Dolostone (dolomite rock) is composed predominantly of the mineral dolomite with a stoichiometric ratio of 50% or greater content of magnesium replacing calcium. Limestone that is partially replaced by dolomite is referred to as dolomitic limestone. Details of location and leased area for dolomite in Mardan are given in Table 5.61.

| Present Detail Profile of Dolomite: ⁹² | |
|---|--------------------------|
| Number of leases | 04 (four) |
| Mining Method | Surface mining |
| Scale of Mining | Small & primitive mining |
| Lease Area | 1164.071 Acres |
| Production in tones | 74702 tons (2010) |

Table 5- 59: Location and leased area for dolomite in Mardan

| Sr. No. | Location | Area (in acres) |
|---------|---------------------------|-----------------|
| 1. | Village Kati Garhi Mardan | 270.271 |
| 2. | Village Palo Mardan | 466.063 |
| 3. | Village Badam Mardan | 293.440 |
| 4. | Village Mian Khan Mardan | 134.297 |

ii. Limestone

Limestone is a sedimentary rock composed primarily of calcium carbonate ($CaCO_3$) in the form of the mineral calcite. It most commonly forms in clear, warm, shallow marine waters. It is usually an organic sedimentary rock that forms from the accumulation of shell, coral, algal and fecal debris. It can also be a chemical sedimentary rock formed by the precipitation of calcium carbonate from lake or ocean water. Details of location and leased area for limestone in Mardan are given in Table 5.62.

Present Detail Profile of Limestone⁹³

| Number of leases | 31 (thirty-one) | |
|---------------------|--------------------------|--|
| Mining Method | open pit mining | |
| Scale of Mining | small & primitive mining | |
| Lease Area | 1835.498 Acres | |
| Production in tones | 753091 tons (2010) | |

| Table 5- 60: Location and leased area for limestone in Mardan | | |
|---|-----------------------------|-----------------|
| S. No. | Location | Area (in acres) |
| 1. | Village Kharkai Mardan | 49.338 |
| 2. | Village Shakar Tangi Mardan | 32.727 |
| 3. | Village Usai Mardan | 49.690 |
| 4. | Village Ziarat Mardan | 100 |
| 5. | Village Kharkai Mardan | 49.92 |
| 6. | Village Shakar Tangi Mardan | 97.623 |

⁹² *Source: Directorate General of Mines and Minerals, Government of KP .2011

⁹³ Source: Directorate General of Mines and Minerals, Government of KP .2011

| 7. | Village Shakar Tangi Mardan | 49.19 |
|-----|-------------------------------------|---------|
| 8. | Village Sawaldher Mardan | 299.741 |
| 9. | Village Shakar Tangi Mardan | 50 |
| 10. | Village Garo Kandao Mardan | 67.363 |
| 11. | Village Kharkai Mardan | 50 |
| 12. | Village Jungara Mardan | 47.438 |
| 13. | Village Garo Kando Mardan | 21.157 |
| 14. | Village Palo Dheri Mardan | 49.323 |
| 15. | Village Ghano Dheri Mardan | 50 |
| 16. | Village Kharkai Mardan | 50 |
| 17. | Village Kharkai Mardan | 48.504 |
| 18. | Village Jungara Mardan | 59.50 |
| 19. | Village Shakar Tangi Mardan | 40.351 |
| 20. | Village Shakar Tangi | 48.447 |
| 21. | Village Jamal Garhi Mardan | 48.10 |
| 22. | Village Kharkai Mardan | 18.40 |
| 23. | Village Shahbaz Garhi Mardan | 49.524 |
| 24. | Village Shakar Tangi Mardan | 99.380 |
| 25. | Village Shakarai Baba Ziarat Mardan | 21.6 |
| 26. | Village Shakar Tangi Mardan | 49.468 |
| 27. | Village Palo Dheri Mardan | 49.586 |
| 28. | Village Chena Mardan | 49.06 |
| 29. | Village Belandi Mardan | 40.82 |
| 30. | Village Jamal Garhi Mardan | 49.66 |
| 31. | Village Swaldher Mardan | 49.588 |

iii. Marble

Marble is a rock resulting from metamorphism of sedimentary carbonate rocks, most commonly limestone or dolomite rock. Metamorphism causes variable recrystallization of the original carbonate mineral grains. The resulting marble rock is typically composed of an interlocking mosaic of carbonate crystals. Primary sedimentary textures and structures of the original carbonate rock (protolith) have typically been modified or destroyed. Pure white marble is the result of metamorphism of a very pure (silicate-poor) limestone or dolomite protolith. The characteristic swirls and veins of many-colored marble varieties are usually due to various mineral impurities such as clay, silt, sand, iron oxides, or chert which were originally present as grains or layers in the limestone. Green coloration is often due to serpentine resulting from originally high magnesium limestone or dolostone with silica impurities. These various impurities have been mobilized and recrystallized by the intense pressure and heat of the metamorphism. Details of location and leased area for marble in Mardan are given in Table 5.63.

| Present Detail Profile of Marble ⁹⁴ | |
|--|--------------------------|
| Number of leases | 55 (Fifty fives) |
| Mining Method | Surface mining |
| Scale of Mining | Small & primitive mining |
| Lease Area | 15847.340 Acres |
| Production in tones | 244573 tons (2016) |

| S. No. | Location | Area (in acres) |
|--------|-----------------------------------|-----------------|
| 1. | Village Palo Dheri Mardan | 80.581 |
| 2. | Village Bezat Mardan | 499.924 |
| 3. | Village Matta Mardan | 243.373 |
| 4. | Village Shamozai Mardan | 146.97 |
| 5. | Village Pirsai Mardan | 638.760 |
| 6. | Village Palo Dheri Mardan | 91.744 |
| 7. | Village Palo Dheri Mardan | 166.99 |
| 8. | Village Babuzai Mardan | 499.132 |
| 9. | Village Palo Dheri Mardan | 84.752 |
| 10. | Village Palo Dheri Mardan | 60.490 |
| 11. | Village Babuzai Mardan | 375.774 |
| 12. | Village Babuzai Mardan | 487.489 |
| 13. | Village Palo Dheri Mardan | 1021.22 |
| 14. | Village Babuzai Mardan | 155.888 |
| 15. | Village Palo Dheri Mardan | 458.978 |
| 16. | Village Shamozai Mardan | 579.417 |
| 17. | Village Shamozai Mardan | 143.00 |
| 18. | Village Palo Dheri Mardan | 104.858 |
| 19. | Village Sawaldher Mardan | 260.14 |
| 20. | Village Babuzai Mardan | 85.919 |
| 21. | Village Badam Mardan | 494.22 |
| 22. | Village Shakkar Tangi Mardan | 97.623 |
| 23. | Village Kohi Barmol Mardan | 336.776 |
| 24. | Village Palo Dheri Mardan | 252.287 |
| 25. | Village Mian Khan / Sangao Mardan | 499.741 |
| 26. | Village Mian Khan /Sangao Mardan | 500 |
| 27. | Village Babuzai Mardan | 300.405 |
| 28. | Village Shamozai Mardan | 299.721 |
| 29. | Village Shamozai Mardan | 152.32 |
| 30. | Village Chena Mardan | 284.727 |
| 31. | Village Pirsai Mardan | 498.23 |
| 32. | Village Shamozai Mardan | 290.98 |
| 33. | Village Shamozai Mardan | 23.698 |
| 34. | Village Shamozai Mardan | 217.654 |

⁹⁴ Source: Directorate General of Mines and Minerals, Government of KP .2011

| Table 5- 61: Location and leased area for marble in Mardan | | |
|--|-----------------------------------|-----------------|
| S. No. | Location | Area (in acres) |
| 35. | Village Shamozai Mardan | 299.338 |
| 36. | Village Pallo Dheri Mardan | 167 |
| 37. | Village Pallo Dheri Mardan | 499.834 |
| 38. | Village Bara Banda Mardan | 285.989 |
| 39. | Village Palo Dheri Mardan | 80.206 |
| 40. | Village Palo Dheri Mardan | 115.33 |
| 41. | Village Badam Mardan | 491.133 |
| 42. | Village Babuzai Mardan | 267.458 |
| 43. | Village Palo Dheri Marddan | 277.975 |
| 44. | Village Babuzai Mardan | 24.93 |
| 45. | Village Babuzai Mardan | 1050 |
| 46. | Village Shamozai Mardan | 184.49 |
| 47. | Village Palo Dheri Mardan | 16.787 |
| 48. | Village Palo Dheri Mardan | 198.61 |
| 49. | Village Palo Dheri Mardan | 19.855 |
| 50. | Village Pitao Mardan | 90 |
| 51. | Village Badam Mardan | 473.078 |
| 52. | Village Shakir Tangi Mardan | 50 |
| 53. | Village Mian Khan Sangao Mardan | 280 |
| 54. | Village Sangao / Tangai Mardan | 520.55 |
| 55. | Village Mian Kali District Mardan | 21 |

iv. Granite

The word granite comes from the Latin *granum*, a grain, in reference to the coarse-grained structure of such a crystalline rock. Granite is a common widely occurring type of intrusive, felsic, igneous rock. Granite usually has a medium- to coarse-grained texture. Occasionally some individual crystals (phenocrysts) are larger than the groundmass, in which case the texture is known as porphyritic. A granitic rock with a porphyritic texture is sometimes known as porphyry. Granites can be pink to gray in color, depending on their chemistry and mineralogy. By definition, granite is an igneous rock with at least 20% quartz by volume. Granite differs from granodiorite in that at least 35% of the feldspar in granite is alkali feldspar as opposed to plagioclase; it is the alkali feldspar that gives many granites a distinctive pink color. Outcrops of granite tend to form tors and rounded massifs. Granites sometimes occur in circular depressions surrounded by a range of hills, formed by the metamorphic aureole or hornfels. Granite is usually found in the continental plates of the Earth's crust.

Granite is nearly always massive (lacking internal structures), hard and tough, and therefore it has gained widespread use as a construction stone. The average density of granite is between 2.65 and 2.75 g/cm³, its compressive strength usually lies above 200 MPa, and its melting temperature is 1215 - 1260 °C.

Granitoid is a general, descriptive field term for light-colored, coarse-grained igneous rocks. Details of location and leased area for granite in Mardan are given in Table 5.64

Present Detail Profile of Granite⁹⁵

| Number of leases | 02 (two) |
|---------------------|--------------------------|
| Mining Method | Surface mining |
| Scale of Mining | Small & primitive mining |
| Lease Area | 1371.678 Acres |
| Production in tones | 5267 tons (2010) |

| Table 5- 62: Location and leased area for granite in Mardan | | |
|---|-------------------------|-----------------|
| S. No. | Location | Area (in acres) |
| 1 | Natian Mardan | 996.884 |
| 2 | Village Baudseri Mardan | 374.80 |

v. Barite

Barite, or bayrte, (BaSO₄) is a mineral consisting of barium sulfate. Barite itself is generally white or colorless, and is the main source of barium. The term "primary barite" refers to marketable product, which includes crude barite (run of mine) and the products of simple beneficiation methods, such as washing, jigging, heavy media separation, tabling, flotation. Most crude barite requires some upgrading to minimum purity or density. Barite that is used as an aggregate in "heavy" cement is crushed and screened to a uniform size. Most barite is ground to a small, uniform size before it is used as filler or extender, an addition to industrial products, or a weighting agent in petroleum well drilling mud. Details of location and leased area for barite in Mardan are given in Table 5.65.

Present Detail Profile of Barite⁹⁶:

| Locality | Villages; Smastha. | |
|------------------|--------------------------|--|
| Number of leases | 01 (one) | |
| Mining Method | Surface mining | |
| Scale of Mining | Small & primitive mining | |
| Lease Area | 193.338 Acres | |

| Table 5- 63: Location and leased area for barite in Mardan | | | |
|--|--------------------------------|---------|--|
| S. No. Location Area (in acres) | | | |
| 1 | Village Kashmir Smastha Mardan | 193.338 | |

⁹⁵ Source: Directorate General of Mines and Minerals, Government of KP, 2011

⁹⁶ Source: Directorate General of Mines and Minerals, Government of KP .2011

vi. Asbestos

Asbestos is a set of six naturally occurring silicate minerals used commercially for their desirable physical properties. They all have in common their eponymous, asbestiform habit: long (ca. 1:20 aspect ratio), thin fibrous crystals. The prolonged inhalation of asbestos fibers can cause serious illnesses, including malignant lung cancer, mesothelioma (a formerly rare cancer strongly associated with exposure to amphibole asbestos), and asbestosis (a type of pneumoconiosis). Long exposure to high concentrations of asbestos fibers will cause health problems. This is most common among the miners of asbestos, since they have the longest exposure to it.

Present Detail Profile of Asbestos⁹⁷

| Locality | Villages; Alpurai, Behram Dheri and etc. |
|------------------|--|
| Number of leases | 0 (None) |
| Mining Method | Surface mining |
| Scale of Mining | Small & primitive illegal mining |
| Lease Area | Not known |
| | |

vii. Minor Minerals

Sand, gravel and bajri are categorised as minor minerals, these are excavated though dredging on the banks of river/stream/nulla side in District Mardan. They are auctioned in blocks. The excavated material in tons is not recorded. Their leases are granted for one year only.

Sand:

It is a naturally occurring granular material composed of finely divided rock and mineral particles. The composition of sand is highly variable, depending on the local rock sources and conditions, but the most common constituent of sand in inland continental settings and non-tropical coastal settings is silica (silicon dioxide, or SiO₂), usually in the form of quartz.

As the term is used by geologists, sand particles range in diameter from 0.0625 mm (or 1/16 mm, or 62.5 µm) to 2 mm. An individual particle in this range size is termed a sand grain. The next larger size class above sand is gravel, with particles ranging from 2 mm up to 64 mm. The next smaller size class in geology is silt: particles smaller than 0.0625 mm down to 0.004 mm in diameter. The size specification between sand and gravel has remained constant for more than a century, but particle diameters as small as 0.02 mm were considered sand.

Sand feels gritty when rubbed between the fingers (silt, by comparison, feels like flour.

ISO 14688 grades sands as fine, medium and coarse with ranges 0.063 mm to 0.2 mm to 0.63 mm to 2.0 mm. In the United States, sand is commonly divided into five sub-categories based on size: very fine sand ($1/16 - \frac{1}{8}$ mm diameter), fine sand ($\frac{1}{8}$ mm - $\frac{1}{4}$ mm), medium sand ($\frac{1}{16}$ mm - $\frac{1}{16}$ mm), coarse sand ($\frac{1}{2}$ mm - 1 mm), and very coarse sand (1 mm - 2 mm).

Gravel:

⁹⁷ Source: Directorate General of Mines and Minerals, Government of KP .2011

Gravel is composed of unconsolidated rock fragments that have a general particle size range and include size classes from granule- to boulder-sized fragments. Gravel can be sub-categorized into granule (>2 to 4 mm/0.079 to 0.16 in) and boulder (>64 to 256 mm, 2.5 to 10.1 in).

5.17.3 Uses of the minerals mined/extracted from District Mardan

i. Dolomite

Dolomite is used as an ornamental stone, a concrete aggregate, a source of magnesium oxide and also used for the production of magnesium. It is an important petroleum reservoir rock, and serves as the host rock for large strata-bound ore deposits of base metals such as lead, zinc, and copper. Where calcite limestone is uncommon or too costly, dolomite is sometimes used in its place as a flux for the smelting of iron and steel. Large quantities of processed dolomite are used in the production of float glass. In horticulture, dolomite and dolomitic limestone are added to soils and soilless potting mixes to lower their acidity and as a magnesium source. Home and container gardening are common examples of this use. Dolomite is also used as the substrate in marine (saltwater) aquariums to help buffer changes in pH of the water.

ii. Limestone:

It is the raw material for the manufacture of quicklime (calcium oxide), slake lime (calcium hydroxide), cement and mortar. Pulverized limestone is used as a soil conditioner to neutralize acidic soils. It is crushed for use as aggregate (the solid base for many road). Geological formations of limestone are among the best petroleum reservoirs. It is added to toothpaste, paper, plastics, paint, tiles, and other materials as both white pigment and a cheap filler. It can suppress methane explosions in underground coal mines. Purified limestone is added to bread and cereals as a source of calcium. Calcium levels in livestock feed is supplemented with it, such as for poultry (when ground). It can be used for re-mineralizing and increasing the alkalinity of purified water to prevent pipe corrosion and to restore essential nutrient levels. Used in blast furnaces, limestone extracts iron from its ore.

iii. Marble

Sculpture/curving decorative items

White marble has been prized for its use in sculptures since classical times. This preference has to do with its softness, relative isotropy and homogeneity, and a relative resistance to shattering. Also, the low index of refraction of calcite allows light to penetrate several millimeters into the stone before being scattered out, resulting in the characteristic waxy look which gives "life" to marble sculptures of the human body. Marble is extensive used as table and kitchen tops. Also, it is used for making Decorative gift items of various uses.

Construction marble

Construction marble is a stone which is composed of calcite, dolomite or serpentine which is capable of taking a polish More generally in construction, specifically the dimension stone trade, the term "marble" is used for any crystalline calcitic rock (and some non-calcitic rocks) useful as building stone.

iv. Granite

Sculpture and memorials

In some area's granite is used for gravestones and memorials. Granite is a hard stone and requires skill to carve by hand. Until the early 18th century granite could only be carved by hand tools with generally poor results. Modern methods of carving include using computer-controlled rotary bits and sandblasting over a rubber stencil. Leaving the letters, numbers and emblems exposed on the stone, the blaster can create virtually any kind of artwork or epitaph.

Buildings

Granite has been extensively used as a dimension stone and as flooring tiles in public and commercial buildings and monuments. With increasing amounts of acid rain in parts of the world, granite has begun to supplant marble as a monument material, since it is much more durable. Polished granite is also a popular choice for kitchen countertops due to its high durability and aesthetic qualities. In building and for countertops, the term "granite" is often applied to all igneous rocks with large crystals, and not specifically to those with a granitic composition.

Engineering

Engineers have traditionally used polished granite surface plates to establish a plane of reference, since they are relatively impervious and inflexible. Sandblasted concrete with a heavy aggregate content has an appearance similar to rough granite, and is often used as a substitute when use of real granite is impractical.

v. Barite

Oil Industry

Some 77% worldwide is used as a weighting agent for drilling fluids in oil and gas exploration to suppress high formation pressures and prevent blowouts. As a well is drilled, the bit passes through various formations, each with different characteristics. The deeper the hole, the more barite is needed as a percentage of the total mud mix. An additional benefit of barite is that it is non-magnetic and thus does not interfere with magnetic measurements taken in the borehole, either during logging-while-drilling or in separate drill hole logging. Barite used for drilling petroleum wells can be black, blue, brown or gray depending on the ore body. The barite is finely ground so that at least 97% of the material, by weight, can pass through a 200-mesh (75-µm) screen, and no more than 30%, by weight, can be less than 6 µm diameter. The ground barite also must be dense enough so that its specific gravity is 4.2 or greater, soft enough to not damage the bearings of a tricone drill bit, chemically inert, and containing no more than 250 milligrams/kilogram of soluble alkaline salts.

Other uses

After processing barite is used as filler in paint and plastics, sound reduction in engine compartments, coat of automobile finishes for smoothness and corrosion resistance, friction products for automobiles and trucks, radiation-shielding cement, glass ceramics and medical applications (for example, a barium meal before a contrast CAT scan). Barite is supplied in a variety of forms and the price depends on the amount of processing; filler applications commanding higher prices following intense physical processing by grinding and micronising, and there are further premiums for whiteness and brightness and color.

Historically barite was used for the production of barium hydroxide for sugar refining, and as a white pigment for textiles, paper, and paint.

vi. Asbestos

Asbestos is strong, fire-resistant, flexible and a good thermal insulator. These qualities encouraged its use in a variety of products. It is used for thermal insulation, fire proofing, acoustic insulation, roofing, flooring and in a variety of other building materials.

vii. Sand

It is mixed with cement and sometimes lime to be used in masonry construction. Sand is a principal component of plaster in construction of buildings. It is the principal component raw material for making common glass. In paints, it is: mixed to produces a textured finish for walls and ceilings or non-slip floor surfaces. In foundry, sand is used to make moulds into which molten material is poured. This type of sand must be able to withstand high temperatures and pressure, allow gases to escape, have a uniform, small grain size and be non-reactive with metals. Sandbags are made which protect against floods and gunfire. The inexpensive bags are easy to transport when empty, and unskilled volunteers can quickly fill them with local sand in emergencies. Graded sand serves as an abrasive in cleaning, preparing, and polishing

viii. Gravel

Gravel is an important commercial product, with a number of applications. It is used to make concrete, for road construction, for mixing with asphalt, as construction fill, and in the production of construction materials like concrete blocks, bricks, and pipes. It is also used to make roofing shingles.

