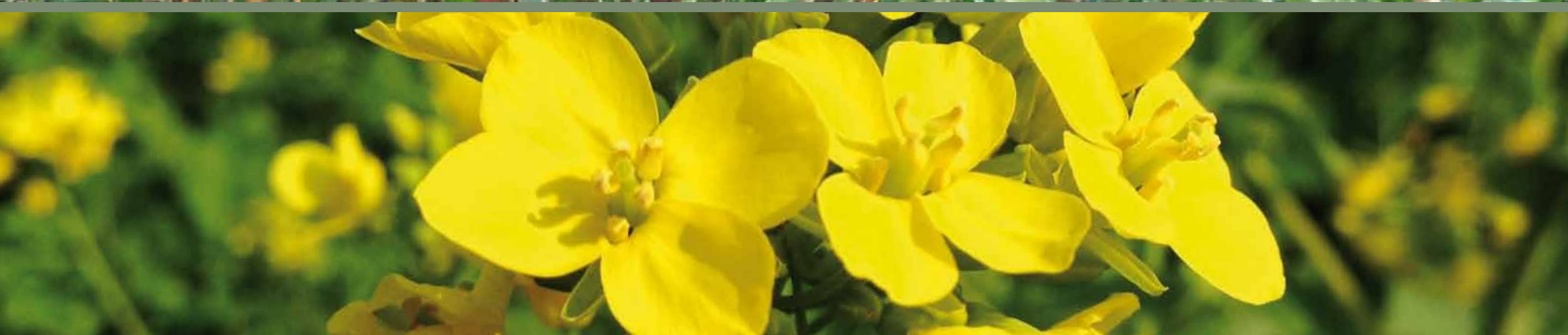




Food and Agriculture
Organization of the
United Nations



LAND COVER ATLAS OF PAKISTAN

The Khyber Pakhtunkhwa Province and Federally Administered Tribal Areas

A joint publication by FAO, SUPARCO and Crop Reporting Service, Government of KP and FATA

This publication has received funding from



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FOREWORD

The Government of Pakistan, with support from its cooperating partners, has initiated a comprehensive program to address the improvement in agricultural statistical reporting utilizing auxiliary data from Earth Observation satellites.

The project: *Agricultural Information System - Building Provincial Capacity in Pakistan for Crop Estimation, Forecasting, and Reporting based on the integral use of Remotely Sensed Data; GCP/PAK/125/USA* focuses on enhancing and improving current systems based the integral use of remotely sensed data into the existing data collection, analysis, and dissemination systems; as well as the development of complementary systems to validate the use of satellite remotely-sensed data for area estimation and yield forecasting.

In this respect, the land cover mapping aspect was considered as a critical component of the area frame development and evolution. Many agricultural applications require detailed, updated, reliable and accurate baseline on land cover to support spatial monitoring and to evaluate ecosystem and landscape dynamics. Particularly in agriculture, a reliable land cover model of the present status at land utilization can significantly assist the development and support statistical applications. Due to its importance the project supported the development of a harmonized land cover database. The land cover atlases of Punjab, Sindh, Khyber Pakhtunkhwa provinces & Federally Administered Tribal Areas have been developed and the series will be continued to provide a complete coverage of the country.

The Area Frame development provides a statistical robust, cost-effective tool to monitor agriculture in the country at Federal and provincial level. FAO with the project partners, the Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) and the Crop Reporting Services (CRS), have successfully developed and integrated the land cover database information, derived from remote sensing, into a procedure for crop area estimation (Area Frame Sampling).

The process involves critical key steps:

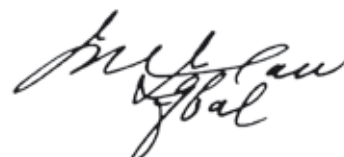
- STRATIFICATION: The land is divided into homogeneous entities or strata using the updated land cover database, generated using the FAO Land Cover Classification System (LCCS).
- MULTI-STACK/PHASE SAMPLING: Within each stratum, the land is further divided into sampling units or segments and a sample of segments selected for a field survey.
- ANALYSIS: Statistical analysis is conducted based on several decisions e.g. land cover strata definitions, number of substrata, size of the sampling units, the allocation of the sample to the strata and the method of selecting the sample. These decisions will have an appreciable impact on the statistical and cost efficiency of the final result.

Moreover, the land cover assessment and monitoring of its dynamics, whilst critical for area frame development, are also essential requirements for the sustainable management of natural resources and represent a fundamental baseline to support the government institutions in developing several activities linked to the improved monitoring and management of agricultural land. The multipurpose land cover database so produced, is an important and harmonized baseline of agriculture in the country.

The Provincial land cover database of Khyber Pakhtunkhwa and Federally Administered Tribal Areas (FATA) are created using a number of data sources ranging from remote sensing satellite imagery (at 5 meters resolution or better), available historical digital datasets and in-situ data. The FAO Land Cover Classification System (LCCS) was used for the creation of the national legend in consultation and inputs from the national experts. The FAO methodology for land cover change mapping was implemented using FAO land cover change mapping toolbox. FAO provided substantive technical assistance to the national experts to undertake a consistent assessment of the land cover in Pakistan.



John S. Latham
Senior Land and Water Officer



Imran Iqbal
Member
Space Applications & Research

ACKNOWLEDGEMENTS

The publication of the *Land Cover Atlas of Pakistan - The Khyber Pakhtunkhwa Province & FATA* is the result of the outstanding efforts of many institutions and individuals working in close partnership. The following paragraphs attempt to acknowledge everyone who supported and contributed to this atlas.

The *Land Cover Atlas of Pakistan - The Khyber Pakhtunkhwa Province & FATA* was made possible by the contributions (financial and in-kind) of the partner organizations involved in the project *Agricultural Information System - Building Provincial Capacity in Pakistan for Crop Estimation, Forecasting, and Reporting based on the integral use of Remotely Sensed Data; GCP/PAK/125/USA* the Government of Pakistan, the Food and Agriculture Organization of the United Nations (FAO) and the United States Department of Agriculture (USDA), which funds the Project.

This activity was implemented in collaboration with SUPARCO, Directorate Crop Reporting Service, The Khyber Pakhtunkhwa and other relevant stakeholders in Pakistan. The national experts from SUPARCO and the CRS were trained on the methodology and tools to create, manage and analyse the land cover changes database.

FAO has worked closely with the Pakistan partners to:

- produce a detailed and harmonized national land cover database, which provides reliable and updated information on the distribution of the land cover classes to support a multiplicity of applications but in particular it will foster an improvement in the area frame development, improved sample selection and allocation and refinement of the sample size as it implicitly creates a stratification of the province suitable for rationalization of the sampling strategy;
- strengthen the national capacity to undertake land cover and land change analysis using standards, remote sensing and GIS technology and integrate in-situ data with the earth observation data;
- prepare the draft and final Atlas of Khyber Pakhtunkhwa Province & FATA land cover;
- use the outputs of these activities to support informed decision making at various levels.

We acknowledge the cooperation of the following institutions and experts for their support in the process of development of the Pakistan land cover (image interpretation and classification, field verification, dissemination and uptake, image processing, photo-interpretation, database creation and map production). The SUPARCO team involved in the project was led by Imran Iqbal comprising Shafiq Ahmed, Jawed Ali Qureshi, Arshad Ali, Asmat ullah, Muhammad Farooq, Riffat Shamshad, Raheel Ahmad, Atif Shahzad, Syed Farhan Ahmed Khalil, Mudassar Umer, Fahad Ahmed, Hafiz Uzair Ahmed Khan, Zafar Jamil and Hasan Shahab. The Pakistan FAO representative Patrick Evans, the FAO office in Pakistan supported the implementation of the land cover mapping project. The FAO HQs team was led by John Latham, with support of Renato Cumani, Ugo Leonardi, Antonio Di Gregorio, Ilaria Rosati, Emanuela De Leo. The contribution of all of the above, along with input from many other unnamed people, has been vital for the success of this project. The preparation of the land cover atlas for publication has been led by Lucia Moro (Graphic Design) and Mario Bloise (Database).

The effort of the photo-interpreters group and of the field work team from SUPARCO and CRS that undertook field validation activities travelling extensively under difficult circumstances in the most remote areas of Pakistan is highly appreciated.

Thanks are also due to the staff of SUPARCO who generously allowed access to their high resolution imagery.

The entire land cover update would have been very difficult, if not impossible, without the leadership and oversight of Imran Iqbal (SUPARCO) and John Latham (FAO).

INTRODUCTION

This *Land Cover Atlas of Pakistan - The Khyber Pakhtunkhwa Province & Federally Administered Tribal Areas* provides a comprehensive description of the biotic and abiotic resources of the province and includes, inter alia, numerous categories of cultivated land; natural vegetation and non-vegetated areas including bare and rocky areas, and areas of human settlement. The LCCS approach also captures the physiographic characteristics of the region.

Twenty four officials from the Crop Reporting Services of Khyber Pakhtunkhwa, Punjab and Sindh provinces, as well as SUPARCO staff attended the training, from the 12th to the 23rd February 2012, at the SUPARCO Islamabad office, by FAO to appraise all the stakeholders of the significant benefit of the LCCS approach and to train Pakistani counterparts. At the conclusion of the training, and in consultation with all the stakeholders, it was decided to adopt the LCCS methodology. It was determined that the land cover database would assist not only the development of a robust statistical area frame methodology but would also be the basis for the development of an improved capacity for natural resources monitoring and management in Pakistan.

The legend has 13 main land cover classes which have been further subdivided into 37 classes, which have been mapped based on the analysis, interpretation and validation of SPOT -5 very high resolution satellite data (5 meter). The SPOT-5 satellite images were segmented into homogeneous polygons and labeled using the LCCS classification system and adopting the FAO methodology and its land cover toolbox. A seamless and detailed land cover database has been created that lays the foundation of future detailed land cover monitoring strategies in the country.

In addition to agricultural statistics and agricultural monitoring other thematic beneficiary areas are expected to include forestry, environment, irrigation, disasters, hazard monitoring, planning & development, geological surveys and wild life habitat assessment.

This volume of the national atlas pertains to the province of Khyber Pakhtunkhwa and FATA, Pakistan. The atlas is illustrated at a district and agency level, providing land cover information in aggregated and cartographic form as well as tabular statistics per class per district and agency for the province and FATA.

BACKGROUND

SUPARCO, in collaboration with FAO, undertook land cover mapping of Pakistan to assess the extent of cultivated land and their associated changes over time. Land cover maps of Punjab, Sindh, Khyber Pakhtunkhwa provinces & FATA have been produced using the FAO Land Cover Classification System (LCCS), which is an important component of FAO's land cover initiative designed to create a harmonized and extensive representation of land cover features of a single country and between countries.

The main objective of land cover mapping is to respond to the need for standardized and harmonized land cover data, for developing a common integrated approach in conformance with UNCED (United Nation Conference on Environment and Development) agenda.

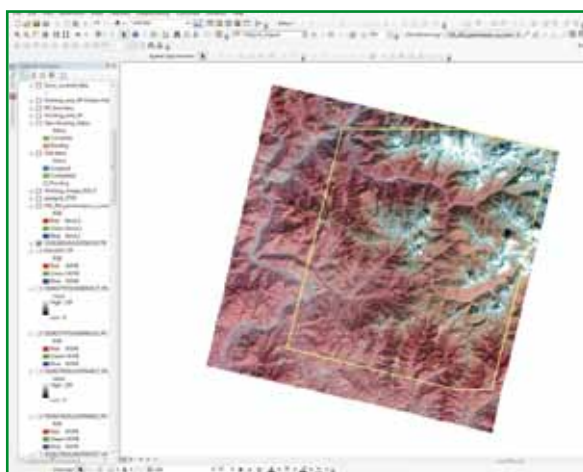
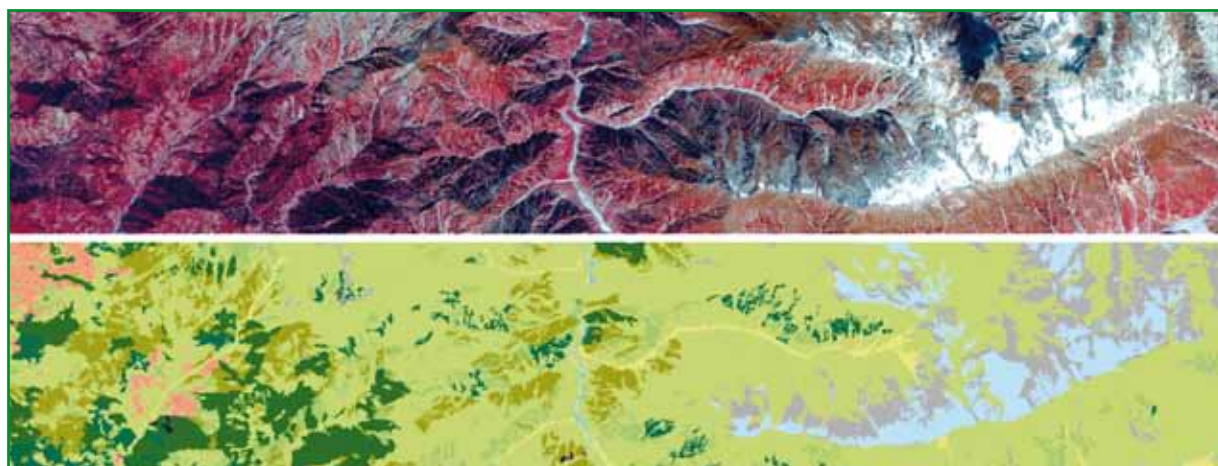


Figure 1: Sub-setting of image according to the extent of working area



Figure 2: Image segmentation using eCognition software



2. Image Processing and Interpretation

2.1 Segmentation

Segmentation is the process of grouping pixels to simplify the image into meaningful pixel groups (i.e. segments or objects). Image segmentation provide layer of polygons based on spatially continuous and spectrally homogenous regions or objects. Each segment represents regions with similar pixel values with respect to some characteristics such as color, intensity or texture. For land cover mapping segmentation helps in developing cluster pixels that belong to same land cover class.

For the purpose of Land Cover Atlas development, segmentation was performed using Definiens software. Multi-resolution segmentation approach was implemented to perform segmentation at the scale ranged 35 to 55 depending on the complexity of image. In addition, compactness was set to 0.9 and shape to 0.1 to get more homogenous segments.

2.2 Image Interpretation

Image interpretation is the process of identifying and delineating useful spatial information and labeling of the image object using land cover legends and ancillary information. The FAO tool - Mapping Device Change Analysis Tool (MADCAT) was used for the creation of land cover database using the remote sensing imagery and the LCCS legend to assign the land cover class label of each polygon.

In order to assure interpretation consistency inside the same mosaic, a block of contiguous scenes (a sub-mosaic) was assigned to each interpreter. Photo-interpretation of the scene was carried out at 1:25000 scale, taking care of the matching between scenes belonging to the same sub-mosaic. Topology was checked and confirmed after completion of interpretation. Subsequently, the original segmentation of interpreted scenes was dissolved while keeping a copy of the full resolution interpretation.

Figure 3: Image interpretation using MadCat software

METHODOLOGY

Satellite Remote Sensing (SRS) offers a flexible, cost effective and an efficient means for monitoring and mapping natural resources and man-made infrastructure. Significant improvements in the spatial, spectral and temporal resolutions of satellite data in recent decades have significantly enhanced the usefulness of this technology for land cover mapping and its subsequent utilization. The production of maps is based on a detailed methodology which is as follow:

1. Image Acquisition and Pre-Processing

SPOT-5 imagery was utilized to map land cover of Khyber Pakhtunkhwa and FATA, Pakistan. The imagery was analyzed with respect to cloud cover percentage and image quality. Pre-monsoon scenes of the year 2010 and 2011 were selected to map the land cover, keeping in view a recurrence of any major floods.

All images were geometrically corrected to UTM projection following which orthorectification was performed. The images were then sub divided into the desired area of interest and reprojected to Mercator projection. Subsequently, the images were pan-sharpened to 5m spatial resolution for land cover mapping.

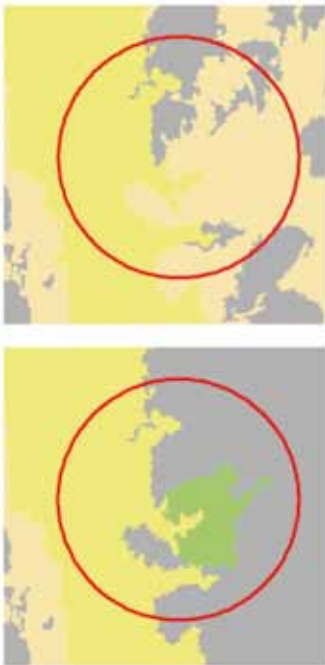


Figure 4:
Intermediate quality
control and correction
of errors

2.3 Intermediate Supervision Process - Quality Control

A team of two interpreters undertook an independent quality control of the database. The team checked the dissolved segments of each working area and highlighted the errors. Where errors were identified or the interpretation did not attain a minimum standard and/or contain non coded polygons, the quality control supervisor was tasked to reject/sent back the scene/mosaic for re-photo-interpretation.

After the errors were removed by the photo-interpreter, the corrected interpretation was again submitted to a Quality Control supervisor for quality check. The process was repeated in case errors still exist.

After the quality check, edge matching of the dissolved tiles was carried out between same sub-mosaic and bordering mosaics.

2.4 Field validation

On completion of the interpretation phase, field survey was conducted by SUPARCO officials to validate the image interpretation and to remove the ambiguities related to land cover classes based on detailed field surveys. For survey point, the land cover type and the coordinates were recorded using GPS systems.

2.5 Evaluation

After the completion of interpretation, a quality check and final edge matching was undertaken and final product was submitted to FAO, HQs for final evaluation of the land cover database.

2.6 Data Harmonization and Final Database Generation

As a final step, the land cover data was thoroughly reviewed and harmonized to create a consistent land cover database, minimizing difference from the subjectivity of different interpreters.

Finally, detailed topology rules were applied to correct inconsistencies and to remove slivers or voids in the database.



Figure 5: Field validation of Khyber Pakhtunkhwa Province and FATA

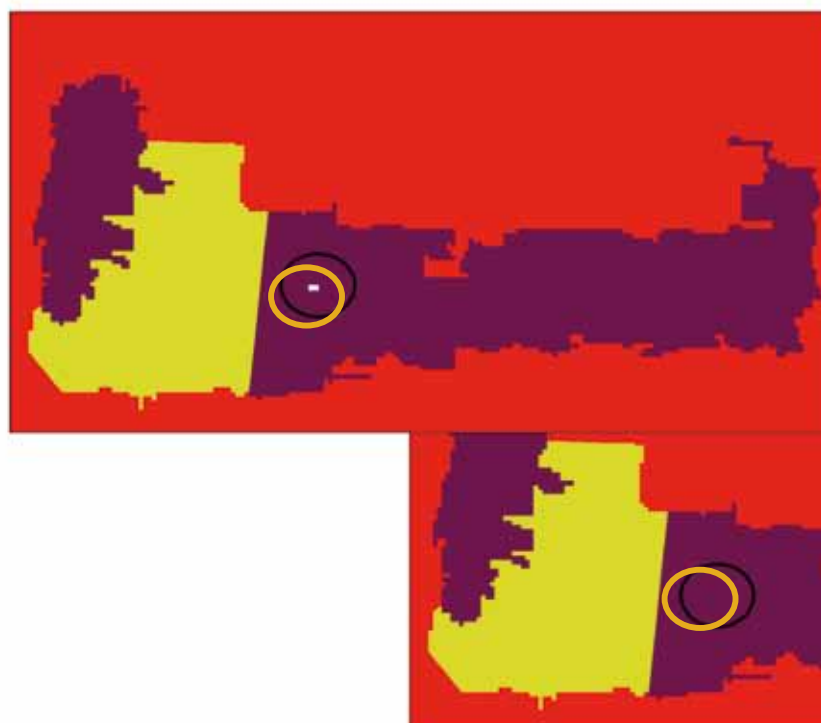


Figure 6: Removal of gaps
and overlaps errors

LEGEND

The legend for land cover mapping was created by FAO in consultation with SUPARCO and representatives of the Crop Reporting Services of all provinces. The photo-keys of different land cover types were developed which serve to illustrate the aspect on the ground (texture, tone, colour and reflectance) of the land cover units, present in the images.

The final version of the legend is composed of 37 land cover classes aggregated into 13 main classes which are as below:

1. Orchard

Orchards are the cultivated or maintained areas for the production of fruits, nuts, berries, or ornamentals. Orchards are divided into two subclasses on the bases of growth form namely tree orchards and shrub orchards. Orchards are generally found in the agricultural irrigated area. An herbaceous crop could be present beneath the trees.

2. Crop Irrigated

Areas used for the production of annual crops such as wheat, rice, cotton, corn, soybeans, vegetables and tobacco. This class also includes all land being actively tilled. The differentiation of this class with rainfed crops is made on the basis of the presence of channels, geographic location and local knowledge. Herbaceous crop irrigated and herbaceous crop surrounded by tree orchards are included in crops irrigated.

3. Crop Marginal and Irrigated Saline

Crop marginal and irrigated saline are identified as those areas which are currently used for agriculture with low and unstable rainfall or higher rainfall areas intensively used, relative to user-capability, under existing population densities, traditional technologies and institutional structures. Crop marginal and irrigated include herbaceous crop irrigated saline fields and herbaceous crop rainfed in desert area. Herbaceous crop rainfed in desert areas are mostly found in the southern part of Sindh province, where the arid climate and the consequent shortage of rainwater allow crops to take place only when the occasional

rainfall occurs and hence fields are sporadically active. Differentiation of this class with the class crop rainfed is made on the basis of geographic location and local knowledge. Herbaceous crop in saline area can resemble as reflectance to the class saline area. Its discrimination with saline area can be done on the basis of clear field pattern.

4. Crop in Flood Plain

Herbaceous crop located only in proximity of the river bed is termed as crop in floodplain. The water supply is provided either by irrigation or by the annual floods. Crop in floodplain includes herbaceous crop irrigated in floodplain and herbaceous crop post-flooding.

5. Crop Rainfed

The term rainfed agriculture is used to describe farming practices that rely only on rainfall for water. Crop rainfed includes herbaceous crop rainfed and herbaceous crop rainfed in sloping land. The differentiation of this class with irrigated crops is made on the basis of geographic location, absence of drainage network and local knowledge. Herbaceous crop rainfed in sloping land can be found only in the sloping mountainous areas of Hindu Kush and Himalayan region.

6. Forest

Forest is described as area characterized by tree cover natural or semi-natural woody vegetation, generally taller than 6 meters. Forest includes both natural and planted forest. In this class trees forest plantation, trees closed, trees open and mangroves are considered as subclasses. Tree forest plantation refers to governmental plantation. This class can be identified with large area and regular shape. Tree closed are type of vegetation with tree percentage cover more than 60%. The class closed trees occurs in the different parts of the country. It has woody natural vegetation, found both in broad as well as in needle leaves. Open trees are type of vegetation with mandatory presence of trees and herbaceous growth forms with percentage cover varying from 10 to 60 percent in both. Mangroves are forest type exclusively found in the coastal belt.

7. Natural vegetation in wet areas

The subclasses include river bank, wetlands, shrubs closed to open in wetland, tree closed in wetland and tree open in wetland. The classes are derived on the basis of soil and vegetation type. River bank is a part of the river bed flooded during the rainy season (Floodplain). The bed of the seasonal rivers is included in this class. Wetlands are herbaceous vegetation with cover ranging from 60% to 100% found in flooded/wet areas, sometimes associated with shrubs. Shrubs closed to open in wetland found along the rivers and associated flooded areas. Generally, in the vegetated portion of the river bank, made of shrubs with cover 20-100%. Tree closed in wetland are woody vegetation occurring along the rivers and associated flooded areas, with cover from 60 to 100%. Tree open in wetlands are the woody vegetation with cover ranging from 10 to 60%.

8. Range Lands - Natural Shrubs and Herbs

Rangelands are vast natural landscapes in the form of grasslands, shrublands and woodlands. Areas characterized by natural or semi-natural woody and herbaceous vegetation with aerial stems, generally less than 6 meters tall, with individuals or clumps not touching to interlocking. These areas are not subject to intensive management such as tilling, but can be utilized for grazing. Shrub closed, shrubs open and herbaceous closed to open are the subclasses that are included in rangelands. Shrubs with a cover from 60 to 100% are considered as shrub closed. A layer of trees sparse (1-10%) could be present with shrub closed. Open shrubs are natural or semi-natural vegetation with shrubs ranging from 10 to 60% and trees ranging from 1 to 10%. These are found mainly on the hilly areas of Pakistan and generally have broad as well as needle leaves. Herbaceous closed to open is a type of vegetation where mandatory presence of herbaceous growth forms varies from 10 to 100% and optional presence of trees and shrubs up to 10% percent of cover.

9. Built-up Area

It defines all the built-up areas (urban, industrial, airport etc.) with all vegetated areas linked to the built-ups such as gardens, golf courses, urban recreation parks, plots devoted to urban expansion, etc.

10. Bare Areas

This class describes areas that have very less natural and manmade vegetative cover. The subclasses include sand dunes and barren land. Barren land is bare soil area with very low density of shrubs and no agriculture activity. Sand dunes are made of low ridges or hillocks of drifted sand mainly moved by wind. The shifting sand is not covered by vegetation and if present, is negligible.

11. Bare Areas with Sparse Natural Vegetation

Sand Dunes with natural vegetation, bare rocks (with sparse vegetation) and desert flat plain are included in bare areas with sparse natural vegetation. These are the areas where sparse vegetation could be present but the percentage coverage would be less than 10%. Sand Dunes with natural vegetation are dunes that have permanent vegetation cover ranges from 1 to 40%. The vegetation cover causes a process of dune stabilization. According to the amount of vegetation cover, dunes are stabilized or semi-stabilized. Bare rocks (with sparse vegetation) are a class that contains less than 10% of growth forms. The class based on the geographical location of the area that is declared as desert other than sand dunes.

12. Wet Areas

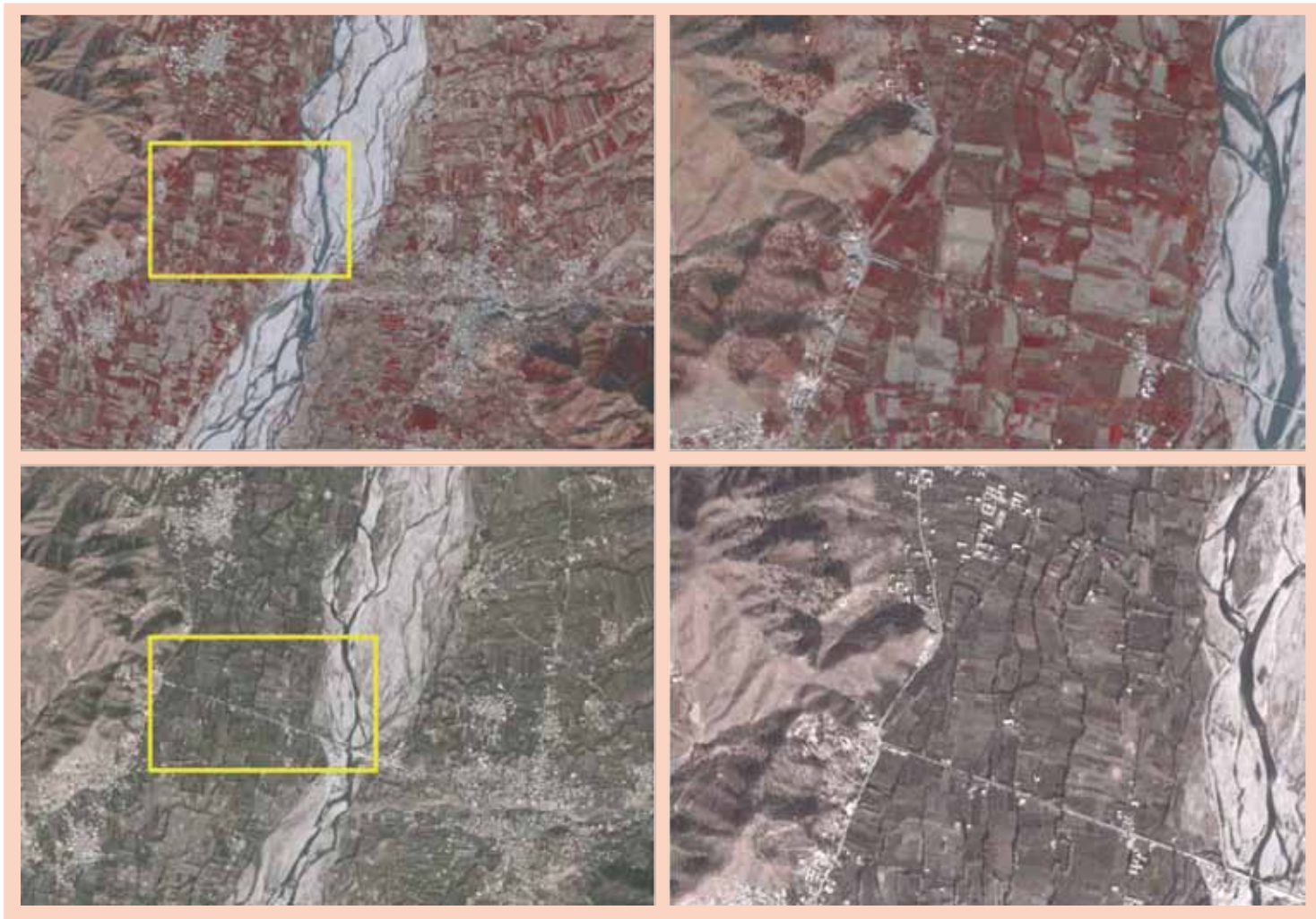
Areas which are naturally covered with fresh or saline water such as river and lakes are grouped in this class. Wet areas are characterized by drainage and the consequent presence of sluggishly moving or standing water saturating the soil with sparse natural vegetation. The subclasses include mud flats, river perennial, salt lake, water bodies, saline area and water logged bare areas. The classes are derived on the basis of presence of water at the surface. Mud flats are areas with wet sand in proximity of mangroves forest and coastal area. River perennial is a part of the river bed where there is a constant presence of flowing water throughout the year. Saline lakes are water bodies located near the coast where the water is brackish or saline. Lake shore is also included in the classes of water bodies and saline lake. Saline area can resemble as reflectance to the class herbaceous crop irrigated saline fields. In this case the field pattern is absent. Water logged bare area is a low level land generally filled with

a high water table. It is generally surrounded by agricultural area.

13. Snow and Glaciers

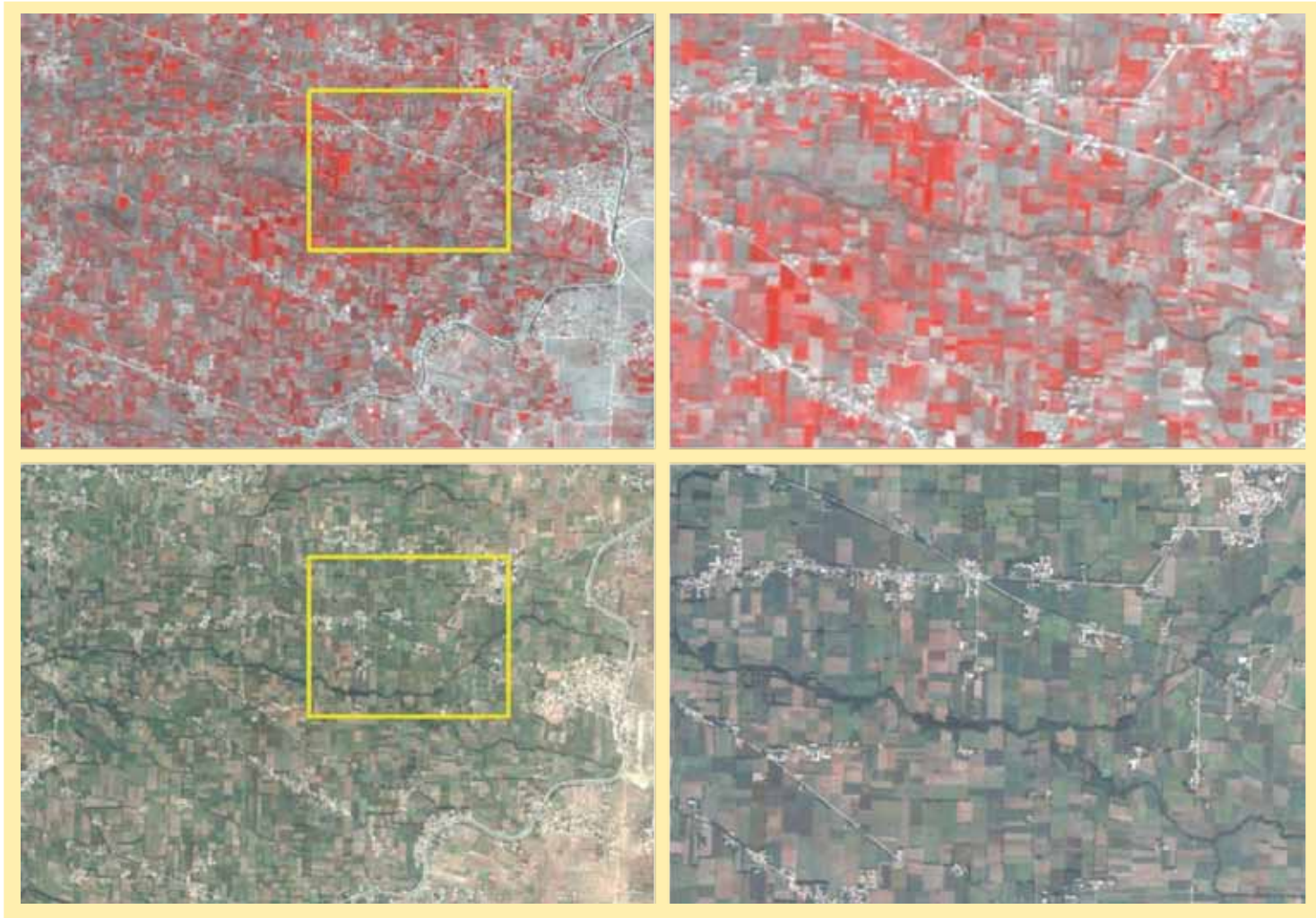
The subclasses include snow permanent, glaciers and glacier with debris. Snow permanent is the area characterized by year-long surface cover of ice and/or snow. Glaciers are permanent solid moving under its own gravity; it forms where the accumulation of snow exceeds its ablation (melting and sublimation) over many years, often centuries. Glaciers with debris contain permanent moving ice with deposits of eroded material from rocks on its surface.

PHOTO KEYS



1. ORCHARDS

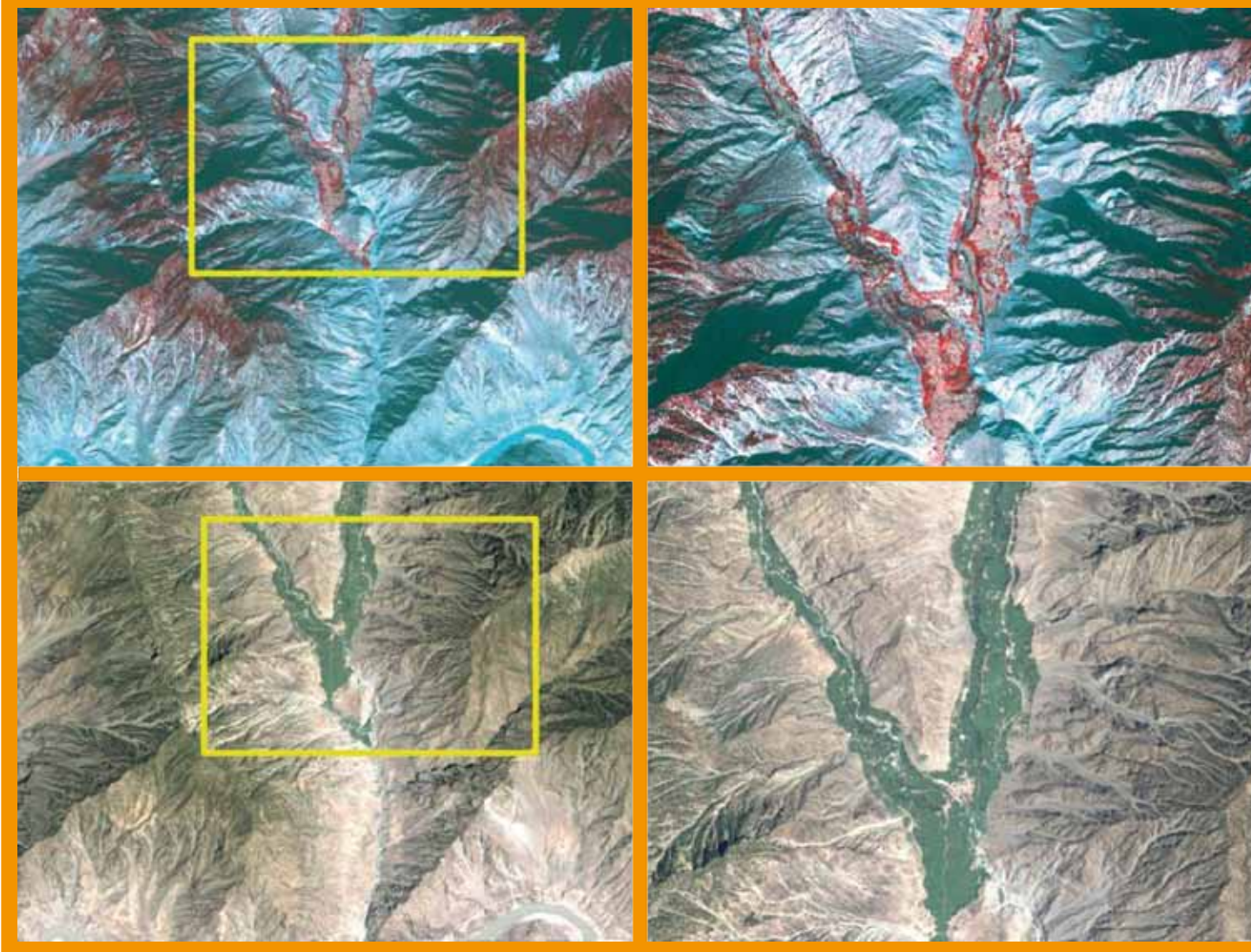
Orchards - tree crop



2. CROP IRRIGATED

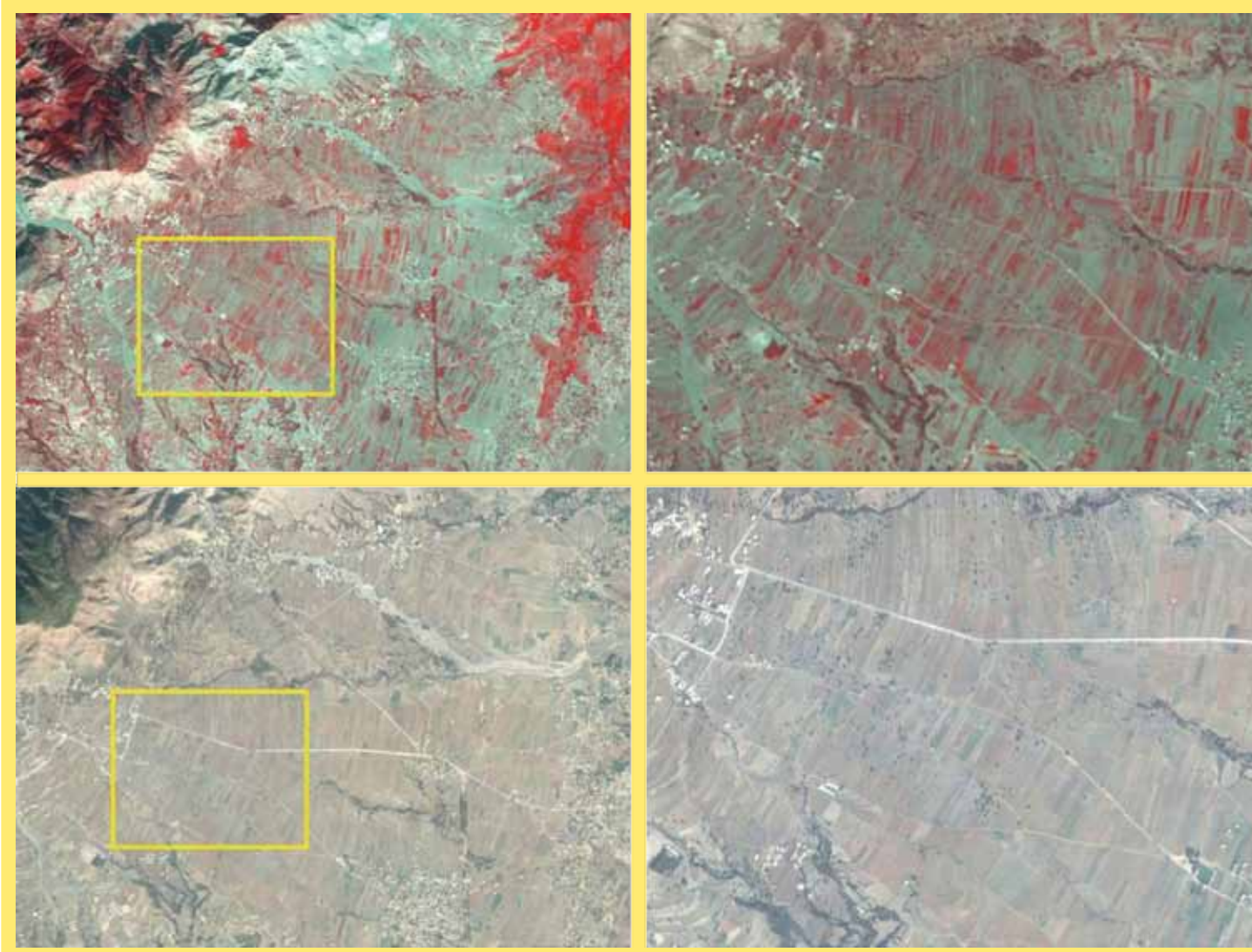
Crop irrigated - herbaceous crop irrigated