5.17.4 Future Development Plan in Mineral Sector

- Directorate of Mines and Minerals, Govt of KP has formulated a comprehensive development program of Rs 1250 million in Mineral sector for the next three years, which include:
- To establish three model quarries at Mardan, Buner and Chitral for extraction of marble on scientific lines in order to avoid wastage of marble at an estimated cost of Rs 150 million each.
- To established two model mines at Shahkot, Cherat and Sherwan in Abbottabad at an estimated cost of Rs 200 million each.
- To established a training school for the training of skill mine workers at an estimated cost of Rs. 100 million.
- In the exploration sector Rs. 30 million has been allocated for the exploration of new minerals.
- In year 2011-12, required amount has been released.

5.17.5 Constraints and Recommendations in Mineral Sector

KP is endowed with in exhaustible resources of variety of minerals. To exploit these resources the DGMM and other public sectors stake holders have to address following constraints

- i. To explore and evaluate the identified mineral deposits on scientific lines
- ii. With the help of drilling and other geophysical methods reserve of mineral deposit have to be calculated.
- iii. Geo chemical studies of each potential mineral deposit is necessary
- iv. Capacity building is needed to meet the requirement of mining industry.

- v. In order to demonstrate mineral potential a systematic data generation and its documentation on sustainable basis is needed
- vi. A step wise documented procedure be given in a booklet for starting a business in mining which should include, how to apply/renew/mine for a lease, what mining method one should adapt to mine/extract a particular mineral, what are the potential market and where to get human resource. All such information should be available free of cost. It will help the private entrepreneur to invest in mining sector.
- vii. Other effective dissemination of mineral data as source of information should be used to attract as well as facilitate investment
- viii. Bankable document on development of mine deposit be prepared so that banks can provide loans to the prospective entrepreneur in mining sector.
- ix. Developing of curriculum for graduate/post graduate studies to suit to local mineral industry.
- x. Specialised training in coordination with public and private sectors should be arranged by the academia.
- xi. Market oriented training and workshops be held on sustainable basis for the different level of stake holders for the improved mining and market practices.
- xii. R&D work should be conducted using indigenous technology for value addition of mineral product to suit to local and international market.
- xiii. In gemstones an accredited laboratory should be established to evaluate finished and uncut gems for marketing of gems in international market.
- xiv. Mechanism and rules are to framed to prevent the leased area to sublet to contractor to extract the valuable mineral on contract basis which leads to wastage of the valuable minerals and destroy the deposit for further exploitation because of nonscientific mining practices.
- xv. Leased holders should use scientific mining practices.
- xvi. Leased holders should employ skilled mine workers and mining engineers for exploitation and geologist for exploration.
- xvii. KP department should encourage corporate mining
- xviii. Leased should be granted to those prospector bidders who have sufficient investment available which should be made mandatory to use scientific practices in exploration and mining phases.

5.17 POWER DEVELOPMENT

Power sector is an important part of provincial Land Use Plan. This plan is being prepared to provide systematic planning and to coordinate development activities for next 20 years for rural and urban population. In Khyber Pakhtunkhwa, Electric power generation, transmission and distribution is facing a number of challenges. These include availability of reliable and affordable power, rehabilitation of aging and inadequate transmission and distribution system, and efficient construction, operation and maintenance. This Chapter pertains to District Mardan which covers all aspects required under TOR including Electric Demand Forecast for the next 20 years.

5.17.1 Existing Situation in Mardan

Electric power sector in Mardan such as transmission and distribution are managed by PESCO (Peshawar Electric Supply Company). There is no Hydel or thermal power station in Mardan and all the required electric power is purchased from WAPDA National Grid. SHYDO has identified a 2.6 MW hydro power plant at village Alo, near Katlang, Distt. Mardan. The project is in design stage and when completed will be added to the list of small hydro power plants. SHYDO is working on similar potential everywhere in the province including Marda.

Power Infrastructure

The service area of District Mardan is 1627 sq km, containing 02 divisions and 13 sub-divisions. The total length of transmission lines (all categories) in the District is 4,654 kilometers, which is about 5.98 percent of the provincial total. The length of about 50 % of the transmission lines is of 400 volts, while around 47.5 % belong to 11 KV category. Thus, these two categories together form 97.5 % of the total transmission lines length in the District. The total number of grid stations in District Mardan is 05, against 87 in the entire Province. In the District, 4 Grid Station are of 132 KV and 1 Grid Station is 220 KV (Table 5.66).

| Table 5- 64: Power Infrastructure: Province Vs District Mardan ⁹⁸ | | | | | |
|--|--------------------------|-----------------|--|--|--|
| Description | Province | Mardan District | | | |
| Service Area | 74,521 Sq Km | 1627 Sq Km | | | |
| Number of Divisions | 31 No | 02 No | | | |
| Number of Sub Divisions | 143 No | 13 No | | | |
| LT (400v) Transmission Lines | 42,526 km | 2327 km | | | |
| 11 kv Transmission Lines | 31,284 km | 2209 km | | | |
| 33 kv Transmission Lines | 311 km | 0 | | | |
| 66 kv Transmission Lines | 861 km | 0 | | | |
| 132 kv Transmission Lines | 1919 km | 73 km | | | |
| 220 Kv Transmission Line | 750 km | 45 | | | |
| 500 Kv Transmission Line | Transmission Line 117 km | | | | |
| Total Transmission lines | 77,768 km | 4654 km | | | |
| Grid Station 33 kv | 06 | 0 | | | |
| Grid Station 66 kv | 18 | 0 | | | |
| Grid Station 132 kv | 59 | 04 | | | |
| Grid Stations - 220 kv | 03 | 01 | | | |
| Grid Stations 500 kv | 01 | 0 | | | |
| Total Grid Stations | 87 | 05 | | | |

Transmission and Distribution Losses

PESCO reported total system energy losses of 37.1% in the 2015-16 fiscal year. The transmission losses are 4.5% as estimated, the distribution component of loss would be 32.6%. The difference between the distribution technical losses of 13.4% and probable total distribution loss of 32.6% is a non-technical (commercial) loss of 19.2%. This figure is likely to reflect large-scale meter tampering, illegal line kunda connections and meter reading fraud aided and abetted by company employees.

Power Consumers

According to development statistics 2017 the total2.8 million registered customers province. in the Approximately 88% of their customers are Domestic. predominant The other category is commercial, comprising more than 10% customers. The industrial customers are less than 1% of all customers served (Table 5.67).

| Table 5- 65: Power Consumers | | | | | | | |
|------------------------------|-------------------------|-------------|--------------------|--|--|--|--|
| S. No | Description | Province KP | Mardan District | | | | |
| 1 | Domestic Customers | 2886597 | 243590 | | | | |
| 2 | Commercial Customers | 259,127 | 20,877 | | | | |
| 3 | Industrial Customers | 28967 | 2824 | | | | |
| 4 | Tube Wells | 26,732 | 2,354 | | | | |
| 5 | Bulk Customers | 848 | 29 | | | | |
| | Total | 3202471 | 269674 | | | | |

⁹⁸ Source: PESCO Data

5.17.2 Reasons for Load Shedding

The quantity of Electric Power generated is not enough to fulfill the demands of country, which necessitates load shedding. Serious efforts are not made for efficiency improvements, maintenance and repair of power plants. The shut downs of plants become more frequent due to this reason. Delay to complete the ongoing Hydro Electric Power Projects. According to Sustainable Development Policy Institute, the delay of 18 Hydro Power Plants led to an energy crisis and power short fall. Alternative energy power projects are not developed on large scale. Non-payments of fuel bills to some of Independent Power Producers (IPP's) by the government is causing shutting down of these power plants.

Table 15.4 explains the situation in the country, while Table 5.68 provides similar information for the Province and District Mardan.

| Table 5- 66: Power Generation Vs Shortfall in the Country | | | | | |
|---|-----------------------|--|--|--|--|
| Total Power generated in the country Oct 2010 | 14,840 M W | | | | |
| Total Power Generated in the country May 2011 | 12,999 M W | | | | |
| Peak Demand | 17,847 M W | | | | |
| Short Fall | 3,007 M W in Oct 2010 | | | | |
| SHOLLEN | 4,848 M W in May 2011 | | | | |
| Short Fall (%) | 16.8 % in Oct 2010 | | | | |
| Short rall (%) | 27 % in May 2011 | | | | |

| Table 5- 67: Power Availability Vs Shortfall – KP Vs District Mardan ⁹⁹ | | | | | | |
|--|-----------------|-------------|-----------------|--|--|--|
| S. No | Description | Province KP | Mardan District | | | |
| 1 | Average Demand | 2,100 MW | 93 MW | | | |
| 2 | Peak Demand | 2,487 MW | 116 MW | | | |
| 3 | Available Power | 1,179 MW | 71 MW | | | |
| 4 | Short Fall | 921 MW | 22 MW | | | |
| 5 | Short Fall % | 43.8 % | 31 % | | | |

5.17.3 Existing Generating Capacity

Table 5.70 shows electric generation capacity in Pakistan, while the detailed existing installed capacity and capability of WAPDA system is shown in Table 15.2. As seen from Table 15.1, the total installed capacity from different sources of generation is 19,246 megawatts, of which dependable capacity is 17,779 megawatts. Source-wise installed and dependable capacities are shown in the table below. In winter, hydro availability is based on last 5 years average. The availability excludes 10% forced outages for GENCOs and 6% for IPPs and rentals.

⁹⁹ PESCO Data

| Table 5- 68: Electric Generation Capacity (2010) ¹⁰⁰ | | | | | | |
|---|----------------------------|-----------------------------|--------|--------|--|--|
| Nameplate / Derated / Availability | | | | | | |
| Type of Generation | Installed Capacity (MW) | Dependable Capacity (MW) | Summer | Winter | | |
| WAPDA Hydro | 6,444 | 6,444 | 6,250 | 2,300 | | |
| GENCOs | 4,829 | 3,580 | 2,780 | 3,222 | | |
| IPPs (including Nuclear) | 7.911 | 7,695 | 5,750 | 6,900 | | |
| Rental | 62 | 60 | 60 | 60 | | |
| Total | 19,246 | 17,779 | 14,840 | 12,482 | | |

| | Table 5- 69: Existing Installed Capacity & Capability of WAPDA System (Nov. 2010) | | | | | | | |
|----------|---|------|-----------------------------|------------------------|------------------|------------------|--------|--|
| | | Sr | | | Installed | Capability, (MW) | | |
| | Sr. No. | | Name of Power Station | Fuel | Capacity (MW) | Summer | Winter | |
| | | 1 | Tarbela | | 3478 | 3521 | 1101 | |
| | | 2 | Mangla | | 1000 | 1014 | 409 | |
| | | 3 | Ghazi Barotha | | 1450 | 1405 | 580 | |
| | yde | 4 | Warsak | | 243 | 171 | 145 | |
| | Т | 5 | Chashma Low Head | | 184 | 91 | 48 | |
| | | 6 | Small Hydels | | 89 | 64 | 20 | |
| | | | Sub-Total (WAPDA Hydel) | | 6444 | 6266 | 2303 | |
| | | 7 | TPS Jamshoro # 1-4 | Gas/Fo | 850 | 70 | 0 | |
| | | 8 | GTPS Kotri #1-7 | Gas | 174 | 14 | 0 | |
| | | | Sub-Total GENCO-I | | 1024 | 84 | 0 | |
| | ermal (GENCOs) | 9 | TPS Guddu Steam # 1-4 | Gas | 640 | 270 | | |
| | | 10 | TPS Guddu C #5-13 | Gas | 1015 | 886 | | |
| tor | | 11 | TPS Quetta | Gas | 35 | 25 | | |
| Sect | | | Sub-Total GENCO-II | | 1690 | 118 | 80 | |
| ic o | | 2 12 | | TPS Muzaffargarh # 1-6 | Gas/FO | 1350 | 1130 | |
| qn | | 13 | NGPS Multan #1&2 | Gas/Fo | 195 | 60 |) | |
| <u>а</u> | | 14 | GTPS Faisalabad # 1-9 | Gas/HSD | 244 | 21 | 0 | |
| | | 15 | SPS Faisalabad # 1&2 | Fo | 132 | 10 | 0 | |
| | The | 16 | Shahdra G.T | Gas | 44 | 30 |) | |
| | | | Sub-Total GENCO-III | | 1965 | 153 | 0 | |
| | | 17 | FBC Lakhra | Coal | 150 | 30 |) | |
| | | | Sub-Total GENCO-IV | | 150 | 30 |) | |
| | | | Sub-Total GENCOs | | 4829 | 358 | 80 | |
| | | | Sub-Total (WAPDA+GENCOs) | | 11273 | 9846 | 5883 | |
| | ear | 18 | Chashma Nuclear (PAEC) | | 325 | 30 | 0 | |
| | Nucl | | Total Capacity (Public) | | 11598 | 101 | 46 | |

¹⁰⁰ Source: General Manager (Planning), WAPDA/NTDC

| | | Name of Power | | | Installed | Capability, (MW) | | |
|-------|---------------------------------------|---------------|---------------|--------------------------------|------------------|------------------|-------|--------|
| Sr. | No. | Station | | Fuel | Capacity (MW) | Summer | w | /inter |
| | | 20 | Malak | and – III Hydel | | 81 | | 81 |
| | | | Sub-Tc | tal (Hydel IPPs) | | 111 | | 111 |
| | γde | 21 | | КАРСО | Gas/FO | 1638 | 1 | 1386 |
| | Т | 22 | Hub | Power Project (HUBCO) | FO | 1292 | 1 | 1200 |
| | | 23 | Kohinoo | r Energy Ltd (KEL) | FO | 131 | | 124 |
| | | 24 | AE | S Lailpur Ltd | FO | 362 | | 350 |
| | | 25 | AES Pa | ik Gen (Pvt) Ltd | FO | 365 | | 350 |
| | | 26 | Souther Lt | n Elec. Power Co d (SEPCOL) | Fo | 135 | | 119 |
| | | 27 | Habibu | ıllah Energy Ltd (HCPC) | Gas | 140 | | 129 |
| | | 28 | Uch | Power Project | Gas | 586 | | 551 |
| | | 29 | Rouch | (Pak) Power Ltd | Fo | 450 | | 395 |
| | | 30 | Fauji Ka | abirwala (FKPCL) | Gas | 157 | | 151 |
| | | 31 | Saba P | ower Company | FO | 134 | | 126 |
| ector | | 32 | Japan P | ower Generation Ltd | Fo | 135 | | 120 |
| e S | | 33 Liberty | | erty Power Project Gas | | 235 | 211 | |
| ivat | - | 34 | Altern | Energy Ltd (AEL) | Gas | 31 | | 31 |
| Pri | E35Attock Generation PPJ36ATLAS Power | | Attock | Generation PP | Fo | 163 | | 156 |
| | | | Gas | 219 | 219 | | | |
| | н | 37 | Engro P | P Daharki. Sindh | Gas | 227 | 217 | |
| | | 38 | Saif PP | Sahiwal, Punjab | RFO/Gas | 225 | 225 | |
| | 39 Orient | | Orient P | P Balloki, Punjab | RFO/Gas | 225 | | 225 |
| | | 40 | Nishat | PP Near Lahore, Punjab | RFO | 200 | | 200 |
| | | | Nishat C | hunian Proj. Near Lahore | RFO | 200 | | 200 |
| | | | Sapph | ire PP Muridke, Punjab | Rfo/Gas | 225 | | 225 |
| | | | Sub-Tot | al (Thermal IPPs) | | 7475 | 6 | 5909 |
| | | 42 | Gu G | lf Rental PP ujranwala | Rfo | 62 | | 62 |
| | | | Sub- | Total (Rental) | | 62 | | 62 |
| | | | Total | Thermal (IPPs) | | 7537 | 6 | 5971 |
| | | | Total C | apacity (Private) | | 7648 | | 7082 |
| | | | Total | Hydel (Public + Private) | | 6555 | 6377 | 2414 |
| То | otal | | Total T | hermal (Public + Private) | | 12691 | 1 | 0851 |
| | | | Total (| PEPCO System) | | 19246 | 17228 | 13265 |

| Table 5- 70: WAPDA/PEPCO System Historical Trends ¹⁰¹ | | | | | |
|--|-------------------------|-----------------------|-------------------|--|--|
| Year | Peak Historical (MW) | Forecast Peak (MW) | Difference (%) | | |
| 1999-00 | 9289 | 9311 | 0.24 | | |
| 2000-01 | 9718 | 9736 | 0.18 | | |
| 2001-02 | 10922 | 10243 | -6.21 | | |
| 2002-03 | 10484 | 10799 | 3.00 | | |
| 2003-04 | 11078 | 11398 | 2.80 | | |
| 2004-05 | 12035 | 12087 | 0.43 | | |
| 2005-06 | 13212 | 12916 | -2.20 | | |
| 2006-07 | 15138 | 15213 | 0.50 | | |
| 2007-08 | 16838 | 16480 | -2.10 | | |
| 2008-09 | 17252 | 17867 | 3.50 | | |
| 2009-10 | 17847 | 19451 | 8.90 | | |

5.17.4 Alternate Resources of Energy in Mardan

i. Coal Energy

Coal has always been a primary source of energy used to produce electricity, for several reasons. First and foremost, coal is abundant. It is found all over the country and it is easy to get. It is also easy to transport and store, compared to other fuels. Coal is one of the principal minerals produced in Pakistan. The measured coal reserves as on June 30, FY-2009 is 3.46 billion tones. The estimated coal reserves are around 185 billion tones, only a fraction of which is utilized. Pakistan Economy Watch in a statement said that Pakistan reserves of coal worth USD 25 trillion, can cater the electricity requirements of the country for next 100 years. Coal is oldest technique to run steam turbines for producing electricity. Coal is composed of many types of gases, like carbon, nitrogen and hydrogen and therefore coal is an immense resource for power generation. The negative impacts can be mitigated by adopting proper measure. Federal Government should launch large scale projects for power generation from coal. Electricity can be generated from coal on small scale at District level by the process of coal gasification. The concept of coal gasification is basically reacting steam heated coal to get synthetic fuel gas (Co, H2, CH4). This fuel gas is used to run a generator to produce electricity. Some of the benefits of coal gasification technology are as follows.

- Low fuel cost as compared to diesel or fuel oil
- Easy to operate machines
- Clean and environment friendly.

Coal gasification machines are manufactured in Lahore. The cost of electricity generation per kwh is about Rs 16/ = based on 20 years machine life and related maintenance / operating cost. Details are available on the following website.

http://www.kinetixautomation.com/index_files/gasification.htm

¹⁰¹ Source: General Manager Planning WAPDA / NTDC
ii. Energy Generation from Garbage

Electricity can be generated from garbage at District Level by utilizing waste management process. The brief description of the process is as follows:

Collection trucks bring waste to the power plant and it is unloaded into the refuse bunker. From refuse bunker it is transferred to combustion chamber for burning. The heat generated by burning the waste is used to heat the boiler and produce steam. The gases of combustion pass through a scrubber for removal of acid which is hazardous and cannot be released in the air. The clean gases are then dispersed to the atmosphere through the smoke stack.