3. CROP IN FLOOD PLAIN



Crop in flood plain
- herbaceous crop
irrigated in flood plain

4. CROP RAINFED



Crop rainfed -
herbaceous crop
rainfed



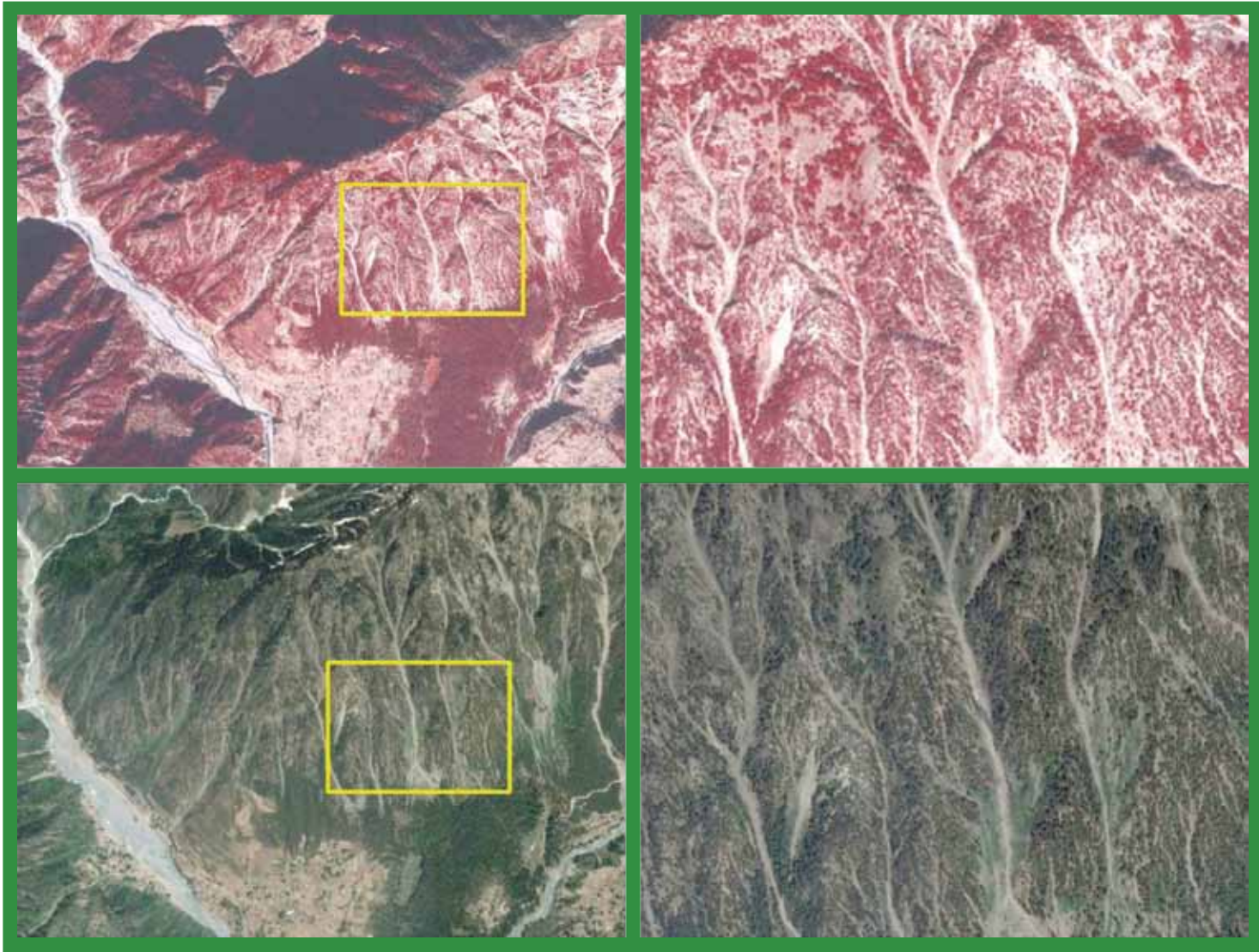
Crop rainfed -
herbaceous crop in
sloping land



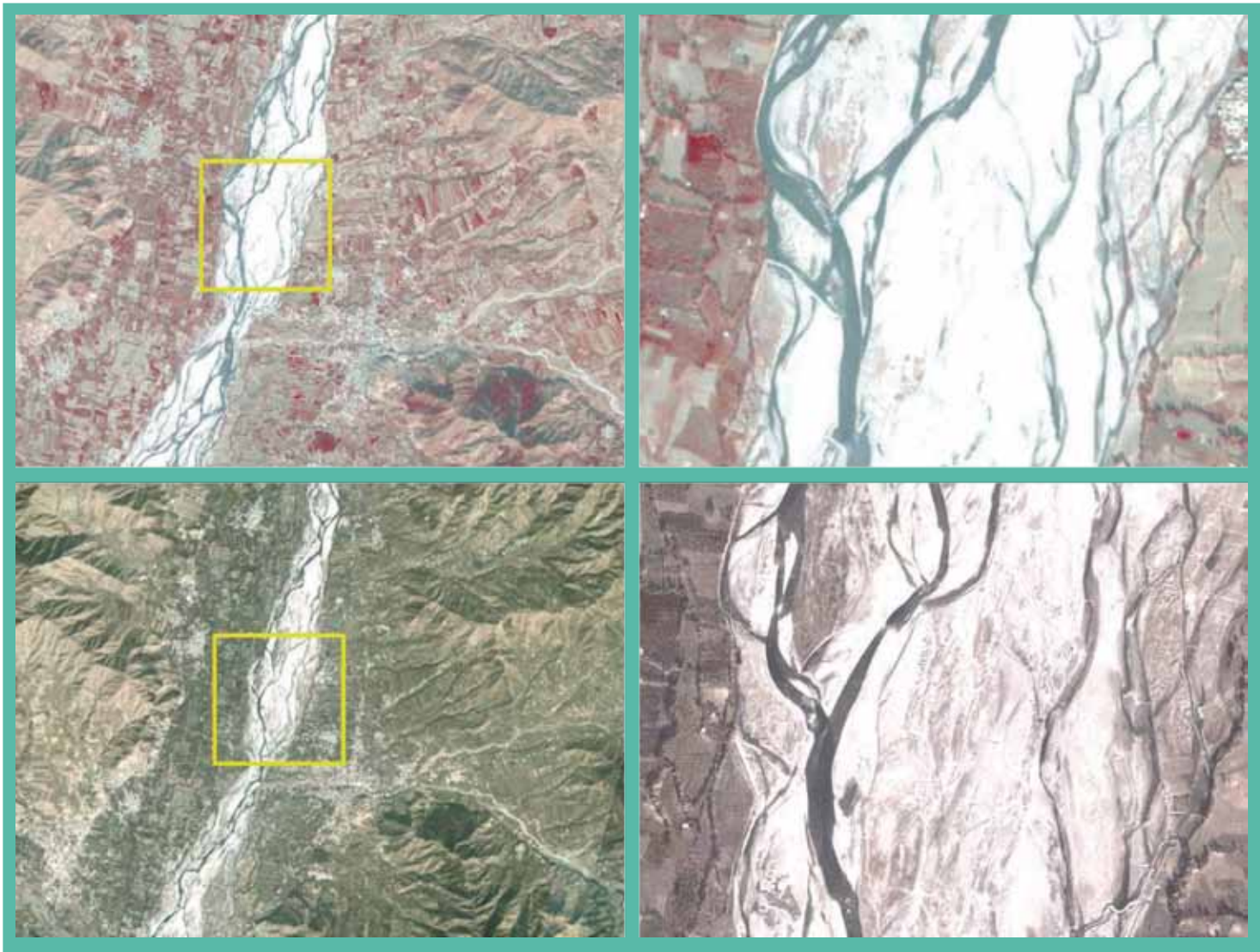
5. FOREST



Forest - trees
closed



Forest - trees open



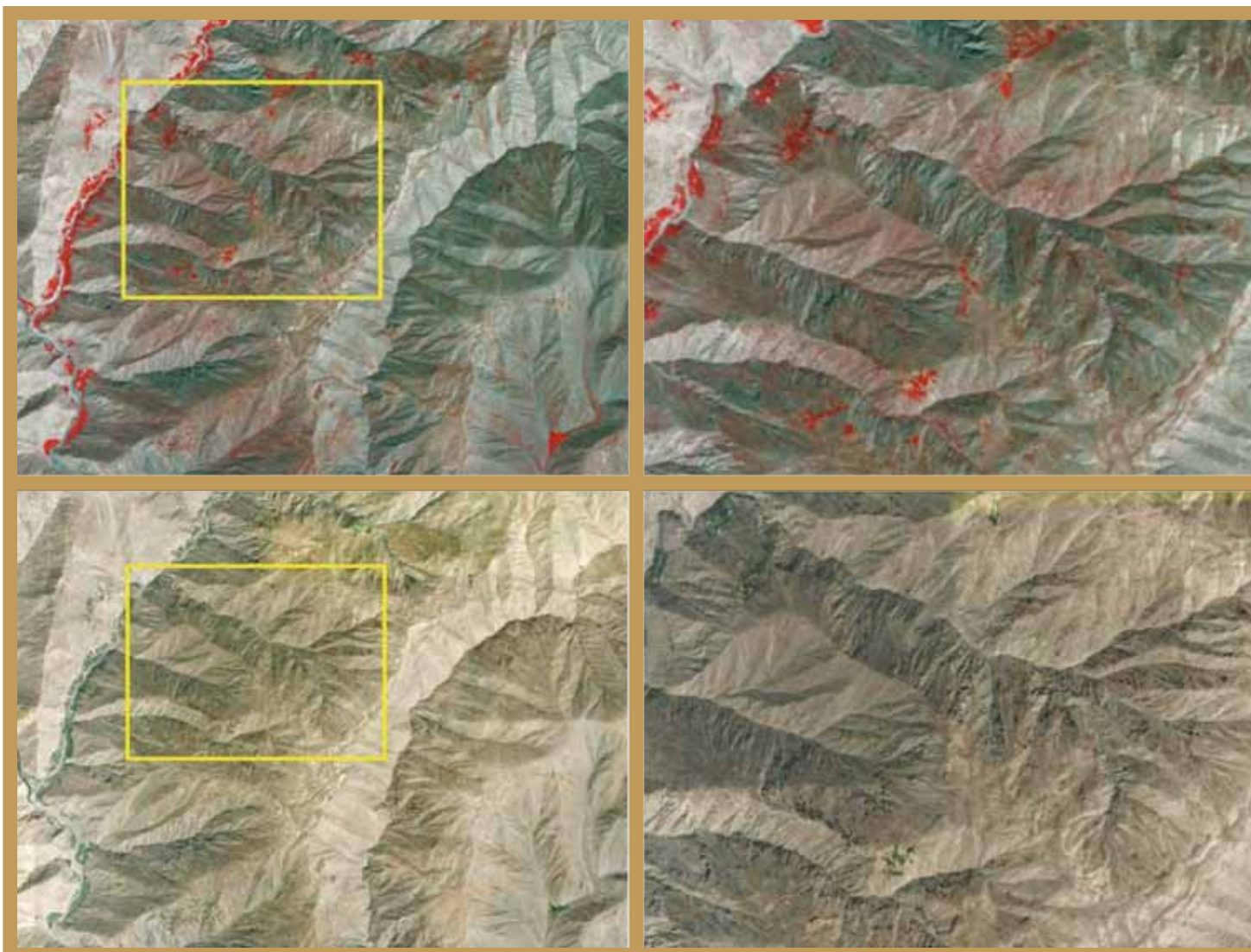
6. NATURAL VEGETATION IN WET AREAS

Natural vegetation - river bank



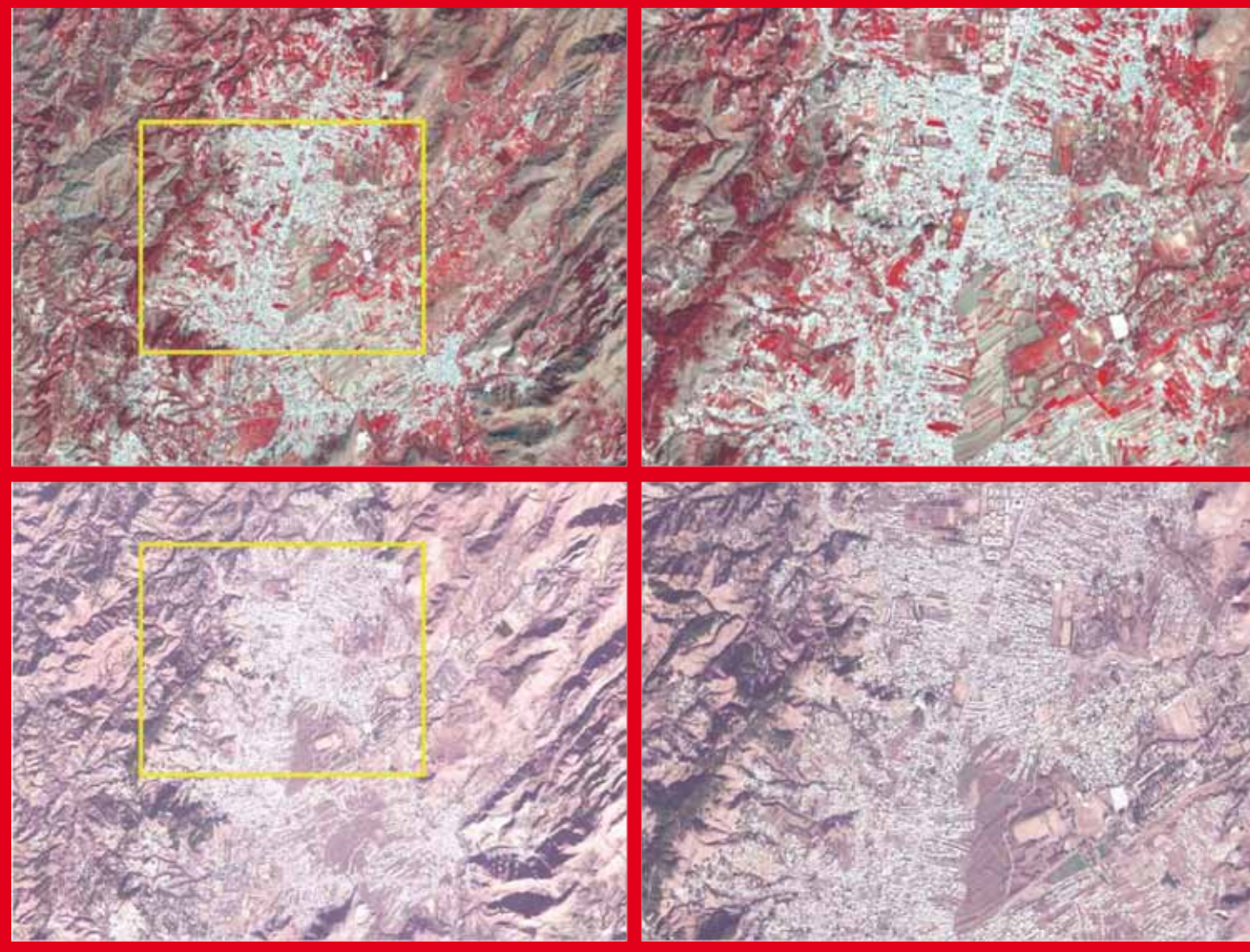
7. RANGE LANDS -
NATURAL SHRUBS AND
HERBS

Range lands -
shrub closed

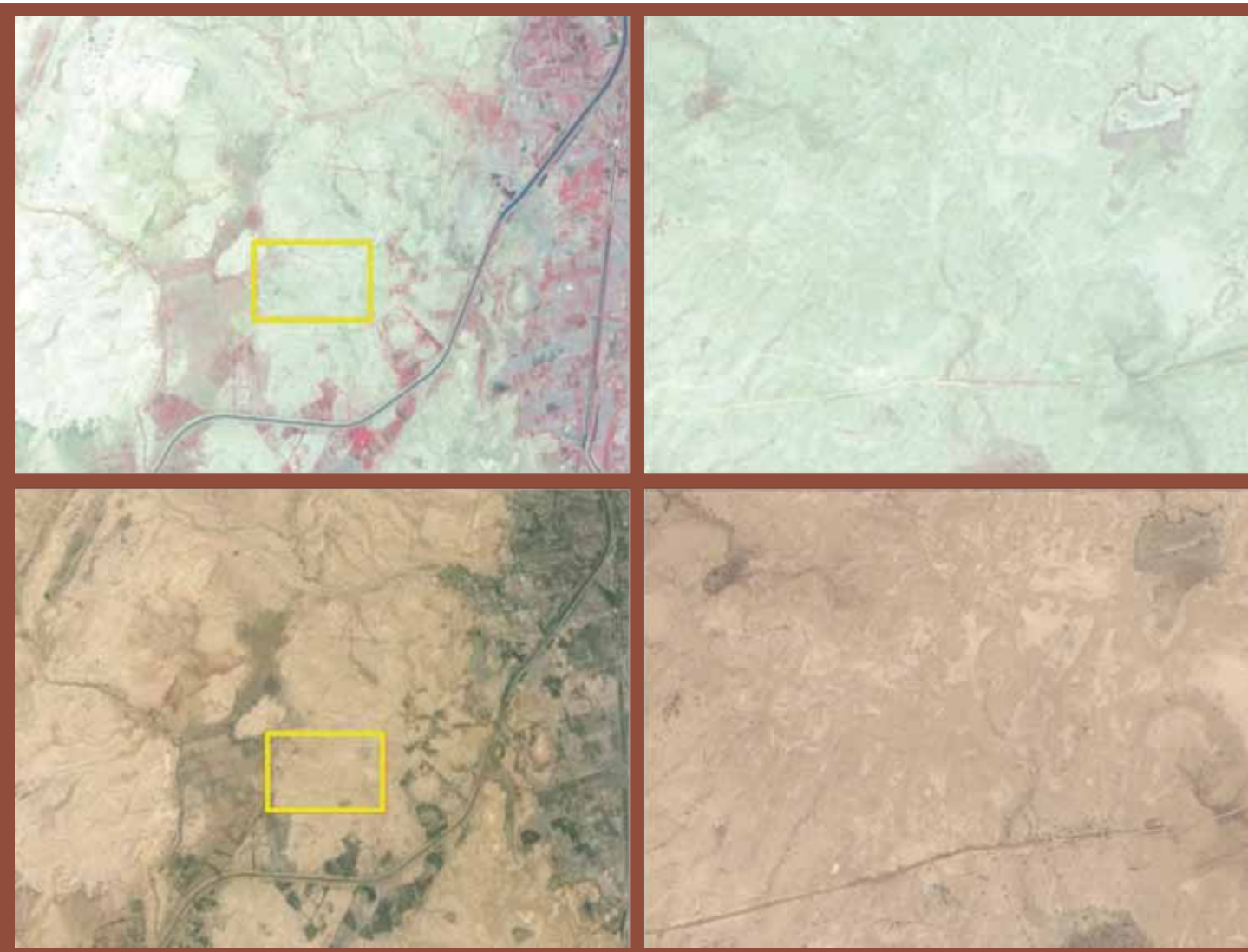


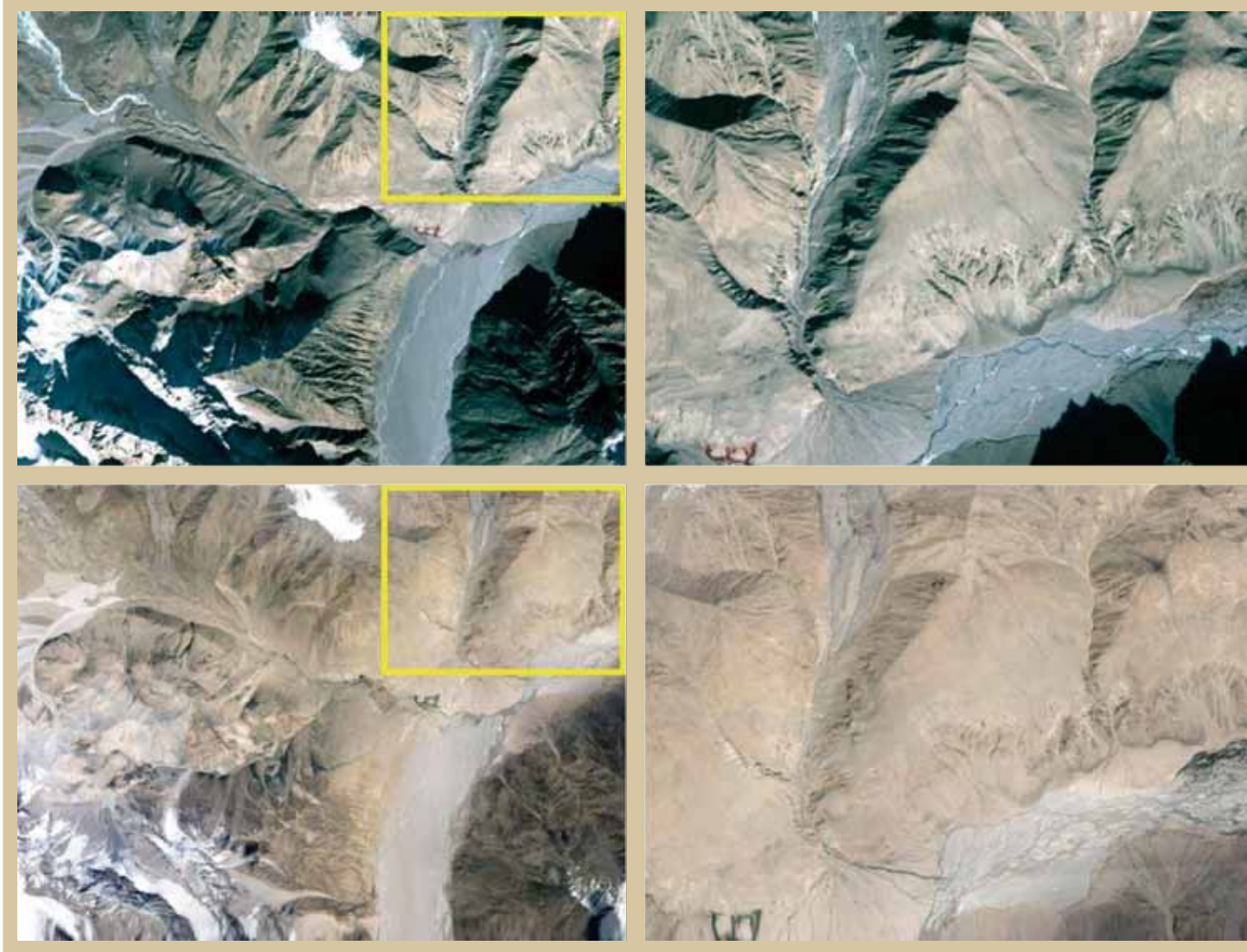
Range lands -
herbaceous natural
closed to open

8. BUILT-UP AREA

**Built-up area**

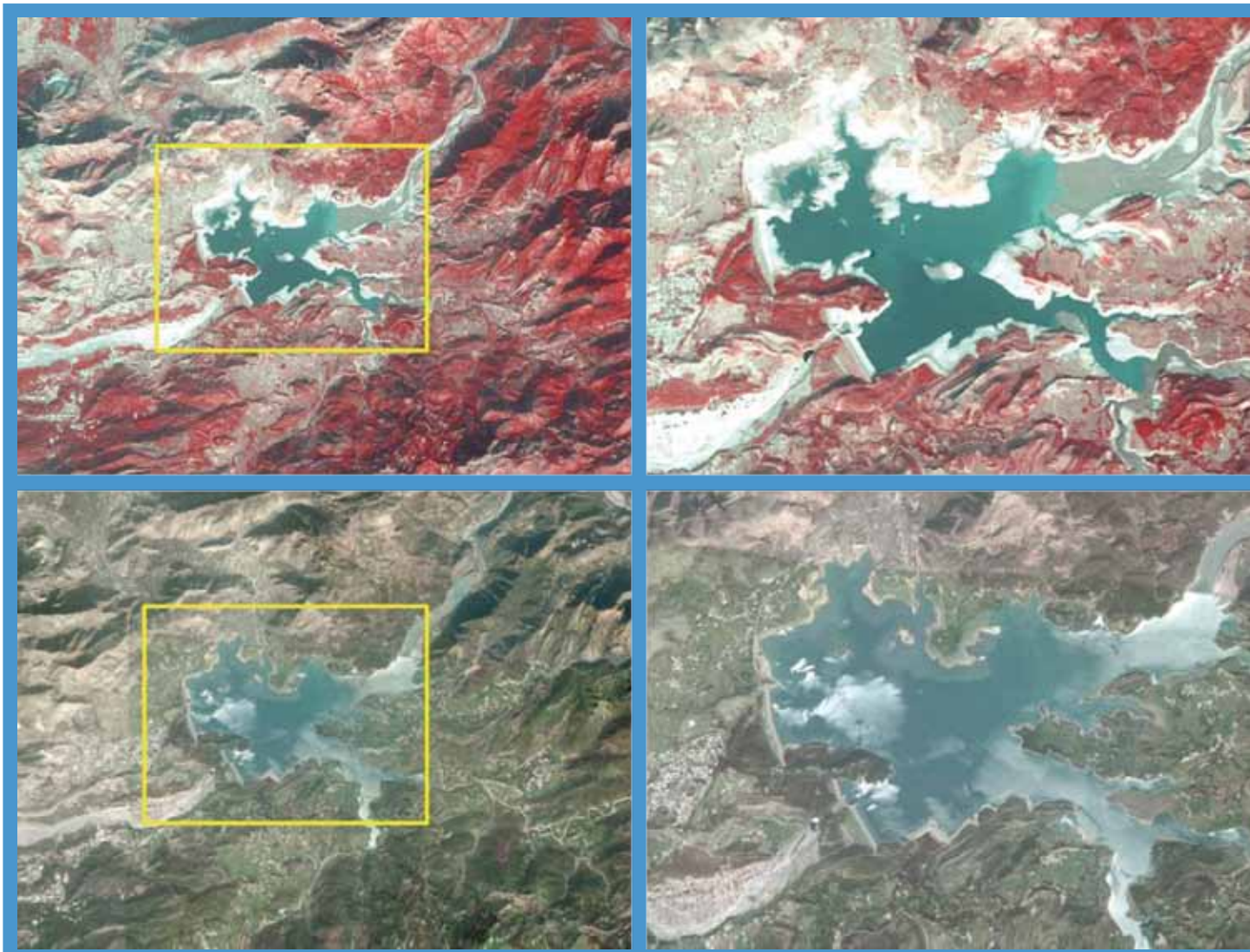
9. BARE AREAS

**Bare areas -
barren land**



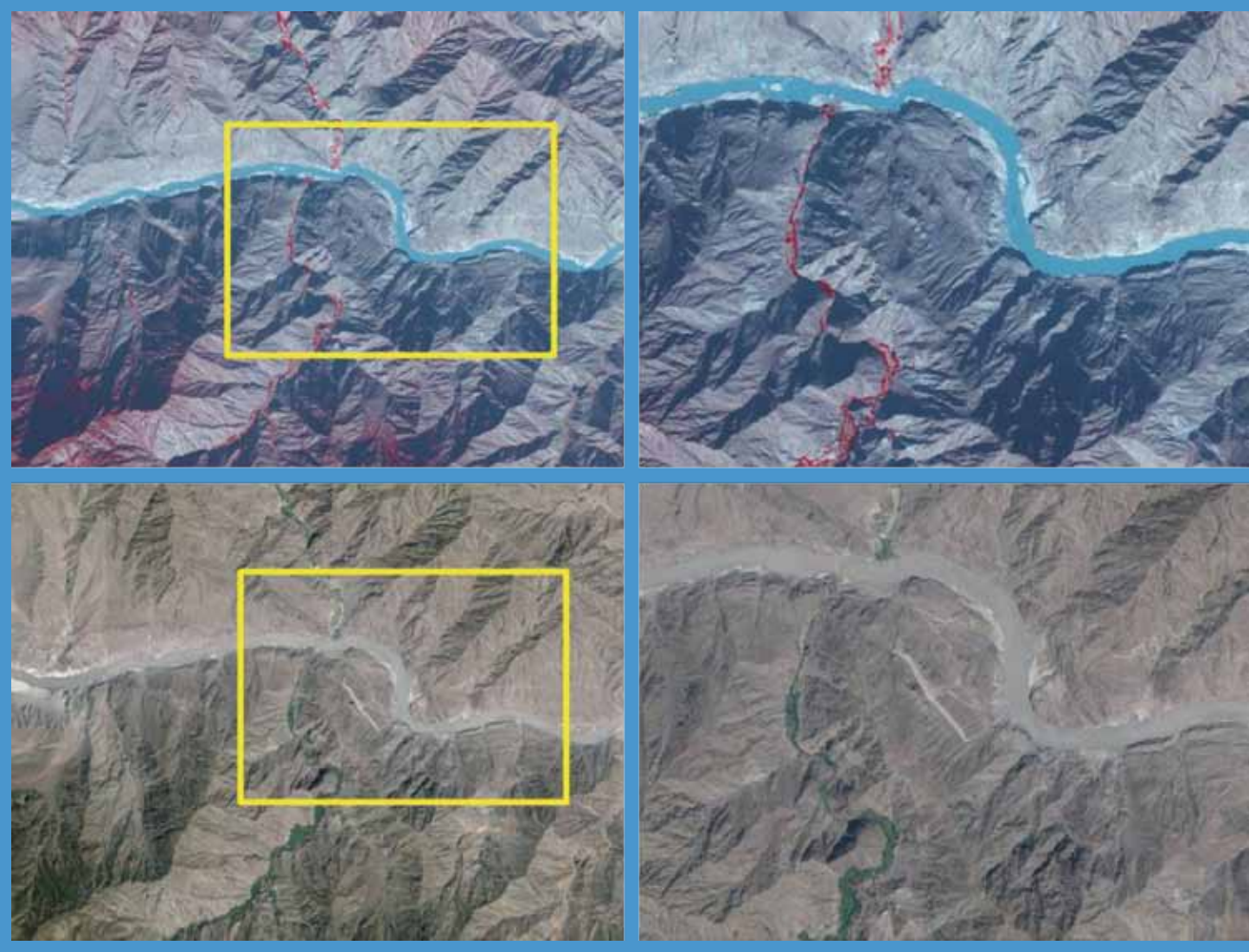
10. BARE AREAS WITH
SPARSE NATURAL
VEGETATION

Bare areas sparse -
bare rock

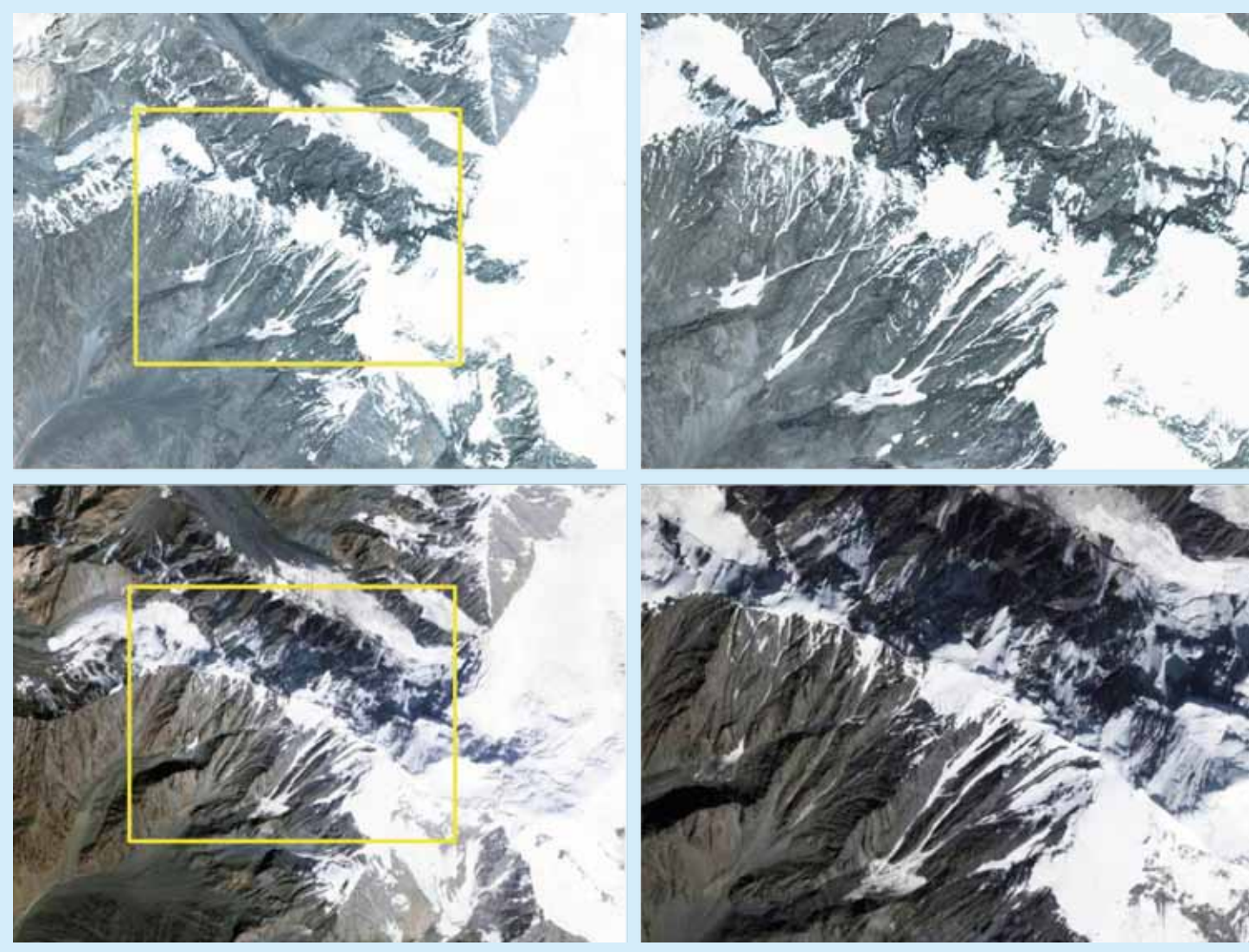


11. WET AREAS

Wet areas - water
body

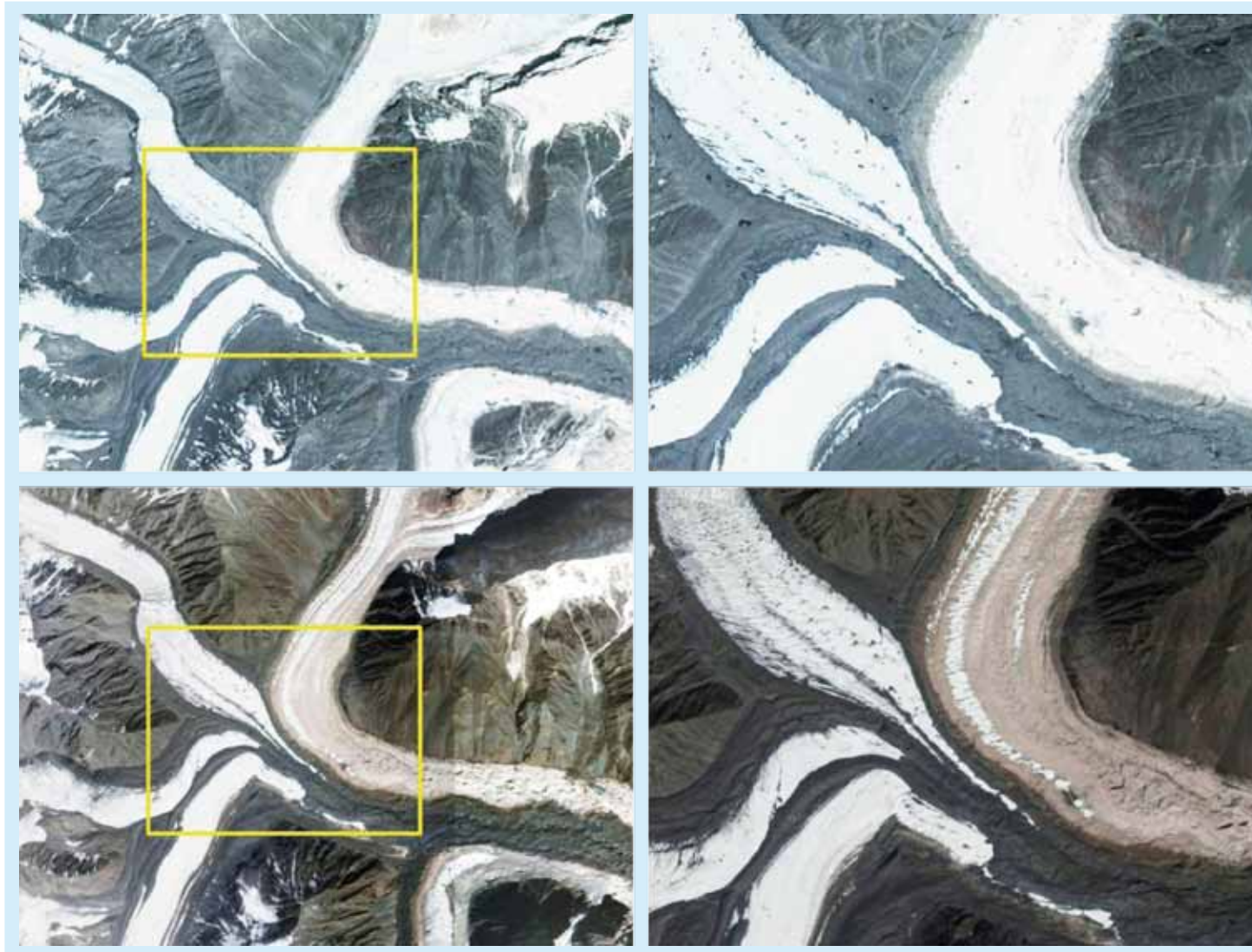


Wet areas - river
perennial

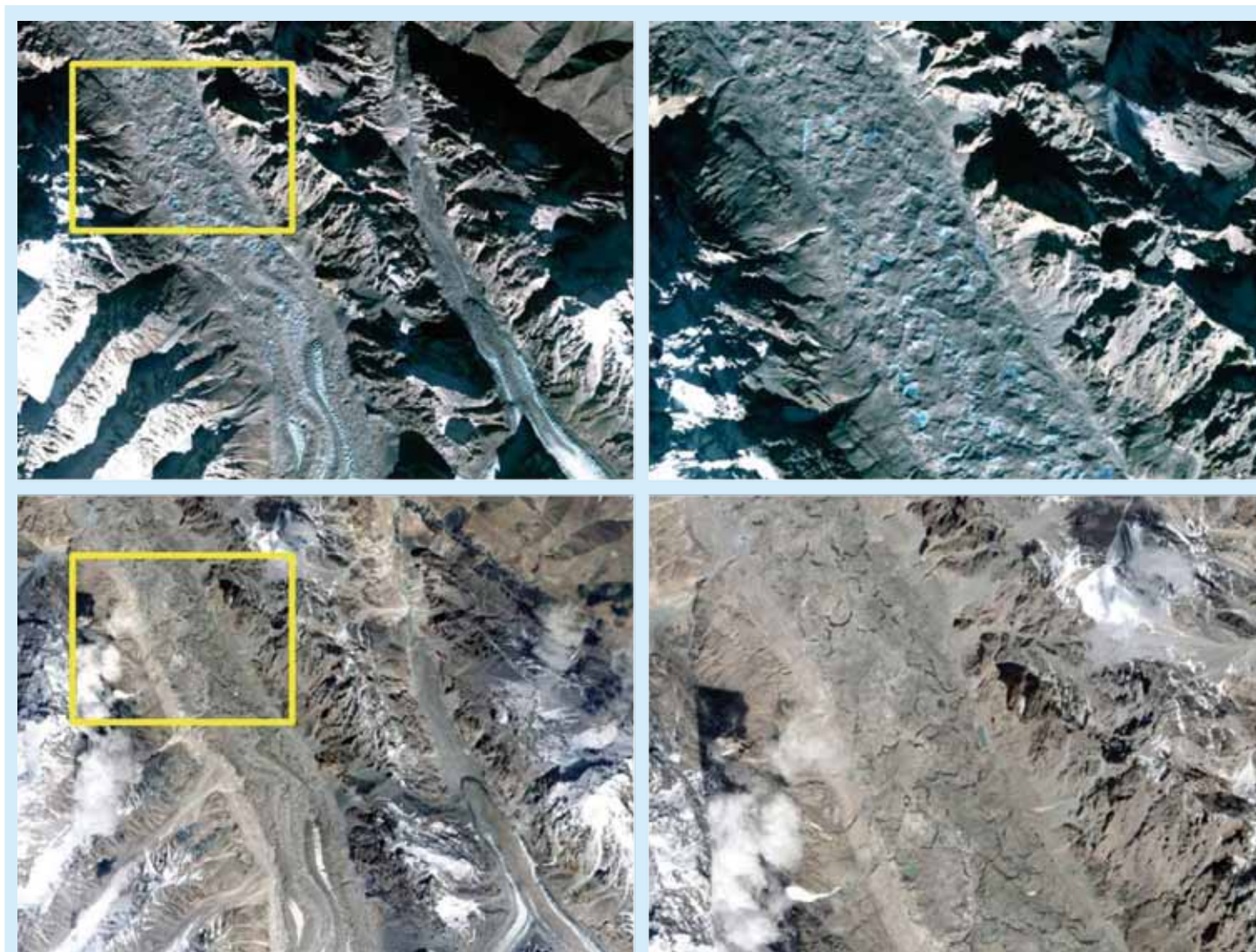


12. SNOW AND GLACIERS

Snow and glaciers
- snow permanent



Snow and glaciers
- glaciers

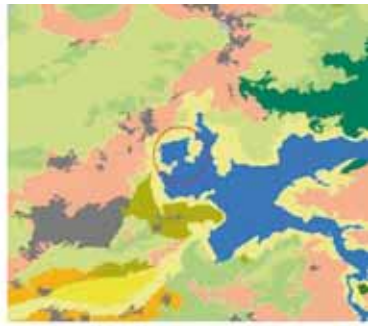


Snow and
glaciers - glaciers
with debris

FIELD VALIDATION



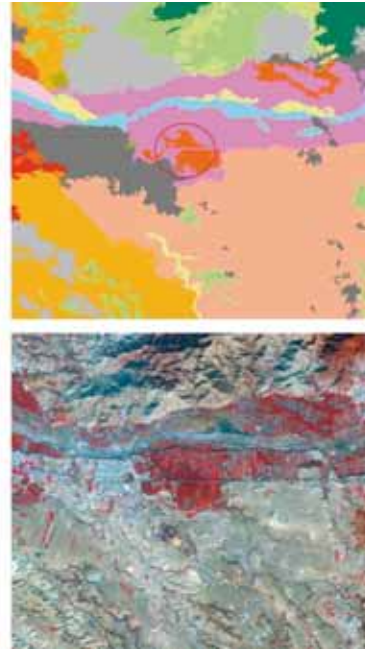
Forest



Water Body



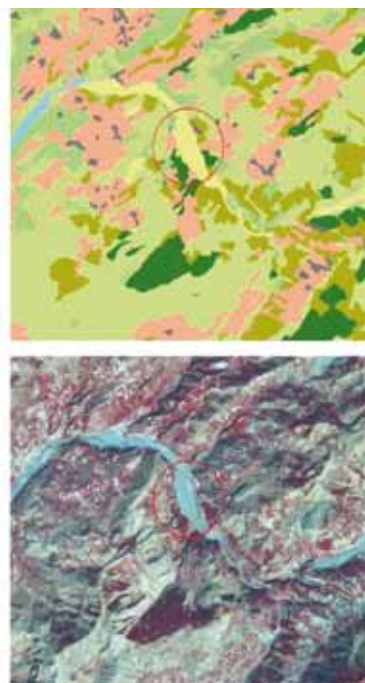
Crop in Sloping Land



Tree Crop



Crop Land



River Bank



MAPS & STATISTICS
The Khyber Pakhtunkhwa Province



KHYBER PAKHTUNKHWA PROVINCE

Khyber Pakhtunkhwa province formerly called North West Frontier Province (NWFP) is one of the four provinces of Pakistan, located in the northwest of the country. It borders the Federally Administered Tribal Areas (FATA) to the west and south, Gilgit Baltistan to the northeast, Azad Jammu & Kashmir to the east, Punjab and the Islamabad Capital Territory to the southeast and Afghanistan to the northwest. The province of Balochistan is located southwards. The provincial capital is Peshawar. Khyber Pakhtunkhwa lies primarily on the Iranian plateau and comprises the junction where the slopes of the Hindu Kush mountains on the Eurasian plate give way to the Indus-watered hills approaching South Asia. The famous Khyber Pass links the province to Afghanistan, while the Kohalla Bridge in Circle Bakote Abbottabad is a major crossing point over the Jhelum River in the east. Geographically, the province could be divided into two zones: the northern one extending from the ranges of the Hindu Kush to the borders of Peshawar basin and the southern one extending from Peshawar to the Derajat basin. The northern zone is cold and snowy in winters with heavy rainfall and pleasant summers with the exception of Peshawar basin, which is hot in summer and cold in winter and having moderate rainfall.