Waste generated by public is 0.5 kg per person per day. The population of District Mardan is 2,146,767. Since the total population is not urbanized and may not generate 0.5 kg per day of garbage. Therefore 50 % population can be considered that generate 0.5 kg per day. The waste generated will be approximately 536,691 kg, i.e. equal to 536.69 tons per day. 627 KWH energy can be produced from each ton of combusted solid waste. Approximately 15 percent of the energy produced is used to operate the plant which is 94 Kwh and the balance 533 Kwh can be sold to the energy customers. Therefore, a garbage plant in Mardan District can produce 286,055 Kwh of electricity to be available for public.¹⁰²

iii. Electricity Generation from Drainage Water

Drainage water can also be used to produce electricity. The drain water is collected into a large reservoir and some of the water is piped to a lower level with gravity. At the lower end of pipe Turbine / Generator is installed. The flowing water is used to turn the turbine / generator to produce electricity. All details are similar to a small hydroelectric plant.

iv. Solar Energy

Solar Energy is an environment friendly and needs to be developed and popularized to achieve the goal of sustainable development. The Solar energy source is widely distributed and abundantly available in District Mardan. District Mardan has a peak demand of 116 MW power. Area required for one MW solar power is approximately 11236 sq meters. To generate 116 MW of power, area required will be approximately 1,103,376 sq meters (01 km X 1.3 km). The cost per kwh is Rs 22.4/= based on 20 years equipment life and related maintenance / operating cost.

| Table 5- 71: Climate data for Mardan (2017) | | | | | | | | | | | | | |
|---|--------|--------|---------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
| Average high °C | 20.1°C | 19.5 C | 29.1 C | 33.6 C | 38 C | 39.5°C | 38.1°C | 33.6°C | 34.4°C | 32.2°C | 26.6°C | 19°C | 30.3°C |
| Average low °C | 1.8°C | 6.6 °C | 12.7 °C | 17.3 °C | 20.6°C | 22.7°C | 26.7 °C | 24.9°C | 21 °C | 16.2 °C | 6.8°C | 1.3 °C | 14.8 °C |
| Sunshine hours | 195.3 | 192.1 | 195.3 | 231.0 | 297.6 | 300.0 | 272.8 | 263.5 | 258.0 | 266.6 | 234.0 | 182.9 | 2,889.1 |

Mardan has solar energy of about 200 - 250 watt per m^2 in a day with about 2,889 sunshine hours in a year. Solar insulation "IS" is 19 - 20 Mega Joules/meter sq a day (1.93 - 2.03 mwh per m^2 in a year) with annual mean sunshine duration of 8 - 8.5 h. Such conditions are ideal for Photovoltaic (PV) and other solar energy applications.

¹⁰² Report on urban environmental problems in Pakistan, case study, Hayatabad, Peshawar and Report on waste to power Karnataka, India

5.17.5 Hydro Electric Potential in Khyber Pakhtunkhwa

Khyber Pakhtunkhwa is blessed with huge hydropower potential. The total hydroelectricity generation capacity is estimated to be more than 25,000 MW. This potential remained focus of interest to private investors and international funding agencies. For the purpose of Hydro Power generation in the province, (SHYDO) Sarhad Hydel Development Organization was established in 1986 to identify and explore the Hydel potential of the province. This organization is under the administrative control of Energy and Power Department of Provincial Government and is governed by Board of Directors. It has identified Hydel potential of more than 6000 MW, which can be explored through public sector, private sector of public private partnership. SHYDO has completed four projects with total installed capacity of 105.3 MW, out of which 81MW Malakand-III-HPP and 18MW Pehur HPP are connected to the national grid. The other two are Shishi HPP 1.8 MW and Rashoon HPP, 4.5 MW. Both are located in Chitral and the generated power is consumed locally in District Chitral. SHYDO has further planned to develop 56MW within next three years, 600MW in five years' time and 1500MW within ten years' time under its short, medium and long-term plan.¹⁰³

5.17.6 Energy Units Consumed: Past Trends Vs Forecasts

Energy consumption is an index of prosperity and standard of living of people in a country. As a result of technological and industrial development, the demand of energy is rapidly increasing. The province will be facing the acute challenge of energy deficit in the future. Even today the primary energy supplies are not enough to meet the present demand. Therefore, the government needs to give serious thoughts to the development of indigenous alternative and renewable energy resources. In addition, environmentally friendly renewable energy sources need to be developed and popularized to achieve the goal of sustainable development.

The annexure at the end of this chapter gives year-wise breakdown of units consumed in the past, during the period 2005 to 2010. The annexure also gives projected data for the next 20 years, computed by applying average growth rate. It is clear that that demand for Electric Energy will increase to about 2 times by the year 2030.

| Table 5- 72: Consumer Growth in District Mardan | | | | | | | | | |
|---|----------|------------|------------|-------|------------|--|--|--|--|
| Year | Domestic | Commercial | Industrial | Bulk | Tube Wells | | | | |
| 2008-2009 | 181,243 | 20,087 | 2,395 | 124 | 2,263 | | | | |
| %Growth | 3.40 | 2.95 | 2.31 | 0.00 | 0.04 | | | | |
| | | | | | | | | | |
| 2009-2010 | 194,458 | 20,877 | 2,448 | 128 | 2354 | | | | |
| %Growth | 7.29 | 3.93 | 2.21 | 3.23 | 4.02 | | | | |
| | | | | | | | | | |
| 2010-2011 | 199,622 | 21,342 | 2,481 | 141 | 2,385 | | | | |
| %Growth | 2.66 | 2.23 | 1.35 | 10.16 | 1.32 | | | | |
| % Average Growth | 3.34 | 3.04 | 1.96 | 4.46 | 1.79 | | | | |

Industrial and nother Consumers Growth in District Mardan

¹⁰³ SHYDO Brochure

The industry sector has a growth rate of 1.96 % in District Mardan. Therefore, by year 2030 the number of industries will increase 1.47 times in Mardan District

5.17.7 National Power Sector Policy

Water & Power Development Authority (WAPDA) is the main public-sector body involved in generation, transmission and distribution of electric power in Pakistan except Karachi, where KESC is doing the same function. Electric power generated by every power station such as Tarbela, Warsak, and Mangla etc. is evacuated to the National Grid System. All the generated electricity is purchased by WAPDA at an-agreed price. The provinces get the royalty of the generated power called "Net Hydel Profit" from WAPDA. (NTDC) National Transmission and Dispatch Company is responsible for transmission, dispatch and distribution. (PESCO) Peshawar Electric Supply Company, is a distribution company, it purchases the energy units required in the province from WAPDA, sell to consumers and collect revenue.

Federal Power Policy 2002 provides the facility that any investor can develop Hydel as well as other power projects in Pakistan. Private Power Infrastructure Board (PPIB) under Ministry of Water and Power, Islamabad is the focal body to coordinate such projects. PPIB website has E-Library to provide details of power policy and guidelines for investors to establish power plants.

5.17.8 Provincial Power Policy

Govt. of Khyber Pakhtunkhwa through SHYDO can offer hydropower projects up to 50 MW through private / public sector development with the following incentives.

Project sites, with estimated power potential of more than 5 MW, will be offered for lease through International Competitive Bidding (ICB) on the basis of available power potential at site of the proposed project. The baseline lease price for the purpose of ICB is fixed as Rs. 1000/- per KW per annum. The site will be awarded on the basis of highest bid received above the baseline lease price. The approved lease price will be escalated @ 25% after every 10 years of the lease period. For solicited cites, the power potential determined in the feasibility report will be considered for estimating the total lease money payable per annum to SHYDO. If the sponsor of the power project succeeds to arrange funds, himself or through a joint venture with other investors, for building another legally permitted project of integrated industry of any type with captive use of the power project, the Govt. of Khyber Pakhtunkhwa will offer incentives for establishing the industry provided that the commercial production from the industry starts with a year from date of commercial operation of the power plant. 5 % duty on import of machinery required for the industry. Lease of public land for the life of the industrial plant, if available.

5.17.9 Constraints

- i. Safe and reliable transmission and distribution of electricity is a major problem due to weak infrastructure of Transmission Lines and Grid Stations. Shut down and trippings are more frequent due to this problem.
- ii. Seasonal variation in hydro power generation due to less water available in winter is a serious problem. Therefore, full capacity of hydro power cannot be generated in winter season.

- iii. Some of the thermal power plants are run by fuel oil, which is an imported item; the cost of electricity generation is very high as compared to other renewable energy systems.
- iv. Coal is available in very large quantity but federal government does not encourage power production from coal.
- v. Power production from solar energy is not developed on large scale. Peak demands during the day can be met with the support of this energy.

5.17.10 Recommendations

- i. Federal and Provincial Govt. should launch a large-scale expansion program to use the renewable Hydro Electric Potential for power generation.
- ii. Coal is one of the principal minerals available in abundance in the country.
- iii. Govt. should develop a policy to install large power plants to utilize this mineral; at District level, small scale coal gasification plants can be installed to add to existing power generation.
- iv. Solar energy is available free of cost and there is a need to develop and popularize the solar power plants on large scale at District level.
- v. The provincial Govt. should increase awareness among the public to use renewable energy. A commercial module shall be developed so that the private sector can follow on the same lines.
- vi. The available infrastructure of transmission lines and grid stations should be repaired and upgraded to reduce technical losses and to reduce shut downs. The ratio of HT to LT line length needs to be improved by extending more HT lines. Selective reconductoring of heavily loaded feeders should be do ne to reduce HT losses.
- vii. Theft of electricity and losses can be reduced to an acceptable limit as follows:
 - a. The Open conductor LT lines are notoriously vulnerable to unauthorized hooking or kunda connections. Some of the open LT transmission lines should be replaced with NEW TECHNOLOGY, Covered Multiplex Conductors. This would assist in limiting loss from this source.
 - b. Approximately 95% of PESCO meters are still of the old Electro-Mechanical type. These are vulnerable to slowing and tampering by any one. Large-scale meter tampering, and illegal kunda connections are done with the help of company employees. Therefore, replacement of these meters with electronic units will reduce meter tempering.

CHAPTER 6: PLANNING FOR INTERMEDIATE TOWNS AND RURAL AREAS

6.1.1 DEVELOPMENT OF INTERMEDIATE TOWNS:

Centralization concept of planning is a type of spatial planning, this concept is a main feature of planned cities. But this concept does not work affectively in unplanned and congested cites. For such cities there is a need for decentralization of facilities and resources to reduce load on the cities.

In decentralization the load will be shared amongst the city and its surrounding intermediate towns. These towns will help in reducing the congestion of city by providing that services outside the city. These towns will facilitate the residents of the peripheral areas of the city and will also serve the people of the surrounding villages.

Intermediate towns perform social and economic functions that are important for regional development, functioning quite reasonably. Therefore, the intermediate towns are important not merely because of their size, but because of the services they render to the rural areas. As services centers, these towns can provide public, social, commercial and personal service not only to its own population but also to the surrounding rural hinterlands

In fact, Intermediate towns can also offer better facilities in social services i.e., health and education, than large and small cities. They become stopping-off points for migrants who might otherwise go directly to the big cities, but the big cities have no more carrying capacity to accommodate more population.

6.1.2 Facilities provided in Town center:

The facilities which should be provided in the Town Centers are:

- Degree Colleges for Women and Men
- Hospital
- Civic Center
- Police Station
- Transport terminal
- Resturants and Cafes
- Hotels
- Public Library
- Parks
- Central Commercial Area
- Post Office
- Sports Complex

6.1.3 Existing Town Centers:

Takht Bhai Intermediate Town

It is plan to extend the existing Takht Bhai Tehsil and upgrade it to an intermediate town, as it is the fastest growing urban settlement in District Mardan. It is also the second largest settlement of District Mardan, after Mardan City. The growth rate of Takht Bhai is 2.64%

during the period 1998-2017, which is the highest rate among all urban settlements of District Mardan. Takht Bhai is situated 15 km from Mardan on Swat-Malakand Road.

In 1908-09 the ancient Buddhist history was discovered in the mountains. Some of the possessions of the Buddhist houses and buildings have been taken away illegally. The population is expanding and new houses are being built in and around Takht Bhai. If ignored for a few more years, the tourist and historic attractions will disappear. The authorities need to draw a boundary line, so stop further encroachments. There is a need for a new township at an appropriately located site near Takht Bhai, along with appropriate living environment, along with tourist rest houses and restaurants where people can relax before and after they embark for the on-wards mountain journey. This will reduce pressure on Mardan City, and will also help to develop Northern part of Mardan District, as Takht Bhai will become a growth pole for this part of the region.

Katlang Intermediate Town

It has been declared as a tehsil in 2010 by the Chief Minister Amir Haider Khan Hoti. It is situated about 19 km north of Mardan City, bordering with District Buner and Malakand. It is surrounded by canals in west and north. Katlang has a busy market with most of the facilities available. Katlang fair, held on Friday, is very popular among the residents of Katlang and the surroundings.

Katlang is also popular for its Topaz, according to an estimate, there are 09 million carats of pink topaz in Katlang. Though some believe Katlang's topaz is equivalent to its Brazilian variety in standard, but many other rates it even of higher quality than that. "The Katlang topaz is simply matchless in beauty, weight, hardness and shine. It is as hard as diamond", says a local gem expert. According to him, the Mingora emerald and Katlang topaz can fetch prices up to Rs20,000 per carat. Their prices increase with their weight and beauty. He says that at Katlang topaz of the quality of sapphire has also been found.

An express way is under construction will connect Malkand Region to the Motorway at Kernal Sher Khan Interchange, Sawabi via Katlang Tehsil. An interchange will also be provided at the Katlang Tehsil, which will provide linkage to Katlang as well as to Juwahr. Through these linkages this tehsil will transform into an economic hub in future, which requires proper planning of the Katlang Tehsil. This induces the need for transforming Katlang into an Intermediate Town of Mardan City.

| | Table 6- 1: Intermediate Towns – District Mardan | | | | | | | | | |
|-----------------|--|-------------|--|--|--|--|--|--|--|--|
| Name of Town | Tehsil | Town Center | UC in which Town Other UC's in the Rural growth z | | | | | | | |
| | | | Center lies | | | | | | | |
| Takht Bahi | Takht Bahi | Takht Bahi | Damae Koh | Takar, Narai, Pat Baba, Saroshah, Manga, Khazana Dheri, Maho Dheri, Seri Bahlol, Jehangirabad, Kotjungara. | | | | | | |
| Katlang | Katlang | Katlang | Katlang-1 | Katlang-2, Jamal Gahri, Katti Gahri, Shamozai, Dheri Lekpani | | | | | | |

6.2 POLICY GUIDELINES FOR SUSTAINABLE DEVELOPMENT OF RURAL AREAS

The peripheral area and countryside of Mardan is a fertile and productive agricultural land. The agricultural land in the vicinity of the built-up area however, is gradually being absorbed by urban growth. Consequently, the agricultural main-stay and the rural character and economy of the surrounding villages have shattered. These rural settlements are gradually getting converted to 'entrapped urban villages.

This Section proposes guidelines on different aspects of Land Use Planning in rural areas of the District. Planning policies should facilitate and promote sustainable patterns of development in rural areas. This should include policies to sustain, enhance and, where appropriate, revitalize rural settlements and villages for strong, diverse, economic activity, whilst maintaining local character and a high-quality environment. To ensure this, local planning authorities should be aware of the circumstances, needs and priorities of the rural communities and businesses in their area, and of the interdependence between urban and rural areas.

People who live or work in rural areas should have reasonable access to a range of services and facilities. Local planning authorities should facilitate and plan for accessible new services and facilities, particularly where there is an identified need for new or expanded services to strengthen the role of a particular local service centre. It should also be ensured that where possible, new development in identified service centers is supported through improvements to public transport, and to walking and cycling facilities; and support mixed and multi-purpose uses that maintain community vitality.

The Planning Authority should also support the provision of small-scale, local facilities to meet community needs outside identified local service centers, particularly where they would benefit those rural residents who would find it difficult to use more distant service centers. These local facilities should be located within or adjacent to existing villages and settlements where access can be gained by walking, cycling and (where available) public transport.

There needs to be a positive approach to planning proposals designed to improve the viability, and community value of existing services and facilities, e.g. village shops and post offices, rural petrol stations, mosques and community buildings, that play an important role in sustaining village communities.

Many villages are of considerable historic value, or make an important contribution to local rural character. Planning authorities should ensure that development respects and, where possible, enhances these particular qualities. It should also contribute to a sense of local identity and regional diversity and be of an appropriate design and scale for its location.

Planning authorities should take a positive approach to innovative, high-quality contemporary designs that are sensitive to their immediate setting and help to make country towns and villages better places for people to live and work.

It should be ensured that the quality and character of rural areas is protected and, where possible, enhanced. There should be particular regard to any areas that have been statutorily designated for their landscape, wildlife or historic qualities where greater priority should be given to restraint of potentially damaging development.

The objective of sustainable developments in rural areas is to raise the quality of life and the environment in rural areas through the promotion of:

- good quality, sustainable development that respects and, where possible, enhances local distinctiveness and the intrinsic qualities of the countryside; and
- Continued protection of the open countryside for the benefit of all, with the highest level of protection for our most valued landscapes and environmental resources.
- To promote more sustainable patterns of development:
- focusing most development in, or next to, existing towns and villages;
- preventing urban sprawl;
- promoting a range of uses to maximize the potential benefits of the countryside fringing urban areas; and
- Providing appropriate leisure opportunities to enable urban and rural dwellers to enjoy the wider countryside.
- To promote sustainable, diverse and adaptable agriculture sectors where farming achieves high environmental standards, minimizing impact on natural resources, and manages valued landscapes and biodiversity; contributes both directly and indirectly to rural economic diversity; is itself competitive and profitable; and provides high quality products that the public wants.

6.2.1 Key Principles

i. Sustainable development is the core principle and foundation of good Land Use Planning. The following key principles should be applied:

Decisions on development proposals should be based on sustainable development principles, ensuring an integrated approach to the consideration of:

- Social inclusion, recognizing the needs of everyone;
- Effective protection and enhancement of the environment;
- Present use of natural resources; and
- Maintaining high and stable levels of economic growth and employment.
- ii. Good quality, carefully-sited accessible development within existing towns and villages should be allowed where it benefits the local economy and/or community (e.g. affordable housing for identified local needs); maintains or enhances the local environment; and does not conflict with other planning policies.
- iii. Accessibility should be a key consideration in all development decisions. Most developments which are likely to generate large numbers of trips should be located in or next to towns or other service centers that are accessible by public transport, walking and cycling. Decisions on the location of other developments in rural areas should, where possible, give people the greatest opportunity to access them by public transport, walking and cycling, consistent with achieving the primary purpose of the development.
- iv. New building development in the open countryside away from existing settlements, or outside areas allocated for development in development plans, should be strictly controlled; the overall aim is to protect the countryside for the sake of its intrinsic character and beauty, the diversity of its landscapes, heritage and wildlife, the wealth of its natural resources and so it may be enjoyed by all.

- v. Priority should be given to the re-use of previously-developed ('brownfield') sites in preference to the development of greenfield sites, except in cases where there are no brownfield sites available, or these brownfield sites perform so poorly in terms of sustainability considerations (for example, in their remoteness from settlements and services) in comparison with greenfield sites.
- vi. All development in rural areas should be well designed and inclusive, in keeping and scale with its location, and sensitive to the character of the countryside and local distinctiveness.

6.2.2 Agriculture and Farm Diversification

The Government recognizes the important and varied roles of agriculture, including in the maintenance and management of rural areas. Thus, there is a need to proposals that will enable farming and farmers to:

- i. Become more competitive, sustainable and environmentally friendly;
- ii. Adapt to new and changing markets;
- iii. Diversify into new agricultural opportunities
- iv. Broaden their operations to 'add value' to their primary produce.

The presence of best and most fertile agricultural land should be taken into account alongside other sustainability considerations (e.g. biodiversity; the quality and character of the landscape; its amenity value or heritage interest; accessibility to infrastructure, workforce and markets; maintaining viable communities; and the protection of natural resources, including soil quality).

Where significant development of agricultural land is unavoidable, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality, except where this would be inconsistent with other sustainability considerations. If any undeveloped agricultural land needs to be developed, any adverse effects on the environment should be minimized.

6.2.3 Tourism and Leisure

Tourism and leisure activities are vital to many rural economies and sustaining many rural businesses. Tourism industry is significant source of employment and help to support the prosperity of villages, local heritage and culture.

Sustainable rural tourism and leisure developments that benefit rural businesses, communities and visitors and which utilize and enrich, but do not harm, the character of the countryside, its towns, villages, buildings and other features.

Area with high landscape value, nature conservation or historic qualities should be recognized and designated as such. The provision of essential facilities for tourist visitors is vital for the development of the tourism industry in rural areas.

6.3 RURAL SETTLEMENTS

6.3.1 Number of Rural Settlements

As per District Census Report (2017) of District Mardan, there are 168 rural settlements in the District. From the same source, it has been calculated that in the year 2017, around 66% of

these villages had population of 5,000 and above, around 16% had population between 2,000 to 4,999 while around 10% had population varying between 1,000 to 1,999. Thus, combining the above categories, 95% rural settlements had population of 1,000 and above, while the remaining about 5% had less than 1,000 populations.

| Table 6-2: No. of Rural Settlements in Peshawar Valley (1998) ¹⁰⁴ | | | | | | | | | | |
|--|----------|--------|---------------|-----------|-------|-------|----------|--|--|--|
| Population | | Nu | mber of Villa | ges | | Total | % of | | | |
| Categories | Peshawar | Mardan | Nowshera | Charsadda | Swabi | TOLAI | Villages | | | |
| 5000 & above | 69 | 112 | 43 | 60 | 54 | 338 | 36.89 | | | |
| 2,000 – 4,999 | 75 | 28 | 46 | 70 | 38 | 257 | 28.05 | | | |
| 1,000-1,999 | 43 | 18 | 27 | 32 | 25 | 145 | 15.82 | | | |
| 500-999 | 33 | 4 | 11 | 17 | 18 | 83 | 9.06 | | | |
| 200-499 | 18 | 3 | 10 | 17 | 9 | 57 | 6.22 | | | |
| Less than 200 | 5 | 2 | 4 | 4 | 5 | 20 | 2.18 | | | |
| Uninhabited | 3 | 1 | 12 | 0 | 0 | 16 | 1.74 | | | |
| Total | 246 | 168 | 153 | 200 | 149 | 916 | 100 | | | |

6.3.2 Growth Pattern of Rural Settlements

Based on the populations of villages as given in the census reports of 2017 and 1998, growth rate of each rural settlement was calculated, based on which these settlements have been divided into 3 categories as per following criteria:

- Rapidly growing villages (growth rate above 3%)
- Moderately growing villages (growth rate between 2%-3%).
- Slowly growing villages (growth rate below 2%)

The results are presented in Table 6.2. As seen, of the total 867¹⁰⁵ rural settlements, 458 villages are rapidly growing, 235 have moderate growth and 174 villages have slow growth.

¹⁰⁴ Source: District Census Reports of Five Districts, 1998, Page 53, Table 3.

¹⁰⁵ There is discrepancy between the number of villages in Table 6.2; it is because a few villages in 1998 Census were not listed, and hence their growth rate could not be calculated.

| Table 6-3: Growth Pattern of Rural Settlements in Peshawar Valley | | | | | | | | | |
|---|--------------------------|--------|----------|-----------|-------|-------|-------|--|--|
| Type of Rural | No. of Rural Settlements | | | | | | | | |
| Settlement | Peshawar | Mardan | Nowshera | Charsadda | Swabi | Total | %age | | |
| Fast Growing | 155 | 70 | 67 | 101 | 65 | 458 | 52.83 | | |
| Moderately Growing | 47 | 48 | 41 | 45 | 54 | 235 | 27.10 | | |
| Slow Growing | 33 | 32 | 29 | 51 | 29 | 174 | 20.07 | | |
| Total | 235 | 150 | 137 | 197 | 148 | 867 | 100 | | |

6.3.3 Rapidly Growing Rural Settlements

As seen in Table 6.2, there are 70 fast growing settlements in District Mardan. There is however vast variation in the growth rates of fast-growing settlements, ranging from 3% to about 17%. Such settlements therefore have therefore been divided into the following subcategories based on their growth rates:

- High-High: Above 7%
- Middle High: 5-7%
- Low High: 3-<5%

Based on the above categorization, the names of villages falling in these categories are given in Table 6.4.

| | Table 6-4: Rapidly Growing Rural Settlements | | | | | | | |
|--------------------|--|--------------------------|--|--|--|--|--|--|
| Growth Category | Growth Rate | Number of Settlements | Names of Settlements | | | | | |
| High-High | Above 7% | 4 | Khura Banda, Surkh Deri, Khan Killi, Urya. | | | | | |
| Medium- High | 5% - 7% | 4 | Bahram Khan Killi, Mohabbat Abad, Husai, Dagai. | | | | | |
| Low-High | 3% - 4.99% | 39 | Alo, Barmola, Ghazi Baba, Sarobi, Allah Dad Khel, Baghe- e-aram, Korough, Chak Shahbaz Garhi, Chauki, Hoti, Berkri banda, Khanjor, Khawaja Rakshi, Maho derhi, Amin Abad, Bagh Dada, Kaki Dheri, Khazan Dheri, Mangah, Chak Mardan, Barigon, Bazar, Surkhabi, Jalal, Ismail Zai, Charguli, Chail, Jangira abad, Jalala, Kot Jongarh, Makuri, Diwan Khel, Shahbat Khel, Qutab Garh, Arbi Banda, Sri Behlol. | | | | | |





Map 6.1 describe the growth pattern of fast-growing villages of District Mardan. These are categoried regarding to their population growth rate.¹⁰⁶

¹⁰⁶ Table 6.4 of this Report.

6.4 RURAL DEVELOPMENT THROUGH GROWTH CENTERS

For rural development, it is important to conceive a strategy of developing growth centers aimed at strengthening local governments' financial and administrative capabilities, and improved channels for effective citizen participation in solving problems of common concern. This calls for additional investments in infrastructure and the provision of incentives for micro/cottage industries and services to be located in the identified growth centers. In rural areas, opportunities need to be created to make rural life more bearable, so that these areas can retain their human capital for agricultural, agribusiness and off-farm activities instead of losing them to the urban centers where opportunities may be limited. This would entail developing rural infrastructure including schools and health clinics and feeder roads to enhance market access for farming households.

No regional development concept or theory has received greater attention among regional planners than growth pole theory. It has been subject to various definitions and interpretations, and its application has spread across the globe considerably. The growth pole theory, as originally formulated, assumes that growth does not appear everywhere at the same time, but it manifests itself in "points" or "poles" of growth, and the growth spreads by different channels and eventually affects the economy as a whole.

In order to attract private sector initiative to accelerate employment-generating activities in the rural areas, it is important to provide urban amenities in rural areas with the objective of stimulating high growth in rural economies. The development of agribusiness and agro-industrial enterprises should be the starting point of any sustainable industrialization process. Agribusiness and agro-industry development can be catalyzed by supporting funding for installation, rehabilitation, and operation of critical infrastructure of "public good" nature that connect rural to urban centers and help integrate the rural economies with the more advanced urban economies.

Such critical infrastructure includes feeder roads, telecommunications systems, public utilities (water supply and sanitation, and energy), and transport facilities. Market access is key to a sustainable increase in agricultural and related products, for without improved access to markets, increases in agricultural productivity cannot translate into higher incomes. Urban bias in terms of investment and infrastructure, in isolation of rural area can be detrimental and costly for the concerned District/region as a whole. These negative aspects may include:

- Proliferation of urban sprawl;
- Premature conversion of rural agricultural land and timberland into urban
- uses;
- Escalation in urban-fringe land prices;
- Lowering water quality due to disturbance of the natural hydrological
- function;
- Impairing the quality of rural living.

For District Mardan, a number of villages throughout the District have been identified which are proposed to be developed as growth centers in the District rural system. These would be the places that could grow to fill the gap between the urban area and smaller villages.

There are 75 union councils in District Mardan, of which 14 are urban and 61 are rural¹⁰⁷. To reduce migration to urban areas, a number of measures can be taken such as employment opportunities near or around the villages, better inter-village road connectivity, provision of basic facilities such as good healthcare, quality education, provision of adequate infrastructure and physical improvement of villages including village streets and houses.

| | Table 6- 5: Rural Growth Zones – District Mardan | | | | | | | |
|---------------------------|--|--|---|--|--|--|--|--|
| Name of growth zone | Tehsil | Growth centre (Name of village) | UC in which growth centre lies | Other UC's in the Rural growth zone | | | | |
| Jalara | Takht Bahi | Jalara | Jalara | Pir Sadai, Maday Baba, Parkho Dheri, Lund Khawar, Makori, Mian Issa, Sher Ghar, Hatiyan | | | | |
| Verter | Katlang | Verter | Qasmi | Ikram Pur, Alo, Kohai Barmol, Babozai | | | | |
| Garhi Daulat Zai | Mardan | Garhi Daulat Zai | Garhi Daulat Zai | Fatima, Bakshali, Toru, Ghala Dher, Shamat Pur, Gumbat, Kandar, Mayar, Garhi Ismail Zai, Kot Daulat Zai, Chak Hoti, Mardan Rural, Mohib Banda, Garhi Daulat Zai, Babiani, Bala Garhi, Shahbaz Garhi, (Complete) | | | | |
| Rustam | Mardan | Rustam | Rustam | Rustam, Palo Dheri, Bazar, Charguli, Machai, Kata Khat, Gujrat, Garyala, Mohabat Abad (Complete) | | | | |

To achieve the above, rural area of District Mardan is proposed to be divided into a number of rural zones, and a centralized village within each such zone designated as Growth Centre for the rural zone. The Growth Centre will have following facilities to serve the rural zone.

- Model Rural Health Centre
- High Schools
- Veterinary Centre
- Repair shops for tractors and other agricultural implements.
- Play Ground
- Agro-based micro industrial sector
- Good quality rural roads, connecting Growth Centre with other main villages of the rural zone, and also a road connecting Growth Centre with the nearby highway/major road.
- Fruit/vegetable market, which may serve as sale as well as purchase point.
- Grain market/godowns, where applicable.
- Bank
- Sub-Police Station
- Revenue Office

¹⁰⁷ Source: District Studies Report Mardan, Chapter 6.



Map 6-2: Rural Growth Zones and Town Centers of District Mardan

Map 6.2 describe about rural growth zones and town centers of District Mardan. And their spatial location with respect to each other.

6.5 GUIDELINES FOR RURAL & TOWN HOUSING AND OTHER AMENITIES:

Developing towns & rural areas in a sustainable manner, through better regulatory measures can be highly helpful for better and balanced physical as well as economic development.

Lack of guidelines and regulatory measures are resulting in uncontrolled and unregulated housing and other physical developments. There have hardly been any remedial measures in the past, resulting in major damages to natural environment. Thus, owing to various historic and institutional reasons, the effectuation of protective measures including land use and building control regulations have remained limited to major urban centers. Rural areas and town have been largely neglected resulting in their haphazard and uncontrolled growth. In these areas, the problems get proliferated and involve heavy financing to cure.

The following guidelines are proposed for towns and rural areas:

- Land for housing should be capable of being served with essential infrastructure such as link to road network, water supply, drainage and sanitation at reasonable costs. One of the most critical factors is the availability of suitable land for various activities. There is a need to identify such land and secure/ safeguard it for planned development.
- The land should be economically developable and should have appropriate location and accessibility to services.
- Conventional land use regulations are not applicable in rural areas, as these entail high building costs and standards which are not affordable by most rural households. To make the regulations realistic for rural areas, the procedures and standards must be cut down. At present there are no Land use and building control regulations for rural areas. These should be formulated and implemented to ensure preservation of rural physical environment.
- By laws should be formulated and implemented for towns to control the urban sprawl, haphazard development in the town center and scattered development throughout the town.
- Strict land use control in rural areas, at current level of the socio-economic development is neither desirable nor possible. Nevertheless, there have to be some guiding principles to rationalize and reasonably exercise control over land use and developments in rural areas.
- The land use control should focus on improving accessibility, control on development activities along major highways, and simplifying the plan approval process.
- Involvement of private sector in development efforts in view of funding constraints in the public sector.

6.5 POSSIBLE MODEL ENVIRONMENTAL VILLAGE: DETAILS OF SITE AREA AND OTHER REQUIREMENTS

For selecting possible Model Environmental Villages, the criteria for selection included its growth rate, distance from existing urban Area, population and present area under village. From total 168 rural settlements/villages in District Mardan, 50 villages have growth rate of above 3%. The selected villages are Jalala and Surkh Dheri.

| | Table 6- 6: Model Environmental Villages population up to plan period | | | | | | | | | |
|----------------|---|--------------------|--------------------|--------------------|------------------------|------------------------|--------------------|--|--|--|
| Name | Population 1998 | Population 2017 | Population 2019 | Population 2024 | Popula tion 2029 | Popula tion 2034 | Population 2039 | | | |
| Jalala | 14571 | 38005 | 42213 | 55094 | 76393 | 100940 | 134148 | | | |
| Surkh Dheri | 8486 | 22240 | 24676 | 32058 | 44029 | 57492 | 75225 | | | |
| Total | 23057 | 60245 | 66889 | 87152 | 120422 | 158432 | 209373 | | | |
| | | | | | | | | | | |

| Table 6- 7: | Table 6-7: Area wise service of Model Environmental Villages | | | | | | | |
|--------------------|--|-------------|--|--|--|--|--|--|
| Different Services | Area (Acers) | | | | | | | |
| Different Services | Jalala | Surkh Dheri | | | | | | |
| Residential | 1141.8 | 1098 | | | | | | |
| Commercial | 76.2 | 73.2 | | | | | | |
| Education | 57.09 | 54.09 | | | | | | |
| Open Space | 285.45 | 274.5 | | | | | | |
| Public Building | 38.06 | 36.6 | | | | | | |
| Roads/Streets | 285.45 | 274.5 | | | | | | |
| Graveyard | 19.03 | 18.3 | | | | | | |
| Total | 1903 | 1830 | | | | | | |



Map 6.3 shows the spatial location of two proposed Jalala and Surkh Dheri Model Environmentall Villages.

CHAPTER 7: SCHEDULE FOR REGULAR MONITORING, EVALUATION & UPDATING

7.1 PROPOSED STRUCTURE:

Regular monitoring, evaluation and updating of the Land Use Planning System at District level are important features of the Project, particularly because of involvement of assembly and integration of geographic information. Based on this system, alternative spatial development strategies over the years can be developed depending upon changed circumstances.

Introduction of GIS in the Land Use Plan will enhance the rationality of the future decision-making process by improving data accuracy and accessibility and as a consequence will lead to 'better' decision making. The analysis of information, if posted on web shall help to describe the existing situation, contribute to improved understanding of local problems and constraints to development by providing key factors and variables.



Figure 7-1: Proposed Structure

The GIS based Land Use Plan can be used by various departments/agencies for the purpose of data updating and enhancement. The data sharing and the information updating will be a two-way process as both the stake holders and the government departments/ agencies will be able to exchange information and achieve continuous improvement in the quality and quantity of information.

Generally, the Land Use Plans in the past were produced using traditional sectoral land cover plans, which described a state of land cover by sectors and plans to be implemented independently without any coordination with other sectors. The result was that more often some sectors were over emphasized and received higher investment, while others which are equally important were marginally developed. Though the process was continuous and cyclical in nature, however there was no coordination and no Land Use was available at District or provincial level. It was considered a purely town planning subject limited to urban areas only.

The approach used while preparing this Plan focuses on planning based on updated sectoral data and electronic mapping using the Geographical Information systems based on the identification of needs and goals. This coupled with the formulation and evaluation of alternative courses of action, resulted in mapping the information in different layers. This strategy needs updating, developing and implementing the Geographical Information System (GIS) as a new tool and approach for planning. A well-integrated and comprehensive database is an important element that could determine the ultimate success of GIS application in development planning.

The functionality of Land Use Plan can be enhanced by coordinating with all the departments and developing data integration tools to existing system. Consequently, it will be used to assist decision-making, taking into account among other things, the current scenarios of the proposed development, physical constraint and future impacts.

Implementation of District Land Use Plan necessitates development of a module for capacity building of institutions via skill improvement of human resources; and coordination amongst different sectors/departments. It is also recommended to develop web-based GIS Land Use maps for implementation of development plan and for project monitoring. This information should be made available and accessible to the general public with a special application for feedback (refer Figure above).

Proper and effective planning generally involves close monitoring growth, review of Annual Development Plans as well as policy appraisal. Plan Implementation calls for comprehensive information concerning the past, present and future. As spatial representation is critical to development, the attribute data related to the problems or issues to be addressed needs to be translated into spatial manifestation to ease the process of analysis and decision making. A Planning Agency such as Urban Policy Unit or the proposed Peshawar Valley Development Authority, to develop, implement and continually update the mapping via GIS calls for planning and monitoring functions, especially to integrate, assemble and coordinate the information obtained from a wide range of sectors, departments and sources.

An Electronic Data Bank (EDB) should be developed to serve as the eyes and ears to the monitoring process, so as to help in the surveillance of compliance with planning proposals. The EDB shall be provided inputs by all the departments and it is estimated that almost 130-person months

of senior level officials, GIS experts and data entry personnel will be involved in managing and updating the EDB. Of these some 120 man-months will be consumed by the respective departments while a Deputy Director assisted by the GIS expert, and data entry persons as well assistants involving 40-person months will be required at the central coordinating office where the District Land Use Plans will be updated.

Methods of creating, obtaining and distributing information for the purpose of mid-term reviews, which shall determine policy and implementation issues for further improvement, are imperative. Additionally, for monitoring the process of updating the geospatial information of Land Use; vertical integration of the developed and maintained datasets is essential. To this end the information from TMAs, Development Authorities and line departments at the provincial and District levels should be given due consideration and the relevant persons at each organization shall be properly trained to follow the monitoring software and develop electronic data base.

The P&D Department /Urban Policy Unit established at the provincial level should be expanded to include the incorporation of the GIS into the development plan preparation process at all planning hierarchy, be it the macro or micro level. As such, GIS technology shall be applied in planning activities, which essentially include plans formulation as well as development control.

The use of web-based GIS will be the best approach in overcoming the constraints in development planning, setting targets and resolving disputes involved in the planning process. When the system is properly monitored and updated on regular basis with access to the general public, it will

provide huge potential for improving the transparency and accessibility and governance.

At present the land records both for urban Patwari system, which has all the record of Use Plans and the EDBs will enable the Urban have easily accessible land records by type, disaster such as floods, landslides, earth

Regular updating and electronic monitoring government to introduce a transparent on commercial, industrial, agricultural and Revenue Department to update its records etc.

Based on the land cover and Land Uses the will be able to introduce plans and programs



planning system especially in terms of consequently contributes to better

and rural areas are managed by the age old landholdings and Land Use. The District Land Policy Unit/ P&D Department to update and geospatial information, and liable to any quake etc.

of the land cover will enable the provincial method of land revenue/ property tax and tax other Land Uses. This will help the Provincial and collect the property tax and land revenue

provincial government/District government for tree plantation, forestation and land conversion thus enhancing both personal income and provincial income. The development of range lands and forests will also help to achieve the goals of environmental protection.

The electronic data sharing with the citizens and the government departments will be more efficient, more effective, and cost effective, as with a click any one will be able to update its records and initiate information coordinating between stakeholders.

The Land Use development plans monitoring in GIS will support the P&D Department of KP, and the Urban Unit in controlling and monitoring development projects. The implementation will be strongly supported by the EDB & GIS which will provide inputs for the planning information needed through continuous data gathering, updating and, storage.

The District Land Use Plan Monitoring emphasizes on Geospatial physical planning involving spatial data, location and land use activities of proposed development. It will be possible to check whether land use development in the District complies with the planning proposals in the District by comparing current land use development with that proposed.