The southern zone is arid with hot summers and relatively cold winters and scanty rainfall. The major rivers that traverse the province are the Kabul, Swat, Chitral, Kunar, Siran, Panjkora, Bara, Kurram, Dor, Haroo, Gomal and Zhob.

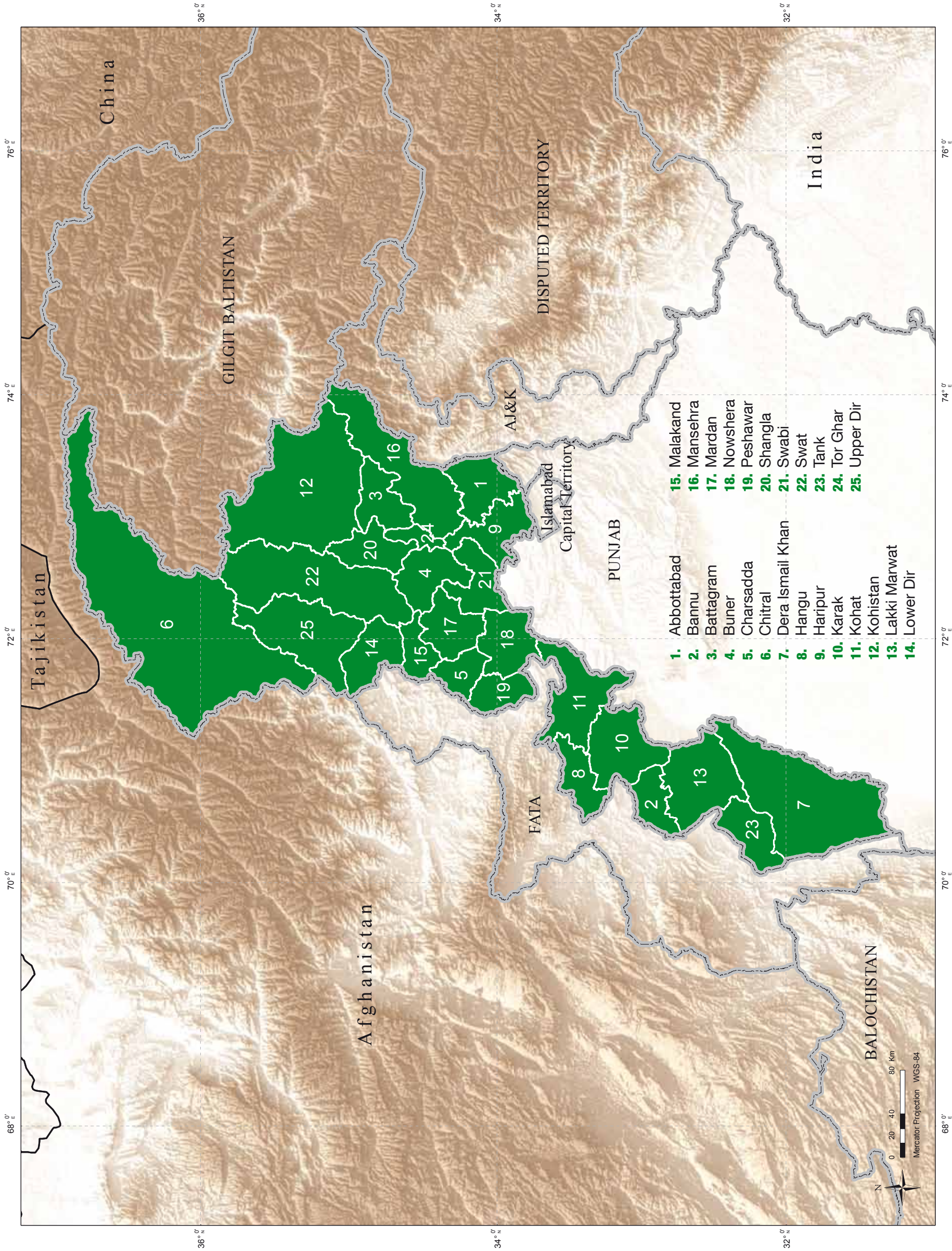
The major Pukhtun tribes of this region are the Afridi, Bangash, Durrani, Khattak, Mahsud, Orakzai, Toori, Wazir and Yusufzai. Other tribes are the Marwat, Mohmand, Gandapur, Swati, Tareen, Tanoli, Jadoon and Mashwani. In this terrain many civilizations have mixed and mingled, risen and were razed. Its inhabitants have excelled in countless fields of endeavor. Perhaps this area has seen more invasions during the course of history than any other region in the world. Apart from the Pathan tribes, the Khyber Pakhtunkhwa is home to diverse ethnic groups and languages. In the northern highlands such languages as Khowar, Hindko, Kohistani, Shina, Torwali, Kashmiri, Kalasha and Kaghani are spoken. The influx of Afghan refugees has brought Ghilzai and Durrani tribes and thousands of Persian speaking Tajiks and Hazaras who have settled here. Nearly all the inhabitants of the Province are Muslim with a Sunni majority, a minority of Shias and Ismailis and a sprinkling of Animists

or Shamanists. Today Khyber Pakhtunkhwa, spread over 74,521 sq km, has a population of over 22 million. It comprises of three major administrative parts. One part, composed of settled areas, consists of the districts of Abbottabad, Bannu, Battagram, Charsadda, Dera Ismail Khan, Hangu, Haripur, Kohistan, Kohat, Karak, Lakki Marwat, Mansehra, Mardan, Nowshera, Swabi, Peshawar and Tank. The second part known as Provincially Administered Tribal Areas (PATA) consist of Malakand Agency and the districts of Upper Dir, Lower Dir, Chitral, Swat, Buner, Shangla, and the pocket of Kala Dhaka / "Black Mountains", Kohistan (previously part of Swat State) and the State of Amb, now submerged in the Tarbela Dam reservoir.

The third part, Federally Administered Tribal Areas (FATA), is spread over 27,220 sq km and has a population of 3,764,000. It comprises of seven Tribal Agencies and six Frontier Regions. The Tribal Agencies are Bajaur, Mohmand, Khyber, Orakzai, Kurram, North Waziristan and South Waziristan. The Frontier Regions include F.R. Bannu, Central Kurram, F.R. Dera Ismail Khan, F.R. Kohat, F.R. Lakki, F.R. Peshawar and F.R. Tank. These are directly controlled by the Provincial Governor of Khyber Pakhtunkhwa.

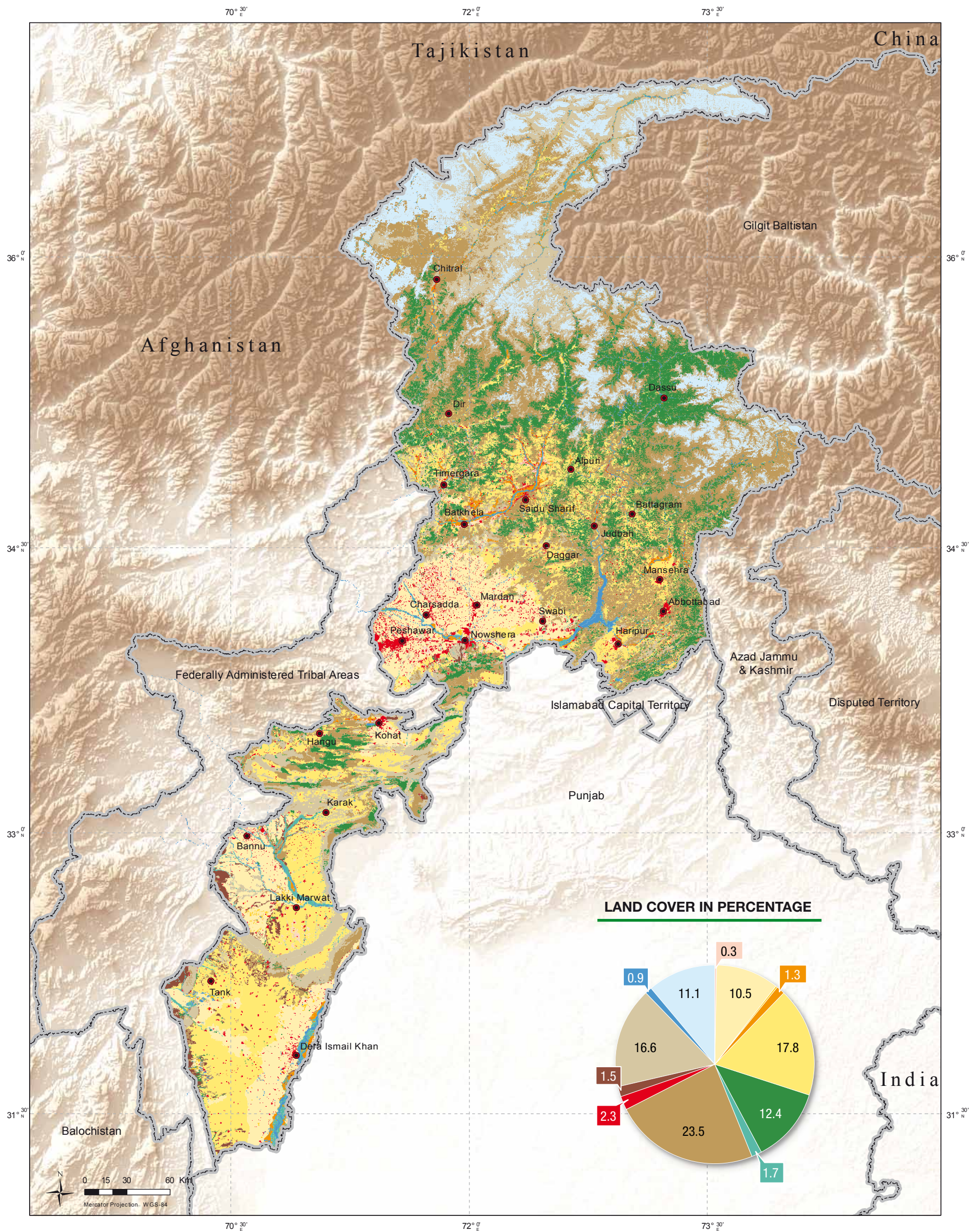


Source: SUPARCO



DISTRIBUTION OF LAND COVER IN THE PROVINCE OF KHYBER PAKHTUNKHWA IN KM²

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ABBOTTABAD

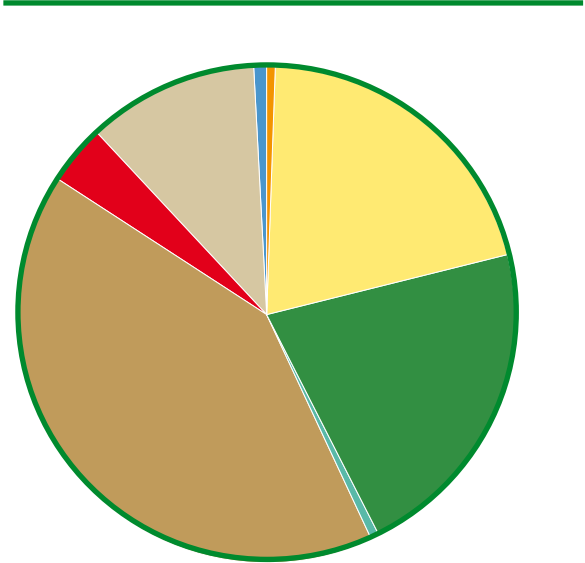
Abbottabad is named after Major James Abbott, the first Deputy Commissioner of Hazara (1849 –1853). During the British rule Abbottabad became the capital of Hazara division, which was named after and contained the Hazara valley, a small valley in the outermost Himalayas, between the Indus in the west and Kashmir in the east. The major crops grown are wheat, potato, maize and vegetables like turnip, radish, peas, pumpkin and beans. It has two tehsils named as Abbottabad and Havelian. The district headquarter is located at Abbottabad.

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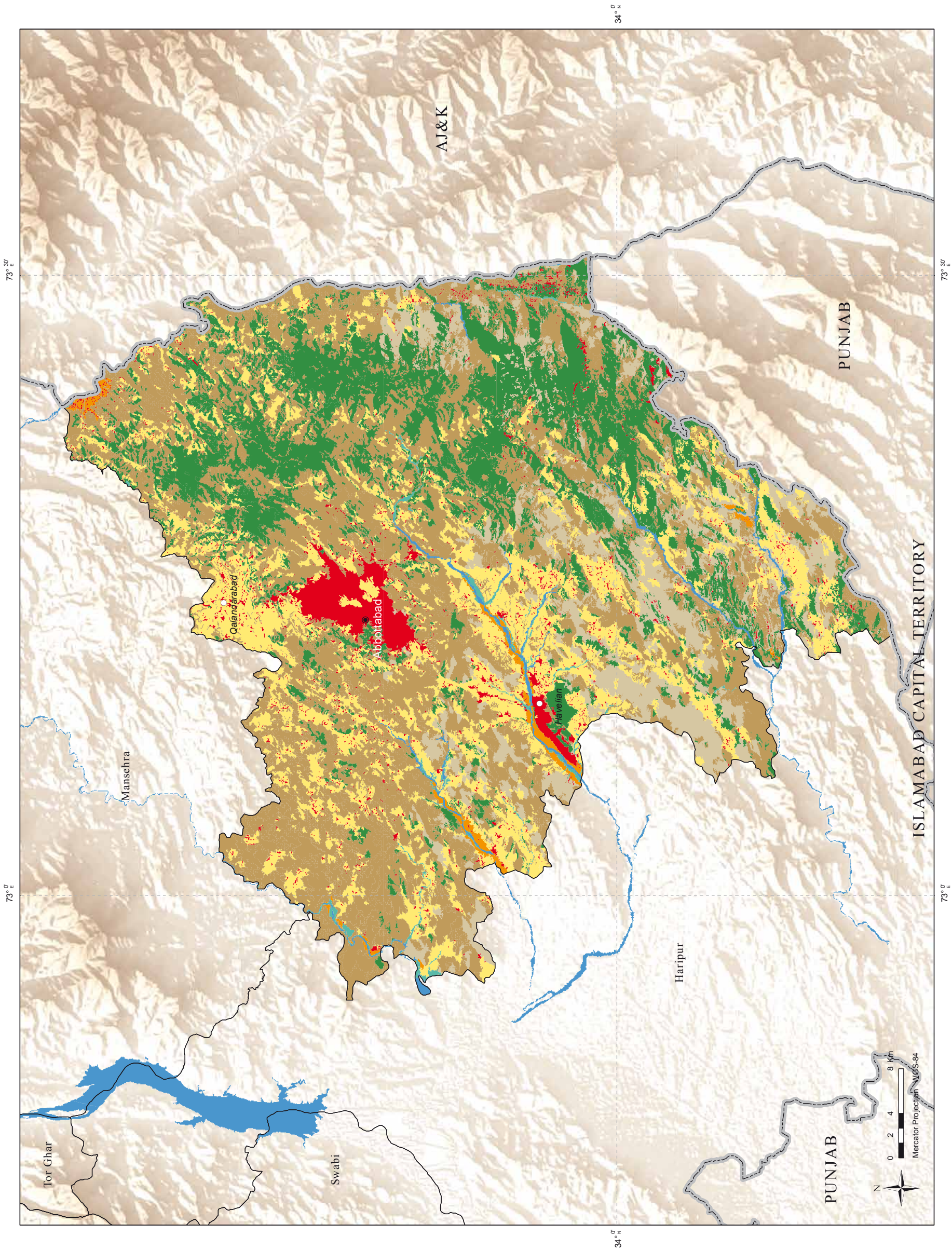
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	00.0	0.0
Crop Irrigated	00.0	0.0
Crop Marginal and Irrigated Saline	00.0	0.0
Crop in Flood Plain	15.09	0.8
Crop Rainfed	366.64	20.3
Forest - Natural Trees and Mangroves	385.80	21.4
Natural Vegetation in Wet Areas	12.42	0.7
Range Lands - Natural Shrubs and Herbs	741.37	41.0
Built-up	71.28	3.9
Bare Areas	0.03	0.0
Bare Areas with Sparse Natural Vegetation	199.37	11.0
Wet Areas	14.72	0.8
Snow and Glaciers	00.0	0.0
Grand Total	1,806.71	



BANNU

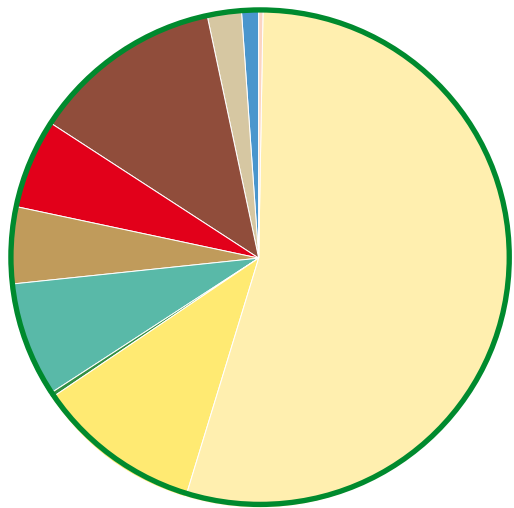
Bannu district is located 192 km south of Peshawar and lies within a sedimentary basin. The main tribes are the Bannuchi, Wazir, Bettani, Mehsud, Dawar, Marwat, Khattak and some Bangash and Hindus. The major industries of Bannu are cloth weaving and the manufacturing of cotton fabrics, machinery, and equipment. It is surrounded by the hard and dried mountain ranges of Koh-e-Safed and Koh-e-Suleiman. Every kind of crops and fruits are grown here but rice crops are especially unique. The district headquarter is located at Bannu.

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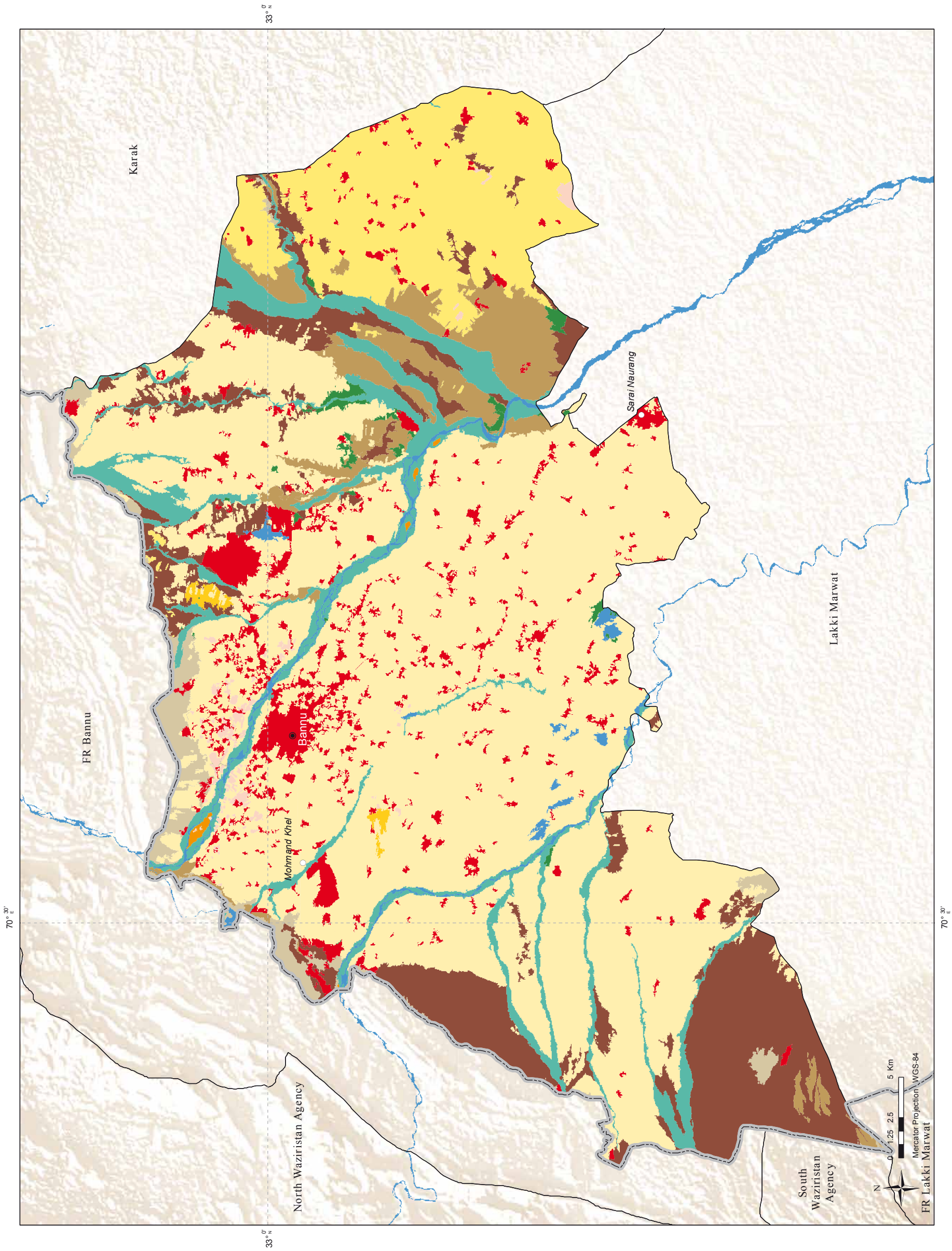
Source: www.timenspacemedia.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	6.27	0.5
Crop Irrigated	657.39	54.2
Crop Marginal and Irrigated Saline	2.63	0.2
Crop in Flood Plain	1.14	0.1
Crop Rainfed	130.44	10.8
Forest - Natural Trees and Mangroves	6.14	0.5
Natural Vegetation in Wet Areas	87.97	7.3
Range Lands - Natural Shrubs and Herbs	62.49	5.2
Built-up	68.57	5.7
Bare Areas	149.92	12.4
Bare Areas with Sparse Natural Vegetation	28.50	2.4
Wet Areas	10.72	0.9
Snow and Glaciers	0.00	0.0
Grand Total	1,212.17	



BATTAGRAM

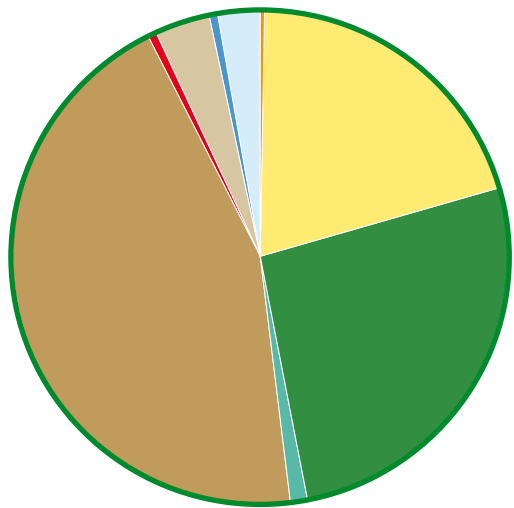
Battagram got the status of district in year 1993. Pashto is the main language while Hindko, Gujri and Kohistani are also spoken. The district is noted for scenic mountain beauty, thick forests, fertile lands and streams. Most of the population is rural and depends upon agriculture. The Shahrāh-e-Resham also called Karakoram Highway has assisted in establishment of industries in the region. The major crops are rice, maize, wheat and red beans. It has two tehsils Battagram and Allai. The district headquarter is located at Battagram.

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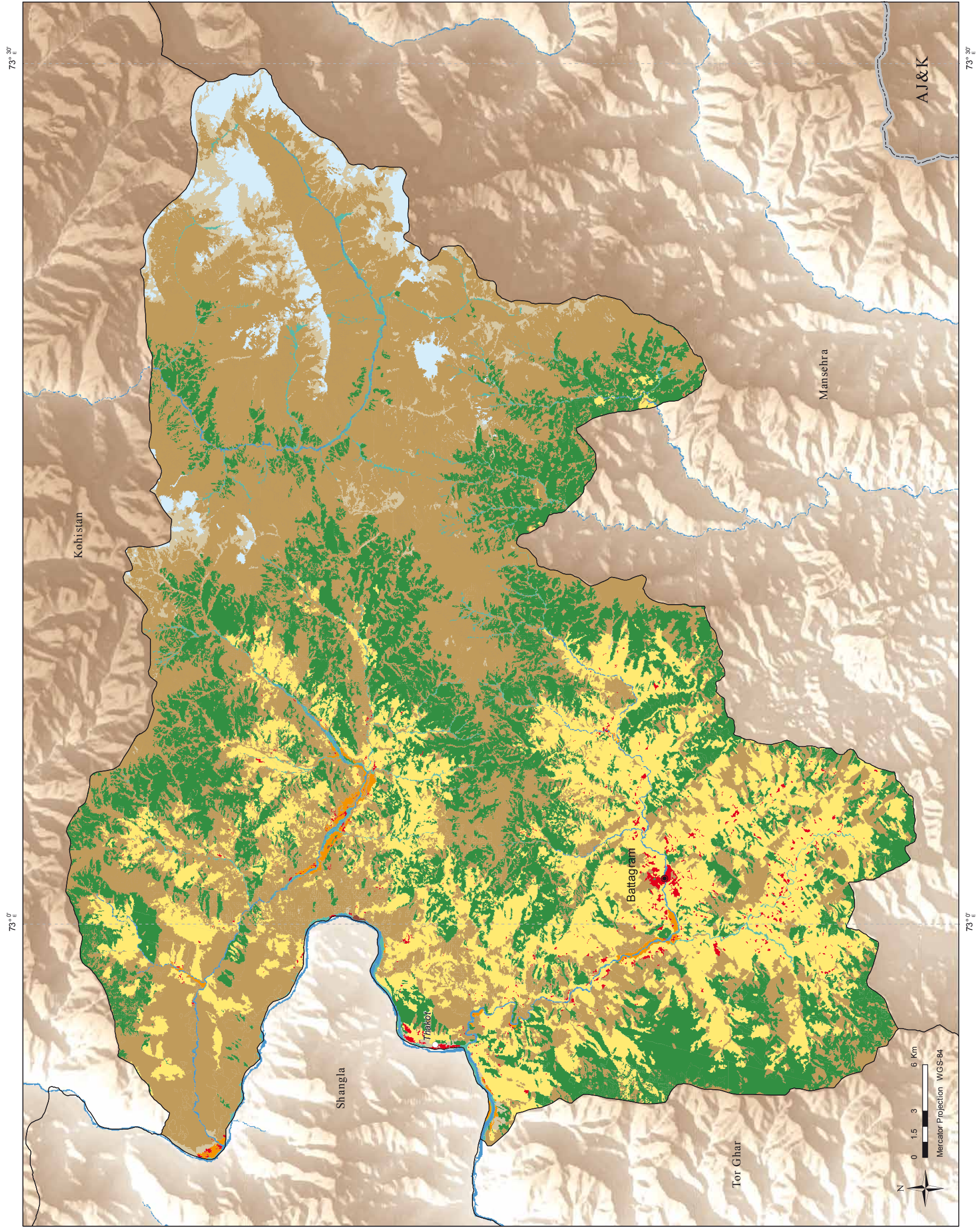
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	0.00	0.0
Crop Irrigated	00.0	0.0
Crop Marginal and Irrigated Saline	00.0	0.0
Crop in Flood Plain	5.65	0.4
Crop Rainfed	303.70	20.4
Forest - Natural Trees and Mangroves	391.13	26.2
Natural Vegetation in Wet Areas	17.35	1.2
Range Lands - Natural Shrubs and Herbs	663.55	44.5
Built-up	8.73	0.6
Bare Areas	0.13	0.0
Bare Areas with Sparse Natural Vegetation	53.93	3.6
Wet Areas	6.83	0.5
Snow and Glaciers	40.17	2.7
Grand Total	1,491.17	



BUNER

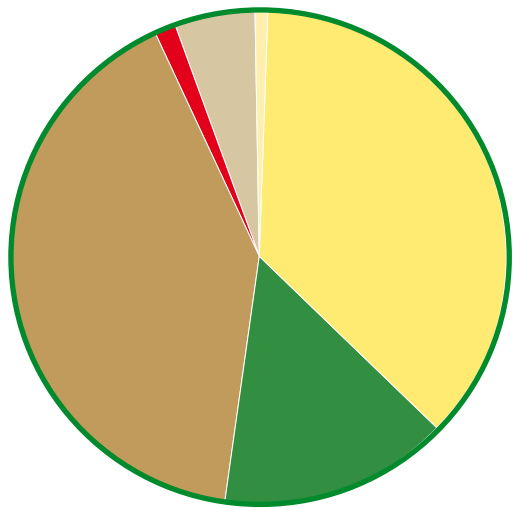
Buner is a small mountain valley dotted with villages. The Mora Hills and the Ilam range divide it from the Swat valley, the Sinawar range from Yusafzai, the Guru mountains from the Chamla valley, and the Duma range from the Puran valley. There are three main rivers namely Barandu, Chamla and Budal which flow in the midst of the district. Most of the population is rural and main source of their livelihood is agriculture. Main crops are wheat, maize, tobacco, and sugarcane. The district has four tehsils Daggar, Gagra, Khadokhel and Mandan. The district headquarter is located at Daggar.

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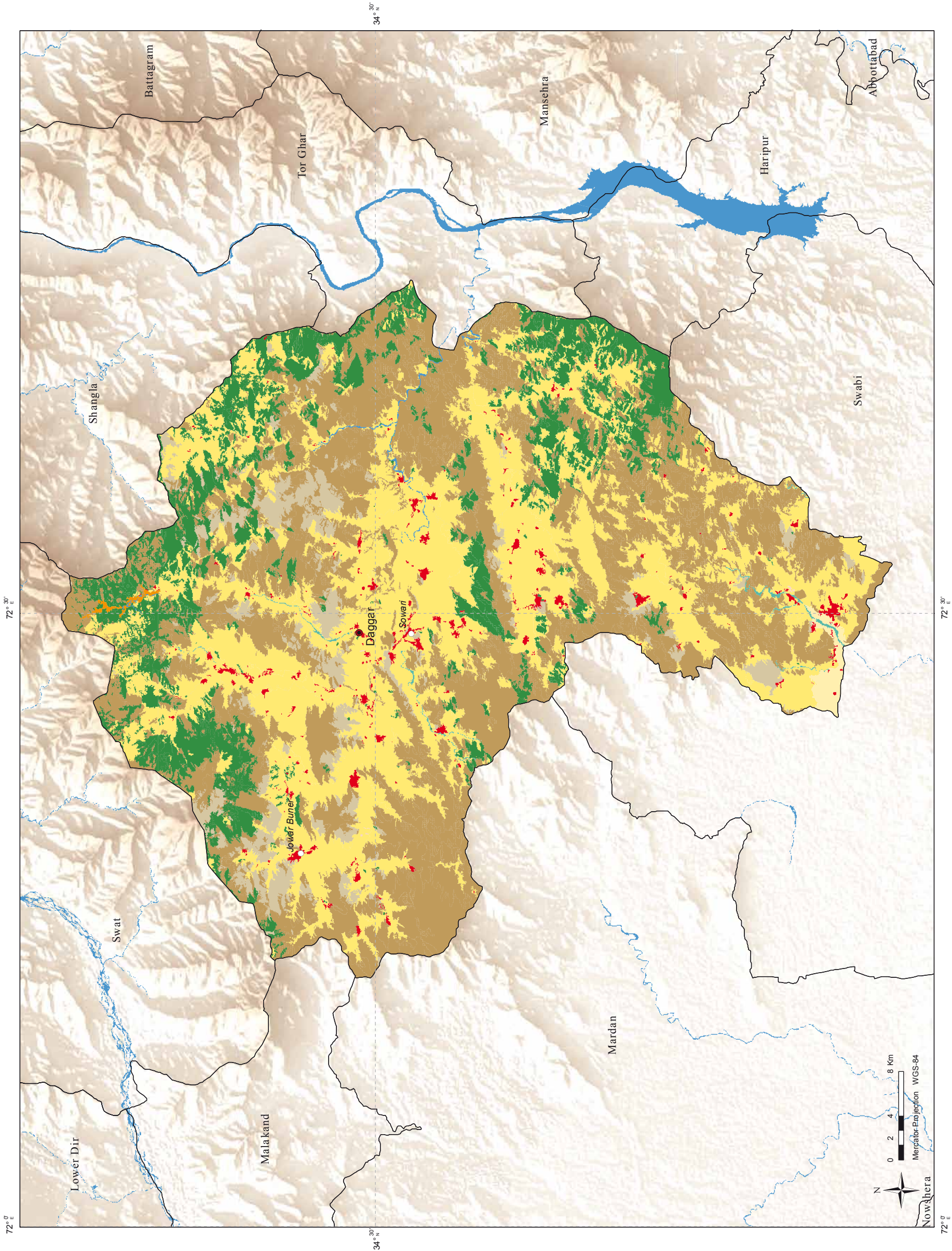
Source: www.tourism.gov.pk

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	0.19	0.0
Crop Irrigated	9.81	0.6
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	1.97	0.1
Crop Rainfed	627.43	36.7
Forest - Natural Trees and Mangroves	252.72	14.8
Natural Vegetation in Wet Areas	3.40	0.2
Range Lands - Natural Shrubs and Herbs	697.10	40.8
Built-up	21.29	1.2
Bare Areas	0.00	0.0
Bare Areas with Sparse Natural Vegetation	93.16	5.5
Wet Areas	2.09	0.1
Snow and Glaciers	0.00	0.0
Grand Total	1,709.17	



CHARSADDA

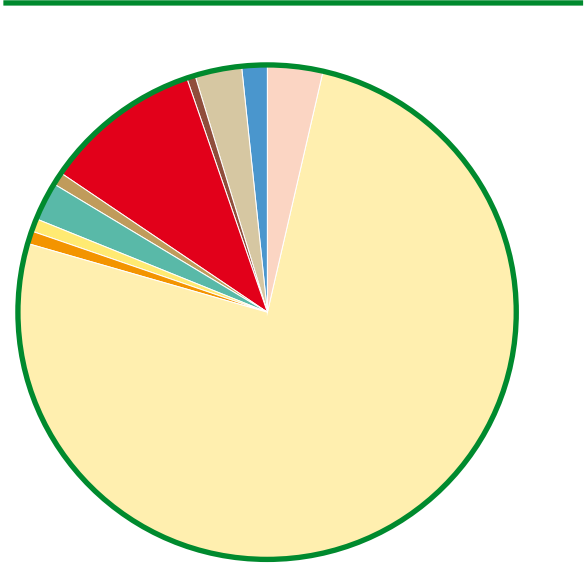
The land of Charsadda is fertile and beautiful. Three rivers are flowing namely Jindi, Kabul and Swat river which are main source of irrigation. These rivers then merge and join the Indus river. The main crops grown in Charsadda are tobacco, sugarcane, sugar beet, wheat and maize. Charsadda is especially famous for lotus roots. Among orchards, peach, apricot, citrus, plum, pears and strawberry are famous. The district is divided into two tehsils, Charsadda and Tangi. The district headquarter is located at Charsadda.

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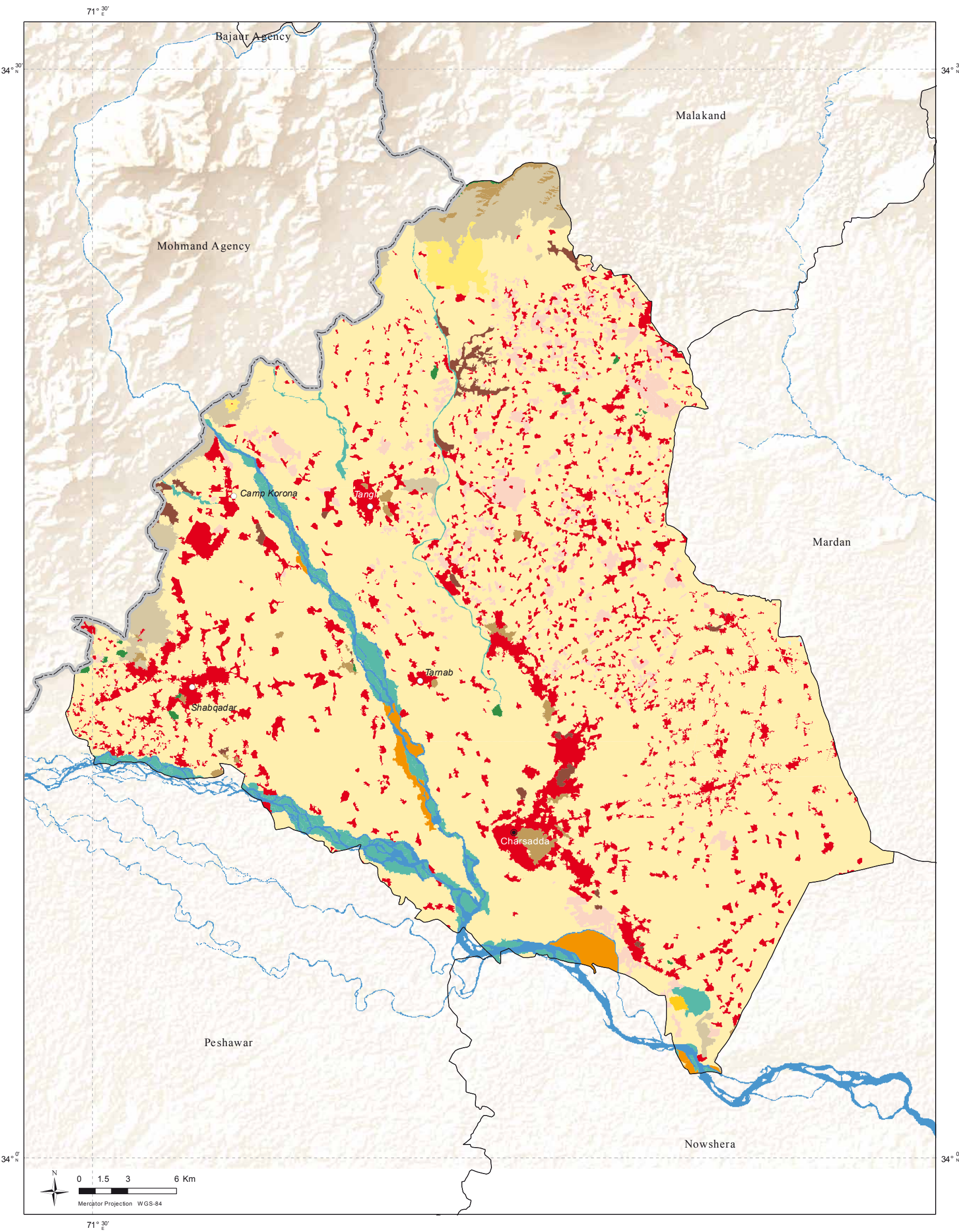
Source: www.timenspacemedia.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	36.44	3.7
Crop Irrigated	754.71	75.7
Crop Marginal and Irrigated Saline	0.50	0.1
Crop in Flood Plain	7.92	0.8
Crop Rainfed	7.41	0.7
Forest - Natural Trees and Mangroves	1.67	0.2
Natural Vegetation in Wet Areas	25.85	2.6
Range Lands - Natural Shrubs and Herbs	8.02	0.8
Built-up	101.98	10.2
Bare Areas	7.26	0.7
Bare Areas with Sparse Natural Vegetation	31.14	3.1
Wet Areas	13.67	1.4
Snow and Glaciers	0.07	0.0
Grand Total	996.63	



CHITRAL

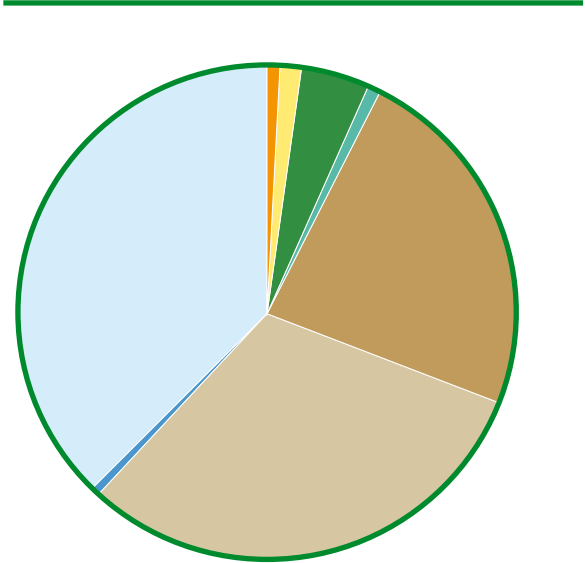
Chitral the largest district of Khyber Pakhtunkhwa is situated on the western bank of the Kunar river called Chitral river. The district lies at the foot of Tirich Mir, the highest peak of the Hindu Kush, which is 7708 m high. The altitude of the valley is 1100 m. The main crops are wheat, maize, pulses, potato, rice and fodder. In addition, high value fruits such as apple, apricot, pomegranate, walnut, grapes and pears are also grown. The population is mainly of the Kho people who speak Khowar language. The district is divided into two tehsils, Chitral and Mastuj. The district headquarter is located at Chitral.

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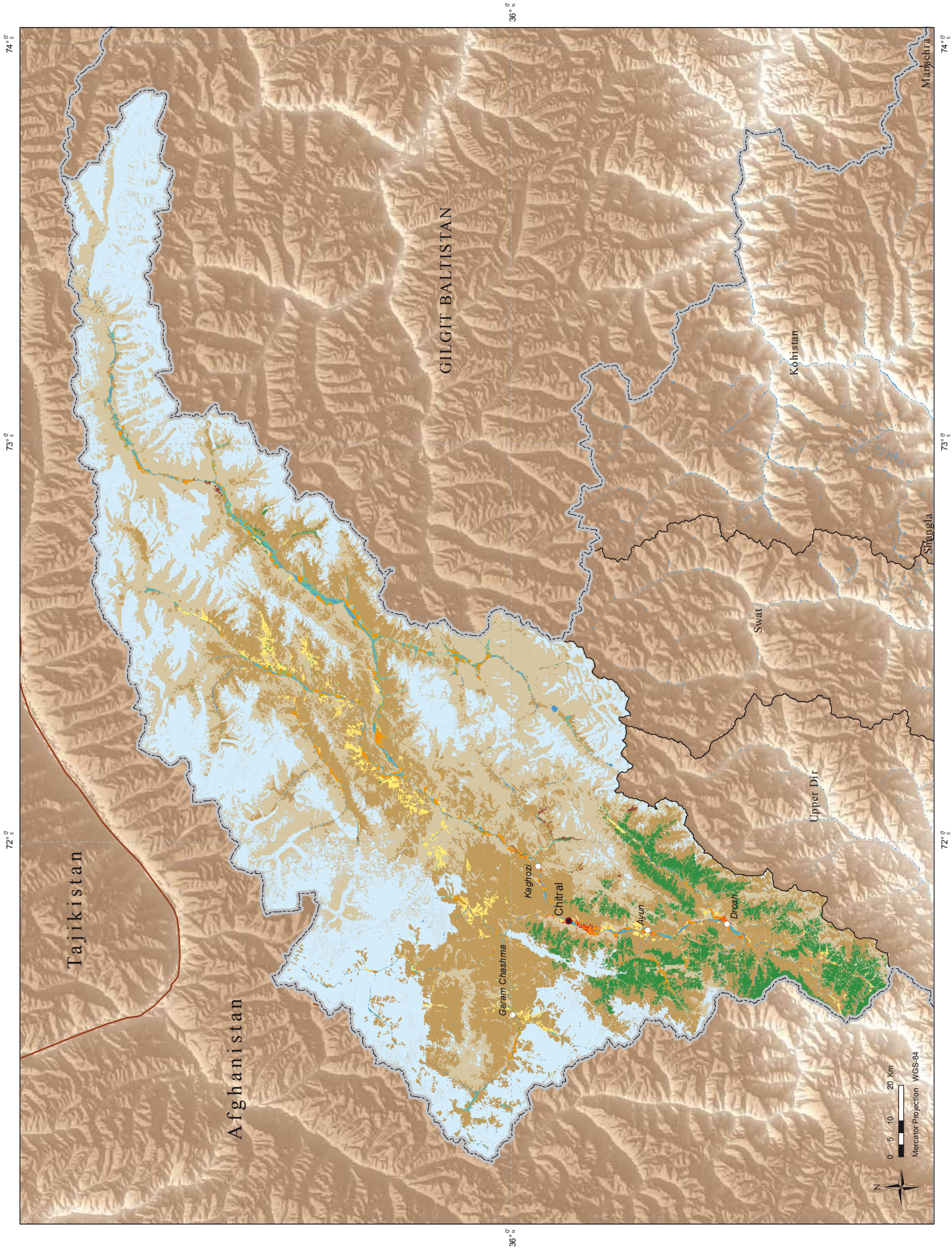
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	0.10	0.0
Crop Irrigated	0.78	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	156.04	1.0
Crop Rainfed	209.17	1.4
Forest - Natural Trees and Mangroves	656.99	4.4
Natural Vegetation in Wet Areas	129.95	0.9
Range Lands - Natural Shrubs and Herbs	3,458.07	23.3
Built-up	10.21	0.1
Bare Areas	16.75	0.1
Bare Areas with Sparse Natural Vegetation	4,617.91	31.1
Wet Areas	54.50	0.4
Snow and Glaciers	5,552.75	37.4
Grand Total	14,863.21	



DERA ISMAIL KHAN

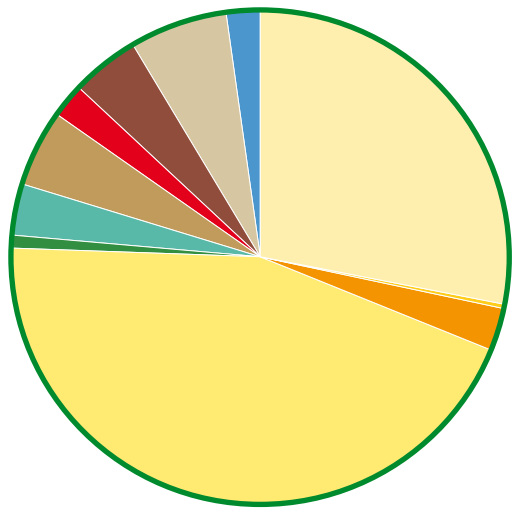
Dera Ismail Khan abbreviated as D. I. Khan is situated on the west bank of the Indus river. One of the most famous products of this district is the “Dhakki date”, which is exported to the Middle East, United States, and Europe. This district also produces wheat, sugarcane, rice, and a famous variety of mango called the langra. Dera Ismail Khan has a hot desert climate with hot summers and mild winters. The district is administratively subdivided into five tehsils named as Dera Ismail Khan, Kulachi, Darabin, Paroa and Paharpur. The district headquarter is located at Dera Ismail Khan.

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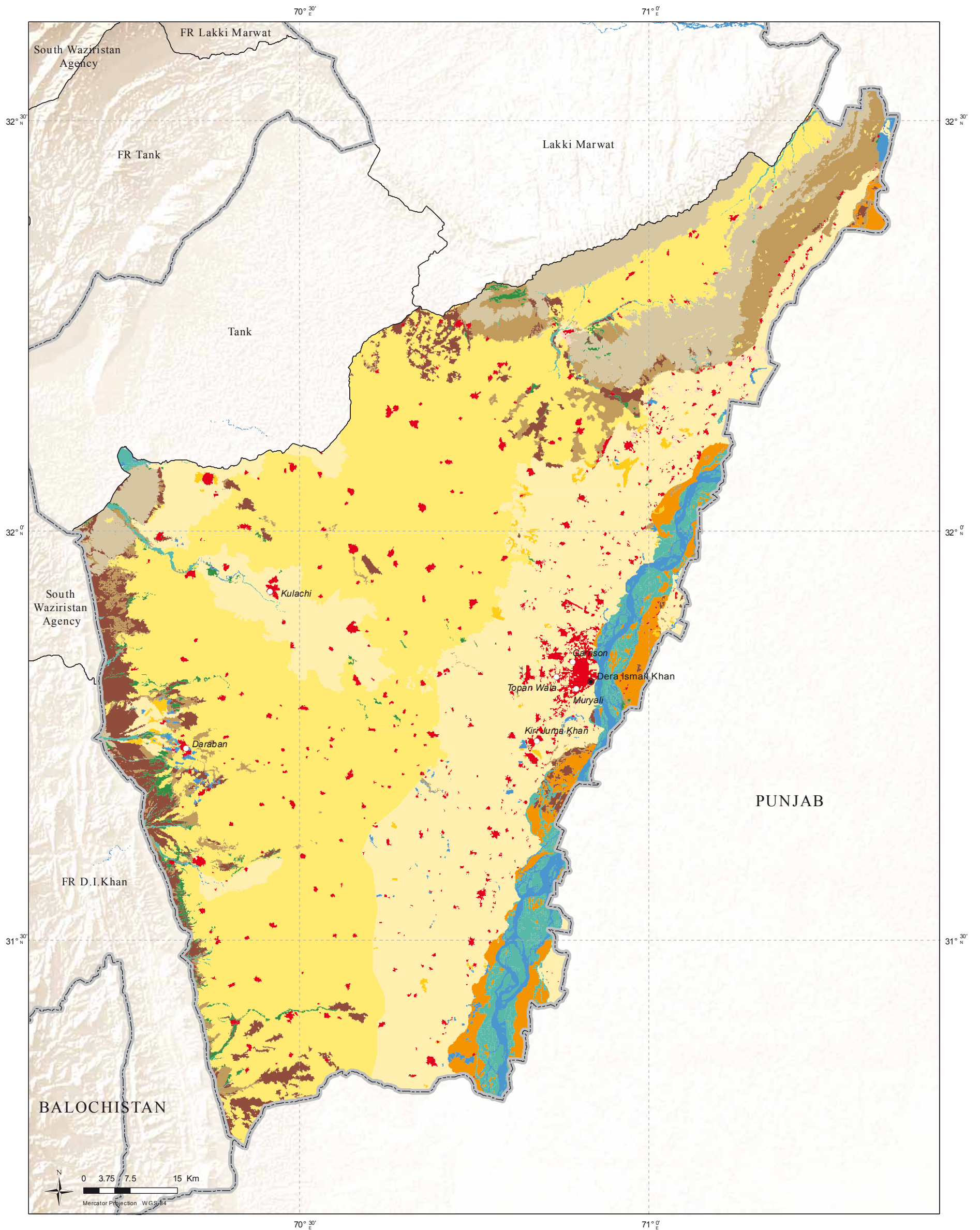
Source: www.timenspacemedia.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	7.59	0.1
Crop Irrigated	2,053.63	28.0
Crop Marginal and Irrigated Saline	32.90	0.4
Crop in Flood Plain	208.98	2.9
Crop Rainfed	3,246.36	44.3
Forest - Natural Trees and Mangroves	54.64	0.7
Natural Vegetation in Wet Areas	252.74	3.5
Range Lands - Natural Shrubs and Herbs	356.24	4.9
Built-up	161.97	2.2
Bare Areas	327.11	4.5
Bare Areas with Sparse Natural Vegetation	471.80	6.4
Wet Areas	148.47	2.0
Snow and Glaciers	0.00	0.0
Grand Total	7,322.42	



HANGU

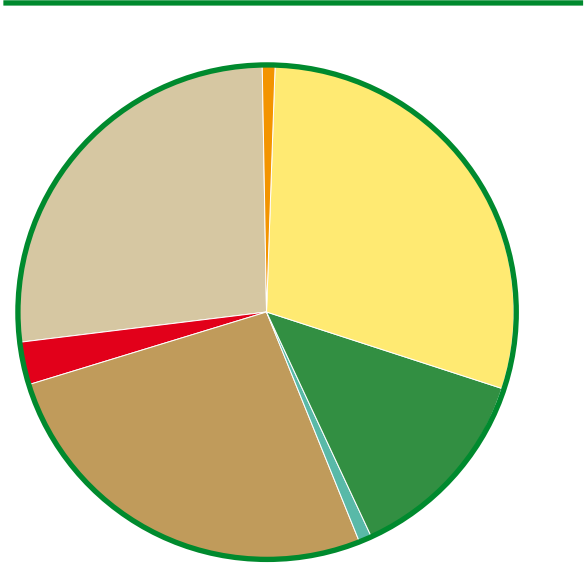
Hangu was a tehsil of Kohat but in 1998 it was formed as district. There are lots of natural springs in Hangu. Snowfall also occurs in winters. Hangu is exceptionally rich in terms of multitudes of tourist attraction. The essence of this attraction is visible from the remarkable natural picturesque comprising beautiful rivers, splendid waterfalls, spell-bound lakes mostly in the mountainous region and green valleys. This district is divided into two tehsils Hangu and Thal. The district headquarter is at Hangu.

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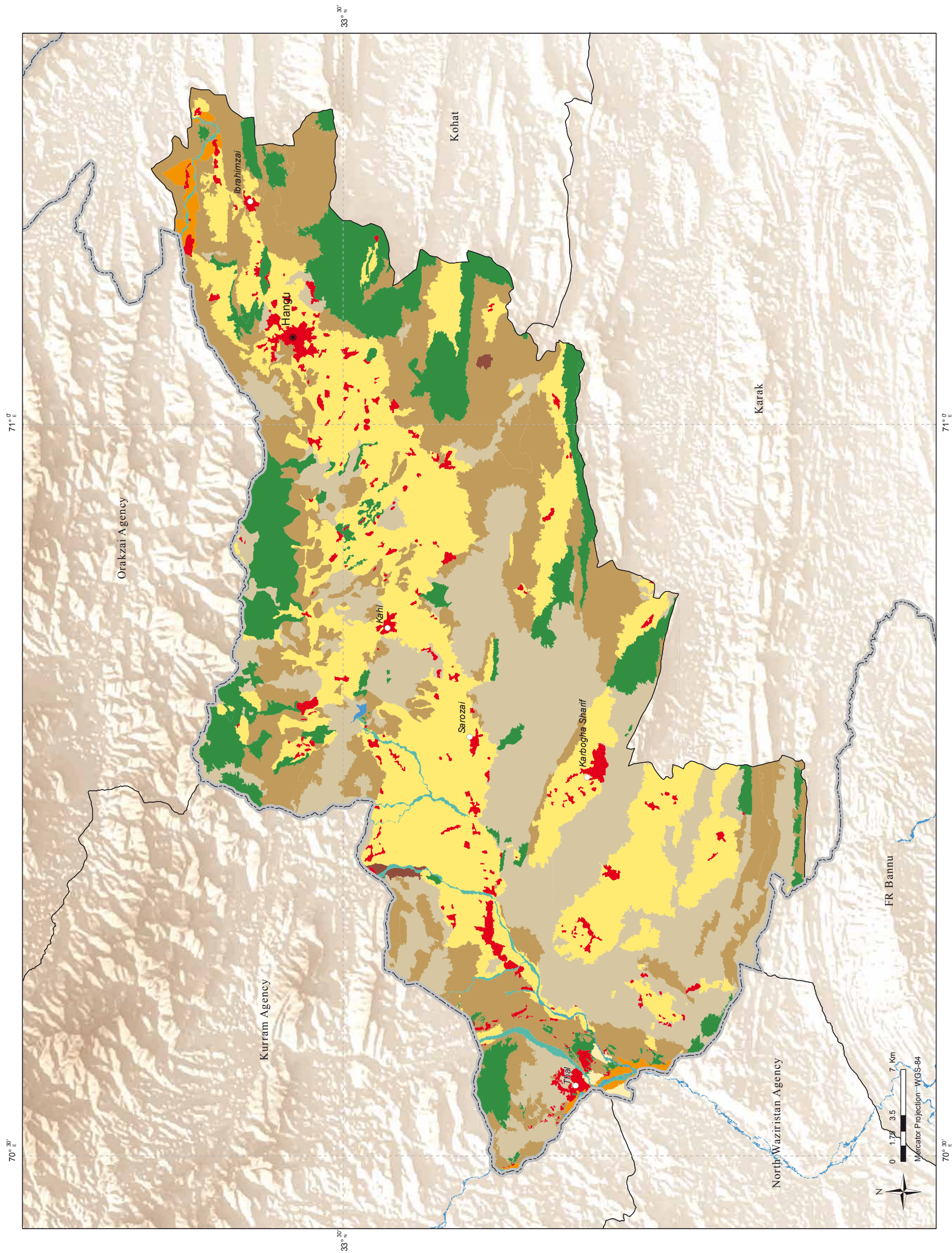
Source: www.weather-forecast.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	0.00	0.0
Crop Irrigated	2.62	0.2
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	10.76	0.8
Crop Rainfed	399.81	29.3
Forest - Natural Trees and Mangroves	175.56	12.9
Natural Vegetation in Wet Areas	10.60	0.8
Range Lands - Natural Shrubs and Herbs	357.87	26.2
Built-up	39.67	2.9
Bare Areas	2.84	0.2
Bare Areas with Sparse Natural Vegetation	365.13	26.7
Wet Areas	1.22	0.1
Snow and Glaciers	0.00	0.0
Grand Total	1,366.07	



HARIPUR

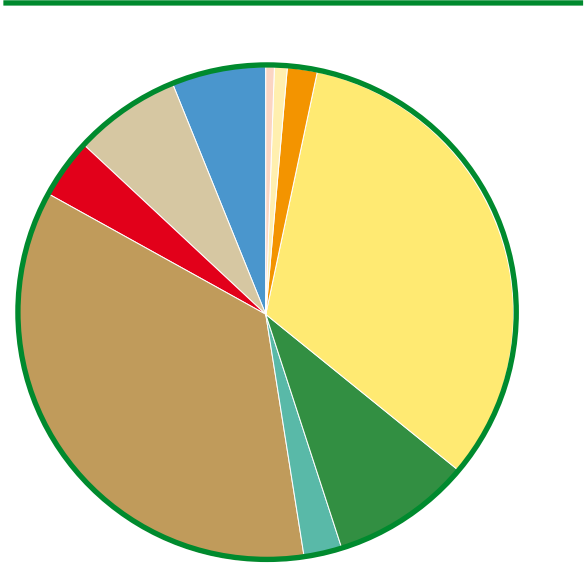
Haripur is a district in the Hazara region with an altitude of around 610 m above mean sea level. There are many factories of various sizes on the Hatar Industrial Estate such as telephone industry, chemical factory, cable manufacturing industry and steel rerolling mills etc. In this district Tarbela dam, the largest earth filled dam in the world is situated on Indus, the largest river of the country. Major crops of district are maize and wheat. Haripur district is divided into two tehsils named as Haripur and Ghazi. The district headquarter is situated at Haripur.

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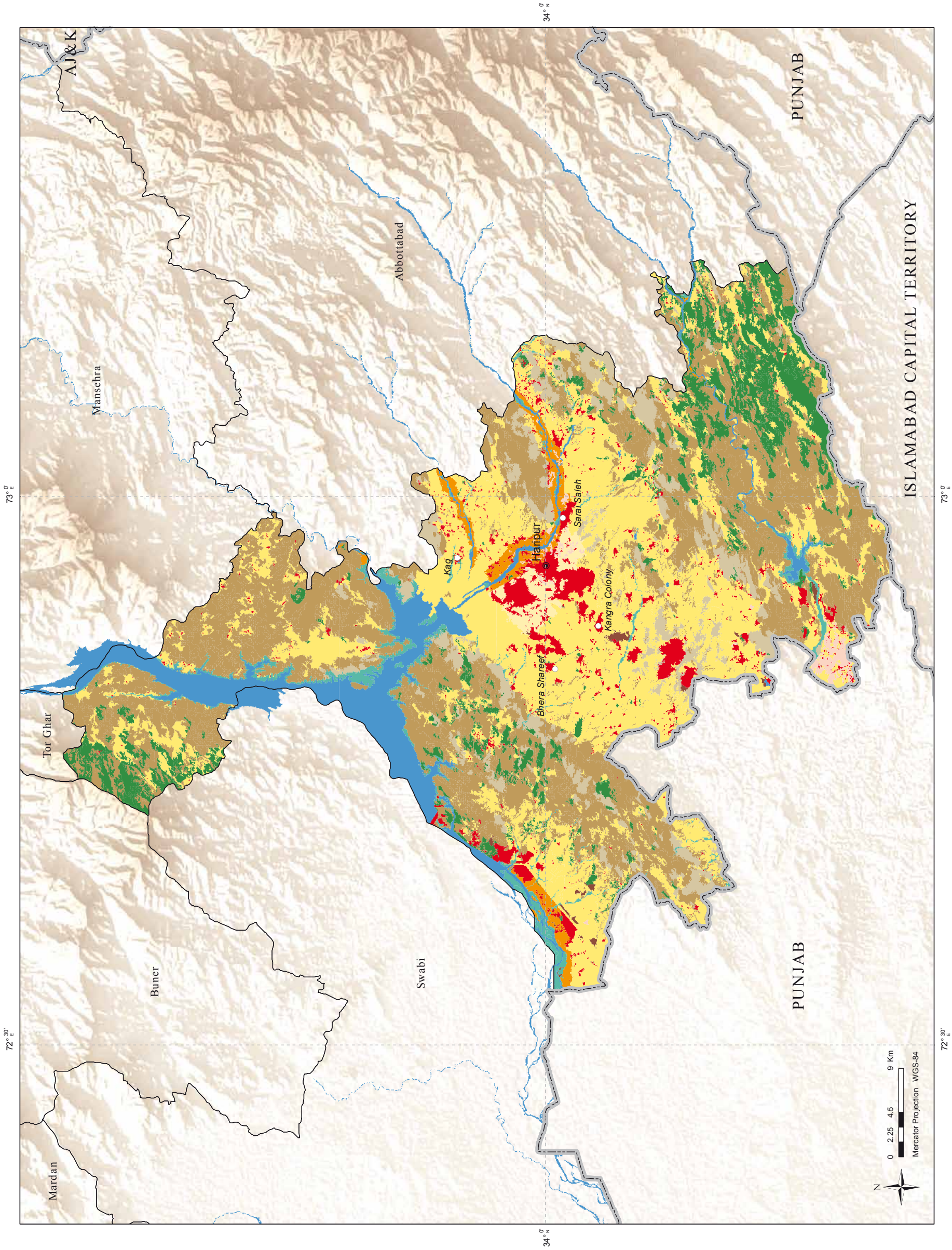
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	10.38	0.6
Crop Irrigated	17.28	1.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	32.15	1.8
Crop Rainfed	585.74	32.5
Forest - Natural Trees and Mangroves	164.79	9.1
Natural Vegetation in Wet Areas	46.20	2.6
Range Lands - Natural Shrubs and Herbs	636.95	35.4
Built-up	72.96	4.1
Bare Areas	4.08	0.2
Bare Areas with Sparse Natural Vegetation	120.48	6.7
Wet Areas	110.36	6.1
Snow and Glaciers	0.00	0.0
Grand Total	1,801.38	



KARAK

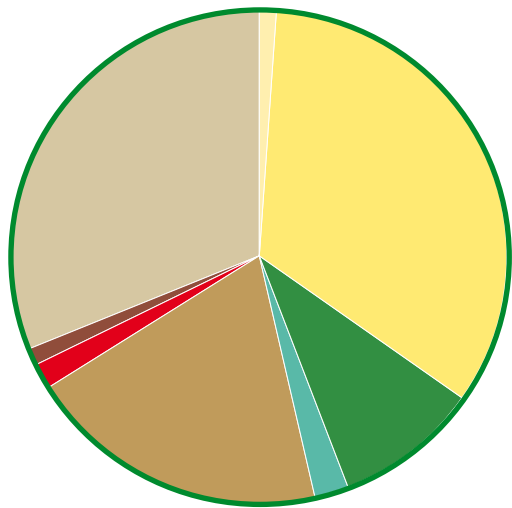
Karak is 123 km from the provincial capital Peshawar. Karak is said to be the only district in Pakistan, inhabited by a single tribe of Pashtuns, the Khattak. Gas has been recently discovered in Shakardara, Gurguri Makori and Nashpa Banda areas. Diverse wild life across the district exists with annual hunting season of quails, cranes, black and brown pheasants. The rainfed agriculture predominates with crops such as wheat, gram, earth nuts, maize & barley. Karak district divided into two tehsils Karak and Takht-e-Nasratti. The district headquarter is situated at Karak.

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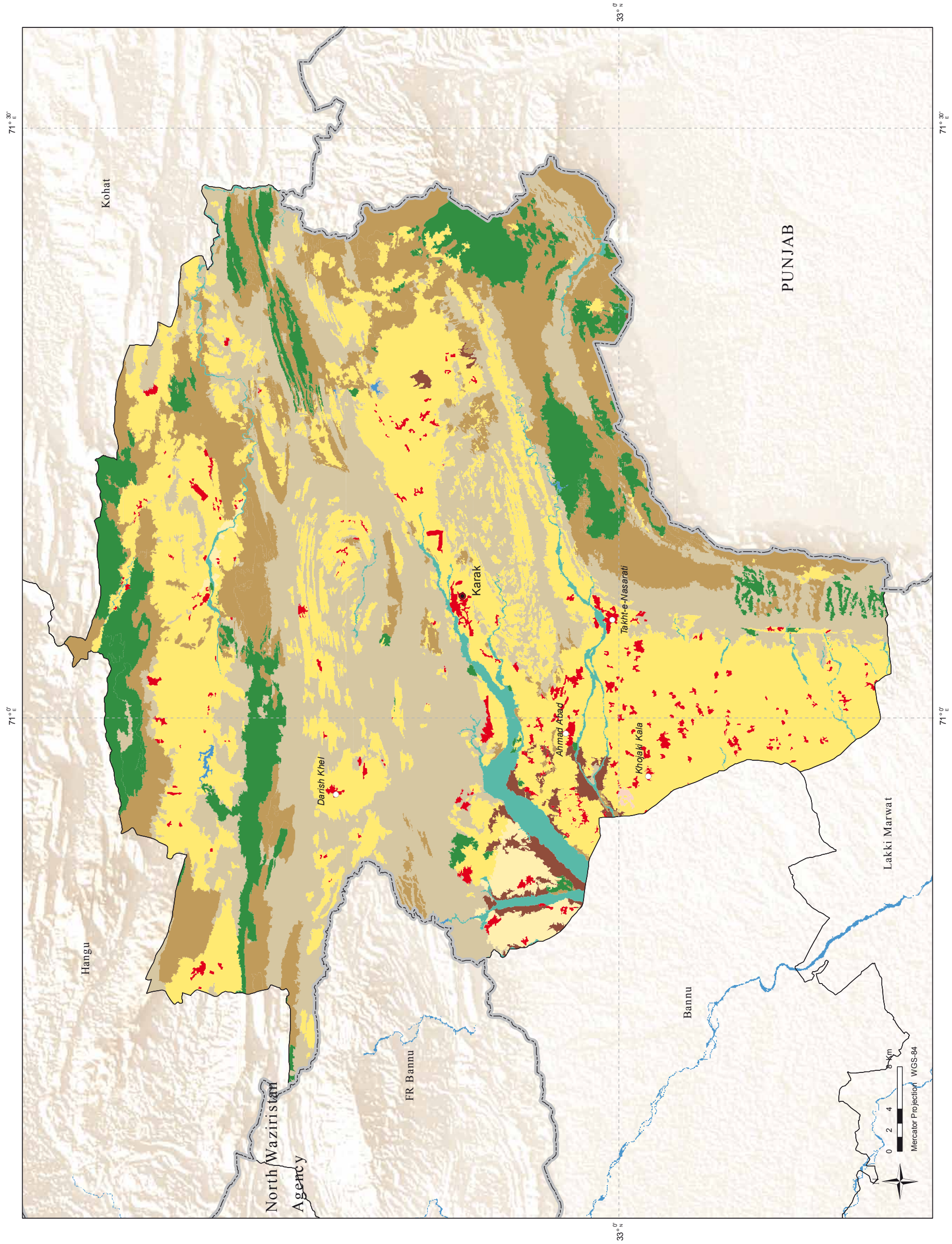
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	1.01	0.0
Crop Irrigated	34.99	1.3
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	0.00	0.0
Crop Rainfed	895.40	33.6
Forest - Natural Trees and Mangroves	248.38	9.3
Natural Vegetation in Wet Areas	61.38	2.3
Range Lands - Natural Shrubs and Herbs	525.74	19.7
Built-up	42.66	1.6
Bare Areas	29.58	1.1
Bare Areas with Sparse Natural Vegetation	822.22	30.9
Wet Areas	2.07	0.1
Snow and Glaciers	0.00	0.0
Grand Total	2,663.44	



KOHAT

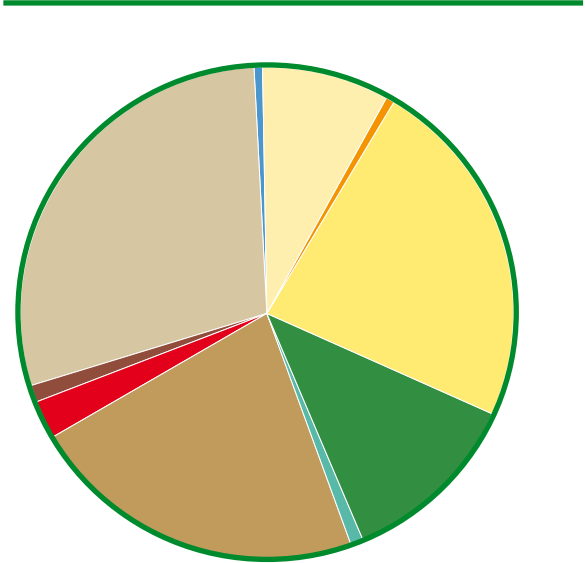
Kohat district is inhabited by various Pashtun tribes such as Afridi, Khattak, Bangash and the Orakzai. Khushkhal Garh Bridge and Friendship Tunnel are the famous places to visit in the district. Main crops are wheat, maize, pearl millet, and peanut. The Tanda Dam is situated to the west of Kohat city. Tanda Lake was included as a Ramsar site on July 23, 1976. The lake is home to migratory birds from Siberia and the Caspian during winter. The district comprises of two tehsils namely Kohat and Lachi. The district headquarter is situated at Kohat.

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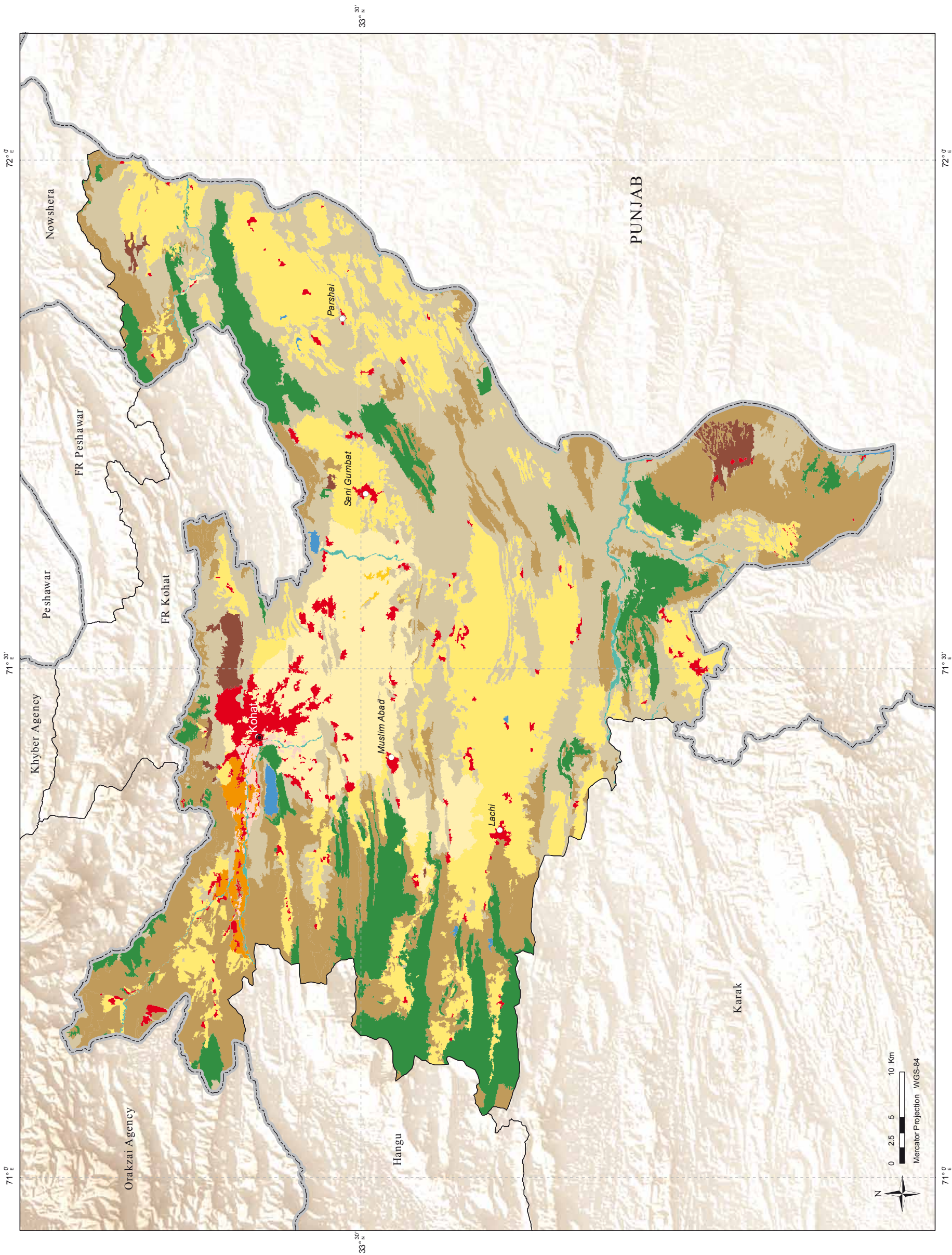
Source: www.timenspacemedia.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	9.89	0.3
Crop Irrigated	241.11	8.1
Crop Marginal and Irrigated Saline	1.56	0.1
Crop in Flood Plain	20.23	0.7
Crop Rainfed	683.07	22.9
Forest - Natural Trees and Mangroves	358.36	12.0
Natural Vegetation in Wet Areas	22.24	0.7
Range Lands - Natural Shrubs and Herbs	658.69	22.1
Built-up	74.84	2.5
Bare Areas	35.62	1.2
Bare Areas with Sparse Natural Vegetation	855.40	28.7
Wet Areas	19.55	0.7
Snow and Glaciers	0.00	0.0
Grand Total	2,980.56	



KOHISTAN

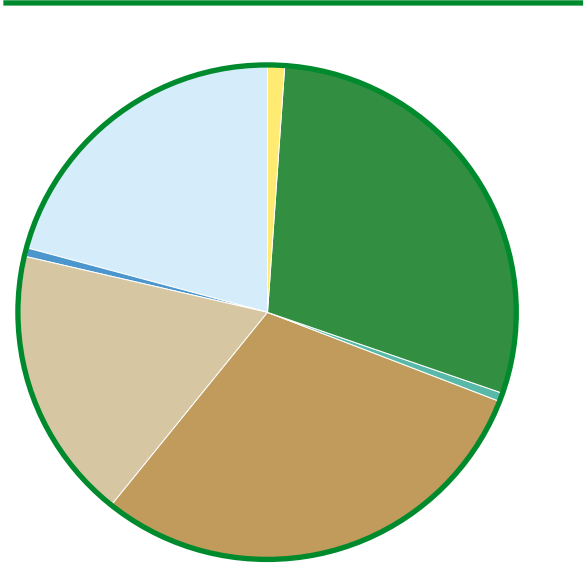
Kohistan meaning “land of mountains” is a district located in an area where the Eurasian land plate and Indian subcontinent collide. Supat Valley, Jalkot is tourism and picnic spot in the region. Farming and growing livestock are the main focus of the economy. The major products are herbs, fuel wood, walnuts, walnut bark, honey, butter, wool and pulses. Kohistan district consists of four teshils namely Dassu, Pattan, Pallas and Kandia. The district headquarter is situated at Dassu.