A series of workshops and trainings may be arranged to ensure smooth technology transfer to acquire the appropriate knowledge and skills to users. The training modules will serve as a supporting factor to GIS capacity building, covering various aspects including competency, infrastructure, procedures and resources essential for overall monitoring, evaluation and updating of Land Use Plans.

| | Table 7- 1: Sectors, Tasks and Manning | | | | | | | | |
|-----------|--|---|---|--|--|--|--|--|--|
| Sr. No | Sectors | Tasks | Personnel | | | | | | |
| 1 | industries & Commerce | Industrial Estates, Future Development Plans, Type of Industries, Land cover, Data, Annual ADP | Supervisor, Software Manager | | | | | | |
| 2 | Agriculture | Cropping Pattern, Land cover, Data, Annual ADP | Supervisor, Software Manager | | | | | | |
| 3 | Irrigation | Canals, Wells, Tubewells, type of irrigation, Other data, ADP and Land Cover | Engineer, Data Entry Clerk, | | | | | | |
| 4 | Water Resources | Rivers, Canals, Wells, Tubewells, Land cover, Data, Quantity of water, Annual ADP | Engineer, Data Entry Clerk, | | | | | | |
| 5 | Water Logging and Salinity | Data on SCAP, Land cover, Data, Financing, Annual ADP | SCARP In charge, Data Entry/ GIS Expert | | | | | | |

| | Table 7- 1: Sectors, Tasks and Manning | | | | | | | | |
|-----------|--|--|---|--|--|--|--|--|--|
| Sr. No | Sectors | Tasks | Personnel | | | | | | |
| 6 | Water Supply and Sewage | Urban Plans, Land cover, Data, Annual ADP | Municipal Engineer, GIS Expert | | | | | | |
| 7 | Climate & Weather | Information from Meteorological Department, Data, Annual ADP | Met Officer and Data Entry Clerk | | | | | | |
| 8 | Floods/ Disaster | Land cover, Data, Financing, Annual ADP | | | | | | | |
| 9 | Environment | Land cover, Data, Financing, Annual ADP | | | | | | | |
| 10 | Communications | Land cover, Data, Financing, Annual ADP | Engineer Data Entry Clerk | | | | | | |
| 11 | Transportation | Land cover, Data, Financing, Annual ADP | Lingineer, Data Litti y Clerk, | | | | | | |
| 12 | Rail and Air | Land cover, Data, Financing, Annual ADP | | | | | | | |
| 13 | Housing | Land cover, Data, Financing, Annual ADP | | | | | | | |
| 14 | Demography | Data on settlements, Financing, Annual ADP | Demographer | | | | | | |
| 15 | Health | Hospitals, Health Centers by location, size and type, Land cover, Data, Annual ADP | Dy. Secy Health, Information Manager | | | | | | |
| 16 | Education | Data on Schools, Higher Education, Training Institutes, by size, type and location, Education Plans and Annual ADP | Dy. Secy Education, GIS Expert and Information Manager | | | | | | |
| 17 | Tourism/ Entertainment | Hotels, Historic Places, Pars, resorts etc., Data, Annual ADP | Tourism Officer, and Data Entry Clerk | | | | | | |
| 18 | Urban Planning/ Expansion | Information from TMAs, Development Authorities, Land cover by type, Urban Land Use, Data, Transportation Network and Annual ADP | Urban Planner and GIS Expert | | | | | | |

| | Table 7- 1: Sectors, Tasks and Manning | | | | | | | | |
|-----------|--|--|--|--|--|--|--|--|--|
| Sr. No | Sectors | Tasks | Personnel | | | | | | |
| 19 | Existing Land Use | District level Land Use and Land cover by Type, vacant, rage land, Development Plans for Land Use change Data, and Annual ADP | Supervisor and GIS Expert | | | | | | |
| 20 | Mining | Type, size and location of mines, Land cover, Data, Annual ADP | Information from Dy. Director Mining Department, Data Entry Clerk | | | | | | |

| | Table 7- 2: Schedule of Expenditure | | | | | |
|--------|-------------------------------------|--------------------|--|--|--|--|
| Sr. No | Sectors | Staffing | | | | |
| 1 | industries & Commerce | Supervisor, | | | | |
| | | Software Manager | | | | |
| 2 | Agriculture | Supervisor, | | | | |
| | | Software Manager | | | | |
| 3 | Irrigations | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 4 | Water Resources | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 5 | Water Logging and Salinity | SCARP In charge | | | | |
| | | Data Entry/ GIS | | | | |
| 6 | Water Supply and Sewage | Municipal Engineer | | | | |

| | Table 7- 2: Schedule of Expenditure | | | | | |
|--------|-------------------------------------|---------------------|--|--|--|--|
| Sr. No | Sectors | Staffing | | | | |
| | | GIS Expert | | | | |
| 7 | Climate & Weather | Met Officer | | | | |
| | | Data Entry Clerk | | | | |
| 8 | Floods/ Disaster | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 9 | Environment | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 10 | Communications | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 11 | Transportation | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 13 | Housing | Engineer | | | | |
| | | Data Entry Clerk, | | | | |
| 14 | Demography | Demographer | | | | |
| 15 | Health | Dy. Secy Health | | | | |
| | | Information Manager | | | | |
| 16 | Education | Dy. Secy Education | | | | |
| | | GIS Expert | | | | |
| | | Information Manager | | | | |

| | Table 7- 2: Schedule of Expenditure | | | | | |
|--------|-------------------------------------|--|--|--|--|--|
| Sr. No | Sectors | Staffing | | | | |
| 17 | Tourism/ Entertainment | Tourism Officer | | | | |
| | | Data Entry Clerk | | | | |
| 18 | Urban Planning/ Expansion | Tourism Officer Data Entry Clerk Urban Planner GIS Expert Dy. Director/ Senior level planner Supervisor/ Coordinator GIS Expert Information from Dy. Director Mining Department Data Entry Clerk | | | | |
| | | GIS Expert | | | | |
| 19 | Existing Land Use | Dy. Director/ Senior level planner | | | | |
| | | Supervisor/ Coordinator | | | | |
| | | GIS Expert | | | | |
| 20 | Mining | Information from Dy. Director Mining Department | | | | |
| | | Data Entry Clerk | | | | |
| | Pro | ofessionals @ Rs.250,000/month Others @ Rs. 150,000 | | | | |
| | | Other Costs 75 % of above | | | | |

7.2 ZONING:

The total area of the District needs to be divided in different Land Use zones, as there is a strong need to clearly delineate zonal boundaries to distinguish between residential, large-scale commercial, industrial and other Land Uses in the District. The purpose is to control and direct the use and development of land and properties. Primarily objective of zoning is to improve the efficiency derived from agglomeration economies, ensure minimum standards of health and safety and provide land for public goods and services. The criteria for earmarking the zones have been based on the following characteristics:

- Physical and spatial Characteristics
- Predominant Land Uses
- Intensity of development

In the District Land Use Plan, like all other zones, specific Land Use parameters have been formulated for different zones to facilitate better and effective planning control in the area.

In this Chapter, specific set of parameters have been proposed for better Land Use control in each zone; these regulations are mainly influenced by the characteristics of the zones, and their perceived development pattern.

In Chapter 6, a Land Use strategy has been proposed for Mardan, including location and allocation of major Land Use zones. For each of the proposed zones, it is important to have Land Use parameters, to facilitate effective planning control. The agricultural area should be preserved in a manner that its character as a green belt is protected to maximum possible extent. In the existing built-up areas, there should be a gradual shifting of non-conforming uses from a particular zone so as to cause minimum hardship to the owners of non-conforming uses. The obnoxious industries may for example be assigned high priority for shifting, depending on the nuisance of the industries. It is high time that stringent steps are taken to adopt a clear-cut policy based on identification and gradual elimination of non-conforming uses located in various zones.

Land Uses permitted/permitted on appeal in different planning zones of Mardan are proposed in sections below. Permitted Land Uses are those, which the City Government/Planning Agency may allow in a particular zone. Land Uses that can be 'permitted on appeal' should be carefully scrutinized by the planning agency and decided upon on case-to-case basis. Uses not specifically provided in a particular zone are prohibited and should not be permitted. The important thing to emphasize is that a building or Land Use shall not be used in a manner inconsistent with the prescribed use.

Zone-wise regulations considering compatibility of various Land Uses are proposed in section below:

7.3 LAND USE COMPATABILITY:

7.3.1 Regulations for Residential Zones:

| Table 7- 3: Regulation for Residential Zones | | | | | | | |
|--|---|--|--|--|--|--|--|
| Residential | Uses Permitted | Uses Permitted on Appeal | | | | | |
| | Detached/semidetached dwellings | | | | | | |
| | Mosques | | | | | | |
| | Primary/High Schools | | | | | | |
| | Clinics/Dispensaries | Commercial Offices and Service Shops of Local Character ¹⁰⁸ . | | | | | |
| | Social/Cultural Institutions | Raising of poultry for non-commercial | | | | | |
| Low Density | Local Shopping Areas/Retail Shops | purposes ¹⁰⁹ . | | | | | |
| Residential | Offices of Professionals with adequate parking facilities | Petrol pump, gas filling station. | | | | | |
| | Parks and Playgrounds | Taxi/rickshaw stand. | | | | | |
| | Local Recreational Uses | | | | | | |
| | Non-commercial vegetable gardens and nurseries. | | | | | | |
| | Ancillary uses clearly incidental to residential uses, which must be free from nuisance and hazard. | | | | | | |
| | Apartment Buildings / Multi-family dwellings | All uses permissible on appeal in low- | | | | | |
| Residential | Colleges and Research Institutions | density residential zone. | | | | | |
| | Hostels, Guest Houses | Restaurants and hotels | | | | | |

¹⁰⁸ Should be located in local shopping centre

¹⁰⁹ Provided the birds are properly segregated from the habitable parts of the house.

| Table 7-3: Regulation for Residential Zones | | | | | | |
|---|---|--|--|--|--|--|
| Residential | Uses Permitted | Uses Permitted on Appeal | | | | |
| | Offices of TMAs/other tiers of Local Govt. | Hospitals ¹¹¹ | | | | |
| | All uses permitted in low density residential zones ¹¹⁰ | Petrol and Gas filling stations ¹¹² . | | | | |
| | All uses permitted in Medium Density Zone | | | | | |
| High Density | Public Utilities and Buildings | All uses permitted on appeal in medium | | | | |
| Residential | Recreational Uses | density zone. | | | | |
| | Taxi and Rickshaw Stands | | | | | |
| Major Commercial Areas | Shopping plazas, Shops and commercial centers, educational institutions, recreational places, parks and open spaces, public and religious buildings and service industries and fire fighting arrangements governed by the building and space regulations. | Petrol filling stations, Hospitals, residences, transport terminals, cinemas, clubs and all sort of storage. | | | | |

7.3.2 Regulations for Educational Zone:

| Table 7- 4: Regulation for Education Zone | | | | | | | | |
|--|--|------------------------------------|--|--|--|--|--|--|
| Zone Uses Permitted Uses Permitted on Appeal | | | | | | | | |
| | Educational and Research Institutions | Hotels | | | | | | |
| Educational Zone | Offices of Social and Cultural Organizations | Offices of Commercial Institutions | | | | | | |
| | Religious Institutions | Restaurants and Clubs | | | | | | |

¹¹⁰ Subject to density limitations specified for the sub-zone.

¹¹¹ Not treating contagious diseases and mental patients

¹¹²Should be on sites located along roads having at least 30 metres right-of-way and 100 metres away from a crossing of two primary roads or a roundabout.

| Table 7- 4: Regulation for Education Zone | | | | | | | |
|---|---|---|--|--|--|--|--|
| Zone | Uses Permitted | Permitted Uses Permitted on Appeal | | | | | |
| | Parks, Memorials and Monuments | Commercial Recreational uses like theatre halls and cinemas | | | | | |
| | Recreational Uses | Petrol and gas filling Station | | | | | |
| | Public Utilities and Buildings | Limited Retail Shopping | | | | | |
| | Community Facilities, Arts Councils and Auditoriums | | | | | | |
| | Government Offices | | | | | | |
| | Taxi Stands, Bus Halts | | | | | | |
| | Approved Parking Provisions | | | | | | |
| 7.3.3 Regulations fo | 3.3 Regulations for Trade Zone: | | | | | | |

7.3.3 Regulations for Trade Zone:

| Table 7- 5: Regulations for Trade Zones | | | | | | |
|---|---|--|--|--|--|--|
| Zone | Uses Permitted | Uses Permitted on Appeal | | | | |
| | Wholesale/retail commercial markets and establishments. | | | | | |
| | Restaurants/Hotels. | | | | | |
| | Business and professional offices | Petrol and gas filling stations | | | | |
| Trade Zone | Transportation Terminals | Hospitals not treating contagious diseases or mental patients. | | | | |
| | Recreational Uses | | | | | |
| | Public utilities and buildings | | | | | |
| | Approved parking provisions. | | | | | |
| | | | | | | |

7.3.4 Regulations for Industrial Zones:

| Table 7-6: Regulations for Industrial Zones | | | | | | | |
|---|--|--|--|--|--|--|--|
| Zone | Uses Permitted | Uses Permitted on Appeal | | | | | |
| Light-Medium Industrial Area | Auto-Mechanic Shops/Yards Motor Bargains Cottage Industrial Units Warehouses and Storage Public Utilities and Buildings Canteens Agriculture (until the area is required for development) Approved Parking Loading and Unloading Provisions | Bus and Truck Terminals Railway passenger and freight terminals Petrol and gas filling stations Taxi stands Junk Yards Recreational facilities for employees. | | | | | |
| | All categories permitted in the light-medium industrial zone. | All categories permissible on special appeal in Light-Medium | | | | | |
| Medium-Heavy Industrial Area | Approved Parking Loading and unloading provisions. Dwellings for labor and watch and ward staff. | Warehousing of perishable and inflammable commodities. | | | | | |

¹¹³ Only non-perishable and non-inflammable commodities

7.3.5 Regulations for Recreational Areas:

| Table 7- 7: Regulation for Recreational Areas | | | | | | | |
|---|---|---|--|--|--|--|--|
| Zone | Uses Permitted | Uses Permitted on Appeal | | | | | |
| | Recreational areas including parks, playgrounds and related uses. | | | | | | |
| | Youth hostels and clubs | Restaurants and establishments selling eatables | | | | | |
| Descetional Areas | Taxi and rickshaw stand | Incidental recreational uses. | | | | | |
| Recreational Areas | Bus halts and car parking areas. | Graveyards | | | | | |
| | Dwellings for watch and ward staff. | Adequate parking provisions. | | | | | |
| | Public utilities and municipal facilities. | | | | | | |
| 7.3.6 Regulations for Agricultural Zone: | | | | | | | |

7.3.6 Regulations for Agricultural Zone:

| Table 7-8: Regulations for Agricultural Zone | | | | | | |
|--|--|--|--|--|--|--|
| Zone | Uses Permitted | Uses Permitted on Appeal | | | | |
| Agricultural Zone. | Agriculture Horticulture Dairy and poultry farming Milk chilling and pasteurization centers Existing settlements Community facilities and public utilities Servicing/repair of farm equipment and machinery. | Storage, processing and sale of farm products in the zone where produced. Sale of agricultural supplies Parks and recreational uses Retail shopping and service uses | | | | |

Annexure 1.

| Settlement Wise Demographic Statistics | | | | | | | | | | | | |
|--|-------------|---------------------------|--------------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) |
| | | Alo | 12319 | 3.27 | 22,714 | 24224 | 28452 | 34511 | 40535 | 47610 | 4228 | 19158 |
| Alo | Alo | Pipal | 5580 | 2.62 | 9,126 | 9610 | 10937 | 12773 | 14536 | 16543 | 1327 | 5606 |
| | | Babozai Abakhel | 7848 | 1.98 | 11,396 | 11852 | 13072 | 14704 | 16219 | 17889 | 1220 | 4817 |
| Babozai | Babozai | Babozai Baratkhel | 4318 | 2.36 | 6,729 | 7050 | 7923 | 9113 | 10240 | 11507 | 873 | 3584 |
| | | Cherchor | 3985 | 0.75 | 4,591 | 4660 | 4838 | 5059 | 5252 | 5452 | 178 | 614 |
| | | Dheri | 9550 | 2.12 | 14237 | 14847 | 16489 | 18701 | 20769 | 23066 | 1642 | 6577 |
| Dheri | Dheri | Jangi Dher | 1390 | 2.28 | 2134 | 2232 | 2499 | 2861 | 3202 | 3584 | 267 | 1085 |
| | | Kotki | 1857 | 2.77 | 3,122 | 3297 | 3780 | 4453 | 5105 | 5853 | 483 | 2073 |
| | | Lak Pani | 5315 | 2.64 | 8,724 | 9191 | 10470 | 12241 | 13945 | 15885 | 1279 | 5415 |
| Jamal Garhi | Jamal Garhi | Jamal Garhi | 17,056 | 2.59 | 27746 | 29202 | 33185 | 38687 | 43963 | 49959 | 3983 | 16774 |
| | Kati Garhi | Kati Garhi | 7083 | 2.07 | 10,451 | 10888 | 12063 | 13641 | 15112 | 16742 | 1175 | 4679 |
| Kati Garhi | | Shamsi | 2054 | 2.92 | 3,549 | 3759 | 4341 | 5159 | 5958 | 6880 | 582 | 2539 |
| | | Shero | 9291 | 1.99 | 13,504 | 14047 | 15501 | 17447 | 19253 | 21246 | 1454 | 5745 |
| Katlang | Katlang | Katlang | 23248 | 2.3 | 35,794 | 37459 | 41970 | 48105 | 53898 | 60388 | 4511 | 18418 |
| Kharki | Kharki | Kharki | 13466 | 2.78 | 22,666 | 23944 | 27462 | 32373 | 37130 | 42587 | 3518 | 15125 |
| Kahi | | Barmola | 333 | 3.08 | 593 | 630 | 733 | 880 | 1024 | 1191 | 103 | 458 |
| Kolli | Kom | Kohi | 10826 | 2.31 | 16,697 | 17477 | 19591 | 22468 | 25186 | 28233 | 2114 | 8642 |
| Kuni | Kuni | Kunj | 1955 | 2.08 | 2,892 | 3014 | 3340 | 3779 | 4189 | 4643 | 326 | 1303 |
| Kulij | Kulij | Shakartangi | 6767 | 2.16 | 10,151 | 10594 | 11789 | 13402 | 14913 | 16595 | 1195 | 4806 |
| Mion Khon | Mian Khan | Main Khan | 5997 | 2.26 | 9,177 | 9596 | 10731 | 12271 | 13722 | 15344 | 1135 | 4613 |
| Mian Khan | Ivitan Khan | Sangao | 4047 | 1.26 | 5,138 | 5268 | 5609 | 6046 | 6437 | 6853 | 341 | 1244 |
| | | Ghazi Baba | 1412 | 3.53 | 2,732 | 2928 | 3483 | 4289 | 5101 | 6067 | 555 | 2584 |
| Qasmai | Qasmai | Qasmai | 7618 | 2.57 | 12,329 | 12971 | 14726 | 17147 | 19467 | 22100 | 1755 | 7374 |
| | | Sarobi | 2165 | 4.78 | 5,253 | 5767 | 7284 | 9639 | 12174 | 15375 | 1517 | 8091 |

| Settlement Wise Demographic Statistics | | | | | | | | | | | | |
|--|----------------------|---------------------------|--------------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) |
| | | Taza Gram | 6360 | 1.65 | 8,673 | 8962 | 9726 | 10729 | 11644 | 12637 | 764 | 2911 |
| Sawal Dher | Sawal Dher | Bilandi | 5267 | 2.97 | 9,191 | 9745 | 11281 | 13446 | 15565 | 18018 | 1536 | 6737 |
| | | Sawal Dir | 19606 | 1.64 | 26,722 | 27606 | 29945 | 33015 | 35812 | 38847 | 2339 | 8902 |
| Shamozai | Shamozai Pc | Matodigram | 10962 | 1.95 | 15,810 | 16433 | 18098 | 20322 | 22382 | 24651 | 1665 | 6553 |
| | | Shamozai | 13871 | 2.28 | 21,303 | 22285 | 24945 | 28557 | 31965 | 35779 | 2660 | 10834 |
| Allah Dad Khel | Allah Dad Khel | Allah Dad Khel | 10549 | 3.56 | 20,513 | 22000 | 26204 | 32324 | 38502 | 45861 | 4204 | 19657 |
| | | Taus Banda | 3494 | 2.66 | 5,750 | 6060 | 6910 | 8089 | 9223 | 10517 | 850 | 3607 |
| Baghe E Aram | Bagh-E-Aram | Bagh-E-Aram | 2295 | 4.48 | 5,275 | 5758 | 7169 | 9325 | 11610 | 14454 | 1411 | 7285 |
| | | Korough | 5154 | 3.48 | 9,868 | 10567 | 12538 | 15394 | 18266 | 21673 | 1971 | 9135 |
| Chak Shahbaz Garhi | Chak Shabaz Garhi | Chak Shabaz Garhi | 6717 | 3.35 | 12,571 | 13427 | 15832 | 19293 | 22749 | 26823 | 2405 | 10991 |
| | | Koz Band | 1475 | 2.72 | 2,454 | 2589 | 2961 | 3478 | 3978 | 4549 | 372 | 1588 |
| Mohib Banda | Mohib Banda | Mohib Banda | 12083 | 2.55 | 19,489 | 20496 | 23246 | 27037 | 30664 | 34778 | 2750 | 11532 |
| | Ghala Der | Bhago Banda | 5288 | 2.46 | 8,398 | 8816 | 9955 | 11518 | 13006 | 14687 | 1139 | 4732 |
| | | Chauki | 4536 | 3.26 | 8,342 | 8895 | 10442 | 12659 | 14861 | 17447 | 1547 | 7005 |
| | | Gala Dher | 8690 | 2.79 | 14,671 | 15501 | 17788 | 20981 | 24075 | 27627 | 2287 | 9839 |
| Ghala Der | | Kaho | 1090 | 2.09 | 1,616 | 1684 | 1868 | 2115 | 2345 | 2600 | 184 | 732 |
| | | Khat | 999 | 0.43 | 1,083 | 1092 | 1116 | 1145 | 1170 | 1195 | 24 | 79 |
| | | Panjtar | 1690 | 2.52 | 2,713 | 2851 | 3229 | 3749 | 4246 | 4809 | 378 | 1580 |
| Gumbat | Gumbat | Gaddar | 2187 | 2.42 | 3,442 | 3611 | 4069 | 4697 | 5293 | 5966 | 458 | 1897 |
| | | Gumbat | 14646 | 2.3 | 22,547 | 23596 | 26437 | 30302 | 33951 | 38039 | 2841 | 11602 |
| Hoti | Hoti | Hoti | 7831 | 4.46 | 17,945 | 19581 | 24355 | 31644 | 39359 | 48955 | 4774 | 24600 |
| | | | | | | | | | | | | |