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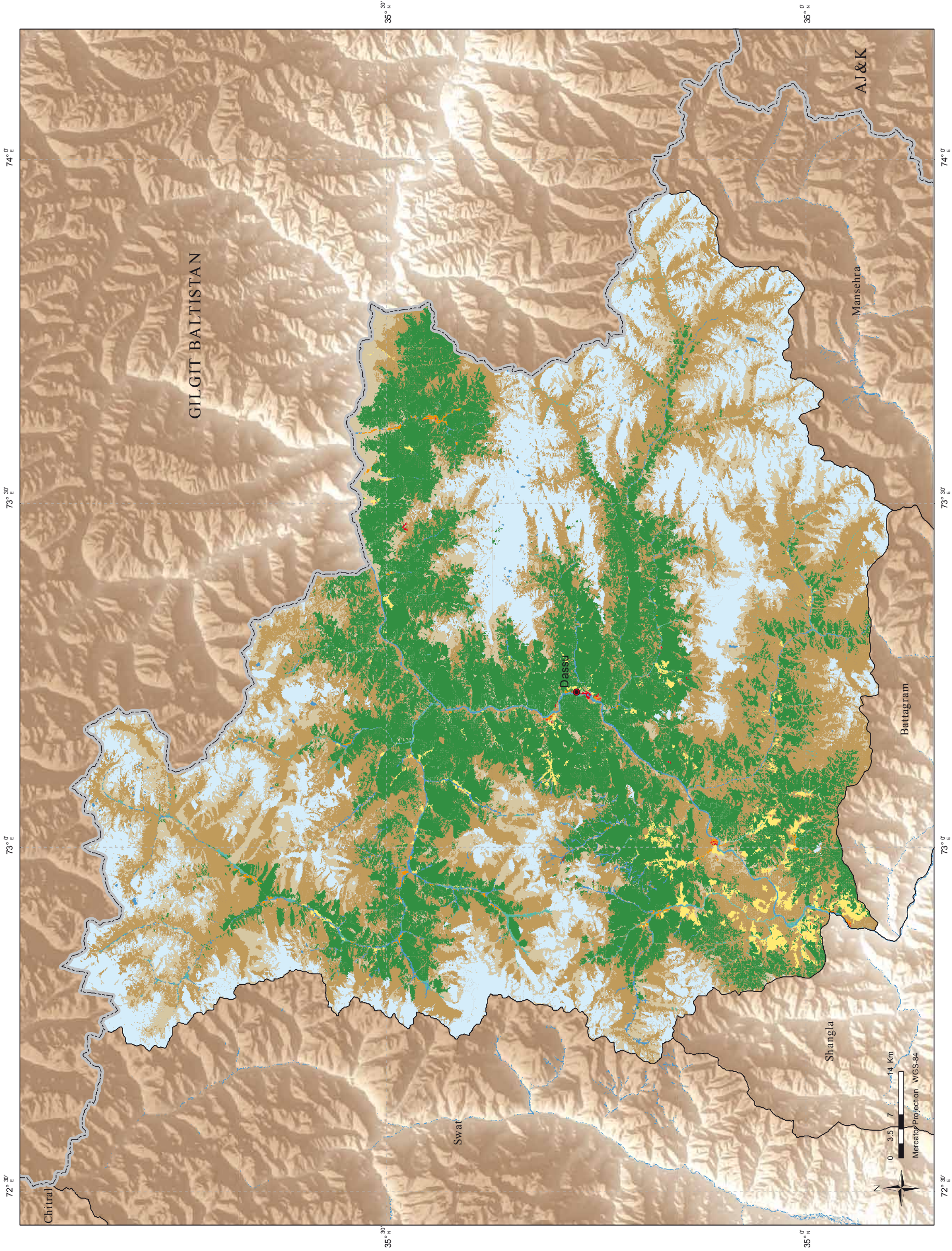
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	0.00	0.0
Crop Irrigated	0.00	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	14.71	0.2
Crop Rainfed	99.25	1.3
Forest - Natural Trees and Mangroves	2,216.53	29.0
Natural Vegetation in Wet Areas	54.98	0.7
Range Lands - Natural Shrubs and Herbs	2,273.71	29.8
Built-up	3.20	0.0
Bare Areas	0.35	0.0
Bare Areas with Sparse Natural Vegetation	1,345.38	17.6
Wet Areas	57.53	0.8
Snow and Glaciers	1,567.51	20.5
Grand Total	7,633.15	



LAKKI MARWAT

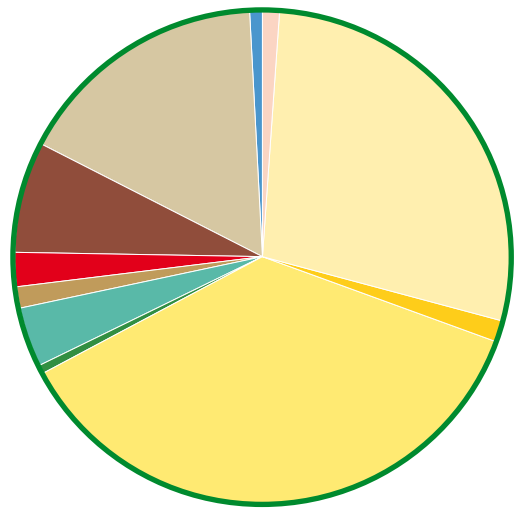
Lakki Marwat district area is a combination of hills and sandy plains. The Kurram river flows through the district from north west to the south east and joins the Indus river south of Isa Khel town. Sorghum and pearl millet are the major crops in summer. Chickpea is the principal crop of the sandy belt of the district. The region has all the characteristics of a desert due to its sand dunes, scorching heat and dry weather. Summers are very hot, while winters are moderately cool. The district headquarter is situated at Lakki Marwat.

INDEX MAP



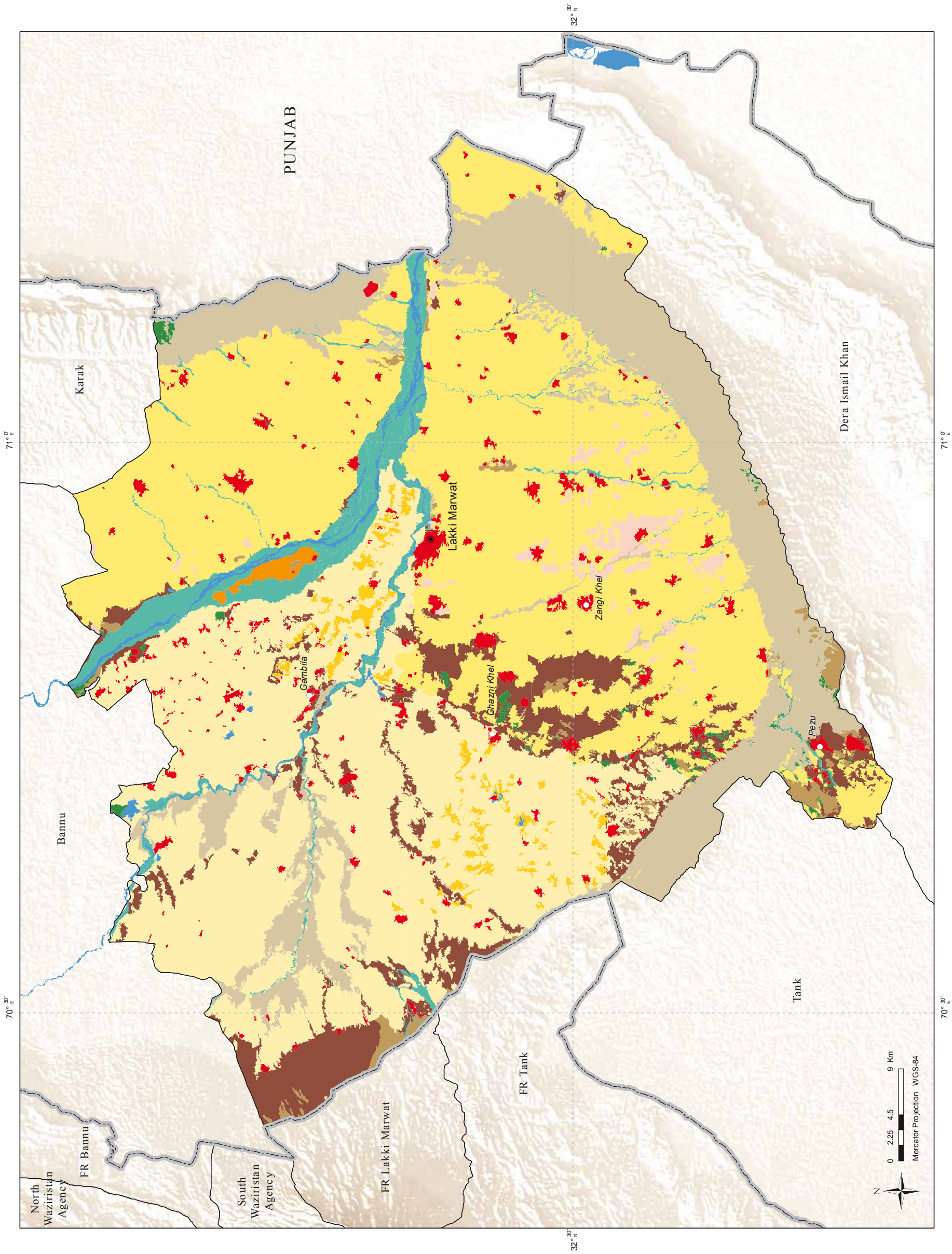
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	39.14	1.2
Crop Irrigated	892.11	28.1
Crop Marginal and Irrigated Saline	36.76	1.2
Crop in Flood Plain	9.94	0.3
Crop Rainfed	1,163.66	36.6
Forest - Natural Trees and Mangroves	15.20	0.5
Natural Vegetation in Wet Areas	129.44	4.1
Range Lands - Natural Shrubs and Herbs	39.53	1.2
Built-up	77.70	2.4
Bare Areas	228.18	7.2
Bare Areas with Sparse Natural Vegetation	522.56	16.4
Wet Areas	24.50	0.8
Snow and Glaciers	0.00	0.0
Grand Total	3,178.72	



LOWER DIR

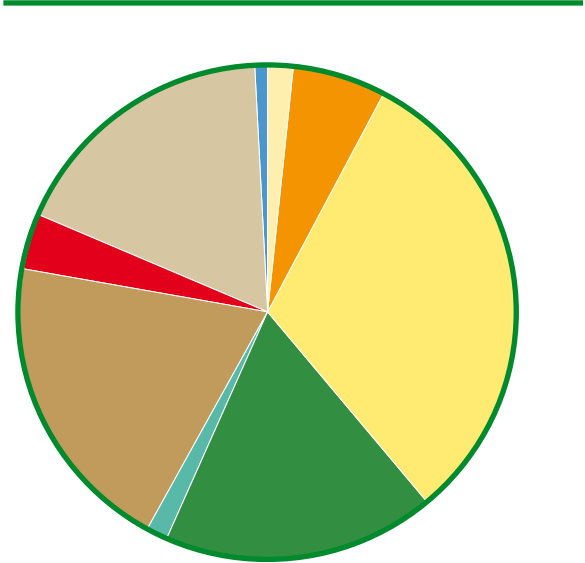
Dir district was divided into two districts Lower Dir and Upper Dir in 1996. The district starts from Chakdara which is the gate way to districts Lower Dir and Upper Dir. Wheat, maize, rice are the main crops grown in the district. Its undisturbed and pristine forests have made it far more beautiful than its neighboring valleys. The district Lower Dir is administratively subdivided into two tehsils, Samar Bagh and Timargara. The district headquarter is located at Timargara.

INDEX MAP



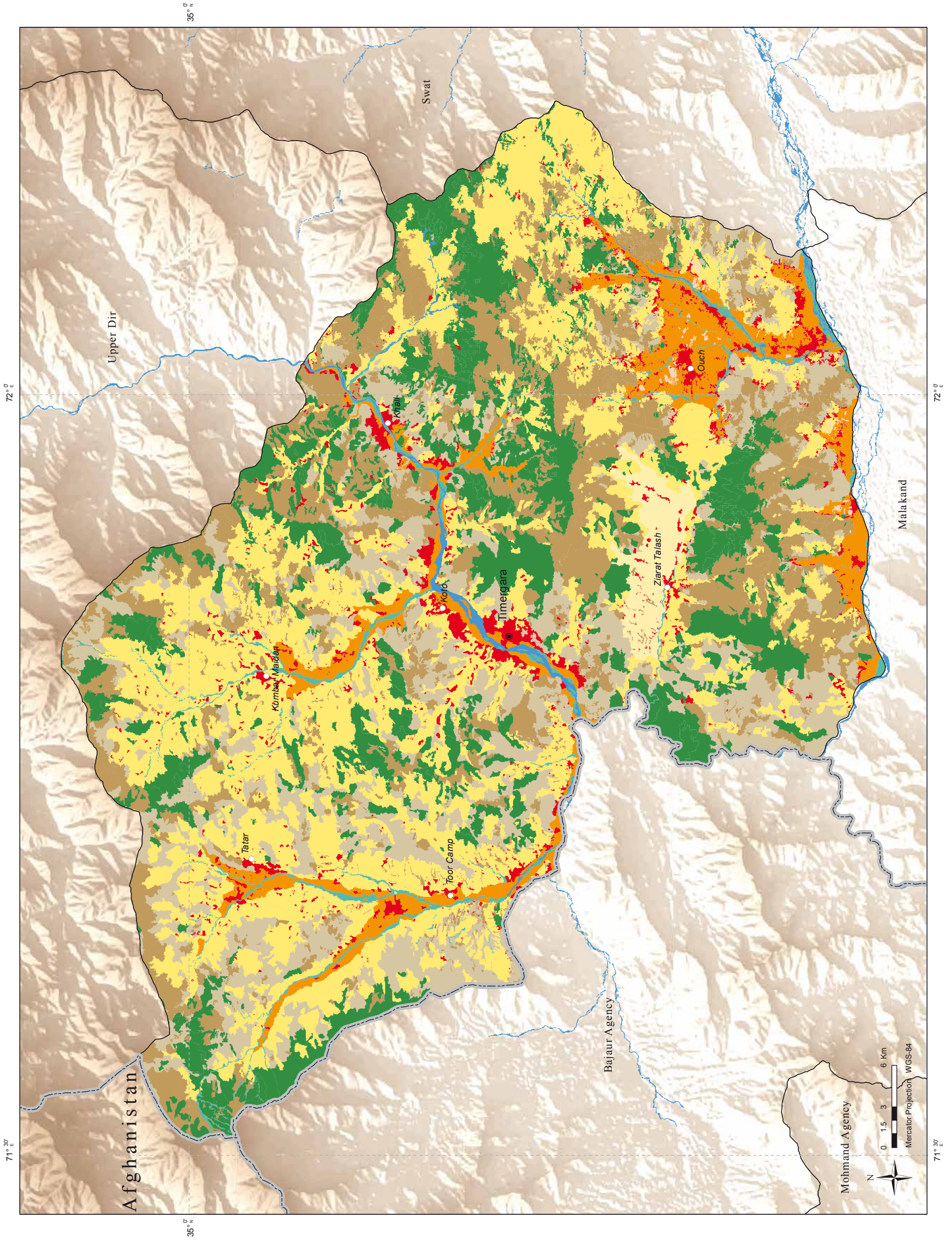
Source: www.tourism.gov.pk

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	2.03	0.1
Crop Irrigated	28.31	1.7
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	104.39	6.2
Crop Rainfed	526.23	31.1
Forest - Natural Trees and Mangroves	301.21	17.8
Natural Vegetation in Wet Areas	24.56	1.5
Range Lands - Natural Shrubs and Herbs	333.51	19.7
Built-up	58.62	3.5
Bare Areas	0.00	0.0
Bare Areas with Sparse Natural Vegetation	304.03	18.0
Wet Areas	10.73	0.6
Snow and Glaciers	0.00	0.0
Grand Total	1,693.62	



MALAKAND

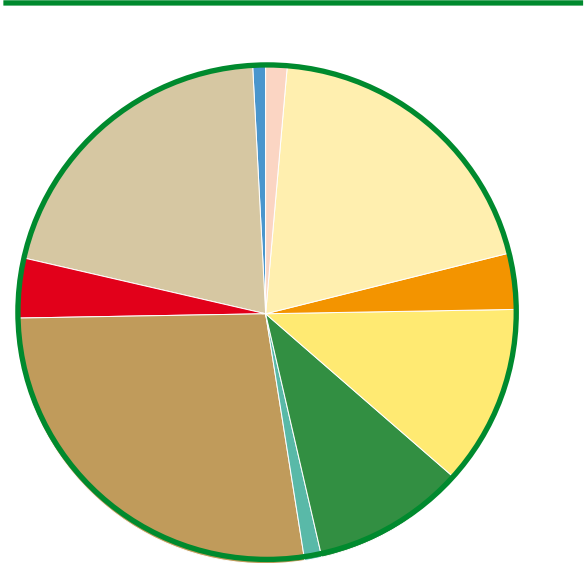
Malakand district lies at a strategically important position as it acts as a gateway to Bajaur, Lower Dir, Swat and Bunair. The famous Malakand Pass which connects Mardan to Swat and Dir is located near Dargai. The main crops are wheat, corn, rice, sugarcane and tobacco. The Swat river flows through the district down towards Charsadda, where it falls into the Kabul river. Malakand district consists of two teshils namely Dargai and Batkhela. The district headquarter is situated at Batkhela.

INDEX MAP



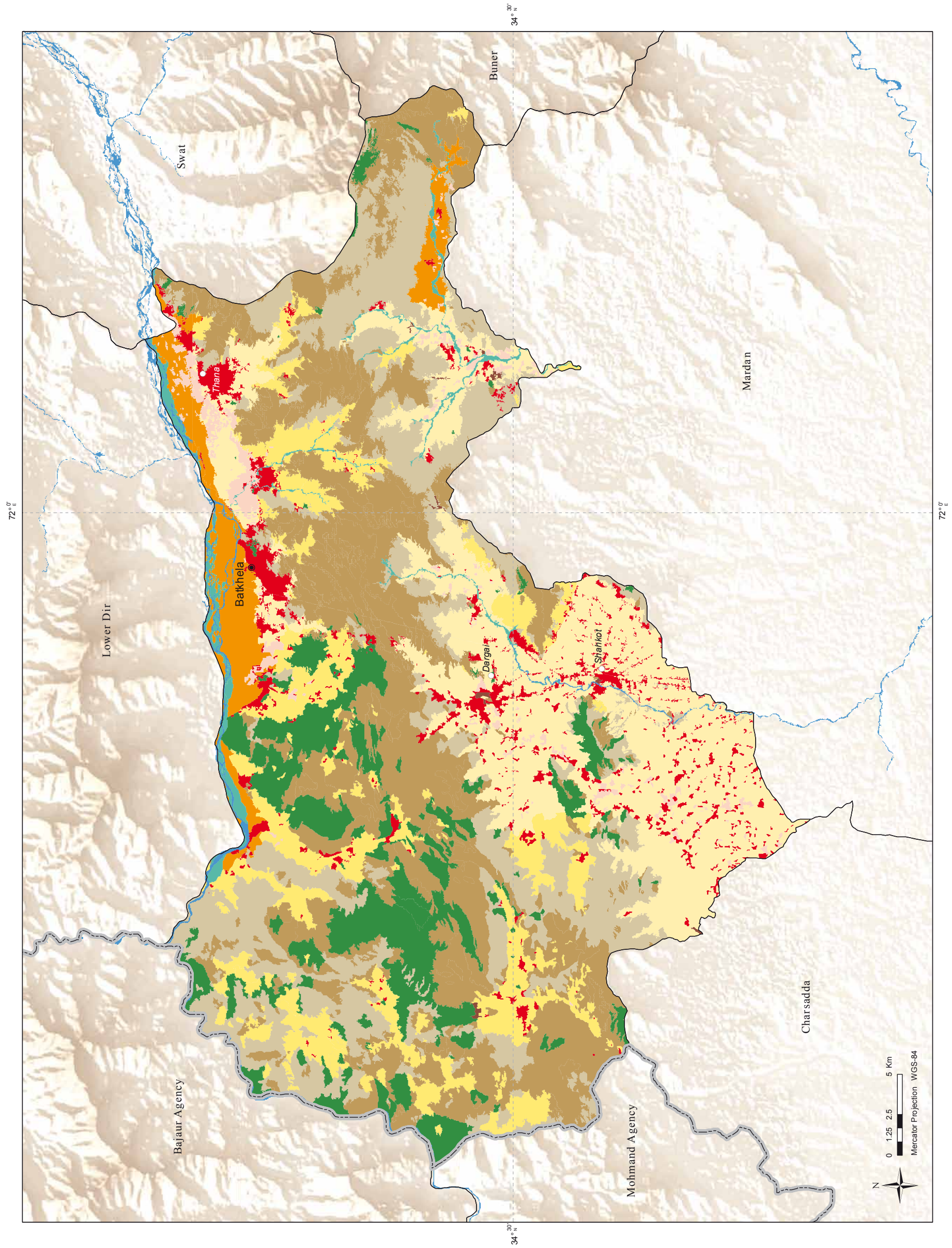
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	15.39	1.6
Crop Irrigated	184.35	19.5
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	36.27	3.8
Crop Rainfed	109.54	11.6
Forest - Natural Trees and Mangroves	93.18	9.9
Natural Vegetation in Wet Areas	12.44	1.3
Range Lands - Natural Shrubs and Herbs	255.76	27.1
Built-up	38.01	4.0
Bare Areas	1.04	0.1
Bare Areas with Sparse Natural Vegetation	193.50	20.5
Wet Areas	5.44	0.6
Snow and Glaciers	0.00	0.0
Grand Total	944.92	



MANSEHRA

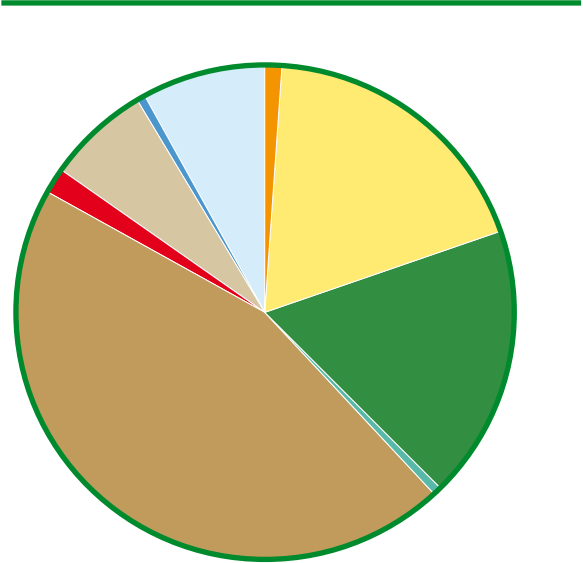
Mansehra district and town are named after Man Singh, a leading General of Mughal Emperor Akbar. The Kaghan Valley area and the Karakoram Highway pass through the district. The district is famous for a number of natural tourism sites like Shogran, Kaghan Valley, Naran, Lulusar Lake, Dudipatsar Lake and Saiful Muluk Lake. Maize, rice and seasonal vegetables are grown in Kharif season. Wheat, peas and other seasonal vegetables are grown in Rabi season. The district consists of three tehsils Balakot, Mansehra and Oghi. The district headquarter is located at Mansehra.

INDEX MAP



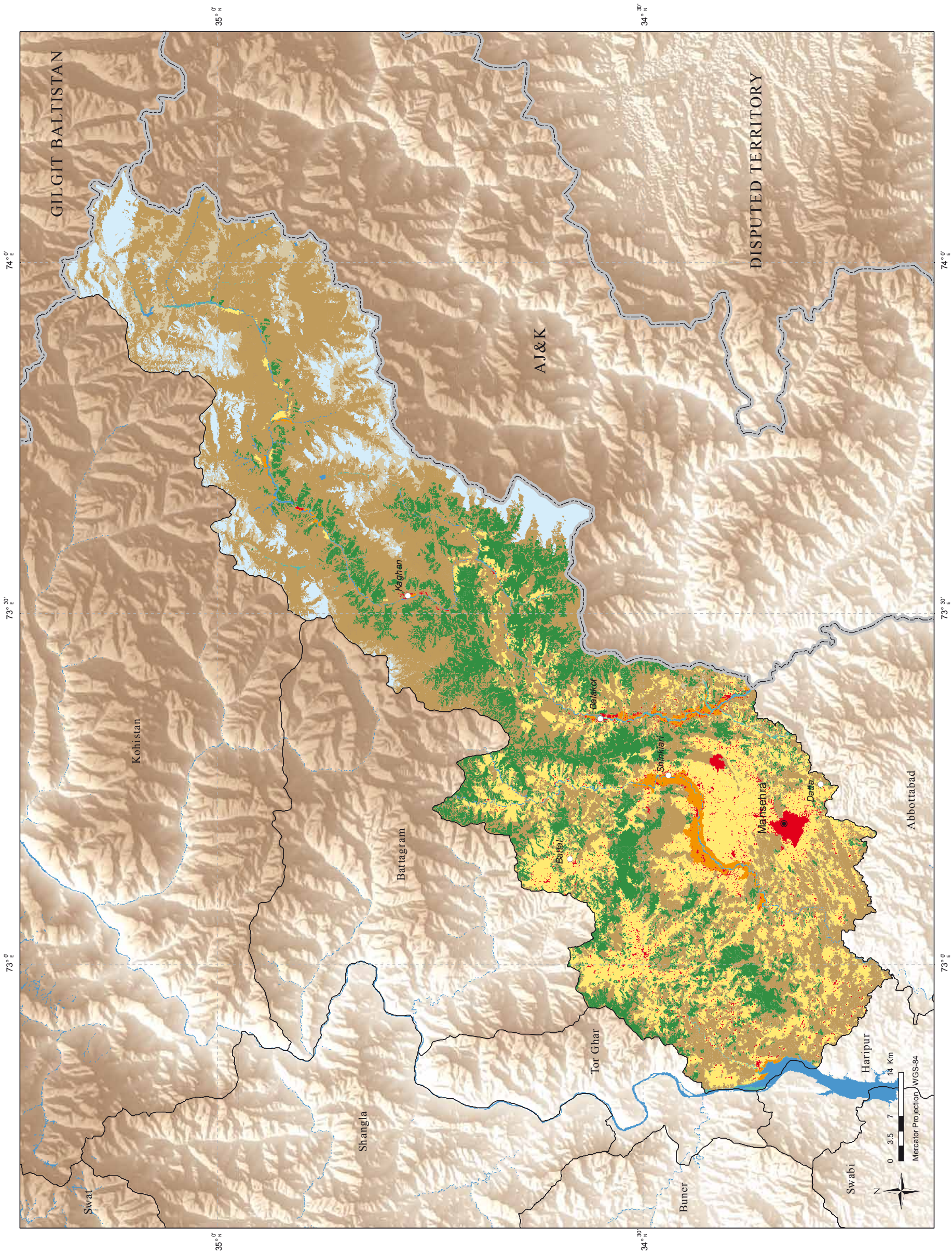
Source: SUPARCO

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	0.00	0.0
Crop Irrigated	0.00	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	55.91	1.3
Crop Rainfed	766.96	18.5
Forest - Natural Trees and Mangroves	741.96	17.9
Natural Vegetation in Wet Areas	20.36	0.5
Range Lands - Natural Shrubs and Herbs	1,868.93	45.0
Built-up	69.64	1.7
Bare Areas	0.00	0.0
Bare Areas with Sparse Natural Vegetation	277.08	6.7
Wet Areas	29.50	0.7
Snow and Glaciers	324.79	7.8
Grand Total	4,155.12	



MARDAN

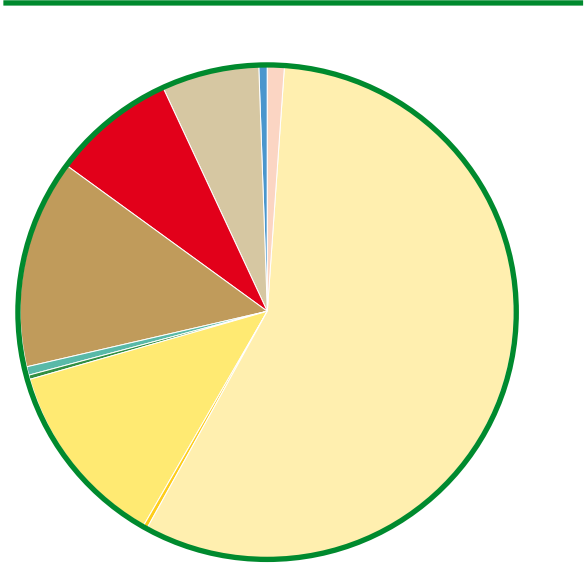
Mardan means the land of brave men and this valley was part of the ancient Gandhara civilization. Mardan contains the famous archaeological site of Takht Bhai, Jamal Ghari and Sawal Dher. Takht Bhai was first a Zoroastrian complex which, after the later arrival of Buddhism, was converted into a Buddhist monastic complex. The major crops are wheat, sugarcane, tobacco, maize, rice, and mustard while fruits are orange, plum, peach, apricot, pear, mango and apple. The district consists of five tehsils Mardan, Takht Bhai, Katlang, Rustam and Lund Khwar. The district headquarter is located at Mardan City.

INDEX MAP



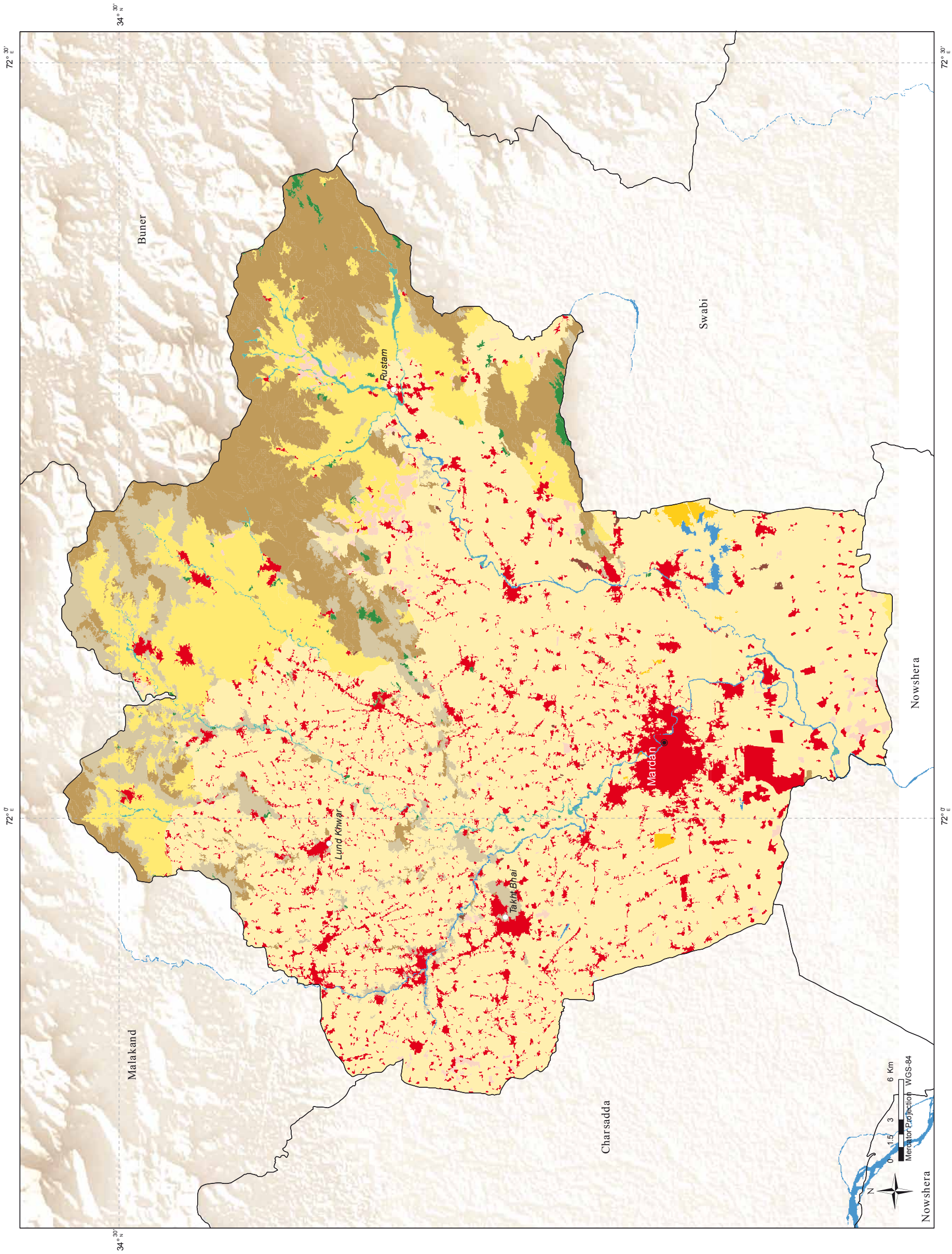
Source: www.tourism.gov.pk

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	19.36	1.2
Crop Irrigated	932.65	57.1
Crop Marginal and Irrigated Saline	4.37	0.3
Crop in Flood Plain	0.04	0.0
Crop Rainfed	196.00	12.0
Forest - Natural Trees and Mangroves	6.63	0.4
Natural Vegetation in Wet Areas	9.22	0.6
Range Lands - Natural Shrubs and Herbs	220.67	13.5
Built-up	134.09	8.2
Bare Areas	1.65	0.1
Bare Areas with Sparse Natural Vegetation	100.67	6.2
Wet Areas	8.27	0.5
Snow and Glaciers	0.06	0.0
Grand Total	1,633.72	



NOWSHERA

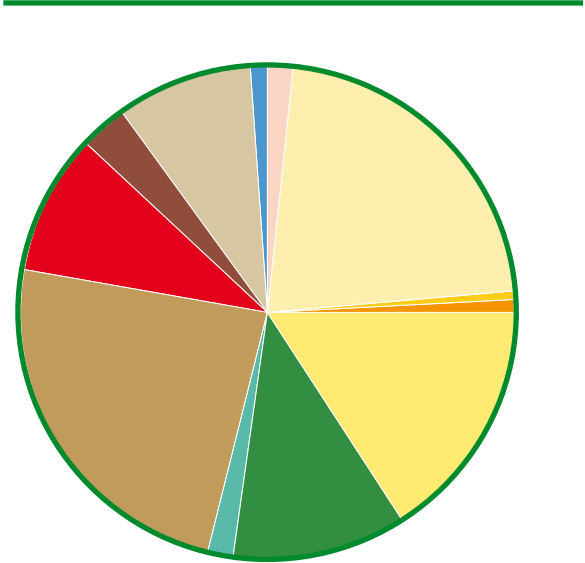
Nowshera became a district in 1988 and before that it was a tehsil of Peshawar district. The Kabul river merges with the mighty Indus river in the district. The world famous Grand Trunk Road runs through the district. The major tribes in the district include the Khattak, Parachas, Awan, Kaka Khels, Gakhar Rajgan, Gujjar, Arain , Babars, Yousafzais, Muhammadzais and Manki khel. The main source of income of the region is agriculture. Potato, sugarcane and wheat are the main crops. The district headquarter is located at Nowshera City.

INDEX MAP



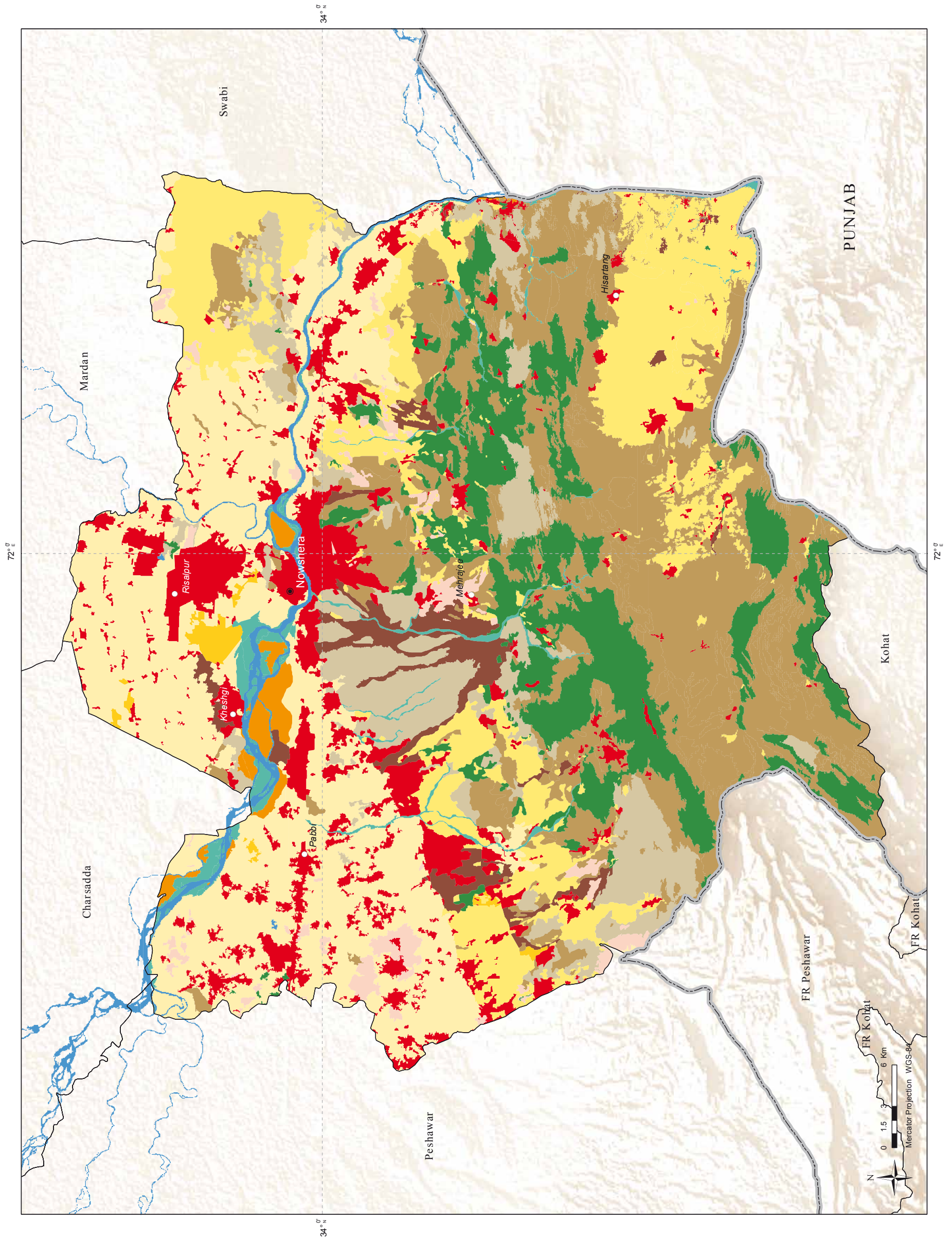
Source: www.timenspacemedia.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	31.46	1.7
Crop Irrigated	402.30	22.0
Crop Marginal and Irrigated Saline	9.66	0.5
Crop in Flood Plain	17.88	1.0
Crop Rainfed	286.91	15.7
Forest - Natural Trees and Mangroves	207.41	11.4
Natural Vegetation in Wet Areas	30.36	1.7
Range Lands - Natural Shrubs and Herbs	436.45	23.9
Built-up	168.93	9.3
Bare Areas	50.73	2.8
Bare Areas with Sparse Natural Vegetation	161.59	8.9
Wet Areas	20.83	1.1
Snow and Glaciers	0.00	0.0
Grand Total	1,824.52	



PESHAWAR

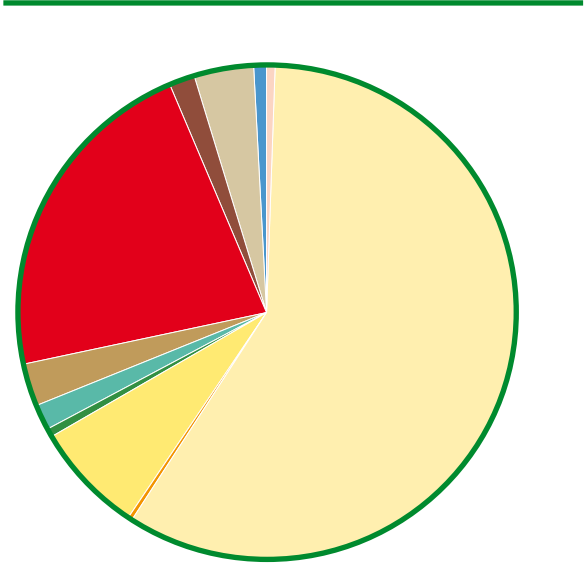
Peshawar is the provincial capital and largest city of Khyber Pakhtunkhwa province. Peshawar is the major educational, political, and business center of Khyber Pakhtunkhwa. Peshawar is situated in a large valley near the eastern end of the Khyber Pass close to the Pak-Afghan border. The main crops are wheat, sugarcane, maize, tobacco, barley and orchards. Under the revision of Pakistan’s administrative structure, promulgated in 2001, Peshawar was given status as a city district and was divided into four towns.