| Settlement Wise Demographic Statistics | | | | | | | | | | | | |
|--|---------------|---------------------------|--------------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) |
| Khandar | | Khandar | 5252 | 2.42 | 8,266 | 8671 | 9772 | 11280 | 12712 | 14327 | 1101 | 4555 |
| | Khandar | Qasam | 7622 | 2.56 | 12,327 | 12966 | 14713 | 17123 | 19429 | 22047 | 1747 | 7334 |
| | | Sharef Abad | 3150 | 2.83 | 5,350 | 5657 | 6504 | 7690 | 8841 | 10165 | 847 | 3661 |
| Maho Derhi | Maho Derhi | Bakri Banda | 3522 | 3.39 | 6,633 | 7090 | 8376 | 10231 | 12087 | 14280 | 1286 | 5904 |
| | | Khanjar | 3067 | 3.58 | 5,988 | 6424 | 7660 | 9460 | 11278 | 13447 | 1236 | 5787 |
| | | Khwaja Rashki | 4174 | 3.06 | 7,403 | 7863 | 9142 | 10954 | 12736 | 14807 | 1279 | 5665 |
| | | Maho Derhi | 3397 | 4.13 | 7,327 | 7945 | 9727 | 12400 | 15181 | 18585 | 1782 | 8858 |
| Mayar | Mayar | Mayar | 23717 | 2.74 | 39622 | 41823 | 47876 | 56305 | 64454 | 73781 | 6053 | 25905 |
| Mohabat Abad | Mohabadt Abad | Amin Abad | 2230 | 4.57 | 5,217 | 5705 | 7133 | 9326 | 11661 | 14581 | 1428 | 7448 |
| | | Bahram Khan Kilii | 5759 | 5.43 | 15,723 | 17477 | 22766 | 31266 | 40728 | 53053 | 5289 | 30287 |
| | | Khura Banda | 547 | 16.53 | 10,008 | 13590 | 29202 | 73120 | 157118 | 337610 | 15612 | 308408 |
| | | Mohabat Abad | 4378 | 5.63 | 12,396 | 13831 | 18188 | 25265 | 33224 | 43691 | 4357 | 25503 |
| | | Platoo | 2189 | 2.99 | 3,829 | 4061 | 4706 | 5616 | 6507 | 7540 | 645 | 2834 |
| | | Surkh Dheri | 1919 | 6.2 | 6,015 | 6784 | 9164 | 13148 | 17761 | 23994 | 2380 | 14830 |
| Shamat Pur | Shamad Pur | Akbar Pura | 113 | 2.24 | 172 | 180 | 201 | 229 | 256 | 286 | 21 | 85 |
| | | Mani Khel | 397 | -2.07 | 267 | 256 | 231 | 203 | 183 | 165 | -25 | -66 |
| | | Shamat Pur | 14292 | 1.68 | 19,600 | 20264 | 22024 | 24340 | 26454 | 28752 | 1760 | 6728 |
| Toru | Toru | Chak Toru | 10395 | 2.51 | 16,663 | 17510 | 19821 | 22999 | 26034 | 29470 | 2311 | 9649 |
| | | Toru | 16925 | 2.38 | 26,461 | 27736 | 31197 | 35926 | 40409 | 45452 | 3461 | 14255 |
| Babiani | Babiani | Babian | 6882 | 1.9 | 9,836 | 10213 | 11221 | 12563 | 13802 | 15164 | 1008 | 3943 |
| | | Charbanda | 9090 | 2.68 | 15,035 | 15852 | 18093 | 21204 | 24202 | 27623 | 2241 | 9530 |
| | | Jori Banda | 1403 | 1.33 | 1,805 | 1853 | 1980 | 2143 | 2290 | 2446 | 127 | 466 |
| | | Koti Naka | 8483 | 2.78 | 14,286 | 15091 | 17309 | 20404 | 23403 | 26842 | 2218 | 9533 |
| | | | | | | | | | | | | |

| Settlement Wise Demographic Statistics | | | | | | | | | | | | |
|--|------------------|---------------------------|--------------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) |
| Bagh Dad | Bagh Dada | Akbar Abad | 1213 | -0.14 | 1,181 | 1178 | 1169 | 1160 | 1152 | 1144 | -9 | -25 |
| | | Bagh Dada | 8280 | 4.95 | 20,735 | 22839 | 29079 | 38858 | 49475 | 62994 | 6240 | 33915 |
| | | Chamtra Derhi | 4144 | 2.91 | 7,147 | 7569 | 8736 | 10377 | 11977 | 13824 | 1167 | 5088 |
| | | Rakh Sarkar | 440 | -0.85 | 374 | 368 | 352 | 335 | 321 | 307 | -16 | -45 |
| Bakshali | Bakshali | Bakhshali | 16241 | 2.35 | 25,232 | 26432 | 29687 | 34127 | 38329 | 43050 | 3255 | 13363 |
| | | Kaki Dehri | 597 | 3 | 1,047 | 1111 | 1288 | 1538 | 1782 | 2066 | 177 | 778 |
| Bala Garhi | Bala Garhi | Bala Garhi | 10644 | 2.41 | 16,734 | 17550 | 19770 | 22806 | 25690 | 28938 | 2220 | 9168 |
| | | Cham Derhi | 2558 | 2.64 | 4,199 | 4424 | 5039 | 5892 | 6712 | 7646 | 615 | 2607 |
| Fatima | Fatima | Fatima | 12104 | 2.75 | 20,280 | 21411 | 24521 | 28856 | 33048 | 37849 | 3110 | 13328 |
| | | Gadar | 8078 | 2.14 | 12,080 | 12603 | 14010 | 15908 | 17684 | 19659 | 1407 | 5649 |
| | | Hamza Khan | 4481 | 2.53 | 7,201 | 7570 | 8577 | 9964 | 11290 | 12793 | 1007 | 4216 |
| | | Qazi Abad | 2979 | 1.65 | 4,064 | 4199 | 4557 | 5027 | 5456 | 5921 | 358 | 1364 |
| Baghecha Derhi | Baghecha Derhi | Baghecha Derhi | 7676 | 2.39 | 12,030 | 12612 | 14193 | 16354 | 18404 | 20710 | 1581 | 6517 |
| Garhi Daulat Zai | Garhi Dawaltzai | Garhi Dawalt Zai | 18982 | 2.3 | 29,225 | 30585 | 34268 | 39277 | 44006 | 49305 | 3683 | 15037 |
| Garhi Ismail Zai | Garhi Ismail Zai | Garhi Ismail Zai | 13113 | 2.2 | 19,830 | 20712 | 23093 | 26314 | 29339 | 32711 | 2381 | 9618 |
| Garyala | Garyala | Bhai Khan | 3952 | -2.02 | 2680 | 2573 | 2323 | 2056 | 1856 | 1676 | -250 | -647 |
| | | Garyala | 10232 | 1.68 | 14,051 | 14527 | 15789 | 17449 | 18965 | 20612 | 1262 | 4823 |
| | | Husai | 1815 | 5.31 | 4,849 | 5378 | 6965 | 9501 | 12306 | 15939 | 1587 | 8974 |
| Gujrat | Gujrat | Gujrat | 11241 | 1.83 | 15,877 | 16463 | 18026 | 20098 | 22006 | 24094 | 1563 | 6068 |
| | | Jhungarah | 5988 | 2.18 | 9,013 | 9410 | 10482 | 11930 | 13288 | 14801 | 1072 | 4319 |
| Kot Daulat Zai | Kot Daulat Zai | Kot Daulat Zai | 7175 | 2.64 | 11,762 | 12391 | 14116 | 16504 | 18801 | 21417 | 1725 | 7301 |
| | | Kot Ismail Zai | 6146 | 1.97 | 8,898 | 9252 | 10200 | 11467 | 12641 | 13937 | 948 | 3737 |
| Mangah | Mangah | Bakyana | 4886 | 1.21 | 6,146 | 6296 | 6686 | 7186 | 7632 | 8105 | 390 | 1419 |
| | | Mangah | 9136 | 3.05 | 16,167 | 17168 | 19951 | 23892 | 27765 | 32265 | 2783 | 12314 |
| | | Shekh Yousaf | 7976 | 2.24 | 12,145 | 12695 | 14182 | 16198 | 18096 | 20215 | 1487 | 6033 |
| | Settlements Settlements Settlements Pop Pop | | | | | | | | | | | |
|--------------|---|---------------------------|--------------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) |
| | | Chak Mardan | 10474 | 4.82 | 25,613 | 28142 | 35610 | 47232 | 59766 | 75627 | 7468 | 40017 |
| Mardan | Mardan | Dagai | 309 | 5.46 | 849 | 944 | 1232 | 1695 | 2210 | 2884 | 288 | 1652 |
| | | Mardan | 13467 | 4.82 | 32,960 | 36214 | 45824 | 60780 | 76910 | 97320 | 9610 | 51496 |
| Shah Bazgarh | Shah Bazgarh | Shah Bazgarh | 23087 | 2.56 | 37,295 | 39229 | 44514 | 51804 | 58783 | 66703 | 5285 | 22189 |
| | | Baringon | 1193 | 3.04 | 2,107 | 2237 | 2598 | 3110 | 3612 | 4196 | 361 | 1598 |
| | | Baroch | 2025 | 2.59 | 3,291 | 3464 | 3936 | 4589 | 5215 | 5926 | 472 | 1990 |
| Baroach | Baroach | Pirsai | 2141 | 2.96 | 3,725 | 3949 | 4569 | 5443 | 6297 | 7286 | 620 | 2717 |
| | | Pitao Malandari | 1560 | 2.14 | 2,332 | 2433 | 2705 | 3071 | 3414 | 3795 | 272 | 1090 |
| | | Sori Malndari | 1219 | 1.48 | 1,612 | 1660 | 1787 | 1951 | 2100 | 2260 | 127 | 473 |
| | | Aman Kot | 533 | 0.94 | 637 | 649 | 680 | 719 | 754 | 790 | 31 | 110 |
| D | D | Bazar | 8274 | 3.64 | 16,325 | 17535 | 20967 | 25984 | 31070 | 37152 | 3432 | 16185 |
| Bazar | Bazar | Garho | 951 | 1.88 | 1,355 | 1406 | 1544 | 1726 | 1895 | 2080 | 138 | 536 |
| | | Surkhabi | 2224 | 4.01 | 4,697 | 5081 | 6185 | 7831 | 9532 | 11602 | 1104 | 5417 |
| | | Alai | 4330 | 1.45 | 5,687 | 5853 | 6290 | 6857 | 7369 | 7919 | 437 | 1629 |
| China | China | Landi | 2166 | 2.31 | 3,341 | 3497 | 3920 | 4496 | 5040 | 5649 | 423 | 1729 |
| | | China | 4365 | 2.19 | 6586 | 6878 | 7664 | 8728 | 9727 | 10840 | 786 | 3176 |
| | | Bari Kab | 4432 | 0.94 | 5,295 | 5395 | 5653 | 5980 | 6266 | 6566 | 258 | 913 |
| Kata Khat | Kata Khat | Kata Khat | 9271 | 2.8 | 15661 | 16550 | 19001 | 22425 | 25745 | 29557 | 2451 | 10556 |
| | | Kotar Pan | 5098 | 2.75 | 8,533 | 9009 | 10318 | 12141 | 13905 | 15925 | 1309 | 5607 |
| | | Chak Shewa | 239 | 1 | 289 | 295 | 310 | 329 | 346 | 363 | 15 | 53 |
| | | Chak Sung Bhati | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mashai | Mashai | Chak Taja | 0 | 2.7 | 1,551 | 1636 | 1869 | 2193 | 2505 | 2862 | 233 | 993 |
| IVIACIIA1 | Macnai | Jalal Daulatzai | 1453 | 1.87 | 2,066 | 2144 | 2352 | 2629 | 2884 | 3164 | 208 | 812 |
| | | Jalal Ismail Zai | 904 | 3.12 | 1,622 | 1725 | 2011 | 2418 | 2820 | 3288 | 286 | 1277 |
| | | Machai | 10384 | 2.53 | 16,702 | 17558 | 19894 | 23112 | 26187 | 29672 | 2336 | 9778 |

| | | | 5 | Settlement Wise | Demographic Sta | tistics | | | | | | |
|---------------|----------------|---------------------------|--------------------|-----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) |
| | | Taja | 831 | -0.19 | 801 | 798 | 790 | 781 | 774 | 767 | -8 | -23 |
| | | Urya | 158 | 8.22 | 709 | 830 | 1233 | 1980 | 2939 | 4362 | 403 | 3129 |
| | | Hamza Kot | 1867 | 0.2 | 1,940 | 1948 | 1967 | 1991 | 2011 | 2031 | 19 | 64 |
| Palo Dheri | Palo Dheri | Palo Dheri | 10575 | 2.99 | 18,495 | 19618 | 22731 | 27126 | 31432 | 36420 | 3113 | 13689 |
| | D (| Nodeh | 5275 | 1.72 | 7,297 | 7550 | 8222 | 9108 | 9919 | 10802 | 672 | 2580 |
| Kustam | Rustam | Rustam | 21785 | 2.03 | 31,915 | 33224 | 36736 | 41444 | 45824 | 50668 | 3512 | 13932 |
| | | Chargul | 1350 | 1.71 | 1,862 | 1926 | 2097 | 2321 | 2527 | 2750 | 171 | 653 |
| CI II | | Charguli | 9244 | 3.03 | 16,296 | 17298 | 20083 | 24022 | 27889 | 32378 | 2785 | 12295 |
| Charguli | Surkh Derni Pc | Khairabad | 2599 | 1.75 | 3,615 | 3743 | 4082 | 4530 | 4940 | 5388 | 339 | 1306 |
| | | Surkh Derhi | 6055 | 1.97 | 8,770 | 9119 | 10053 | 11302 | 12460 | 13736 | 934 | 3683 |
| T 1 · A1 1 | Y . A1 1 | Chail | 12934 | 3.93 | 26,920 | 29077 | 35258 | 44433 | 53878 | 65331 | 6181 | 30073 |
| Janangir Abad | Jangir Abad | Jangir Abad | 7039 | 3.14 | 12,654 | 13461 | 15712 | 18914 | 22076 | 25766 | 2251 | 10054 |
| Hattian | Hattian | Hattian | 21455 | 2.82 | 36392 | 38473 | 44213 | 52241 | 60035 | 68991 | 5740 | 24778 |
| Sher Garh | Sher Garh | Sher Garh | 21845 | 2.86 | 37,342 | 39509 | 45491 | 53877 | 62035 | 71428 | 5982 | 25937 |
| I-1-1- | T-1-1- | Jalala | 11335 | 4.29 | 25,175 | 27381 | 33781 | 43463 | 53621 | 66153 | 6400 | 32372 |
| Jaiaia | Jaiaia | Khan Killi | 3236 | 7.52 | 12,830 | 14832 | 21313 | 32930 | 47319 | 67995 | 6481 | 46682 |
| Kat Ianaah | Kat Isaash | Kot Jongarh | 10056 | 3.26 | 18,486 | 19711 | 23140 | 28052 | 32932 | 38662 | 3429 | 15522 |
| Kot Jongarn | Kot Jongarn | Said Abad | 6421 | 2.87 | 10,987 | 11627 | 13394 | 15872 | 18284 | 21063 | 1767 | 7669 |
| Landkhwar | Landkhwar | Lund Khwar | 31671 | 2 | 46,105 | 47968 | 52960 | 59642 | 65849 | 72703 | 4992 | 19743 |
| Dagai | Dagai | Dagai | 1662 | 0.77 | 1,922 | 1952 | 2028 | 2124 | 2207 | 2293 | 76 | 265 |
| | | Dundia | 2179 | 1.94 | 3,142 | 3265 | 3594 | 4034 | 4440 | 4888 | 329 | 1294 |
| | | Kalo | 10096 | 2.88 | 17,315 | 18327 | 21122 | 25045 | 28866 | 33269 | 2795 | 12147 |
| Mian Isa | | Maingano Kali | 2744 | 2.56 | 4437 | 4667 | 5296 | 6163 | 6993 | 7936 | 629 | 2640 |
| | | Main Isa | 6440 | 3.55 | 12,502 | 13405 | 15960 | 19676 | 23425 | 27889 | 2555 | 11929 |
| | | Zarin Abad | 4246 | 0.46 | 4,633 | 4676 | 4784 | 4918 | 5032 | 5149 | 108 | 365 |

| | Settlement Wise Demographic Statistic Irdan UC's PC Settlements (Villages) P998 Population Growth Rate P010 P01 P02 P02 P02 P03 P03 P03 P13 P24 Nari 4 7761 2.08 11.471 11953 1323 14991 16616 18418 1260 5169 Nari Main Kali 1993 2.97 3.475 3684 4265 5084 5885 6812 581 2547 Nari 11271 1.81 15.836 16414 17955 1995 21871 23924 1541 5969 Rahmat Abad 3505 2.51 5.615 5900 6679 7750 8773 9931 779 3252 rkho Derhi Parkho Derhi 11520 2.52 18.480 19423 2197 2540 28924 32757 2574 10760 rkho Derhi Parkho Derhi 11520 2.52 18.480 19423 | | | | | | | | | | | | | |
|---------------|---|---------------------------|--------------------|----------------|--------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-----------------|--|--|
| Mardan UC's | РС | Settlements (Villages) | 1998 Population | Growth Rate | 2017 Population | Pop 2019 | Pop 2024 | Pop 2029 | Pop 2034 | Pop 2039 | Add (24- 19) | Add (39- 24) | | |
| | | Ahmad Abad | 7761 | 2.08 | 11,471 | 11953 | 13249 | 14991 | 16616 | 18418 | 1296 | 5169 | | |
| Nori | Neei | Main Kali | 1993 | 2.97 | 3,475 | 3684 | 4265 | 5084 | 5885 | 6812 | 581 | 2547 | | |
| INAL | INAL | Nari | 11271 | 1.81 | 15,836 | 16414 | 17955 | 19995 | 21871 | 23924 | 1541 | 5969 | | |
| | | Rahmat Abad | 3505 | 2.51 | 5,615 | 5900 | 6679 | 7750 | 8773 | 9931 | 779 | 3252 | | |
| | | Diwan Khel | 3556 | 3.11 | 6,362 | 6764 | 7883 | 9473 | 11041 | 12868 | 1119 | 4985 | | |
| Parkho Derhi | Parkho Derhi | Parkho Derhi | 11520 | 2.52 | 18,480 | 19423 | 21997 | 25540 | 28924 | 32757 | 2574 | 10760 | | |
| | | Shahbat Khel | 8274 | 3.01 | 14,524 | 15412 | 17875 | 21356 | 24769 | 28728 | 2463 | 10853 | | |
| D' C 11 | D' (11 | Pir Saddo | 16196 | 2.34 | 25,125 | 26315 | 29541 | 33939 | 38100 | 42771 | 3226 | 13230 | | |
| Pir Saddo | Pir Saddo | Qutab Garh | 9407 | 3.21 | 17,151 | 18270 | 21396 | 25863 | 30289 | 35472 | 3126 | 14076 | | |
| | | Fateh Abad | 1217 | 2.3 | 1,874 | 1961 | 2197 | 2519 | 2822 | 3162 | 236 | 965 | | |
| | | Feroz Pur | 5557 | 2.07 | 8196 | 8539 | 9460 | 10697 | 11851 | 13130 | 921 | 3670 | | |
| Conschol | Coursela alt | Jamra | 1945 | 2.03 | 2,848 | 2965 | 3278 | 3698 | 4089 | 4521 | 313 | 1243 | | |
| Sarosnan | Sarosnan | Nari | 4335 | 2.48 | 6904 | 7251 | 8195 | 9493 | 10730 | 12128 | 944 | 3933 | | |
| | | Saroshah | 7369 | 2 | 10,736 | 11170 | 12332 | 13888 | 15334 | 16930 | 1162 | 4598 | | |
| | | Shah Baigh | 5310 | 1.17 | 6618 | 6774 | 7179 | 7698 | 8159 | 8648 | 405 | 1469 | | |
| | | Afzal Abad | 5702 | 1.63 | 7,746 | 8001 | 8674 | 9558 | 10363 | 11235 | 673 | 2561 | | |
| C: D -1-1-1 | Corri Doblo1 | Arbi Banda | 7672 | 3.16 | 13851 | 14740 | 17221 | 20755 | 24249 | 28330 | 2481 | 11109 | | |
| Seri Benioi | Seri Benioi | Pir Abad | 3187 | 2.4 | 5,002 | 5245 | 5905 | 6808 | 7666 | 8631 | 660 | 2726 | | |
| | | Siri Behlol | 6098 | 3.39 | 11,480 | 12272 | 14497 | 17708 | 20920 | 24714 | 2225 | 10217 | | |
| | | Akbar Abad | 6732 | 1.92 | 9,655 | 10029 | 11030 | 12363 | 13596 | 14953 | 1001 | 3923 | | |
| Takar | Takar | Fazal Abad | 19640 | 2.63 | 32,145 | 33858 | 38551 | 45048 | 51292 | 58401 | 4693 | 19850 | | |
| | | Takar | 12010 | 2.42 | 18,907 | 19833 | 22352 | 25800 | 29077 | 32770 | 2519 | 10418 | | |
| Gujhar Garhi | Gujhar Garhi | Gujar Garhi | 28169 | 1.97 | 40,817 | 42441 | 46789 | 52600 | 57989 | 63930 | 4348 | 17141 | | |
| Khazana Dheri | Khazana Deri | Khazana Derhi | 12380 | 3.14 | 22,289 | 23711 | 27675 | 33315 | 38885 | 45385 | 3964 | 17710 | | |
| Makuri | Makuri | Makuri | 11719 | 3.11 | 20,959 | 22283 | 25970 | 31209 | 36373 | 42392 | 3687 | 16422 | | |

Annexure 2.