INDEX MAP



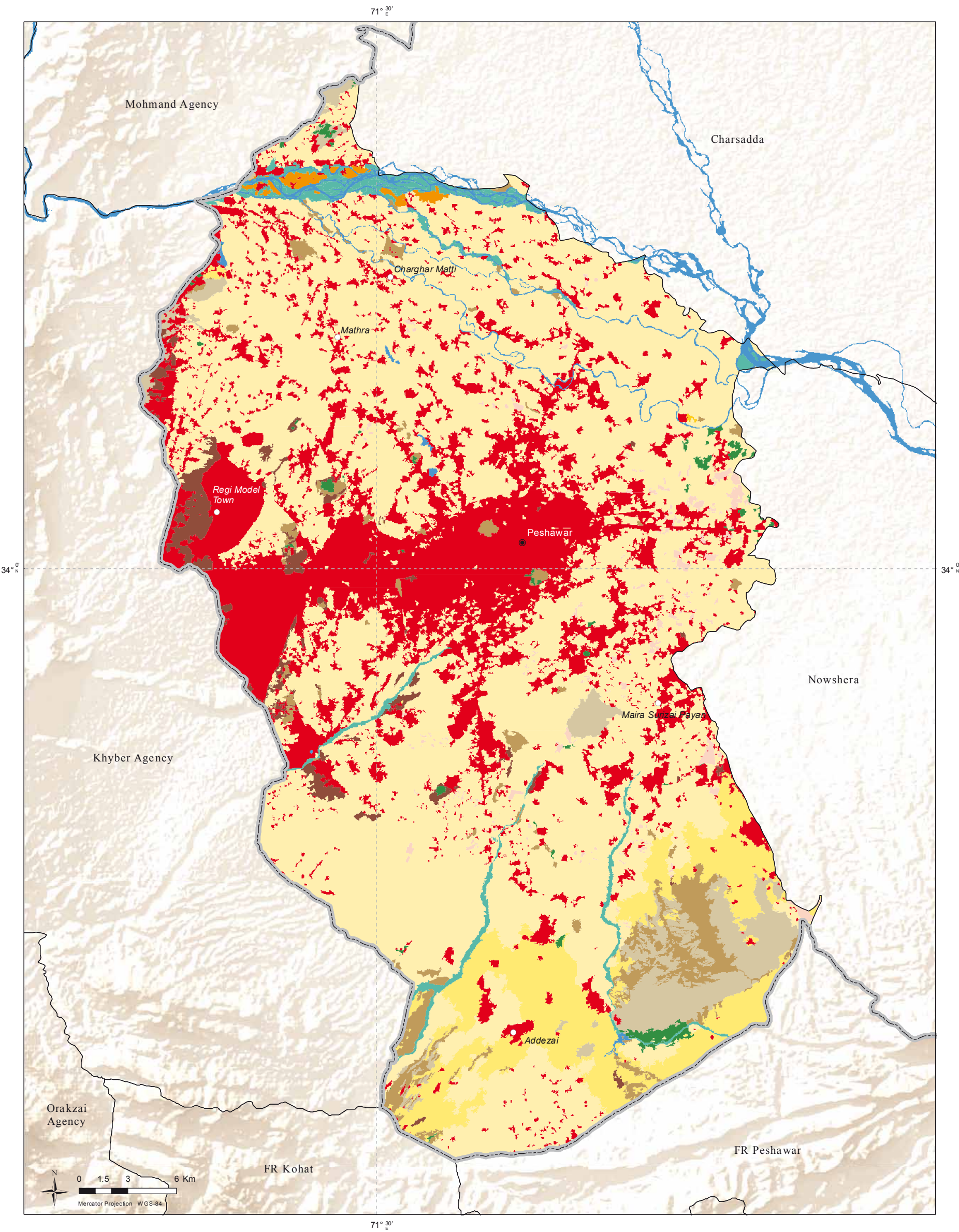
Source: SUPARCO

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	8.80	0.7
Crop Irrigated	691.85	58.5
Crop Marginal and Irrigated Saline	0.13	0.0
Crop in Flood Plain	3.76	0.3
Crop Rainfed	85.51	7.2
Forest - Natural Trees and Mangroves	6.06	0.5
Natural Vegetation in Wet Areas	20.22	1.7
Range Lands - Natural Shrubs and Herbs	34.64	2.9
Built-up	259.60	21.9
Bare Areas	18.59	1.6
Bare Areas with Sparse Natural Vegetation	43.94	3.7
Wet Areas	9.98	0.8
Snow and Glaciers	0.00	0.0
Grand Total	1,183.06	



SHANGLA

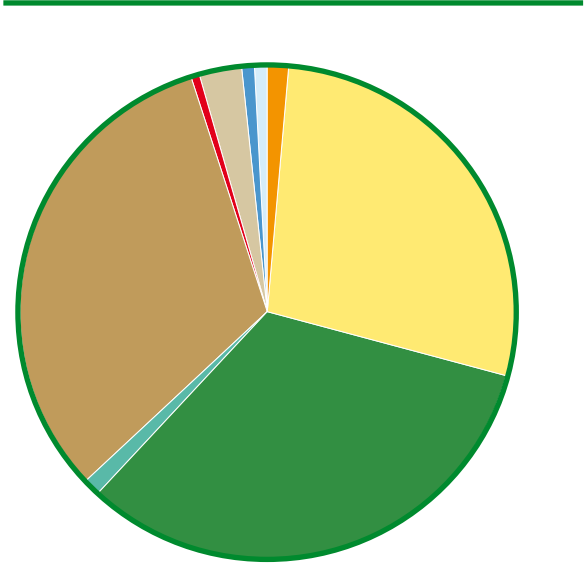
Shangla district consists of small valleys situated between the hillocks and surrounded by high mountains full of forests comprising Pindrow Fir, Morinda Spruce, Blue Pine (Kail), Chir Pine and Deodar Cedar trees. The average elevation of the district is 2000 to 3000 m above mean sea level. People mainly live on farming and grow three major crops namely wheat, maize and rice. Shangla district was founded on 10th July 1995, previously it was a subdivision of Swat district. The district consists of two tehsils named as Alpuri Lilonow and Puran. The district headquarter is located at Alpuri.

INDEX MAP



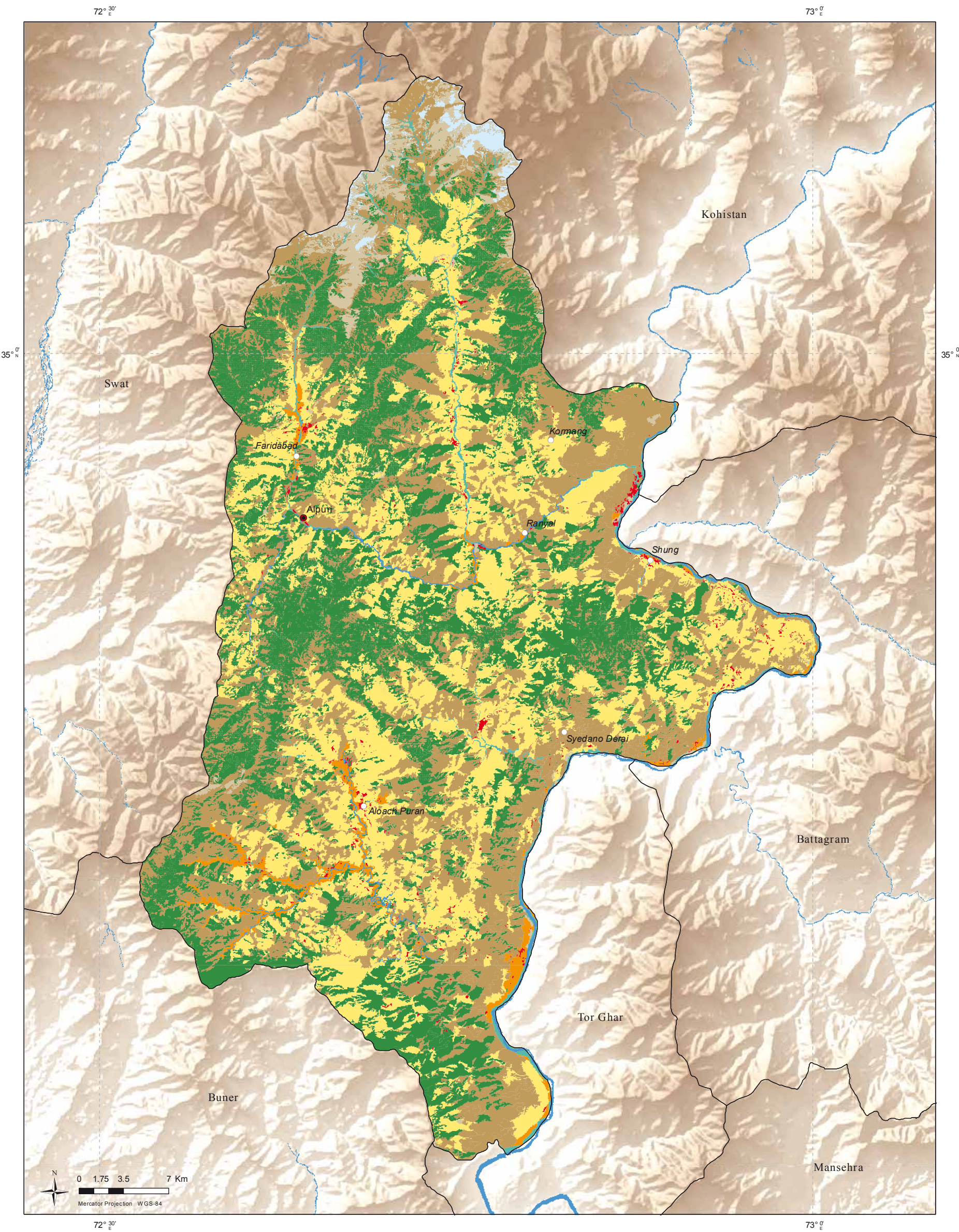
Source: www.timenspacemedia.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend		km ²	%
	Orchards	0.00	0.0
	Crop Irrigated	0.00	0.0
	Crop Marginal and Irrigated Saline	0.00	0.0
	Crop in Flood Plain	21.57	1.5
	Crop Rainfed	394.98	27.8
	Forest - Natural Trees and Mangroves	466.26	32.8
	Natural Vegetation in Wet Areas	17.20	1.2
	Range Lands - Natural Shrubs and Herbs	451.05	31.8
	Built-up	8.38	0.6
	Bare Areas	0.00	0.0
	Bare Areas with Sparse Natural Vegetation	41.01	2.9
	Wet Areas	8.91	0.6
	Snow and Glaciers	11.22	0.8
Grand Total		1,420.56	



SWABI

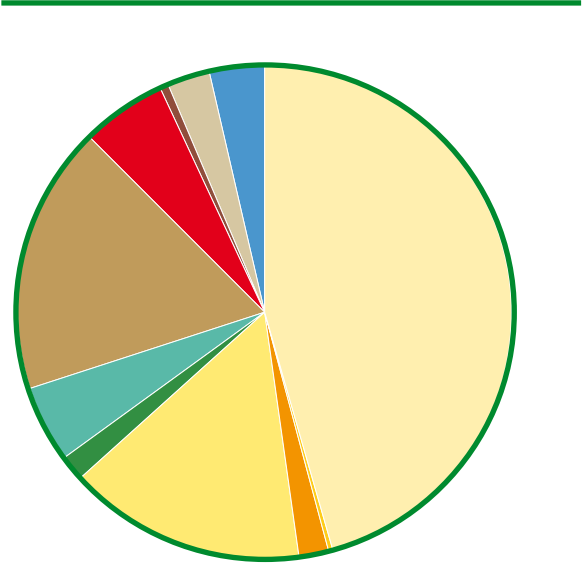
Swabi district lies between the Indus and Kabul rivers. The Indus and Kabul rivers meet at a place called Kund, a major tourist attraction. The Indus river with its blue color and the Kabul River’s muddy brown waters flow side by side without blending. Tobacco is a cash crop of Swabi, along with vegetables, wheat, sugarcane and maize. Its climate is well suited for citrus fruits in particular, but many other fruits like watermelon, peaches and apricots are also grown there. The district has four tehsils namely Swabi, Lahor, Razar and Topi. The district headquarter is located at Swabi.

INDEX MAP



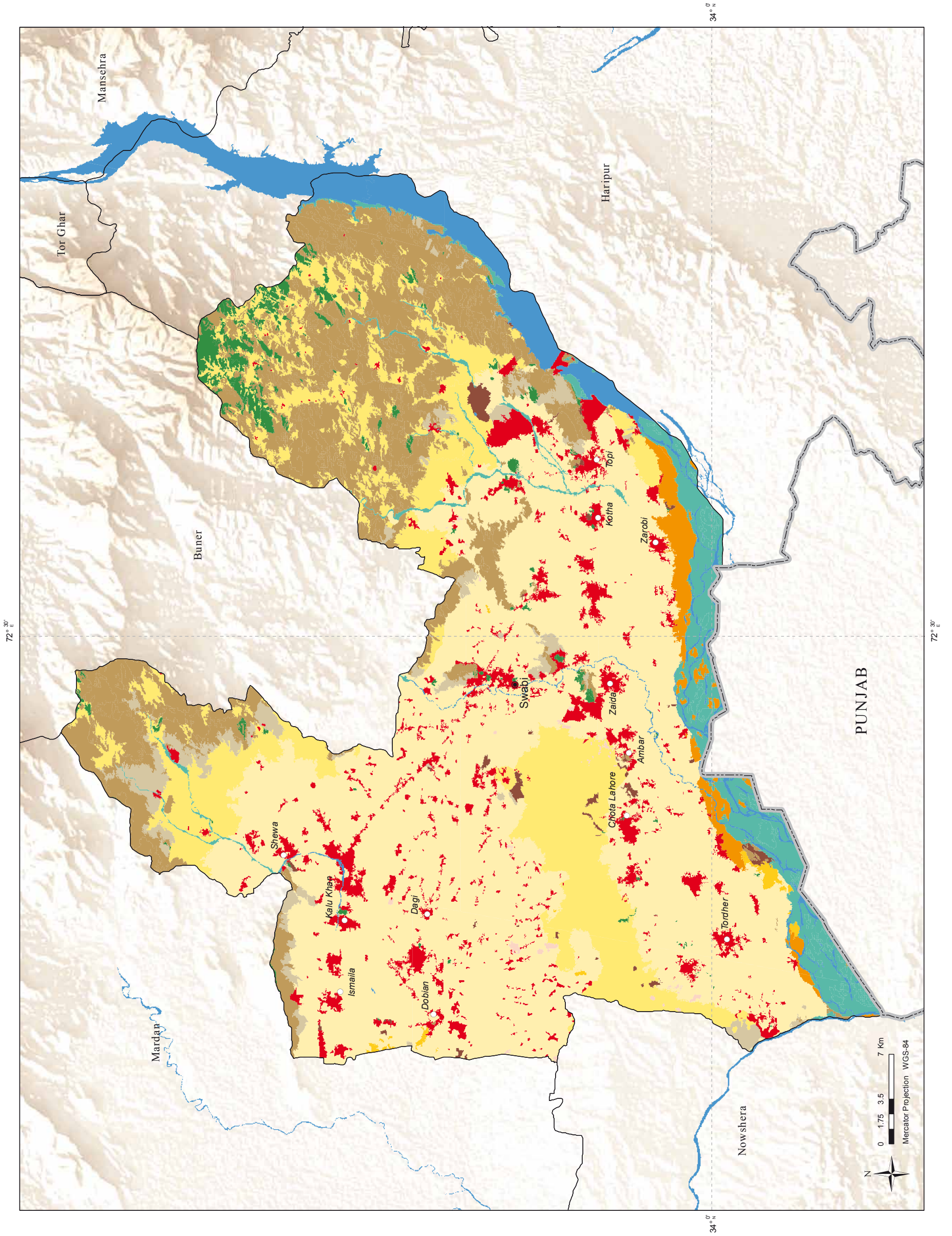
Source: SUPARCO

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

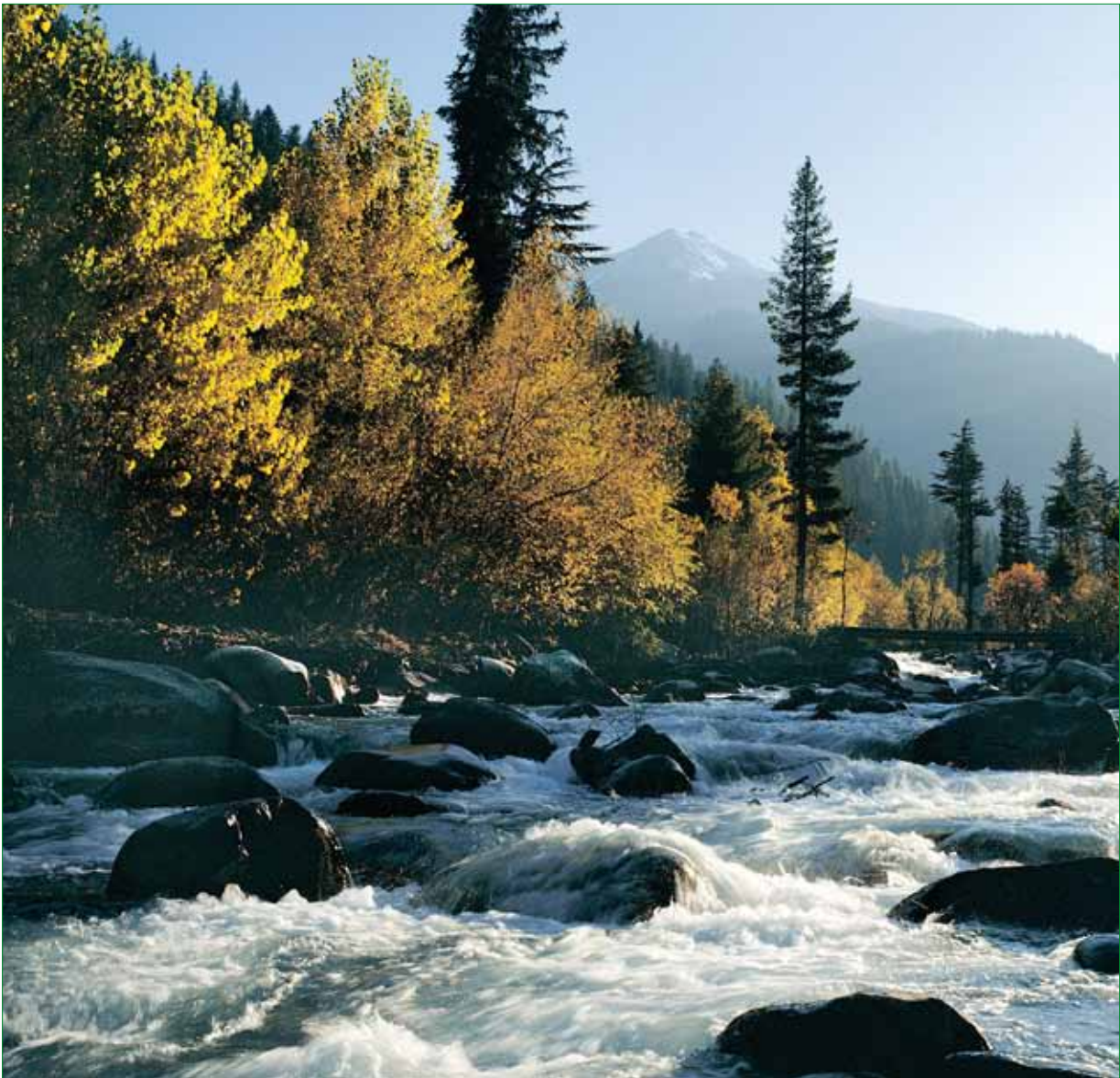
Legend	km²	%
Orchards	2.38	0.2
Crop Irrigated	705.61	45.7
Crop Marginal and Irrigated Saline	3.99	0.3
Crop in Flood Plain	27.16	1.8
Crop Rainfed	241.30	15.6
Forest - Natural Trees and Mangroves	26.18	1.7
Natural Vegetation in Wet Areas	79.38	5.1
Range Lands - Natural Shrubs and Herbs	268.19	17.4
Built-up	86.38	5.6
Bare Areas	8.22	0.5
Bare Areas with Sparse Natural Vegetation	40.68	2.6
Wet Areas	55.56	3.6
Snow and Glaciers	0.00	0.0
Grand Total	1,545.02	



SWAT

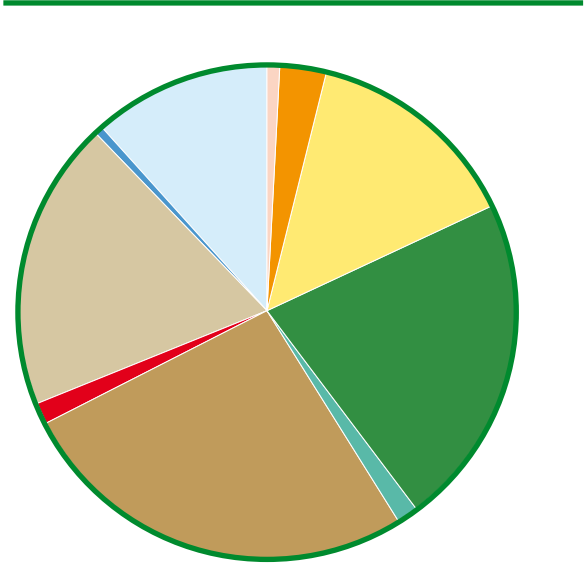
Swat has a rich history of Gandhara civilization and of the Muslim Era. The district is famous for the natural tourism spots like Malam Jabba, Mingora, Kalam, Behrain, Madyan and number of lakes. The district is also famous for its handicraft industry. Wheat and maize are the main crops. The main fruit species cultivated are apple peach and persimmon trees. Other fruit trees cultivated at a smaller scale are plums, grapes, pears, loquat, apricots, walnuts etc. The district consists of two tehsils named as Swat and Matta. The district headquarter is located at Saidu Sharif.

INDEX MAP



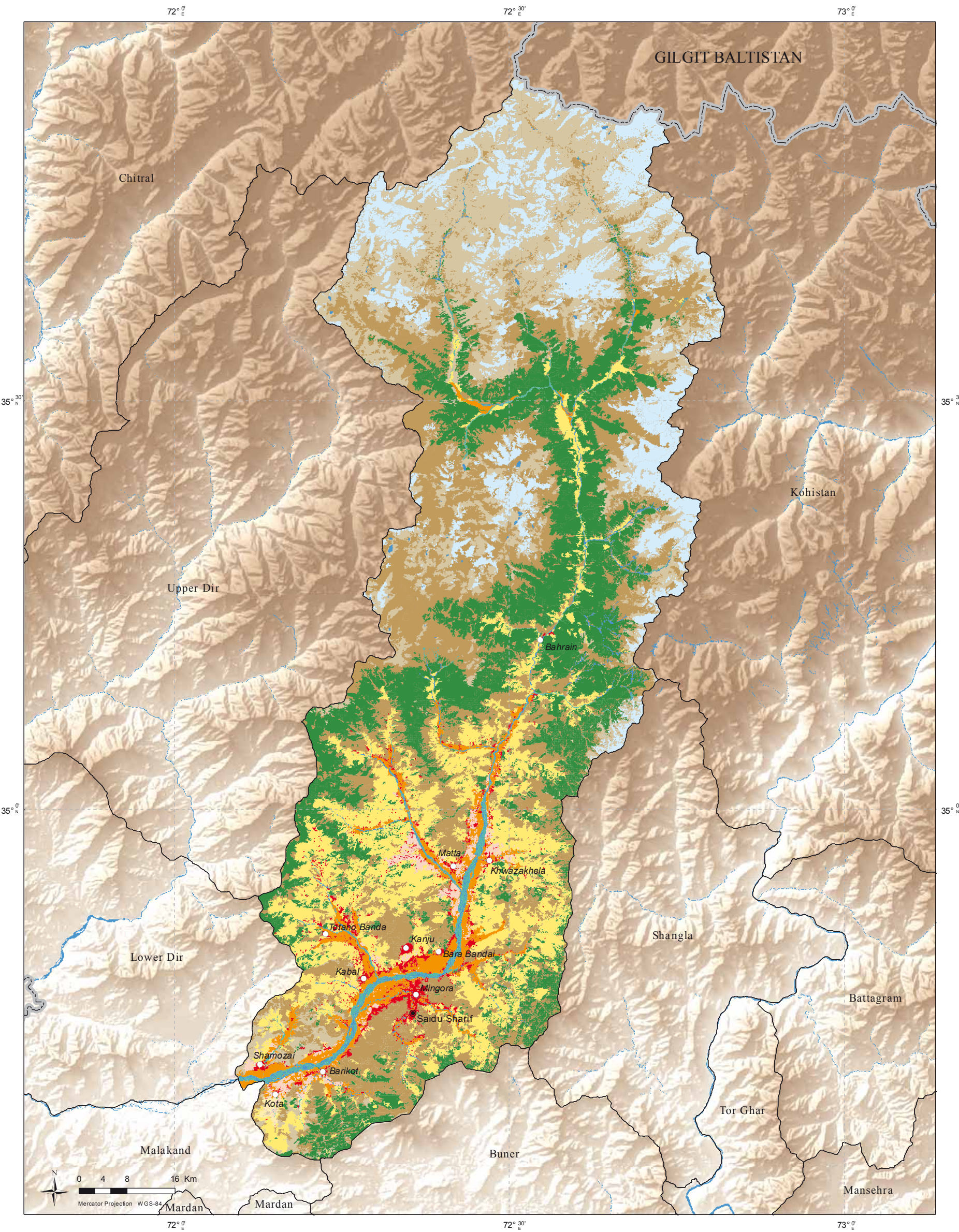
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	49.64	0.9
Crop Irrigated	5.99	0.1
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	170.78	3.2
Crop Rainfed	758.34	14.1
Forest - Natural Trees and Mangroves	1,171.22	21.7
Natural Vegetation in Wet Areas	62.26	1.2
Range Lands - Natural Shrubs and Herbs	1,429.09	26.5
Built-up	77.31	1.4
Bare Areas	0.00	0.0
Bare Areas with Sparse Natural Vegetation	1,015.03	18.8
Wet Areas	38.45	0.7
Snow and Glaciers	613.84	11.4
Grand Total	5,391.95	



TANK

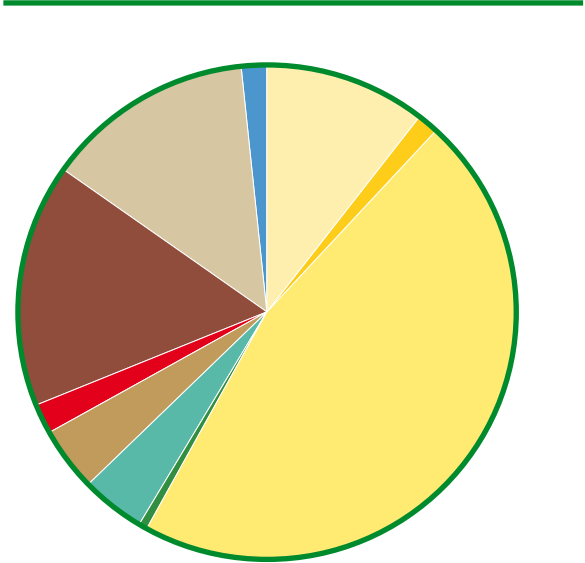
Tank is situated to the northwest of the Indus river and close to the Takht-i-Sulaiman Range. Sorghum, millet, wheat, guar, mongbeans, and chickpeas are the famous crops. People make their livelihood by farming, land ownership, gun running, falcon catching, and migration for employment to the Persian Gulf and business by owning shops in Tank. The district consists of one tehsil named as Tank. The district headquarter is located at Tank.

INDEX MAP



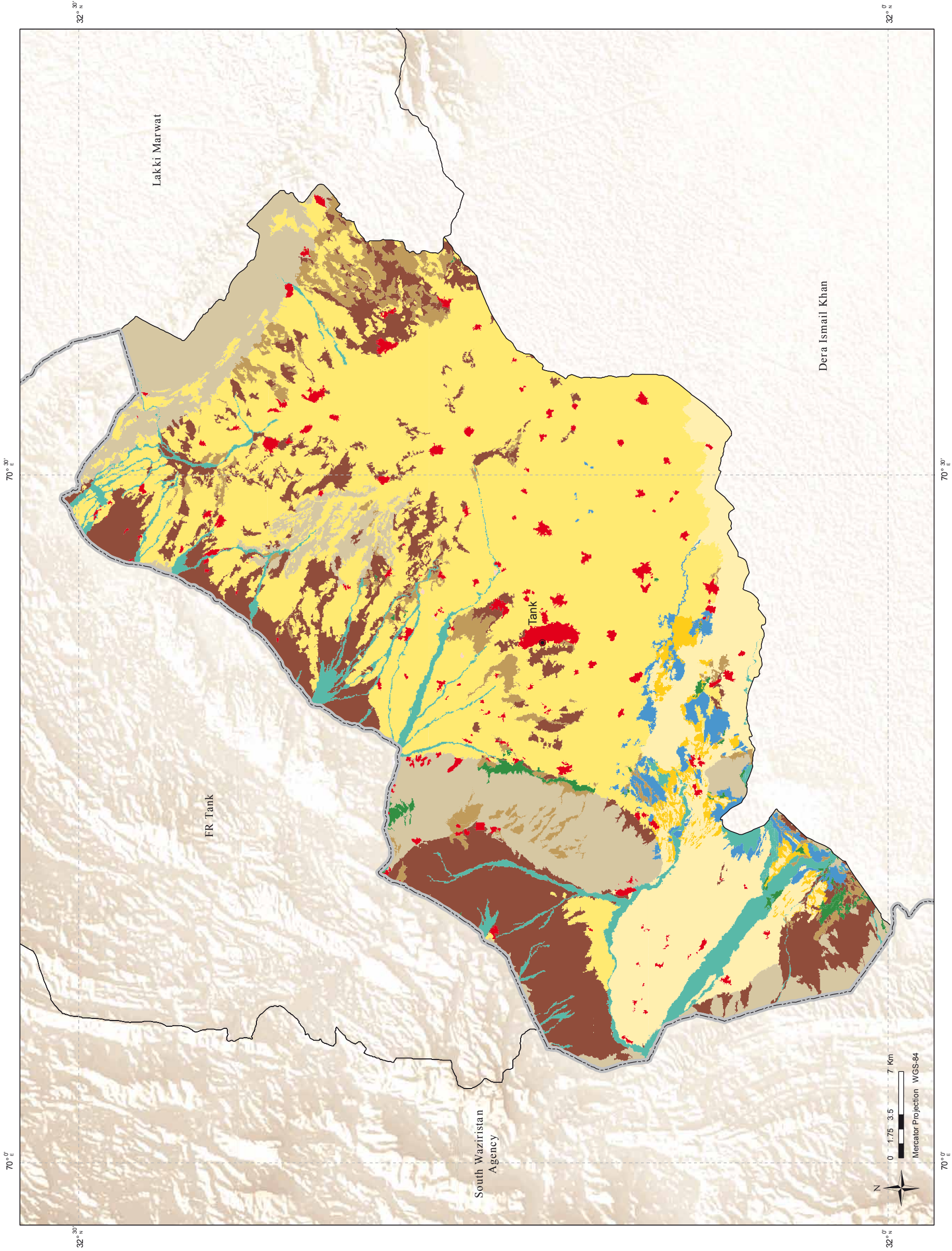
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	0.23	0.0
Crop Irrigated	181.36	10.8
Crop Marginal and Irrigated Saline	21.23	1.3
Crop in Flood Plain	0.00	0.0
Crop Rainfed	772.41	46.1
Forest - Natural Trees and Mangroves	10.72	0.6
Natural Vegetation in Wet Areas	71.25	4.2
Range Lands - Natural Shrubs and Herbs	66.44	4.0
Built-up	32.87	2.0
Bare Areas	266.06	15.9
Bare Areas with Sparse Natural Vegetation	226.75	13.5
Wet Areas	27.66	1.6
Snow and Glaciers	0.00	0.0
Grand Total	1.676.99	



TOR GHAR

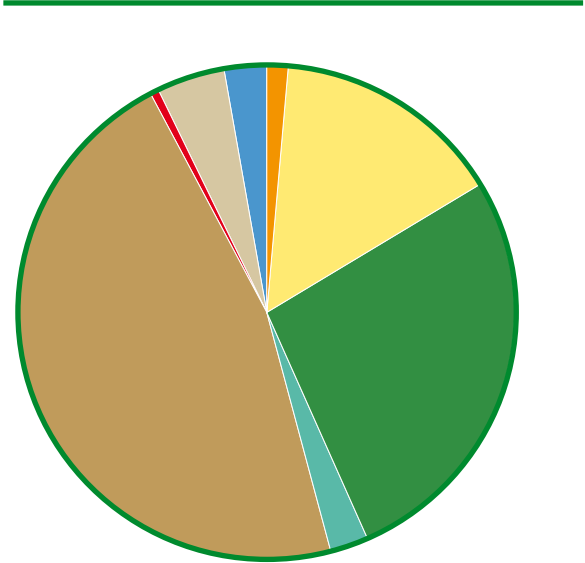
Tor Ghar formerly The Black Mountain (Kala Dhaka) is newly formed district of Khyber Pakhtunkhwa province. The Black Mountain itself has a total length of 32 to 40 km, and an average height of 2438 m. It rises from the Indus basin near the village of Kiara up to its watershed by Bruddur, then it runs northwest by north to the point on the crest known as Chittabut. People grow wheat, maize and rice as their major crops. Agriculture mainly depends upon rain. The district consists of one tehsil named as Tor Ghar. The district headquarter is located at Judbah.

INDEX MAP



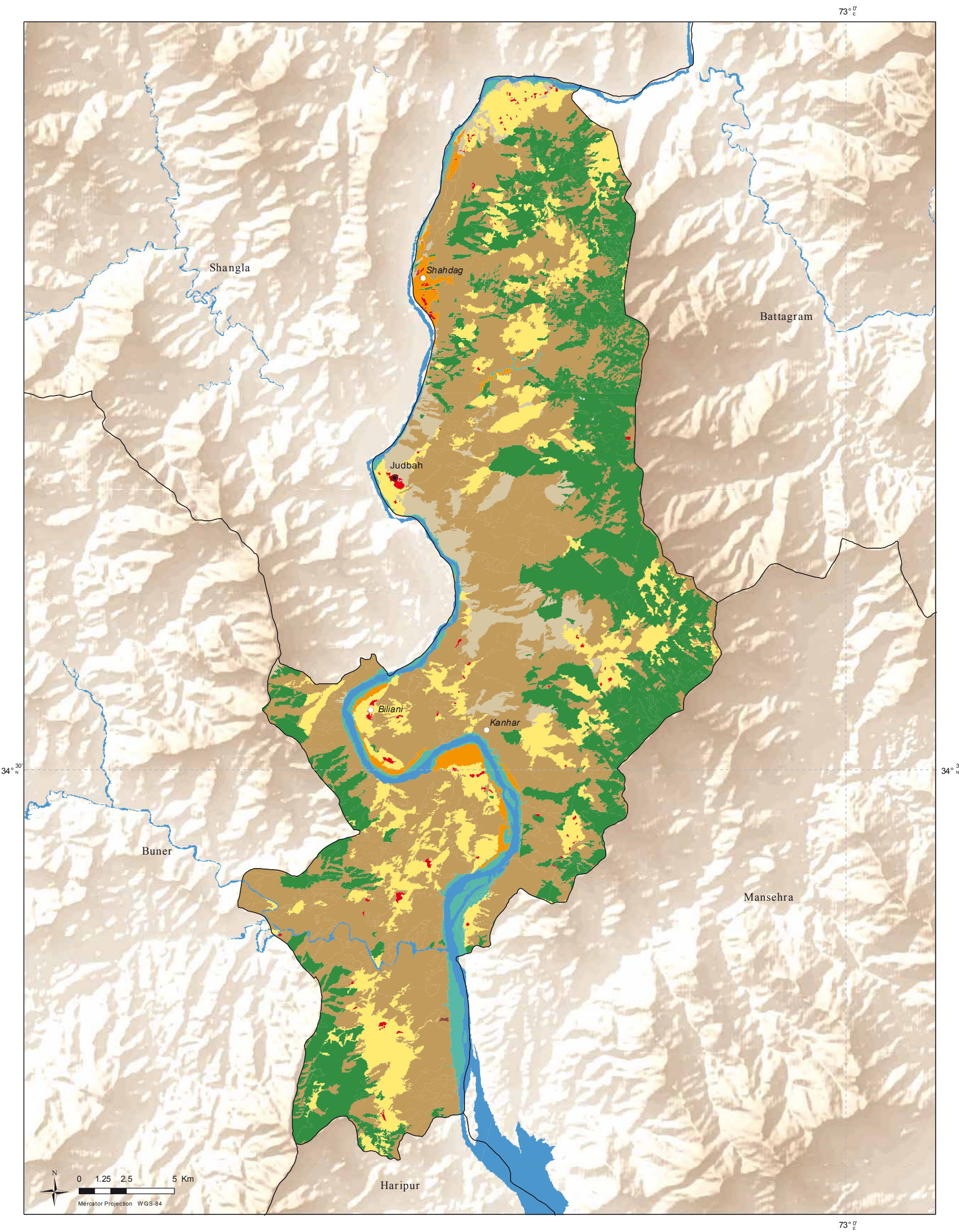
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km²	%
Orchards	0.00	0.0
Crop Irrigated	0.00	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	6.66	1.5
Crop Rainfed	68.26	15.0
Forest - Natural Trees and Mangroves	122.74	26.9
Natural Vegetation in Wet Areas	12.02	2.6
Range Lands - Natural Shrubs and Herbs	211.46	46.4
Built-up	1.90	0.4
Bare Areas	0.06	0.0
Bare Areas with Sparse Natural Vegetation	20.80	4.6
Wet Areas	11.78	2.6
Snow and Glaciers	0.02	0.0
Grand Total	455.71	



UPPER DIR

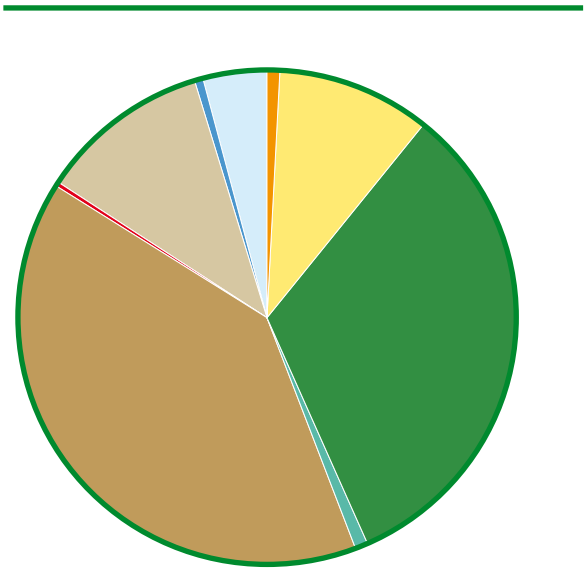
Dir occupied an important position as a centre of Gandhara Art. The region of Dir is therefore littered with the remains of the Gandhara Civilization and Dir Museum, Chakdara, offers a fine and unique collection of Gandhara Art. Except for Dir and a number of rapidly growing towns along the main roads, the population is rural. Wheat, maize, rice and sugarcane are the main crops grown in the district. Fruits and vegetables of different kinds are also grown. The district is divided into six tehsils Barawal, Chapar, Dir, Kalkot, Khal and Wari. The district headquarter of Upper Dir is Dir city.