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|----------------|----------------------------------|----------------------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prir | nary | Mie | ldle | Hi Scł | gh 100l | High See Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Deg | ree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| | | ALO | 13 | 13 | 6 | 18 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| ALO | ALO | PIPAL | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 19 | 19 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 14 | 14 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| DADOZAL | DADOZAL | BABOZAI ABAKHEL | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| BABUZAI | BABUZAI | BABOZAI BARATKHEL | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total CHERCHOR | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DHERI | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| DHERI | DHERI | JANGI DHER | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | КОТКІ | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | LAK PANI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 19 | 19 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 14 | 14 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| JAMAL GARHI | JAMAL GARHI | JAMAL GARHI | 16 | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 16 | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | KATI GARHI | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| KATI GARHI | KATI GARHI GARHI GARHI SHAMSI | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | GARHI GARHI SHERO | | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| KATLAN G | KATLAN KATLAN G G KATLANG | | | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | 21 | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 | |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|--------|---------------------------|-------------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|-----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prii | nary | Mie | ldle | Hi Sch | gh 100l | High See Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Scł | gh 100l | High See Sch | condary 1001 | Deg | ;ree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| KHARKI | KHARKI | KHARKI | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| VOIII | KOIII | BARMOLA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| КОНІ | КОНІ | КОНІ | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | KUNJ | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KUNJ | KUNJ | SHAKARTANGI | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 8 | 8 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| MIAN | MIAN | MAIN KHAN | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| KHAN | KHAN | SANGAO | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | GHAZI BABA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OASMAI | OASMAL | QASMAI | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| QASMAI | QASMAI | SAROBI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TAZA GRAM | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 17 | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| SAWAL | Total SAWAL SAWAL BILANDI | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| DHER | DHER | SAWAL DIR | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 21 | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| SHAMOZ | SHAMOZ | MATODIGRAM | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| AI | AIPC | SHAMOZAI | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| Total | | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|-----------------|--|-------------------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prin | nary | Mic | ldle | Hi Scł | gh 100l | High See Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Scl | igh 100l | High Se Sch | condary 1001 | Deg | ŗree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| ALLAH DAD | ALLAH DAD | ALLAH DAD KHEL | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| KHEL | KHEL | TAUS BANDA | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 16 | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| Baghe e | BAGH-E- | BAGH-E-ARAM | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aram | ARAM | KOROUGH | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total Chak CHAK CHAK SHABAA | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Chak Shabbaz | Total Chak CHAK Shahbaz SHABAZ CHAK SHABAZ | | | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Garhi | GARHI | KOZ BAND | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| MOHIB BANDA | MOHIB BANDA | MOHIB BANDA | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | BHAGO BANDA | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | CHAUKI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| GHALA | GHALA | GALA DHER | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| DER | DER | КАНО | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | KHAT | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PANJTAR | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| Cumbat | Cumbat CUMPAT GADDAR | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Guinnat | Gumbat GUMBAT GUMBAT | | | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |

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|---------|-----------------------------------|----------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prir | nary | Mie | ddle | Hi Sch | gh 100l | High Se Sch | condary 1001 | Deg | gree | Prin | nary | Mio | ldle | Hi Scł | gh 100l | High See Sch | condary ool | Deg | gree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| Hoti | ноті | HOTI | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | KHANDAR | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Khandar | KHANDA R | QASAM | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SHAREF ABAD | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | BAKRI BANDA | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| Maho | МАНО | KHANJAR | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| Derhi | DERHI | KHWAJA RASHKI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | MAHO DERHI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 16 | 16 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| Mayar | MAYAR | MAYAR | 23 | 23 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | Total | | 23 | 23 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | AMIN ABAD | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BAHRAM KHAN KILII | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Mohabat | МОНАВА | KHURA BANDA | 8 | 8 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Abad | Abad DT ABAD MOHABAT ABAD ABAD | | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | PLATOO | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SURKH DHERI | | | | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 34 | 34 | 16 | 16 | 5 | 20 | 2 | 20 | 0 | 0 | 26 | 26 | 4 | 8 | 5 | 20 | 1 | 10 | 0 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | |

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|---------------|---------------|------------------|-----------|----------|-----------|----------|-----------|-----------|-----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Priı | nary | Mie | ldle | Hi Sch | gh ool | High See Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Deg | ree |
| | | (villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| | | AKBAR PURA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shamat Pur | SHAMAD PUR | MANI KHEL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAMAT PUR | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 12 | 12 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| Toru | TOPU | CHAK TORU | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Toru | TOKU | TORU | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 25 | 25 | 12 | 12 | 4 | 16 | 2 | 20 | 0 | 0 | 19 | 19 | 3 | 6 | 4 | 16 | 1 | 10 | 0 | 0 |
| | | BABIAN | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Bahiani | BARIANI | CHARBANDA | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Dabiani | DADIANI | JORI BANDA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KOTI NAKA | 8 | 8 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 24 | 24 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 18 | 18 | 3 | 6 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | AKBAR ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAGH | BAGH | BAGH DADA | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| DAD | DADA | CHAMTRA DERHI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | RAKH SARKAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 18 | 18 | 8 | 8 | 3 | 12 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| BAKSHAL | BAKSHAL | BAKHSHALI | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| I | Ι | KAKI DEHRI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| BALA | BALA | BALA GARHI | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| GARHI | GARHI | CHAM DERHI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|------------------------|---|---------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prii | nary | Mio | ldle | Hi Sch | gh Iool | High Se Sch | condary lool | Deg | gree | Prin | nary | Mio | ldle | Hi Sch | gh 100l | High See Sch | condary ool | Deg | gree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| | | FATIMA | 12 | 12 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | ТАТІМА | GADAR | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| FAIIMA | FAIIMA | HAMZA KHAN | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | QAZI ABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 25 | 25 | 12 | 12 | 4 | 16 | 2 | 20 | 0 | 0 | 19 | 19 | 3 | 6 | 4 | 16 | 1 | 10 | 0 | 0 |
| BAGHEC HA DERHI | AGHEC BAGHEC HA HA DERHI DERHI DERHI GARHI GARHI CARHI DAWAI | | | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | HA HA DERHI DERHI DERHI DERHI Total | | | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| GARHI DAULAT ZAI | IIA IIA DERHI DERHI DERHI Total GARHI GARHI GARHI DAULAT DAWALT ZAI ZAI | | | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 17 | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| GARHI ISMAIL ZAI | GARHI ISMAIL ZAI | GARHI ISMAIL ZAI | 12 | 12 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 12 | 12 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | BHAI KHAN | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GARYAL A | GARYAL A | GARYALA | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | A A GARYALA HUSAI | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| CUIDAT | UIRAT GUIRAT GUIRAT | | | | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| GUJKAI | GUJKAI | JHUNGARAH | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 14 | 14 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | |

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|---------------------|---------------------|--------------------|-----------|----------|-----------|----------|-----------|------------|----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prii | nary | Mie | ldle | Hi Sch | gh Iool | High Se Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Scł | igh 100l | High Se Sch | condary lool | Deg | ree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| KOT DAULAT | KOT DAULAT | KOT DAULAT ZAI | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| ZAI | ZAI | KOT ISMAIL ZAI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | BAKYANA | 3 | 3 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| MANGAH | MANGAH | MANGAH | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SHEKH YOUSAF | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 20 | 20 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 15 | 15 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | CHAK MARDAN | 16 | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| MARDAN | MARDAN | DAGAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MARDAN | 20 | 20 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 15 | 15 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | Total | | 36 | 36 | 17 | 17 | 5 | 20 | 2 | 20 | 0 | 0 | 27 | 27 | 4 | 8 | 5 | 20 | 1 | 10 | 0 | 0 |
| SHAH BAZGAR H | SHAH BAZGAR H | SHAH BAZGARH | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | Total | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | BARINGON | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BAROCH | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAROAC | BAROAC | PIRSAI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| п | п | PITAO MALANDARI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SORI MALNDARI | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | | | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|--------------|----------------------------|---------------------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prir | nary | Mie | ldle | Hi Sch | gh 100l | High See Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Scł | igh 100l | High Se Sch | condary 1001 | Deg | ree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| | | AMAN KOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DAZAD | DAZAD | BAZAR | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| BAZAK | BAZAK | GARHO | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKHABI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | ALAI | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHINA | CHINA CHINA LANDI CHINA | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total BARI KAB | | | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KATA KHAT | КАТА КНАТ | KATA KHAT | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | KOTAR PAN | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 17 | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | CHAK SHEWA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAK SUNG BHATI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | СНАК ТАЈА | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| МАСНАІ | MACHAI MACHAI DAULATZAI | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | JALAL ISMAIL ZAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MACHAI | | | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | ТАЈА | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | URYA | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|---|--------------------------|-------------|-----------|----------|-----------|----------|-----------|------------|-----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prii | nary | Mie | ldle | Hi Sch | gh 100l | High See Sch | condary ool | Deg | gree | Prin | nary | Mic | ldle | Hi Scł | gh 100l | High Se Sch | condary lool | Deg | ;ree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| PALO | PALO | HAMZA KOT | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DHERI | DHERI | PALO DHERI | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| DUCTAN | DUCTAN | NODEH | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| RUSTAM | RUSTAM | RUSTAM | 18 | 18 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 14 | 14 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| | Total CHARGUL | | 23 | 23 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | Total CHARGUL | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHARGU | SURKH | CHARGULI | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| LI | DERHI PC | KHAIRABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKH DERHI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 18 | 18 | 8 | 8 | 3 | 12 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| JAHANGI | JANGIR | CHAIL | 16 | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| R ABAD | ABAD | JANGIR ABAD | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 24 | 24 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 18 | 18 | 3 | 6 | 3 | 12 | 1 | 10 | 0 | 0 |
| HATTIAN | HATTIAN | HATTIAN | 21 | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | Total | | 21 | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| Total SHER SHER GARH GARH | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 | |
| | Total | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | JALALA | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| JALALA | JALALA JALALA KHAN KILLI | | | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | 23 | 23 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 18 | 18 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 | | |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|---|-----------------|------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prii | nary | Mie | ldle | Hi Sch | gh 100l | High Se Sch | condary 1001 | Deg | gree | Prin | nary | Mic | ldle | Hi Scł | gh 100l | High Se Sch | condary 1001 | Deg | çree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| KOT | KOT | KOT JONGARH | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| JONGAR | JONGAK H | SAID ABAD | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Total | | | 17 | 17 | 8 | 8 | 3 | 12 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| LANDKH LANDKH WAR WAR LUND KHWAR | | | | 27 | 12 | 12 | 4 | 16 | 2 | 20 | 0 | 0 | 20 | 20 | 3 | 6 | 4 | 16 | 1 | 10 | 0 | 0 |
| WAR WAR LOND KINWAR Total Total | | | 27 | 27 | 12 | 12 | 4 | 16 | 2 | 20 | 0 | 0 | 20 | 20 | 3 | 6 | 4 | 16 | 1 | 10 | 0 | 0 |
| DAGAI | DAGAI | DAGAI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DUNDIA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KALO | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| MIAN ISA | Mian ISA | MAINGANO KALI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MAIN ISA | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | ZARIN ABAD | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 25 | 25 | 11 | 11 | 4 | 16 | 1 | 10 | 0 | 0 | 18 | 18 | 3 | 6 | 4 | 16 | 1 | 10 | 0 | 0 |
| | | AHMAD ABAD | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| NADI | NADI | MAIN KALI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MARI | MARI | NARI | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | RAHMAT ABAD | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 21 | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 | |
| DAD | B / B | DIWAN KHEL | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| PARKHO DERHI | PARKHO DERHI | PARKHO DERHI | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | SHAHBAT KHEL | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 23 | 23 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|------------------------|-----------------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|----------------|-----------|----------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | РС | Settlements | Prir | nary | Mie | ldle | Hi Sch | gh Iool | High Se Sch | condary ool | Deg | gree | Prin | nary | Mid | ldle | Hi Sch | gh 100l | High Se Sch | condary ool | Deg | ree |
| UC | | (Villages) | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea |
| PIR | PIR | PIR SADDO | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| SADDO | SADDO | QUTAB GARH | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 25 | 25 | 11 | 11 | 4 | 16 | 1 | 10 | 0 | 0 | 19 | 19 | 3 | 6 | 4 | 16 | 1 | 10 | 0 | 0 |
| | FATEH ABAD | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| FEROZ PUR | | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| SAROSHA | SAROSHA | JAMRA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Н | Н | NARI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SAROSHAH | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SHAH BAIGH | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 21 | 21 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | AFZAL ABAD | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| SERI | SERI | ARBI BANDA | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| BEHLOL | BEHLOL | PIR ABAD | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SIRI BEHLOL | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | Total | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | | AKBAR ABAD | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| TAKAR TAKAR FAZAL ABAD | | FAZAL ABAD | 19 | 19 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 14 | 14 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 |
| | | TAKAR | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 35 | 35 | 16 | 16 | 5 | 20 | 2 | 20 | 0 | 0 | 27 | 27 | 4 | 8 | 5 | 20 | 1 | 10 | 0 | 0 |
| GUJHAR GARHI | GUJHAR GARHI | GUJAR GARHI | 24 | 24 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 18 | 18 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |
| | Total | | 24 | 24 | 11 | 11 | 3 | 12 | 1 | 10 | 0 | 0 | 18 | 18 | 2 | 4 | 3 | 12 | 1 | 10 | 0 | 0 |

| | | | | | | | | | 2019 |) | | | | | | | | | | | | |
|---|---|------------------|----------|-----------|----------|-----------|-----------|-------------|-----------------|-----------------|----------|-----------|----------|-----------|----------|-----------|-----------|------------|----------------|-----------------|----------|-----|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Girl | s Educ | ation | | | |
| Mardan | Mardan UC PC Settlements (Villages) | | | | Mic | ldle | Hi Scł | igh 100l | High See Sch | condary lool | Deg | gree | Prir | nary | Mic | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Deg | ree |
| UC PC Settlements (Villages) | | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Uni ts | Ar ea | Units | Area | Uni ts | Ar ea | |
| KHAZAN KHAZAN KHAZANA A DHERI A DERI DERHI | | KHAZANA DERHI | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| A DHERI A DERI DERHI Total | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 | |
| MAKURI | MAKURI | MAKURI | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | Total | | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |

Annexure 3.