INDEX MAP



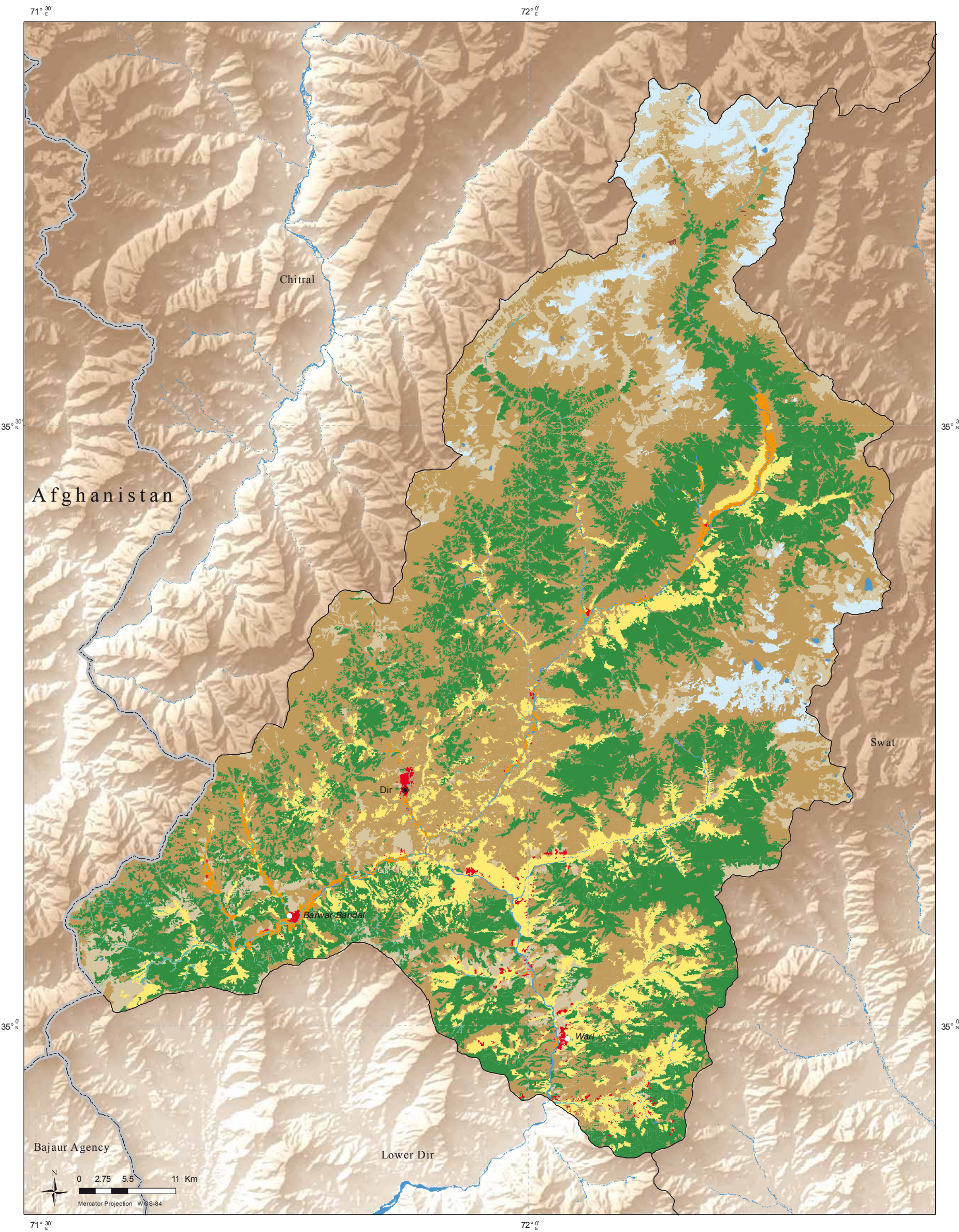
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE DISTRICT

Legend	km ²	%
Orchards	0.00	0.0
Crop Irrigated	0.00	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	32.29	0.9
Crop Rainfed	361.04	10.0
Forest - Natural Trees and Mangroves	1,178.48	32.7
Natural Vegetation in Wet Areas	27.09	0.8
Range Lands - Natural Shrubs and Herbs	1,432.39	39.7
Built-up	12.84	0.4
Bare Areas	0.74	0.0
Bare Areas with Sparse Natural Vegetation	401.94	11.1
Wet Areas	14.42	0.4
Snow and Glaciers	147.51	4.1
Grand Total	3,608.74	





MAPS & STATISTICS
Federally Administered Tribal Areas



FEDERALLY ADMINISTERED TRIBAL AREAS (FATA)

The Federally Administered Tribal Areas (FATA) is strategically located between the Pakistan-Afghanistan border and the settled areas of Khyber Pakhtunkhwa. The FATA both historically and traditionally had a unique administrative and political status from the British times since 1849. However, in 1893, a demarcation was carried out with Afghanistan called Durand Line. The area is controlled through a combination of effective political agents and tribal leaders, while leaving the people with their traditions and internal independence intact. Pakistan inherited this system and more or less continues with it even today.

The mountainous terrain is broken by small basins or valleys, dotted with settlements and agricultural fields. The area can be divided into the northern, central and southern regions which happen to coincide with administrative boundaries. The Safed Koh mountains rise from the Terimangal pass and stretch eastward, reaching an elevation of 3600 m. The Sikaram 4760 m, is the tallest peak in this range. The Kurram river flows north-west to south-east, entering North

Waziristan below the town of Thal in the Hangu district of the Khyber Pakhtunkhwa and eventually joining the Indus river. In Orakzai Agency, the Khanki and Mastura streams flow to the east to meet the Bara river. To the south of the Safed Koh are the Sulaiman mountains and the Waziristan hills. The hills rise to an altitude between 1500 to 3000 m, and are mostly barren. Takhti-Sulaiman located in FR Dera Ismail Khan is the highest peak at 3487 m in the Sulaiman range. The Gomal river flows in the south, while the Kurram river passes through the north. The Jandola, Kaitu and Tochi are smaller rivers in this area.

FATA lies on the cusp of two major climatic systems, the monsoon to the east and the Mediterranean towards the west. Most parts of FATA are arid and semi-arid, with warm summers and cool winters, although some areas in the Kurram and Orakzai agencies fall within the humid and sub-humid zones. The pattern and character of summer and winter rainfall is intermixed to such an extent that it is difficult to determine which is dominant. According to meteorological data, the area

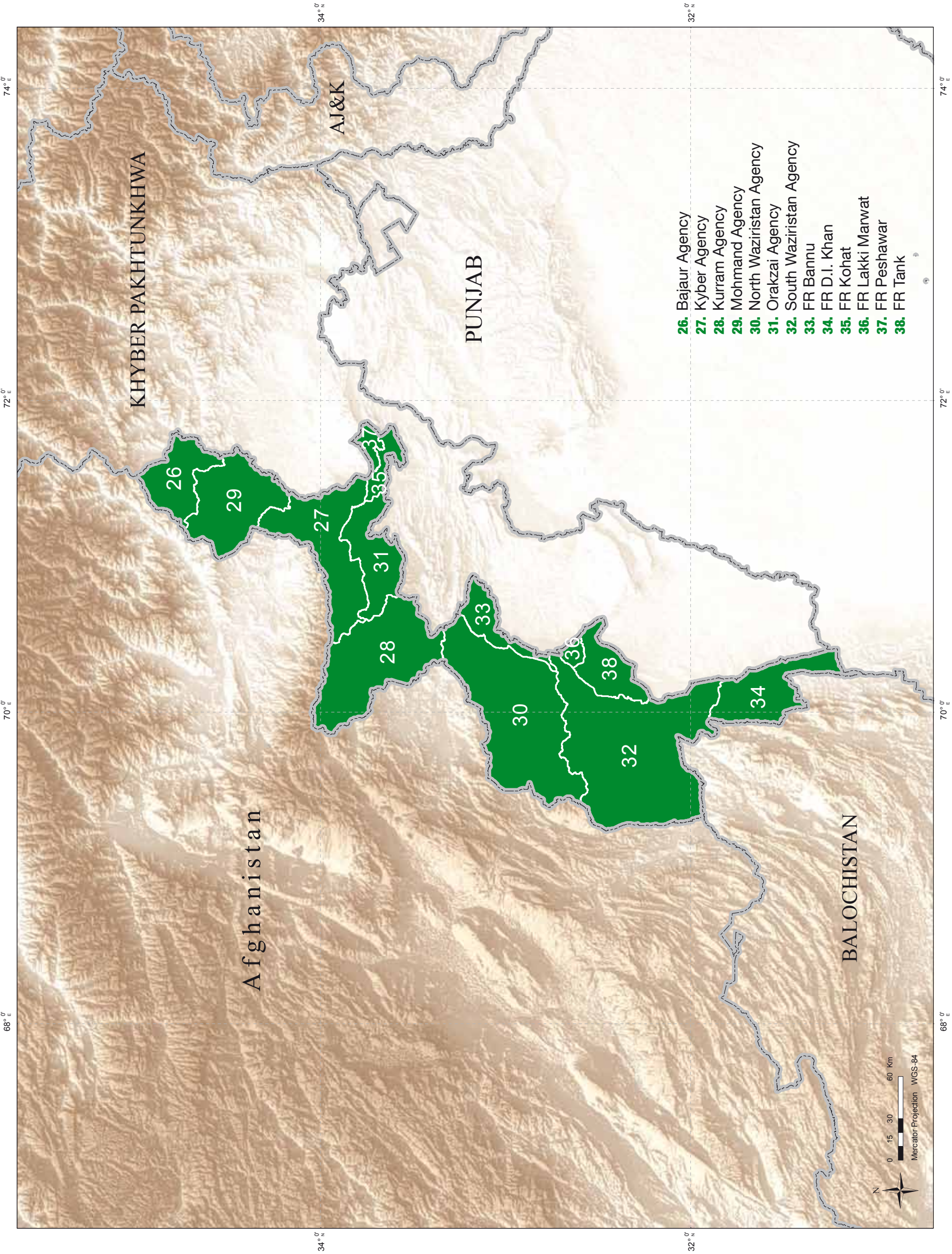
receives more winter precipitation as a result of western disturbances and some rain in the summer from the monsoon. Annual rainfall in the area varies dramatically, from 630 mm reported in Kurram during years 2001-2002, to just 88 mm in neighboring Khyber Agency during the same year.

Six Frontier Regions of FATA

The Frontier Regions (FR) of Pakistan are a group of small administrative units in the Federally Administered Tribal Areas (FATA), lying immediately to the east of the seven main tribal agencies and west of the settled districts of Khyber Pakhtunkhwa province. Each of the Frontier Regions is named after an adjoining settled district and is administered by the District Coordination Officer (DCO) of that adjacent district. The overall administration of the Frontier Regions is carried out by the FATA Secretariat based at Peshawar, the capital of Khyber Pakhtunkhwa. The six Frontier Regions are FR Bannu, FR D.I.Khan, FR Kohat, FR Lakki Marwat, FR Peshawar and FR Tank.

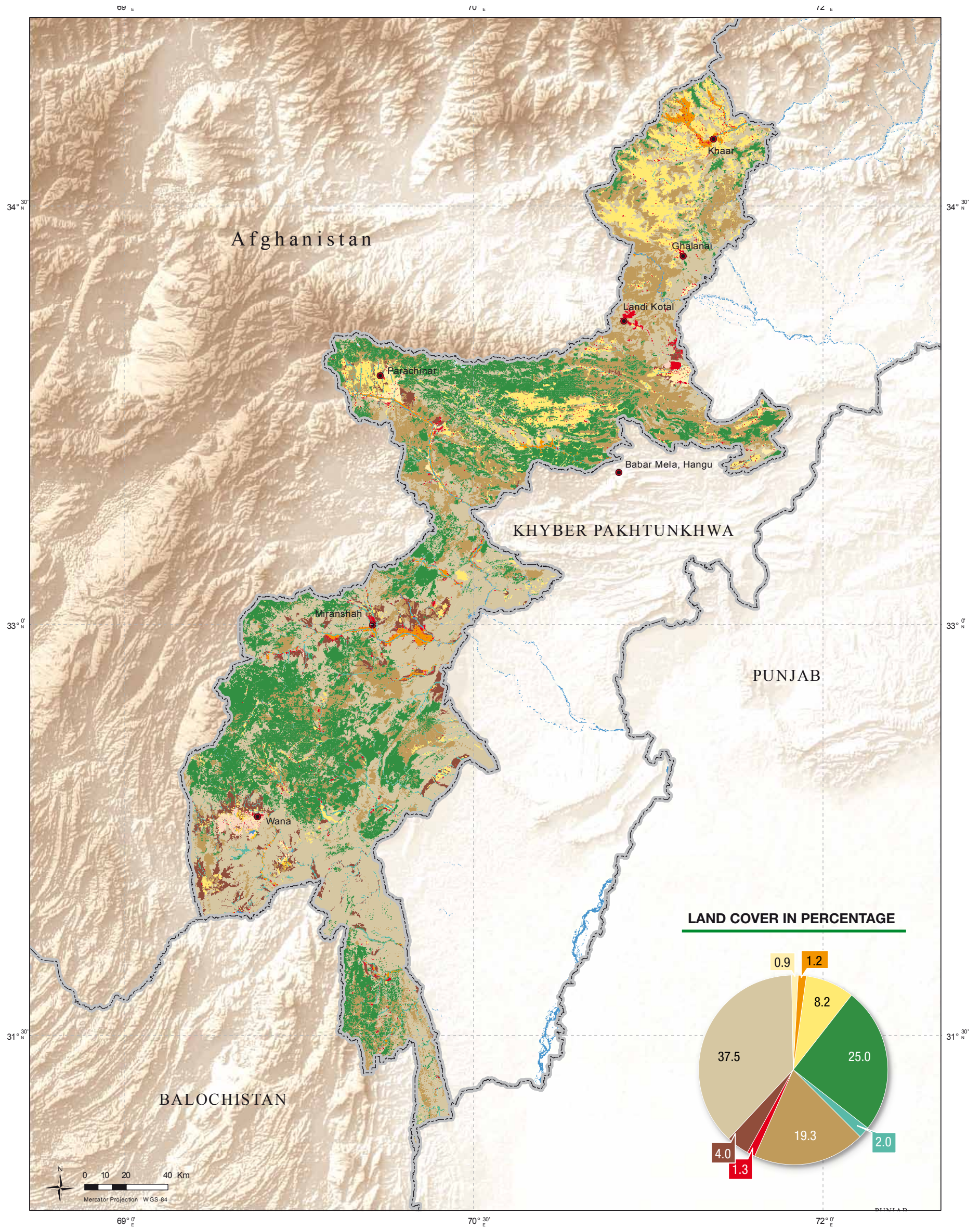


Source: SUPARCO



DISTRIBUTION OF LAND COVER OF FATA IN KM²

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BAJAUR AGENCY

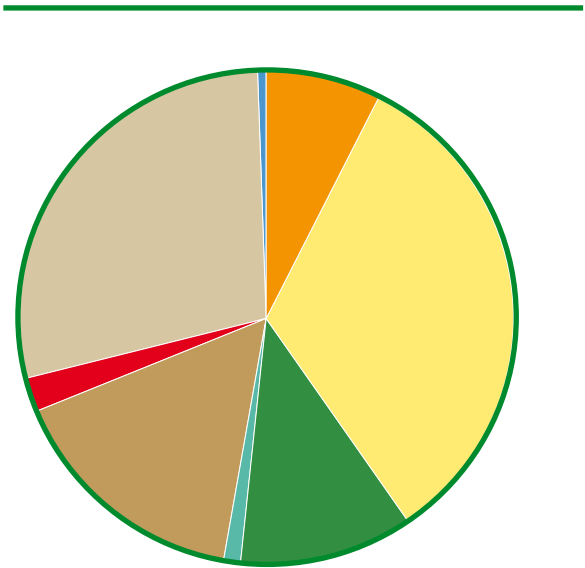
Bajaur Agency is the smallest of the agencies of FATA. It was declared as an Agency in year 1973. It borders Afghanistan’s Kunar Province with a 52 km border. The main crops of Agency are wheat, barley, rice, maize, rapeseed & mustard. The Bajaur Agency has two sub divisions named as Khaar and Nawagai. The Khaar comprises three tehsils Khar, Utman Khel, Salarzai while Nawagai has four tehsils Nawagai, Mamund, Barang, Chamarkand. The headquarter of the Agency is located at Khaar.

INDEX MAP



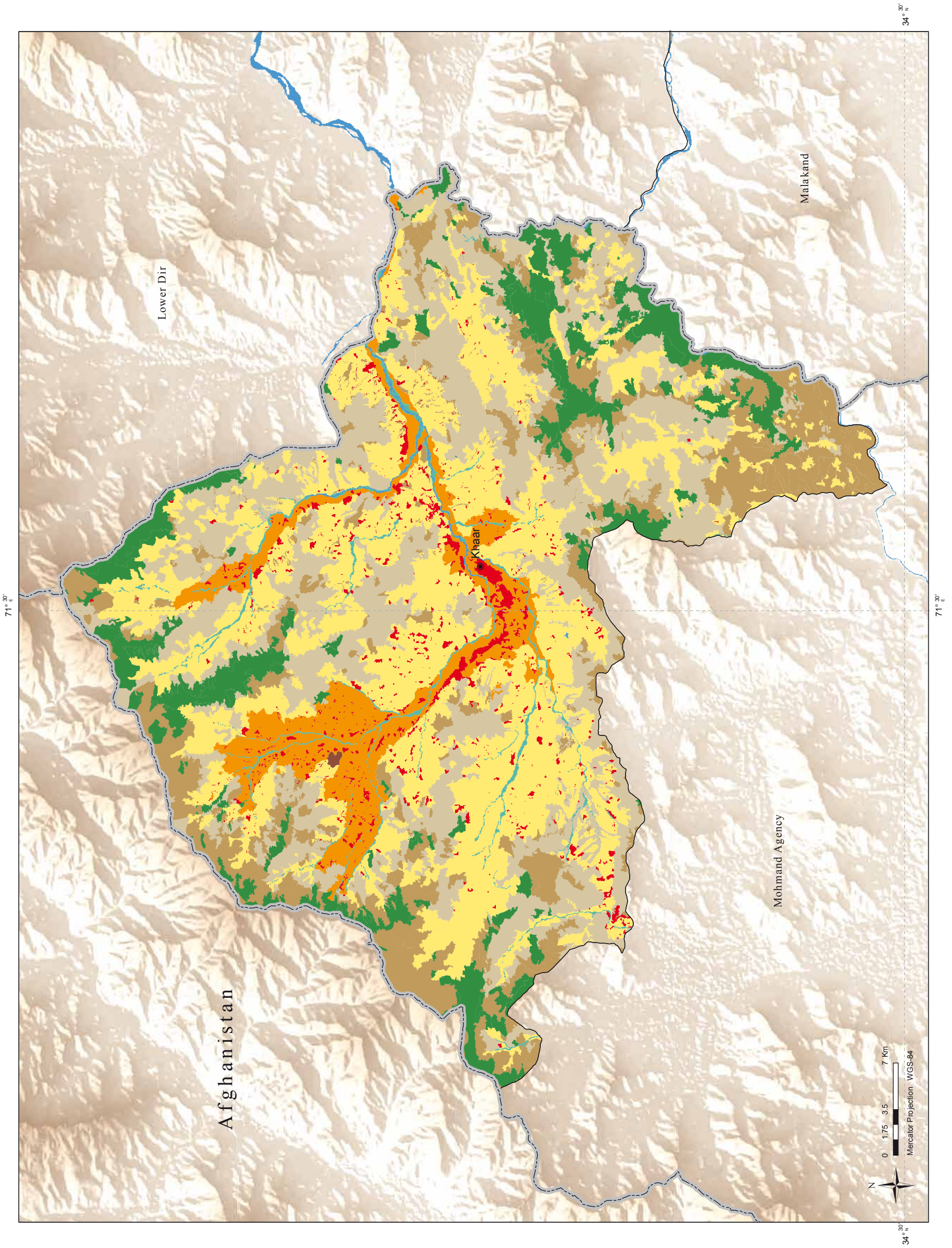
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	0.00	0.0
Crop Irrigated	0.00	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	102.08	7.6
Crop Rainfed	442.60	32.9
Forest - Natural Trees and Mangroves	151.18	11.2
Natural Vegetation in Wet Areas	16.84	1.3
Range Lands - Natural Shrubs and Herbs	213.15	15.9
Built-up	31.93	2.4
Bare Areas	0.67	0.0
Bare Areas with Sparse Natural Vegetation	381.15	28.4
Wet Areas	4.63	0.3
Snow and Glaciers	0.00	0.0
Grand Total	1,344.24	



KHYBER AGENCY

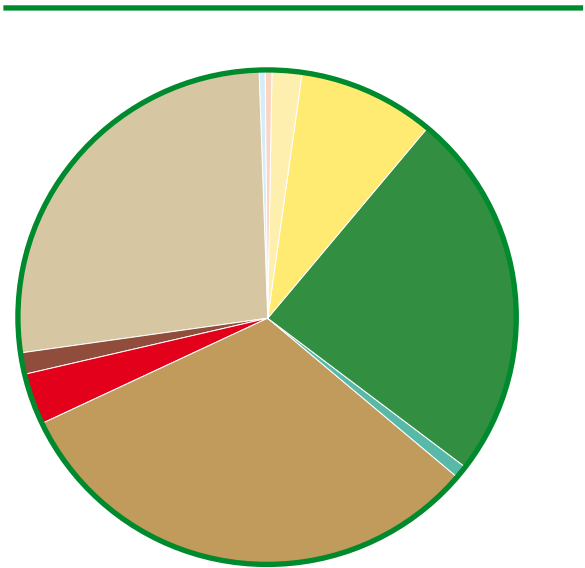
Khyber Agency derives its name from the famous Khyber Pass, which has served as a historical trade route, connecting the Asian sub-continent with the rest of Central Asia, via Afghanistan. It has a rich historical heritage, and has retained an important position throughout the known history. The Khyber Agency has three sub divisions named as Jamrud, Landi Kotal and Bara. The Jamrud comprises two tehsils, Jamrud and Mulla Gori while Landi Kotal and Bara act as tehsils itself. The headquarter of the Khyber Agency is located at Landi Kotal.

INDEX MAP



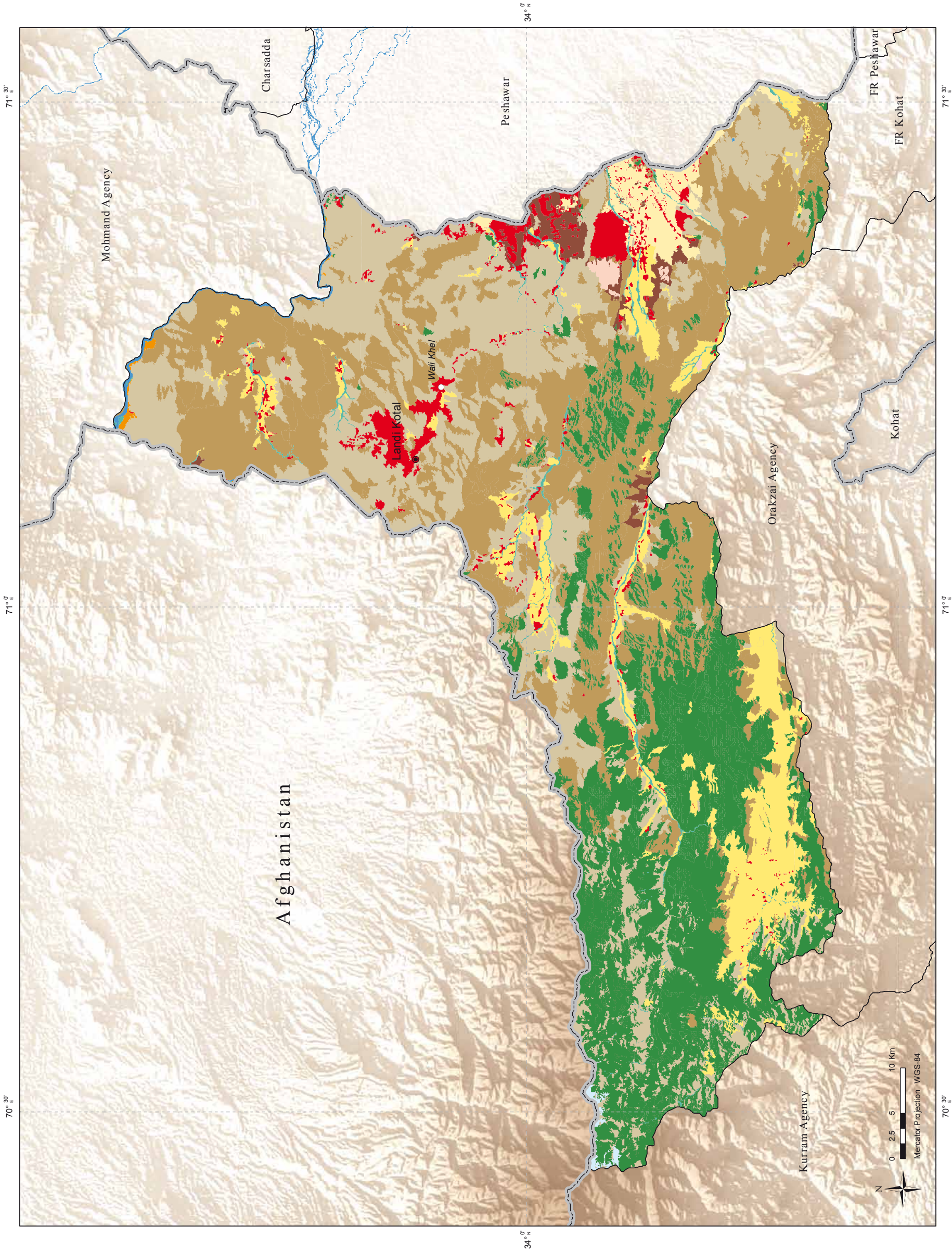
Source: www.tourism.gov.pk

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	6.81	0.3
Crop Irrigated	55.91	2.1
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	2.89	0.1
Crop Rainfed	232.97	8.8
Forest - Natural Trees and Mangroves	634.00	24.1
Natural Vegetation in Wet Areas	22.95	0.9
Range Lands - Natural Shrubs and Herbs	837.75	31.8
Built-up	85.09	3.2
Bare Areas	39.30	1.5
Bare Areas with Sparse Natural Vegetation	704.27	26.7
Wet Areas	6.03	0.2
Snow and Glaciers	6.71	0.3
Grand Total	2,634.67	



KURRAM AGENCY

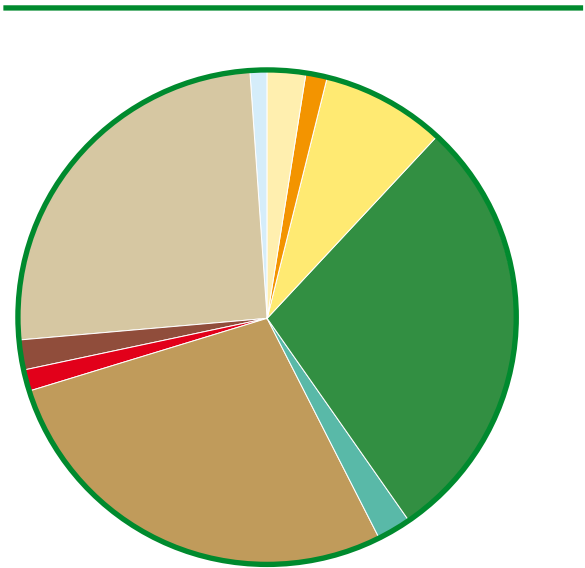
Kurram Agency takes its name from the Kurram river. It covers the Kurram Valley in the northwestern part of Pakistan. Kurram agency is mostly hilly and mountainous. The Sufaid Koh Mountain forms the territorial boundary between Kurram Agency and Afghanistan. Most of the population is Pashtun and major tribes living in Kurram Agency are Turi, Bangash, Orakzai, Zazai, Mangal, Ghilzai and Para Tsamkani. Kurram Agency comprises three sub divisions including Upper Kurram, Central Kurram and Lower Kurram. The Agency headquarter is situated at Parachinar.

INDEX MAP



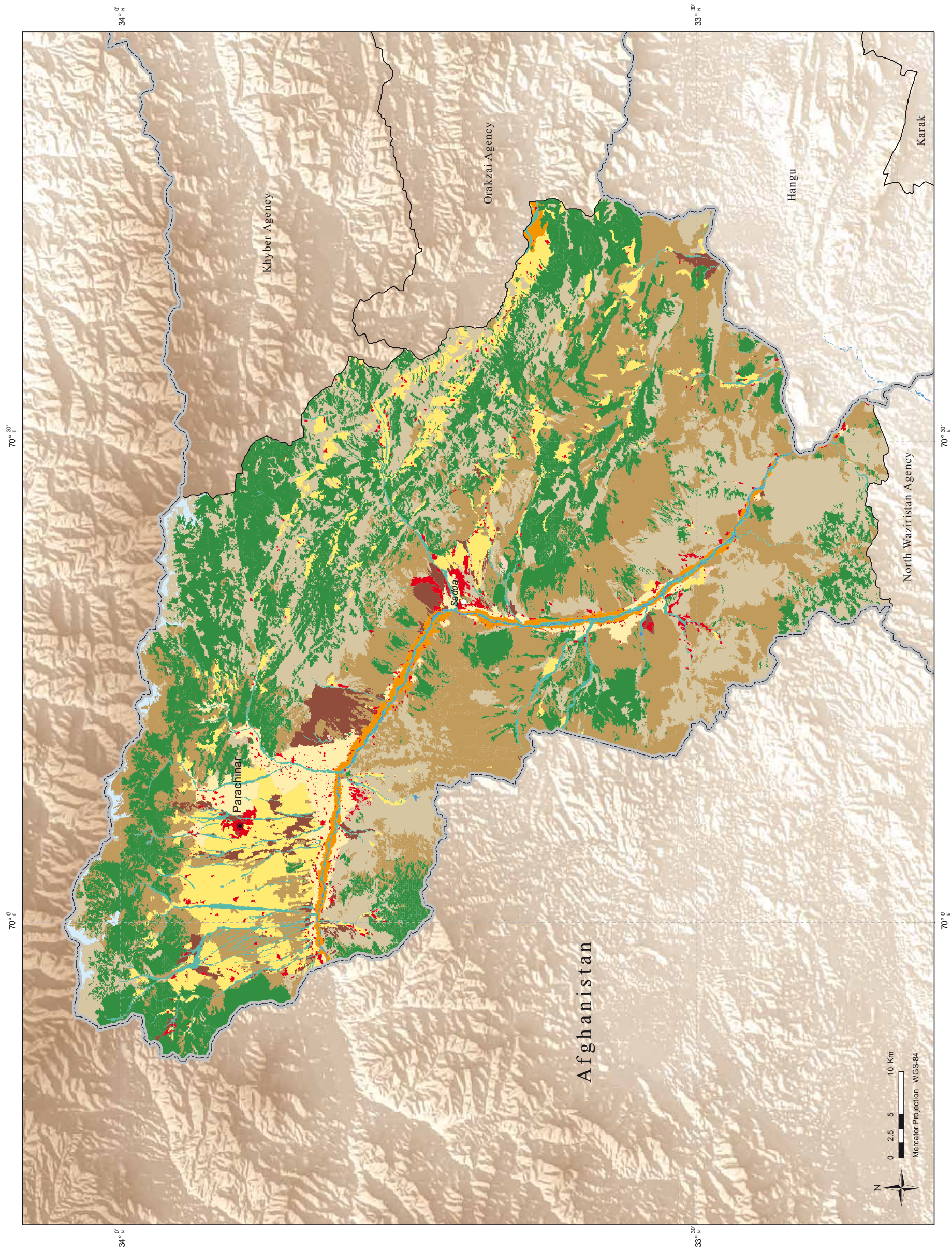
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	1.52	0.0
Crop Irrigated	92.29	2.7
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	44.40	1.3
Crop Rainfed	277.75	8.2
Forest - Natural Trees and Mangroves	951.81	28.2
Natural Vegetation in Wet Areas	76.77	2.3
Range Lands - Natural Shrubs and Herbs	931.52	27.6
Built-up	43.60	1.3
Bare Areas	72.79	2.2
Bare Areas with Sparse Natural Vegetation	850.24	25.2
Wet Areas	5.18	0.2
Snow and Glaciers	31.50	0.9
Grand Total	3,379.37	



MOHMAND AGENCY

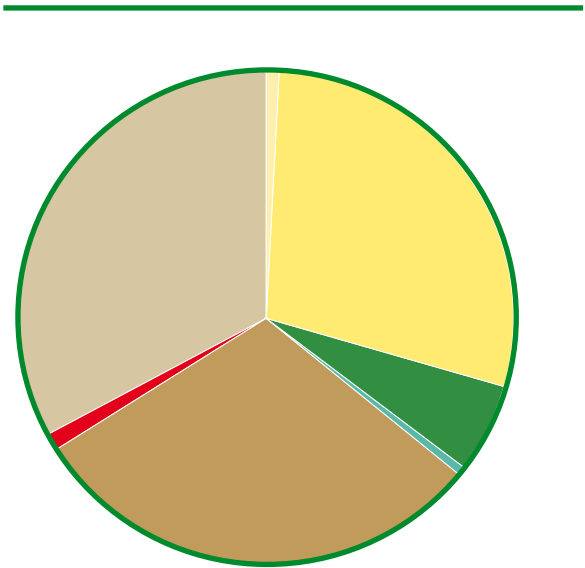
Mohmand Agency was created in 1951 after independence of Pakistan. There is scant rainfall and little irrigated land in the agency. Warsak dam, Munda dam and Shabqadar Fort are famous places in the Agency. The Mohmand Agency has two sub divisions named as Lower Mohmand and Upper Mohmand. The Lower Mohmand comprises four tehsils Yekka Ghund, Ambar, Pandyalai and Praang Ghaar while Upper Mohmand has three tehsils, Safi/Lakaro, Khwezai/ Baezai and Halimzai. The headquarter of the Agency administration is located at Ghalanai.

INDEX MAP



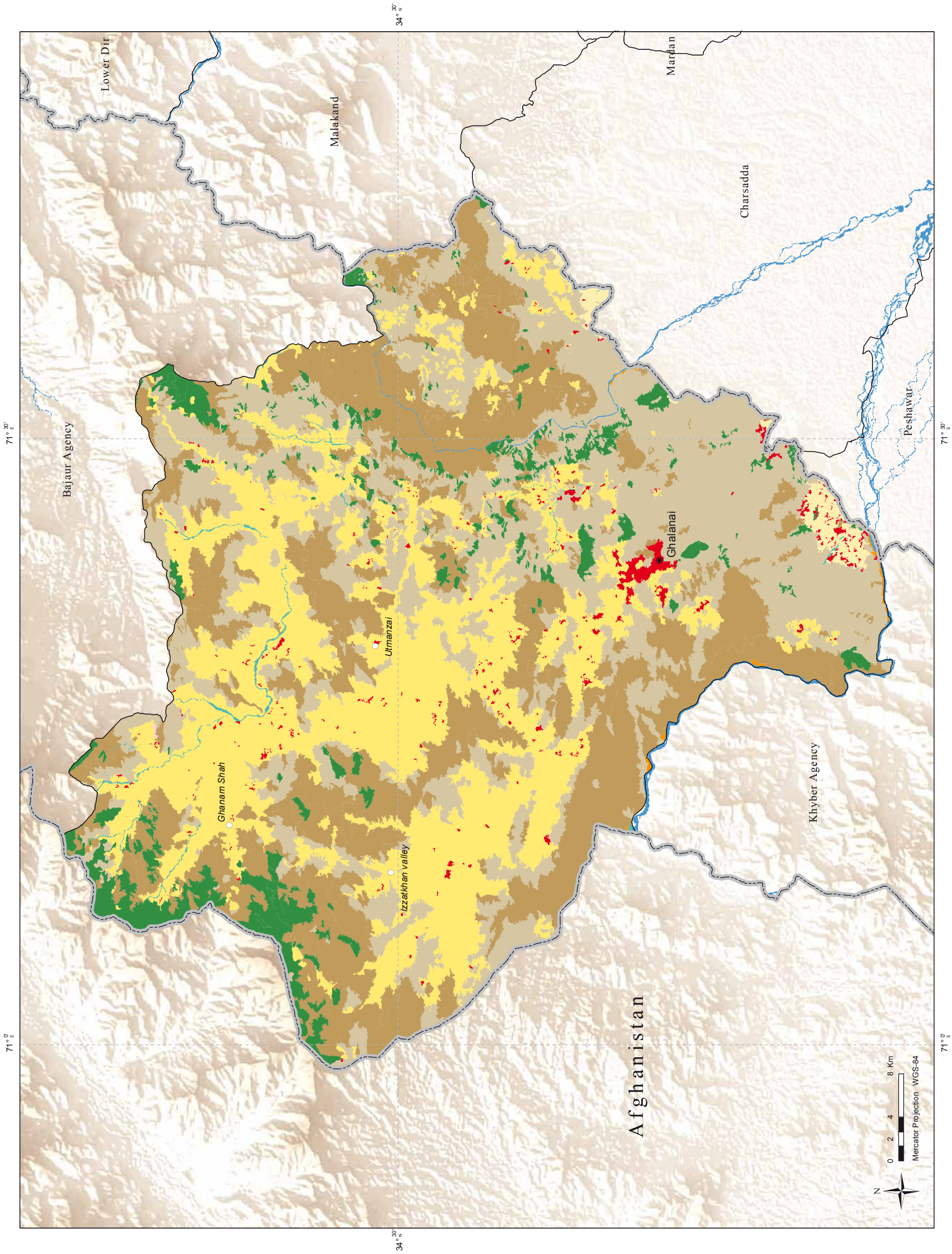
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	0.22	0.0
Crop Irrigated	23.45	1.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	1.99	0.1
Crop Rainfed	649.37	28.6
Forest - Natural Trees and Mangroves	131.62	5.8
Natural Vegetation in Wet Areas	7.36	0.3
Range Lands - Natural Shrubs and Herbs	689.79	30.3
Built-up	23.56	1.0
Bare Areas	0.27	0.0
Bare Areas with Sparse Natural Vegetation	741.43	32.6
Wet Areas	3.89	0.2
Snow and Glaciers	0.00	0.0
Grand Total	2,272.97	



NORTH WAZIRISTAN AGENCY

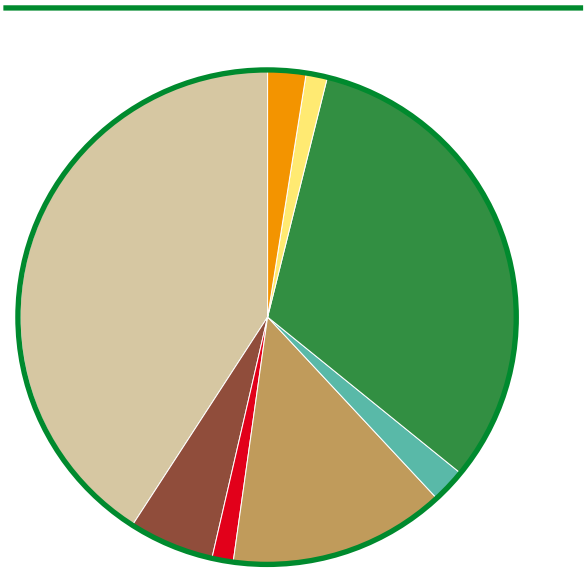
North Waziristan Agency was declared as agency in 1910. It is inhabited by the Pashtun Wazir and Dawari tribes. North Waziristan Agency has three sub divisions named as Mir Ali, Razmak and Miranshah. The Mir Ali comprises three tehsils, Mir Ali, Spin Wam and Shewa while Razmak has four tehsils, Razmak, Dosalli, Geriyum and Shawal. Miranshah sub division has three tehsils Miranshah, Datta Khel and Ghulam Khan. The headquarter of the Agency administration is located at Miranshah.