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|----------------|-------------|----------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Gi | rl Scho | ools | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ldle | Hi Scł | igh 100l | High Se Sch | condary 100l | Deg | gree | Prin | nary | Mie | ldle | Hi Scł | igh 100l | High Se Sch | condary 1001 | Deg C | gree Ig |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| 410 | 41.0 | ALO | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ALO | ALO | PIPAL | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DADOZAJ | DADOZAL | BABOZAI ABAKHEL | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BABUZAI | BABUZAI | BABOZAI BARATKHEL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHERCHOR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DHERI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DHERI | DHERI | JANGI DHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | КОТКІ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | LAK PANI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| JAMAL GARHI | JAMAL GARHI | JAMAL GARHI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KATI GARHI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KATI GARHI | KATI GARHI | SHAMSI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHERO | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KATLANG | KATLANG | KATLANG | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KHARKI | KHARKI | KHARKI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|-------------------|-------------------|-------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|----------------|-----------|------------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ldle | Hi Sch | igh 100l | High Se Sch | condary 100l | Deg | gree | Prir | nary | Mie | ldle | Hi Scł | gh 100l | High Se Sch | condary ool | Deg C | gree lg |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KOIII | VOUI | BARMOLA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| кон | KUHI | КОНІ | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KUNJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KUNJ | KUNJ | SHAKARTANG I | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MIAN KHAN | MIAN KHAN | MAIN KHAN | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SANGAO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | GHAZI BABA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OASMAI | OASMAI | QASMAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| QASMAI | QASMAI | SAROBI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TAZA GRAM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SAWAL | SAWAI DHED | BILANDI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DHER | SAWAL DHEK | SAWAL DIR | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SHAMOZAL | SHAMOZALDC | MATODIGRAM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SHAWOLAI | SHAWOZAI FC | SHAMOZAI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ALLAH DAD KHEL | ALLAH DAD KHEL | ALLAH DAD KHEL | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|-----------------------|-------------------------|----------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ldle | Hi Scl | igh 100l | High Se Sch | condary 100l | Deg | gree | Prir | nary | Mi | ddle | Hi Scł | igh 100l | High Se Sch | condary ool | Deg C | gree lg |
| | | (villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | TAUS BANDA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacha a Amana | BAGH-E- | BAGH-E-ARAM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bagne e Aram | ARAM | KOROUGH | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chak Shahbaz Garhi | CHAK SHABAZ GARHI | CHAK SHABAZ GARHI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KOZ BAND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MOHIB BANDA | MOHIB BANDA | MOHIB BANDA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BHAGO BANDA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAUKI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GHALA DER | GHALA DER | GALA DHER | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | - | КАНО | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | КНАТ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | PANJTAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gumbat | GUMBAT | GADDAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | GUMBAT | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | T | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hoti | HOTI | HOTI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|--------------|--|----------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mio | ldle | Hi Sch | gh 100l | High Se Sch | condary 100l | Deg | gree | Prin | nary | Mie | ldle | Hi Sch | igh hool | High Se Sch | condary lool | Deg C | gree lg |
| | | (villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | KHANDAR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Khandar | KHANDAR | QASAM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAREF ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maho Derhi | | BAKRI BANDA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KHANJAR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MAHO DERHI KHWAJA RASHKI MAHO DERH | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | RASHKI MAHO DERH | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mayar | MAYAR | MAYAR | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | AMIN ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BAHRAM KHAN KILII | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mohahat Ahad | MOHABADT | KHURA BANDA | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| Wonabat Abau | ABAD | MOHABAT ABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | PLATOO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKH DHERI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 17 | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 4 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | AKBAR PURA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shamat Pur | SHAMAD PUR | MANI KHEL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAMAT PUR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|-----------------------|------------|------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Sch | gh 100l | High Se Sch | condary lool | Deg | gree | Prir | nary | Mie | ddle | Hi Sch | igh 100l | High Se Sch | condary lool | Deg C | ;ree lg |
| | | (vinages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| Tom | TOBU | CHAK TORU | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1010 | TORU | TORU | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BABIAN | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Babiani | BARIANI | CHARBANDA | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dablalli | DADIANI | JORI BANDA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KOTI NAKA | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | AKBAR ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BACHDAD | | BAGH DADA | 3 | 3 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| BAGH DAD | BAGH DADA | CHAMTRA DERHI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | RAKH SARKAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| BAKSHALI | BAKSHALI | BAKHSHALI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KAKI DEHRI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BALA GARHI | BALA GARHI | BALA GARHI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BALA GARHI BALA GARHI | | CHAM DERHI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FATIMA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FATIMA | FATIMA | GADAR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HAMZA KHAN | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | QAZI ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|---------------------|-------------------------------|---------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|-------------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Gi | rl Scho | ools | | | |
| Mardan UC | PC | Settlements | Prir | nary | Mie | ddle | Hi Scl | igh 100l | High Se Scł | condary 100l | Deg | gree | Prir | nary | Mi | ldle | Hi Scł | igh 100l | High Se Scł | condary lool | Deg C | gree 'lg |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | · | · | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAGHECHA DERHI | BAGHECHA DERHI | BAGHECHA DERHI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GARHI DAULAT ZAI | GARHI DAWALTZAI | GARHI DAWALT ZAI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GARHI ISMAIL ZAI | GARHI ISMAIL ZAI | GARHI ISMAIL ZAI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BHAI KHAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GARYALA | GARYALA | GARYALA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HUSAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | · | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CUUDAT | | GUJRAT | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GUJKAT | GUJRAT | JHUNGARAH | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| КОТ | KOT DAULAT | KOT DAULAT ZAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DAULAT ZAI | ZAI | KOT ISMAIL ZAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BAKYANA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MANGAH | MANGAH | MANGAH | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MANGAH MANGAH SHEKH YOUSAF | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|-----------------|-----------------|--------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|----------------|-----------|------------|
| | | | | | | | Bo | ys Sch | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mi | ddle | Hi Scł | igh 100l | High Se Sch | condary 100l | Deg | gree | Prir | nary | Mie | ldle | Hi Scł | igh 100l | High Se Sch | condary ool | Deg C | ;ree lg |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | CHAK MARDAN | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| MARDAN | MARDAN | DAGAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MARDAN | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| SHAH BAZGARH | SHAH BAZGARH | SHAH BAZGARH | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BARINGON | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BAROCH | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAROACH | BAROACH | PIRSAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | PITAO MALANDARI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SORI MALNDARI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | AMAN KOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PAZAD | DAZAD | BAZAR | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DALAN | DALAK | GARHO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKHABI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | ALAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHINA | CHINA | LANDI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHINA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| КАТА КНАТ | KATA KHAT | BARI KAB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|---------------|-------------|---------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ools | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ldle | Hi Scł | igh 100l | High Se Scł | condary 100l | Deg | gree | Prir | nary | Mie | ddle | Hi Scł | igh hool | High Se Sch | condary 100l | Deg C | gree lg |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | KATA KHAT | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KOTAR PAN | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAK SHEWA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAK SUNG BHATI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | СНАК ТАЈА | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MACHAI | MACHAI | JALAL DAULATZAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| - | - | JALAL ISMAIL ZAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MACHAI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | ТАЈА | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | URYA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PALO DHERI | PALO DHERI | HAMZA KOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | PALO DHERI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RUSTAM | RUSTAM | NODEH | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RUSTAM RUSTAM | RUSTAM | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHARGUL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHARGIUI | SURKH DERHI | CHARGULI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHARGULI | РС | KHAIRABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKH DERHI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|---------------|-------------|------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ldle | Hi Scł | igh 100l | High Se Sch | condary 100l | Deg | gree | Prin | nary | Mie | ldle | Hi Scł | gh 100l | High Se Sch | condary 1001 | Deg C | gree lg |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| JAHANGIR | | CHAIL | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ABAD | JANGIK ABAD | JANGIR ABAD | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| HATTIAN | HATTIAN | HATTIAN | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SHER GARH | SHER GARH | SHER GARH | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | JALALA | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| JALALA | JALALA | KHAN KILLI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 1 | 4 | 0 | 0 | 0 | 0 |
| кот | кот | KOT JONGARH | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| JONGARH | JONGARH | SAID ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LANDKHWA R | LANDKHWAR | LUND KHWAR | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DAGAI | DAGAI | DAGAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DUNDIA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KALO | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MIAN ISA | MIAN ISA | MAINGANO KALI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MAIN ISA | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|-----------------|-----------------|-----------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ddle | Hi Scł | igh 100l | High Se Scł | condary 100l | Deg | gree | Prir | nary | Mi | ddle | Hi Scł | igh hool | High Se Sch | condary 1001 | Deg C | gree lg |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | ZARIN ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | AHMAD ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MAIN KALI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NARI | NARI | NARI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | RAHMAT ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DIWAN KHEL | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PARKHO DERHI | PARKHO DERHI | PARKHO DERHI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAHBAT KHEL | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PIP SADDO | PIP SADDO | PIR SADDO | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | TIK SADDO | QUTAB GARH | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | FATEH ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FEROZ PUR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SAROSHAH | SAROSHAH | JAMRA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sintosinin | bintobinin | NARI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAROSHAH | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAH BAIGH | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | - | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SERI BEHLOL | AFZAL ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2024 | | | | | | | | | | | | | |
|------------------|-----------------|------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|------------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Scł | igh 100l | High Se Sch | condary lool | De | gree | Prir | nary | Mio | ldle | Hi Sch | igh 100l | High Se Sch | condary 100l | Deg C | gree Ig |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | ARBI BANDA | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SERI BEHLOL | | PIR ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SIRI BEHLOL | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | AKBAR ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TAKAR | TAKAR | FAZAL ABAD | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | TAKAR | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| GUJHAR GARHI | GUJHAR GARHI | GUJAR GARHI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KHAZANA DHERI | KHAZANA DERI | KHAZANA DERHI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MAKURI | MAKURI | MAKURI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Annexure 4.

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|----------------|-------------|----------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ddle | Hi Scł | igh 100l | High Se Sch | condary ool | Deg co | gree llg | Prin | nary | Mic | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Geg | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| 41.0 | | ALO | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| ALO | ALO | PIPAL | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | · | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| DADOZAL | DADOZAL | BABOZAI ABAKHEL | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DADUZAI | DADUZAI | BABOZAI BARATKHEL | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | CHERCHOR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DHERI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| DHERI | DHERI | JANGI DHER | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | КОТКІ | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | LAK PANI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| JAMAL GARHI | JAMAL GARHI | JAMAL GARHI | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | KATI GARHI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KATI GARHI | KATI GARHI | SHAMSI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHERO | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| KATLANG | KATLANG | KATLANG | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| KHARKI | KHARKI | KHARKI | 8 | 8 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|-----------|-------------|-------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Deg co | gree llg | Prin | nary | Mio | ldle | Hi Sch | gh 1001 | High Se Sch | condary lool | Geg | gree |
| | | (villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | | 8 | 8 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| KOIII | KOUI | BARMOLA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KOHI | КОНІ | КОНІ | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| KUNI | KUNI | KUNJ | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KONJ | KONJ | SHAKARTANGI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MIAN KHAN | ΜΙΔΝ ΚΗΔΝ | MAIN KHAN | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SANGAO | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | GHAZI BABA | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OASMAI | OASMAI | QASMAI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| QADMAI | QASMAI | SAROBI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | TAZA GRAM | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 12 | 12 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| SAWAL | SAWAI DHFR | BILANDI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| DHER | SATURE DILK | SAWAL DIR | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| SHAMOZAI | SHAMOZALPC | MATODIGRAM | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| SHAWOZAI | SHAWOZATTC | SHAMOZAI | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| ALLAH DAD | ALLAH DAD | ALLAH DAD KHEL | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| KHEL | KHEL | TAUS BANDA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|-----------------------|----------------------|----------------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Sch | gh 100l | High Se Sch | condary 100l | Deg co | gree llg | Prin | nary | Mic | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Geg | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| Desha a Array | BAGH-E- | BAGH-E-ARAM | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| Bagne e Aram | ARAM | KOROUGH | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| Chak Shahbaz Garhi | CHAK SHABAZ GARHI | CHAK SHABAZ GARHI | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | -1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | KOZ BAND | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| MOHIB BANDA | MOHIB BANDA | MOHIB BANDA | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | BHAGO BANDA | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAUKI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| GHALA DER | GHALA DER | GALA DHER | 5 | 5 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | КАНО | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | КНАТ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | PANJTAR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| Gumbat | GUMBAT | GADDAR | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Guindut | Genillini | GUMBAT | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | 1 | | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| Hoti | HOTI | HOTI | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| Khandar | KHANDAR | KHANDAR | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|--------------|------------|----------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ddle | Hi Scł | igh 100l | High Se Sch | condary ool | Deg co | gree llg | Prin | nary | Mio | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Geg | gree |
| | | (villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | QASAM | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SHAREF ABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| Maho Derhi | | BAKRI BANDA | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KHANJAR | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MAHO DERHI | KHWAJA RASHKI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MAHO DERHI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| Mayar | MAYAR | MAYAR | 14 | 14 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | | 14 | 14 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | AMIN ABAD | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | BAHRAM KHAN KILII | 17 | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| Mohabat Abad | MOHABADT | KHURA BANDA | 171 | 17 1 | 79 | 79 | 25 | 10 0 | 10 | 100 | 1 | 15 | 129 | 12 9 | 18 | 18 | 25 | 10 0 | 4 | 16 | 1 | 15 |
| | ABAD | MOHABAT ABAD | 14 | 14 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | PLATOO | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKH DHERI | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | 1 | | 216 | 21 6 | 100 | 10 0 | 31 | 12 4 | 13 | 130 | 1 | 15 | 162 | 16 2 | 23 | 23 | 31 | 12 4 | 6 | 24 | 1 | 15 |
| | | AKBAR PURA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shamat Pur | SHAMAD PUR | MANI KHEL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAMAT PUR | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | 1 | 1 | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| Toru | TORU | CHAK TORU | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|----------------|-----------------------|------------------|-----------|----------|-----------|----------|-----------|------------|----------------|----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Sch | gh 100l | High Se Sch | condary ool | Deg co | gree llg | Prin | nary | Mic | ldle | Hi Scł | gh 100l | High Se Sch | condary lool | Geș | gree |
| | | (villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | TORU | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | BABIAN | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Babiani | BARIANI | CHARBANDA | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| Datitalli | DADIANI | JORI BANDA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | KOTI NAKA | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| | | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | AKBAR ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RACILDAD | BACUDADA | BAGH DADA | 19 | 19 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 14 | 14 | 2 | 2 | 3 | 12 | 0 | 0 | 0 | 0 |
| BAGH DAD | BAGH DADA | CHAMTRA DERHI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | RAKH SARKAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 16 | 16 | 2 | 2 | 3 | 12 | 1 | 4 | 0 | 0 |
| DAVSUALI | DAVSHALI | BAKHSHALI | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| DAKSHALI | BARSHALI | KAKI DEHRI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| BALA GARHI | BALA GARHI | BALA GARHI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| DALA GARII | DALA OAKIII | CHAM DERHI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | FATIMA | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| FATIMA | FATIMA | GADAR | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 / 1 1 100/ 1 | 1 / 1 1 1 1 1 / 1 / 1 | HAMZA KHAN | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | QAZI ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|---------------------|---------------------|---------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Scł | igh 1001 | High Se Sch | condary lool | Deg co | gree llg | Prin | nary | Mie | ldle | Hi Scł | gh 100l | High Se Sch | condary lool | Geş | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| BAGHECHA DERHI | BAGHECHA DERHI | BAGHECHA DERHI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| GARHI DAULAT ZAI | GARHI DAWALTZAI | GARHI DAWALT ZAI | 8 | 8 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 8 | 8 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| GARHI ISMAIL ZAI | GARHI ISMAIL ZAI | GARHI ISMAIL ZAI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | BHAI KHAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GARYALA | GARYALA | GARYALA | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | HUSAI | 5 | 5 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | · | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| CLUD AT | | GUJRAT | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GUJRAT | GUJRAT | JHUNGARAH | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| КОТ | KOT DAULAT | KOT DAULAT ZAI | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| DAULAT ZAI | ZAI | KOT ISMAIL ZAI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | BAKYANA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MANGAH | MANGAH | MANGAH | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SHEKH YOUSAF | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| MARDAN | MARDAN | CHAK MARDAN | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 2 | 3 | 12 | 1 | 4 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|-----------------|-----------------|--------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Priı | nary | Mie | ddle | Hi Sch | igh 100l | High Se Sch | condary 100l | Deg co | gree llg | Prin | nary | Mic | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Geg | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | DAGAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MARDAN | 29 | 29 | 13 | 13 | 4 | 16 | 2 | 20 | 0 | 0 | 21 | 21 | 3 | 3 | 4 | 16 | 1 | 4 | 0 | 0 |
| | | · | 52 | 52 | 24 | 24 | 8 | 32 | 3 | 30 | 0 | 0 | 39 | 39 | 5 | 5 | 8 | 32 | 1 | 4 | 0 | 0 |
| SHAH BAZGARH | SHAH BAZGARH | SHAH BAZGARH | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | BARINGON | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | BAROCH | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAROACH | BAROACH | PIRSAI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | PITAO MALANDARI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SORI MALNDARI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | AMAN KOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAZAR | BAZAR | BAZAR | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| DALAK | DALAK | GARHO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SURKHABI | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 12 | 12 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 9 | 9 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | ALAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHINA | CHINA | LANDI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHINA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| ката кнат | ката кнат | BARI KAB | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KATA KHAT | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|----------------------|---|--------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prin | nary | Mie | ddle | Hi Sch | igh 100l | High Se Sch | condary lool | Deg co | gree llg | Prin | nary | Mie | ldle | Hi Sch | gh 1001 | High Se Sch | condary ool | Geg | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | KOTAR PAN | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | • | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | CHAK SHEWA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAK SUNG BHATI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CHAK TAJA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MACHAI | JALAL DAULATZAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | JALAL ISMAIL ZAI | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | MACHAI | 5 | 5 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | TAJA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | URYA | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | DALO DHERI | HAMZA KOT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FALO DHERI | FALO DHEKI | PALO DHERI | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| DUCTAM | DUSTAM | NODEH | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RUSTAM RUSTAM RUSTAM | | | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| CHARGUL | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHARCULI | CHARGULI | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| CHARGULI | CHARGULI SURKH DERHI CHARGULI PC KHAIRABAD | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SURKH DERF | | | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|---------------|-------------|------------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Scł | igh 100l | High Se Sch | condary 100l | Deg co | gree llg | Prin | nary | Mie | ldle | Hi Sch | gh 100l | High Se Sch | condary lool | Geş | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| JAHANGIR | | CHAIL | 17 | 17 | 8 | 8 | 2 | 8 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| ABAD | JANGIK ADAD | JANGIR ABAD | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 22 | 22 | 10 | 10 | 3 | 12 | 1 | 10 | 0 | 0 | 17 | 17 | 2 | 2 | 3 | 12 | 1 | 4 | 0 | 0 |
| HATTIAN | HATTIAN | HATTIAN | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | · | | 14 | 14 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| SHER GARH | SHER GARH | SHER GARH | 14 | 14 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | | 14 | 14 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | JALALA | 18 | 18 | 8 | 8 | 3 | 12 | 1 | 10 | 0 | 0 | 13 | 13 | 2 | 2 | 3 | 12 | 0 | 0 | 0 | 0 |
| JALALA | JALALA | KHAN KILLI | 26 | 26 | 12 | 12 | 4 | 16 | 2 | 20 | 0 | 0 | 19 | 19 | 3 | 3 | 4 | 16 | 1 | 4 | 0 | 0 |
| | | | 44 | 44 | 20 | 20 | 6 | 24 | 3 | 30 | 0 | 0 | 33 | 33 | 5 | 5 | 6 | 24 | 1 | 4 | 0 | 0 |
| КОТ | KOT IONCADU | KOT JONGARH | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| JONGARH | KUT JUNGARH | SAID ABAD | 4 | 4 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 13 | 13 | 6 | 6 | 2 | 8 | 1 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| LANDKHWA R | LANDKHWAR | LUND KHWAR | -11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| DAGAI | DAGAI | DAGAI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | DUNDIA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | KALO | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| MIAN ISA | Mian ISA | MAINGANO KALI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | MAIN ISA | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | ZARIN ABAD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | 2039 | | | | | | | | | | | | | |
|-----------------|-----------------|-----------------|-----------|----------|-----------|----------|-----------|-------------|----------------|-----------------|-----------|-------------|-----------|----------|-----------|----------|-----------|------------|----------------|-----------------|-----------|----------|
| | | | | | | | Bo | ys Scho | ools | | | | | | | | Gi | rl Scho | ols | | | |
| Mardan UC | РС | Settlements | Prir | nary | Mie | ddle | Hi Scł | igh 100l | High Se Sch | condary Iool | Deg co | gree llg | Prin | nary | Mic | ldle | Hi Scł | gh 100l | High Se Sch | condary lool | Geg | gree |
| | | (Villages) | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea |
| | | · | 16 | 16 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 12 | 12 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | AHMAD ABAD | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| N/ DI | | MAIN KALI | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NARI | NARI | NARI | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | RAHMAT ABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | DIWAN KHEL | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PARKHO DERHI | PARKHO DERHI | PARKHO DERHI | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | SHAHBAT KHEL | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | PIR SADDO | 7 | 7 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| FIK SADDO | FIK SADDO | QUTAB GARH | 8 | 8 | 4 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 6 | 6 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| | | | 15 | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 |
| | | FATEH ABAD | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | FEROZ PUR | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SAROSHAH | SAROSHAH | JAMRA | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SAROSIIAII | SAROSHAII | NARI | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SAROSHAH | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | SHAH BAIGH | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| SERI BEHLOI | SERI BEHLOI | AFZAL ABAD | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SERT DEFIEOE | SERT DEFILOE | ARBI BANDA | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 |
| 2039 | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|-----------------|---------------------------|--------------|----------|-----------|----------|----------------|----------|--------------------------|------|-----------------|----------|-----------|--------------|-----------|----------|----------------|----------|--------------------------|------|-----------|----------|--|
| Mardan UC | РС | Settlements (Villages) | Boys Schools | | | | | | | | | | | Girl Schools | | | | | | | | | |
| | | | Primary | | Middle | | High School | | High Secondary School | | Degree collg | | Primary | | Middle | | High School | | High Secondary School | | Gegree | | |
| | | | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Un its | Ar ea | Units | Area | Un its | Ar ea | |
| | | PIR ABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | SIRI BEHLOL | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| | | | | 15 | 7 | 7 | 2 | 8 | 1 | 10 | 0 | 0 | 11 | 11 | 2 | 2 | 2 | 8 | 0 | 0 | 0 | 0 | |
| TAKAR | TAKAR | AKBAR ABAD | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | FAZAL ABAD | 11 | 11 | 5 | 5 | 2 | 8 | 1 | 10 | 0 | 0 | 8 | 8 | -1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 | |
| | | TAKAR | 6 | 6 | 3 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| | | | 19 | 19 | 9 | 9 | 3 | 12 | 1 | 10 | 0 | 0 | 14 | 14 | 2 | 2 | 3 | 12 | 0 | 0 | 0 | 0 | |
| GUJHAR GARHI | GUJHAR GARHI | GUJAR GARHI | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| | | | 10 | 10 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| KHAZANA DHERI | KHAZANA DERI | KHAZANA DERHI | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| | | | 10 | 10 | 5 | 5 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| MAKURI | MAKURI | MAKURI | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |
| | | | 9 | 9 | 4 | 4 | 1 | 4 | 1 | 10 | 0 | 0 | 7 | 7 | 1 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | |