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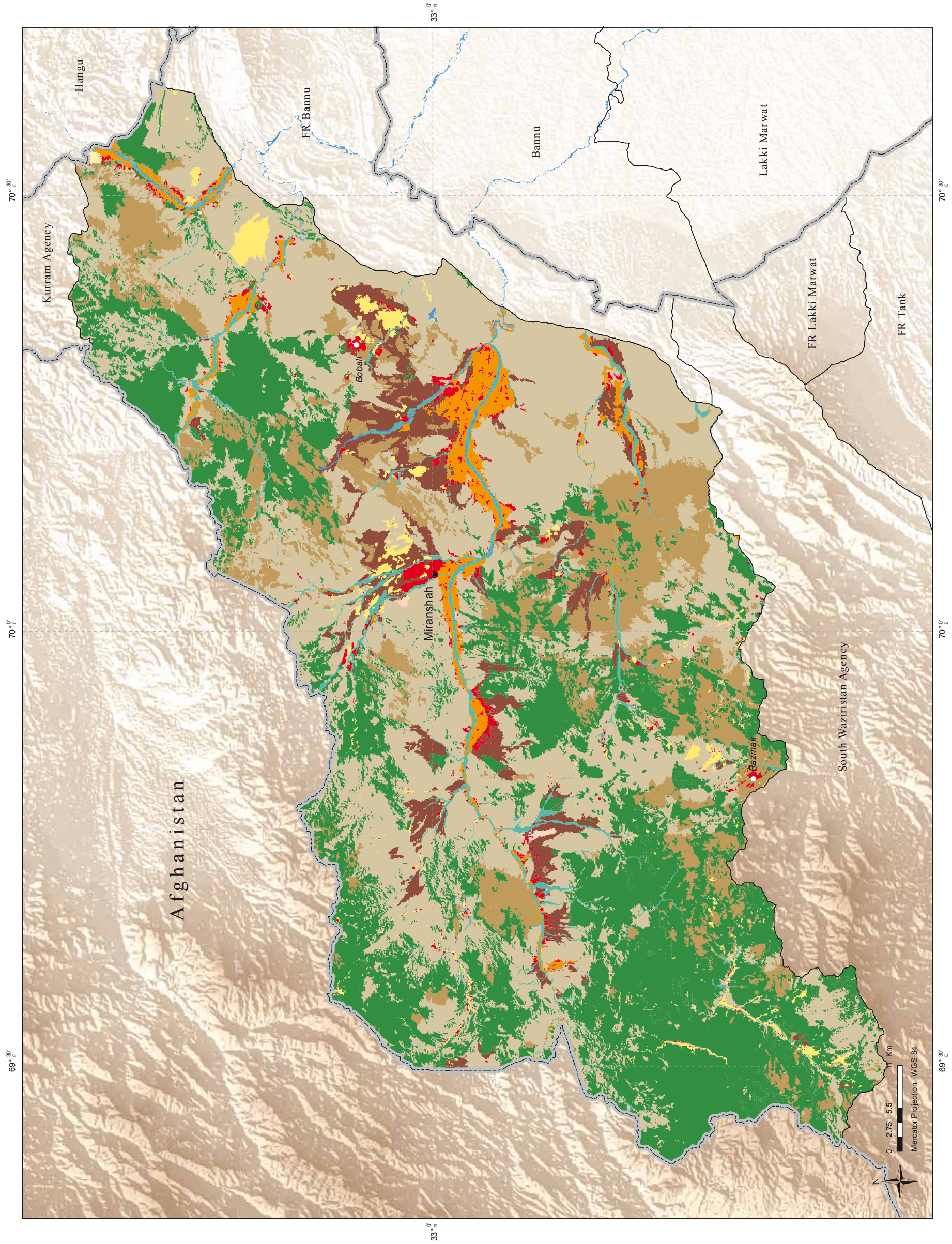
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	3.28	0.1
Crop Irrigated	2.15	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	122.58	2.5
Crop Rainfed	78.70	1.6
Forest - Natural Trees and Mangroves	1,579.40	31.8
Natural Vegetation in Wet Areas	113.41	2.3
Range Lands - Natural Shrubs and Herbs	689.89	13.9
Built-up	70.15	1.4
Bare Areas	282.72	5.7
Bare Areas with Sparse Natural Vegetation	2,010.30	40.5
Wet Areas	8.52	0.2
Snow and Glaciers	0.00	0.0
Grand Total	4,961.10	



ORAKZAI AGENCY

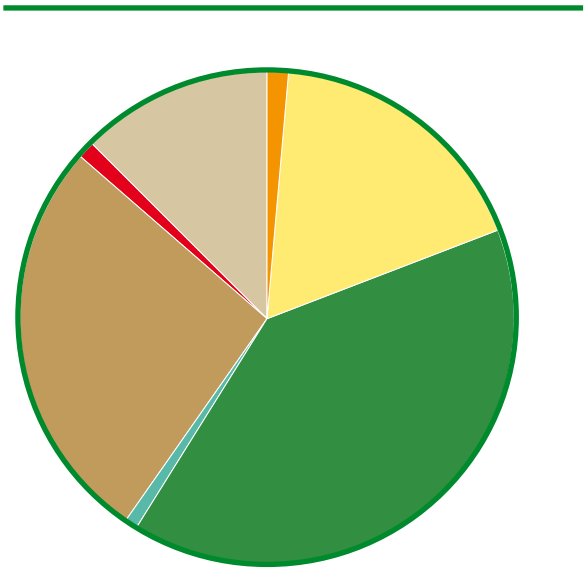
Orakzai Agency was formed in 1973 from Frontier Region Kohat. Maize, rice, groundnut are main crops. Apricot, peaches, walnut, apples are common fruits grown here. The two major streams are the Mastura River and Khanki Toi river. Orakzai Agency is a hilly region with a fertile valley. Orakzai Agency has two sub divisions named as Lower Orakzai and Upper Orakzai. The Lower Orakzai comprises two tehsils Lower Orakzai and Central Orakzai while Upper Orakzai has two tehsils, Ismailzai and Upper Orakzai. The headquarter of agency administration is located at Babar Mela, Hangu.

INDEX MAP



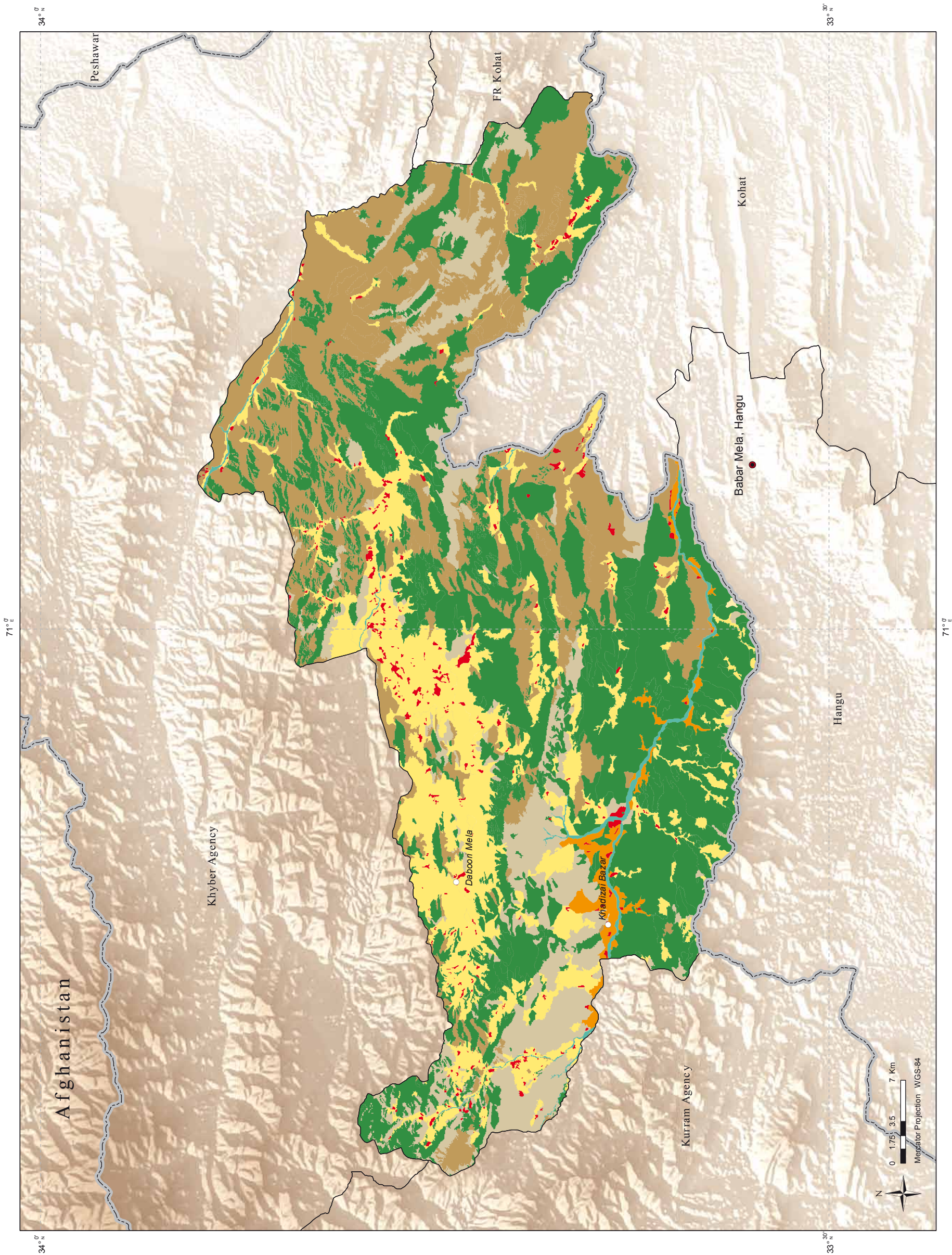
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	0.00	0.0
Crop Irrigated	0.48	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	21.88	1.5
Crop Rainfed	263.51	17.8
Forest - Natural Trees and Mangroves	585.86	39.6
Natural Vegetation in Wet Areas	12.73	0.9
Range Lands - Natural Shrubs and Herbs	395.80	26.8
Built-up	16.93	1.1
Bare Areas	0.15	0.0
Bare Areas with Sparse Natural Vegetation	181.24	12.3
Wet Areas	0.00	0.0
Snow and Glaciers	0.00	0.0
Grand Total	1,478.57	



SOUTH WAZIRISTAN AGENCY

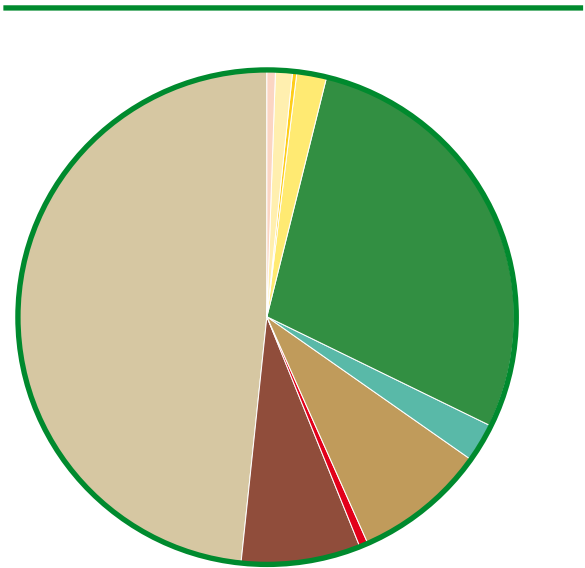
The region was an independent tribal territory, remaining outside of British-ruled Empire and Afghanistan. The region became part of Pakistan in 1947. The main crops are wheat, barley, rice, maize, sugarcane, tomato and Ginger while fruits are apricots, apples, grapes, walnuts and figs. It has three sub divisions Ladha, Sarwakai and Wana. The Ladha comprises three tehsils, Ladha, Makeen and Sararogha while Sarwakai has two tehsils, Sarwakai and Tiaraza. Wana sub division has three tehsils Wana, Birmal and Toi Khulla. The headquarter of the agency administration is located at Wana.

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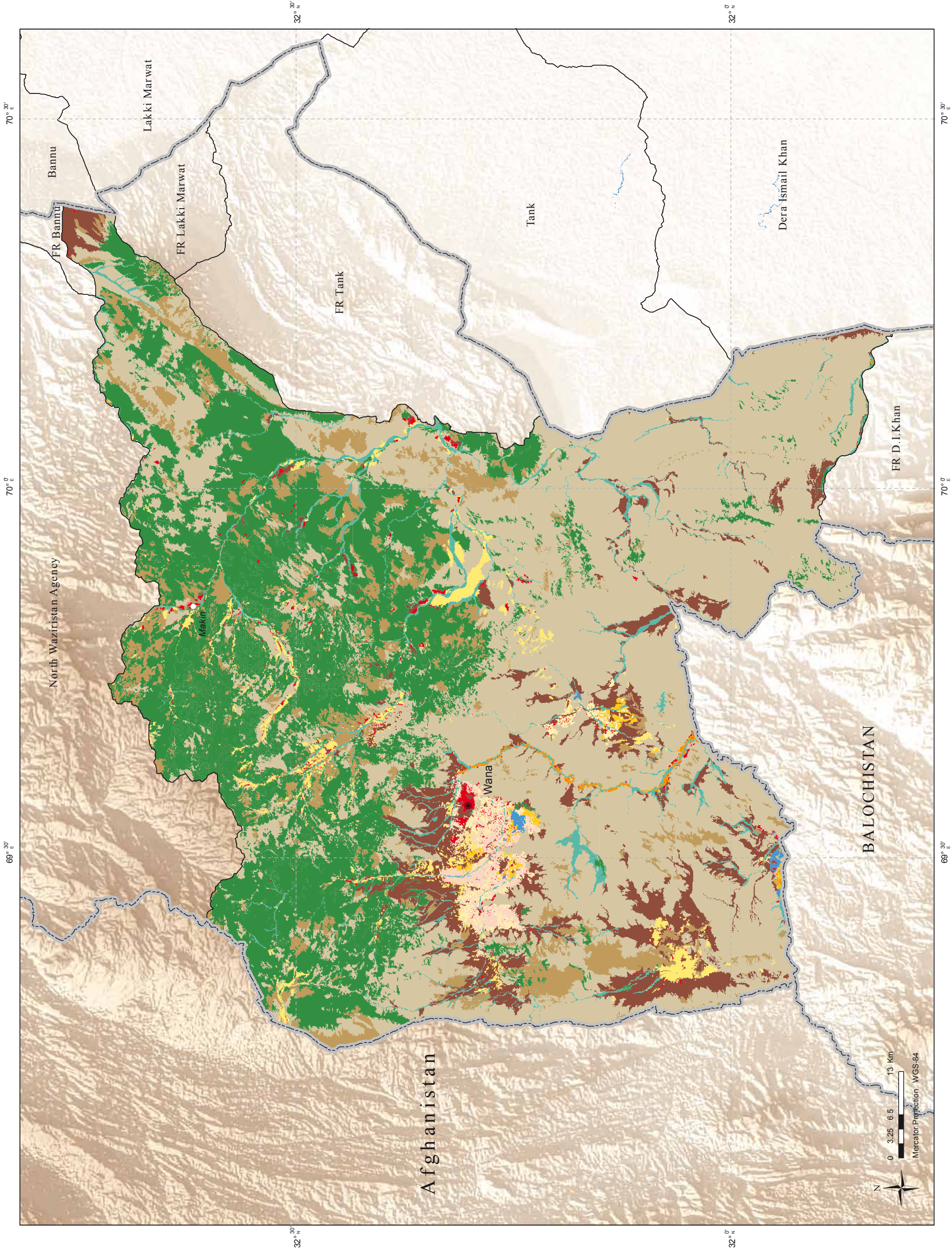
Source: www.flickr.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN THE AGENCY

Legend	km ²	%
Orchards	50.89	0.8
Crop Irrigated	57.44	0.9
Crop Marginal and Irrigated Saline	17.04	0.3
Crop in Flood Plain	13.20	0.2
Crop Rainfed	136.01	2.1
Forest - Natural Trees and Mangroves	1,811.67	28.1
Natural Vegetation in Wet Areas	168.04	2.6
Range Lands - Natural Shrubs and Herbs	550.77	8.5
Built-up	38.64	0.6
Bare Areas	494.04	7.7
Bare Areas with Sparse Natural Vegetation	3,105.60	48.1
Wet Areas	9.07	0.1
Snow and Glaciers	0.00	0.0
Grand Total	6,452.44	



FR BANNU

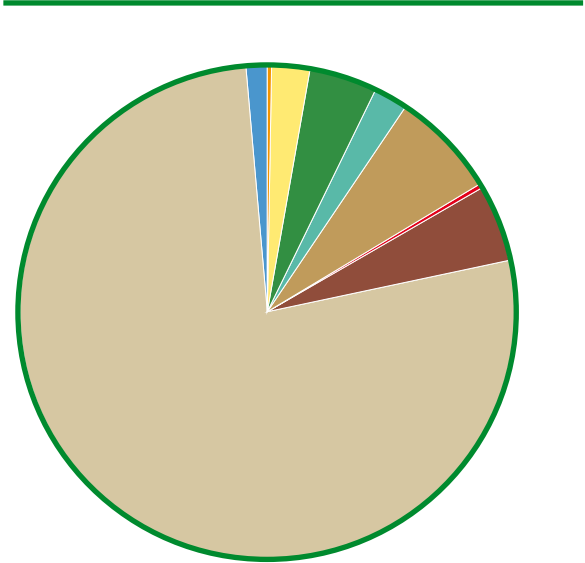
FR Bannu stands for Frontier Region Bannu. FR Bannu is part of the Bannu basin with semi-arid climate and an annual average rainfall of around 300 mm. Most of the area is rainfed and the main sources of irrigation are the Kurram and Tochi Gambila rivers and the Marwat canal. The two main tribes of FR Bannu are Ahmadzai and Utmanzai. The main villages of FR Bannu are Upper Bakakhel, Kotka Khaliq Nawaz, Malik Morad Bakakhel and Malik Qasim Junai Bakakhel. It is administered by the District Coordination Officer (DCO) of Bannu district.

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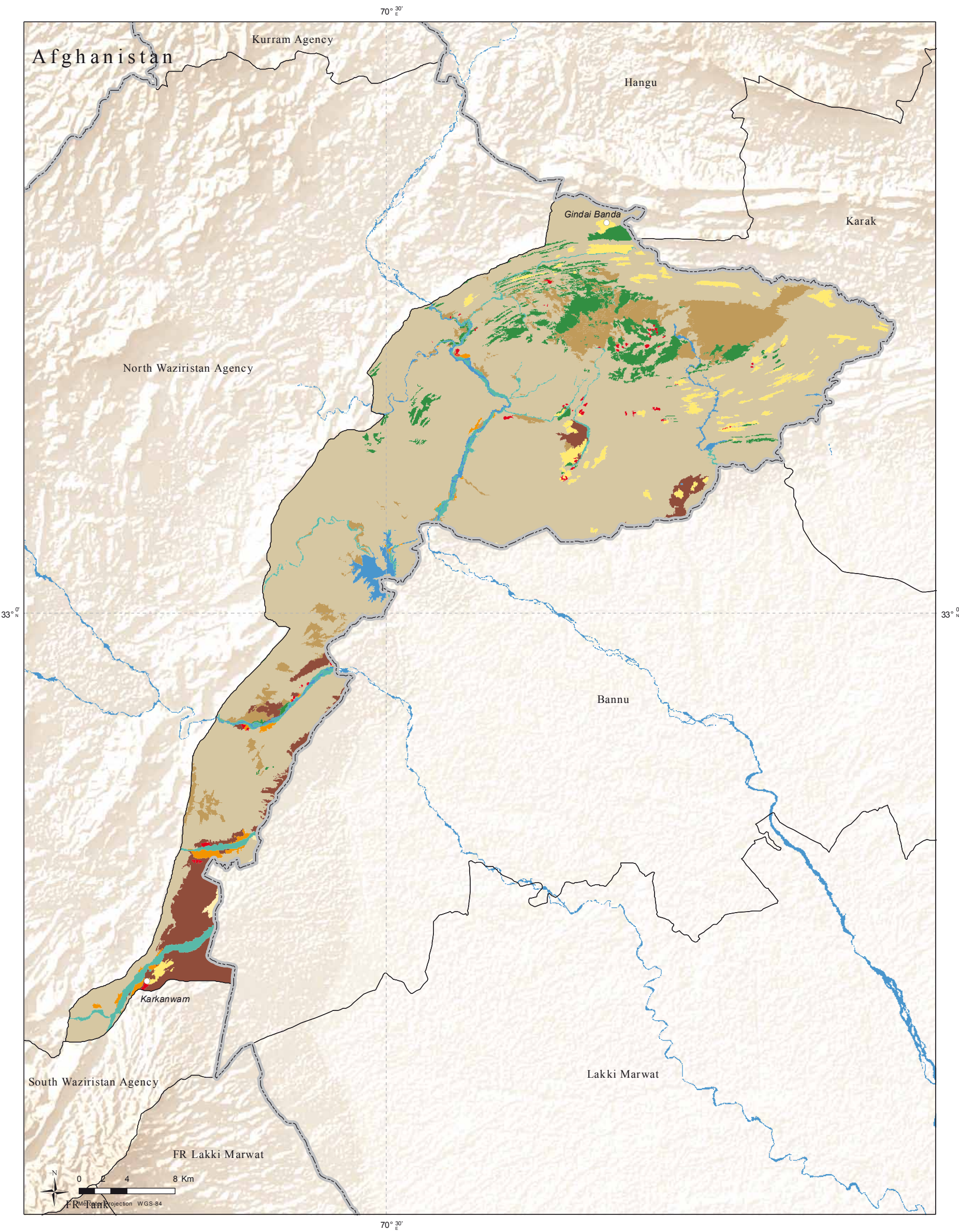
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN FR

Legend	km ²	%
Orchards	0.00	0.0
Crop Irrigated	1.62	0.2
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	3.99	0.5
Crop Rainfed	19.68	2.4
Forest - Natural Trees and Mangroves	35.88	4.4
Natural Vegetation in Wet Areas	18.39	2.3
Range Lands - Natural Shrubs and Herbs	55.92	6.9
Built-up	2.23	0.3
Bare Areas	39.62	4.9
Bare Areas with Sparse Natural Vegetation	618.68	76.7
Wet Areas	10.79	1.3
Snow and Glaciers	0.00	0.0
Grand Total	806.81	



FR DERA ISMAIL KHAN

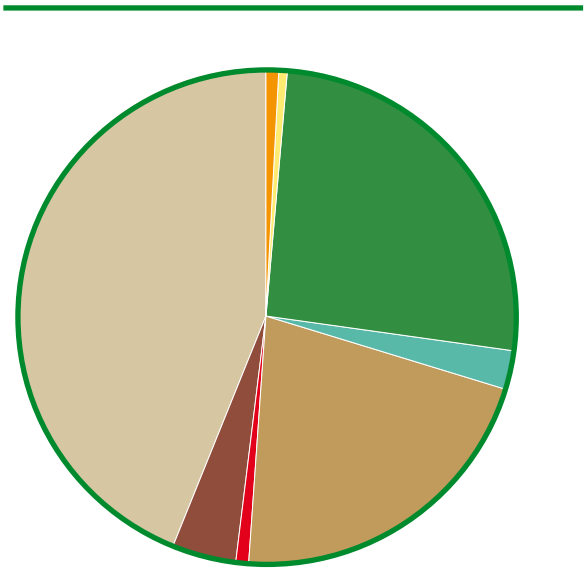
FR D.I. Khan contains Takht-e-Sulaiman the highest point of the Sulaiman Range with a height of 3441m. This range is covered by coniferous forest. Important streams in this part are; Tangi Khwar and Rangharar Khwar. They are the main tributaries of the Khora river. The climate here is at extreme with very hot summers and very cold winters. The nominal income of the people comes from flocks, herds and forests. FR D.I. Khan is inhabited by Shiranis and Usthranas tribes. It is administered by the District Coordination Officer (DCO) of D.I. Khan district.

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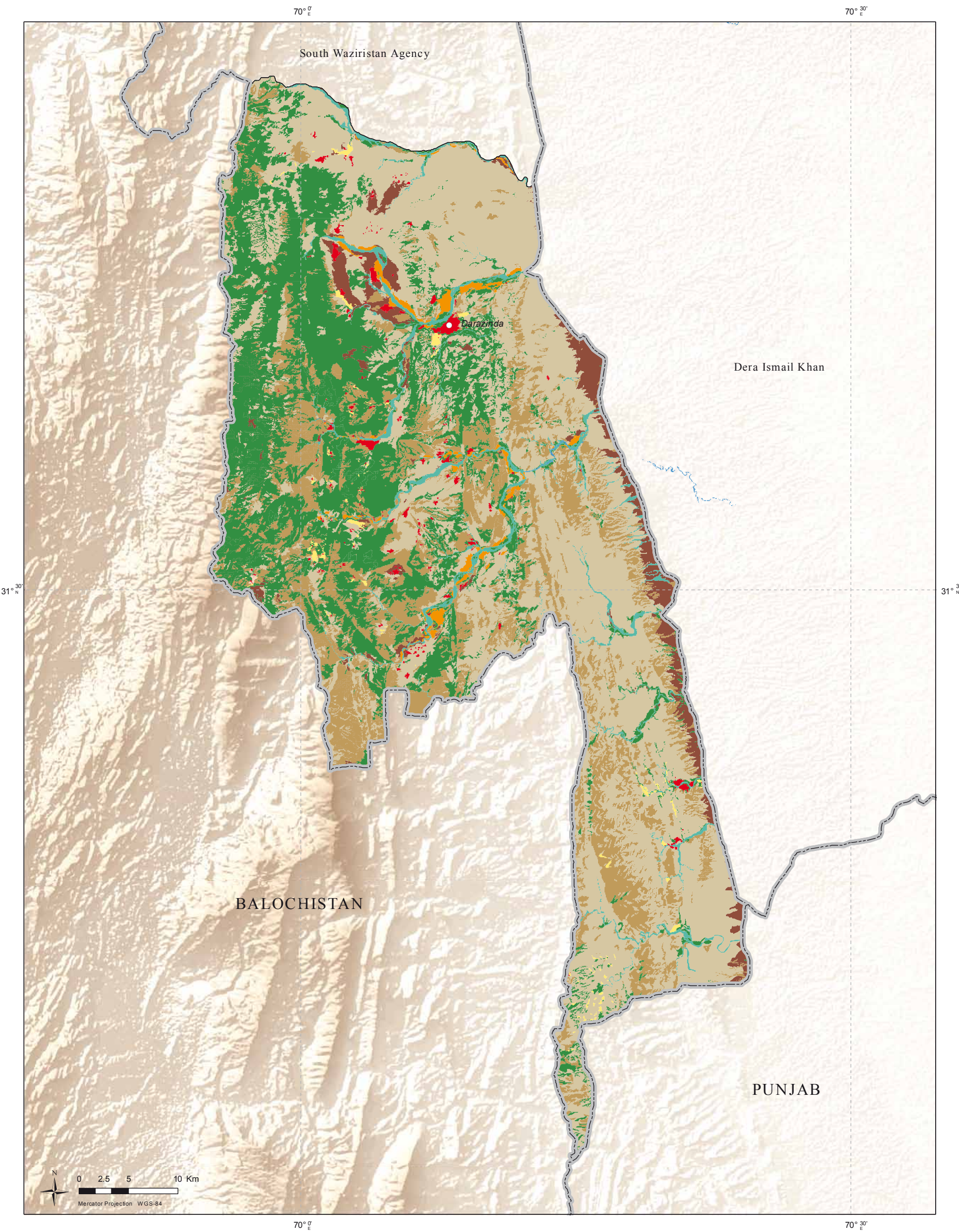
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN FR

Legend	km ²	%
Orchards	0.20	0.0
Crop Irrigated	0.01	0.0
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	17.86	0.9
Crop Rainfed	9.19	0.5
Forest - Natural Trees and Mangroves	491.84	25.8
Natural Vegetation in Wet Areas	48.35	2.5
Range Lands - Natural Shrubs and Herbs	407.98	21.4
Built-up	15.12	0.8
Bare Areas	82.85	4.3
Bare Areas with Sparse Natural Vegetation	832.50	43.7
Wet Areas	0.34	0.0
Snow and Glaciers	0.00	0.0
Grand Total	1,906.25	



FR KOHAT

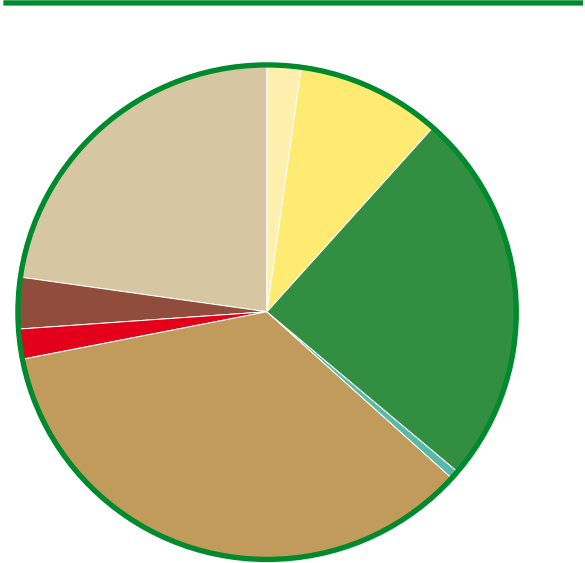
FR Kohat has a diverse topography with rugged mountains. The important valley is Darra or Kohat Pass inhabited by Bosti Khel. The region receives frequent rainfall, with August being the rainiest with an average rainfall of 114 mm. The land as a whole is rainfed except Tor Spar area, which is under well irrigation. A few areas in Sani Khel and Akhor are irrigated from springs and wells, respectively. Common crops are wheat, barley and millet. It is administered by the District Coordination Officer (DCO) of Kohat district.

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



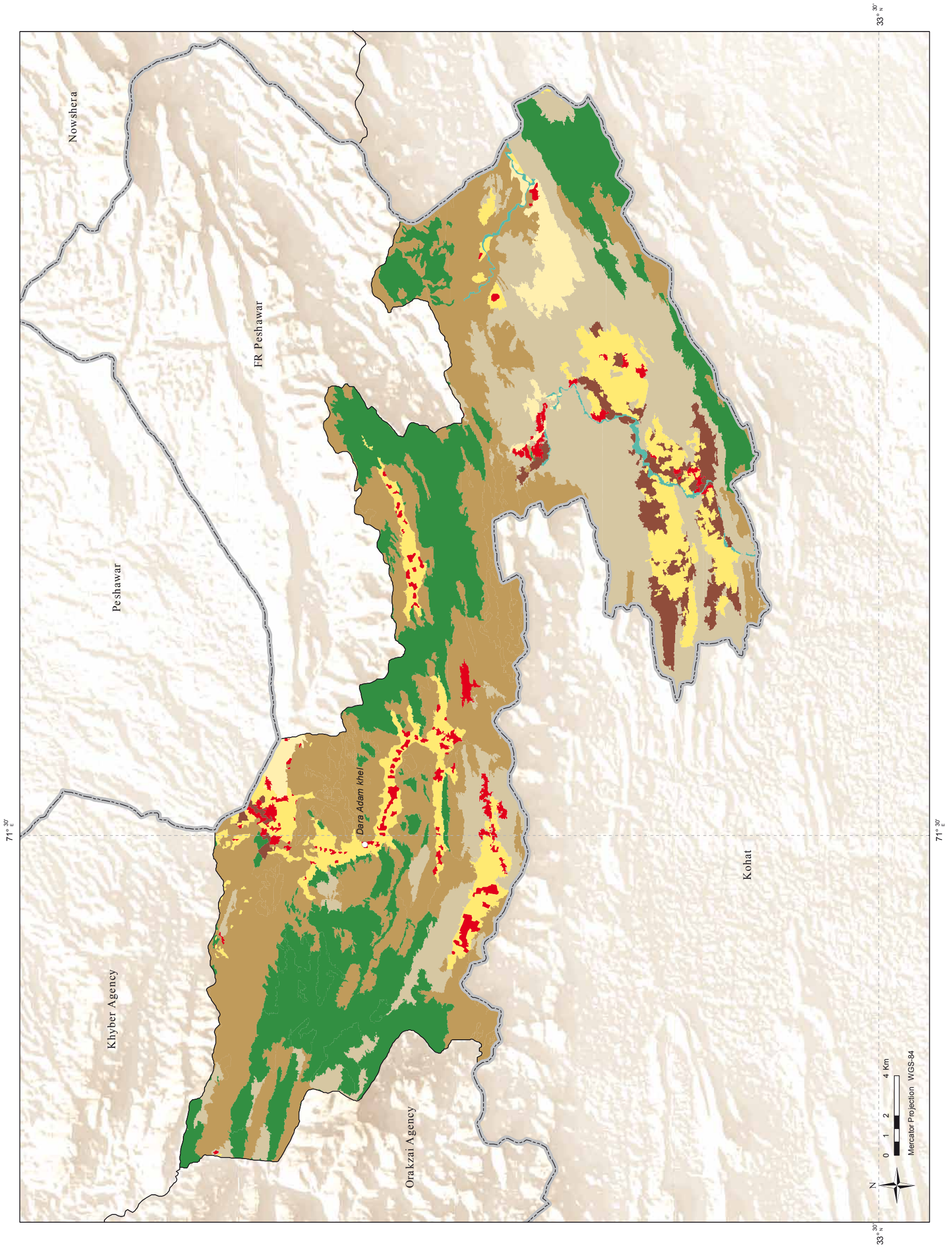
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN FR

Legend		km ²	%
	Orchards	0.00	0.0
	Crop Irrigated	10.67	2.4
	Crop Marginal and Irrigated Saline	0.00	0.0
	Crop in Flood Plain	0.00	0.0
	Crop Rainfed	42.28	9.3
	Forest - Natural Trees and Mangroves	111.96	24.7
	Natural Vegetation in Wet Areas	2.20	0.5
	Range Lands - Natural Shrubs and Herbs	159.88	35.3
	Built-up	9.07	2.0
	Bare Areas	14.36	3.2
	Bare Areas with Sparse Natural Vegetation	102.69	22.7
	Wet Areas	0.00	0.0
	Snow and Glaciers	0.00	0.0
Grand Total		453.11	



FR LAKKI MARWAT

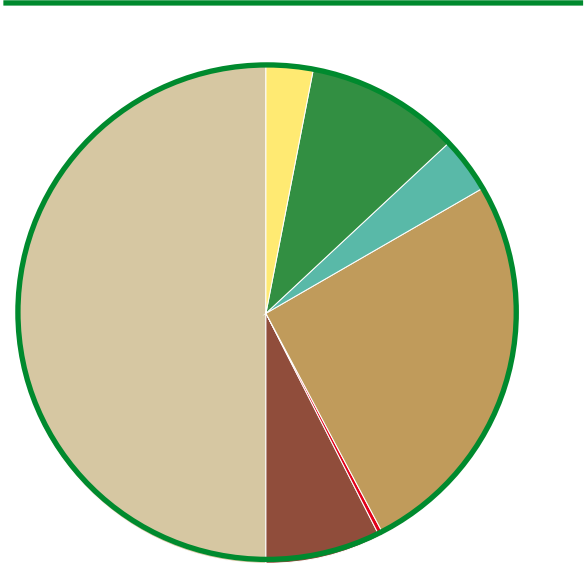
The entire territory of this tribal area is hilly terrain of medium height. Kharaghora is the prominent range in the southern part of the area, with an average height of almost 850 meters. Three of the important western tributaries of the Indus namely Kurram, Baran and Tochi rivers flow across this tribal area. The weather of the region is extreme, with hot summers and cold winters. FR Lakki Marwat is administered by the District Coordination Officer (DCO) of Lakki Marwat district.

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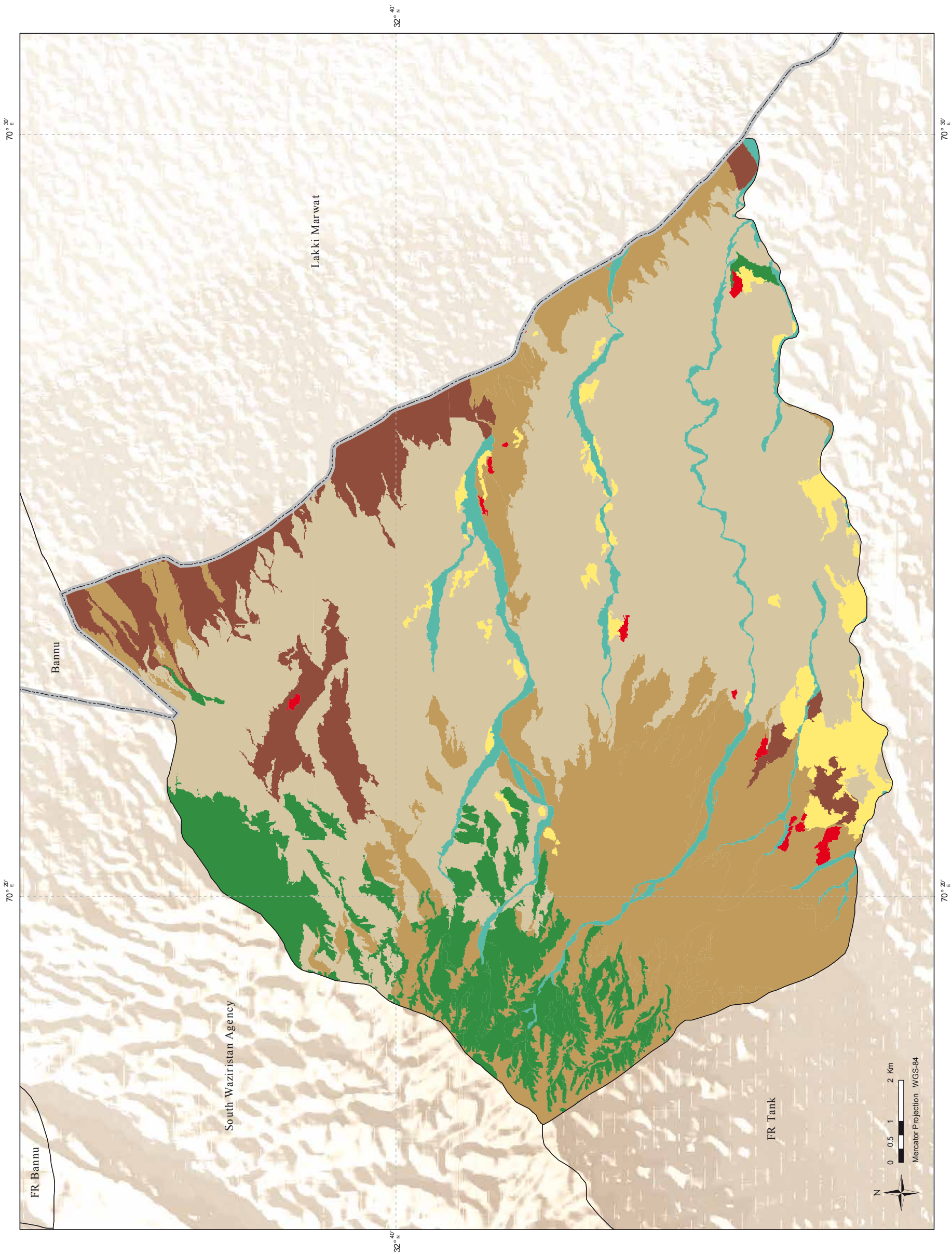
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN FR

Legend		km ²	%
	Orchards	0.00	0.0
	Crop Irrigated	0.01	0.0
	Crop Marginal and Irrigated Saline	0.00	0.0
	Crop in Flood Plain	0.00	0.0
	Crop Rainfed	6.25	3.3
	Forest - Natural Trees and Mangroves	18.65	9.9
	Natural Vegetation in Wet Areas	6.73	3.6
	Range Lands - Natural Shrubs and Herbs	47.86	25.5
	Built-up	0.70	0.4
	Bare Areas	14.18	7.5
	Bare Areas with Sparse Natural Vegetation	93.49	49.8
	Wet Areas	0.00	0.0
	Snow and Glaciers	0.00	0.0
Grand Total		187.87	



FR PESHAWAR

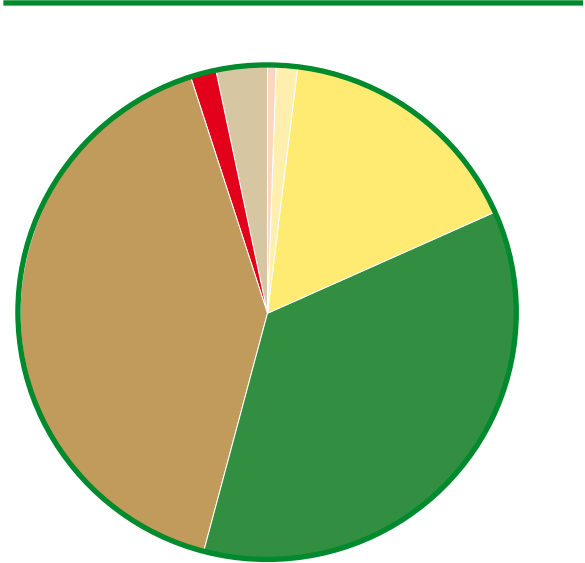
FR Peshawar is geographically located in central FATA. It is bordered by district Peshawar in the north, Kohat district in the south, Khyber Agency in the east and Nowshera district in the west. There is no urban locality in the area. The climate of FR Peshawar is extreme, hot in summers and cold in winters. The main and only tribe of FR Peshawar is Adam khel, a sub-tribe of Afridis. FR Peshawar is also inhabited by the Hasankhel, Jawaki, Janakor and Ashookhel. FR Peshawar is administered by the District Coordination Officer (DCO) of Peshawar district.

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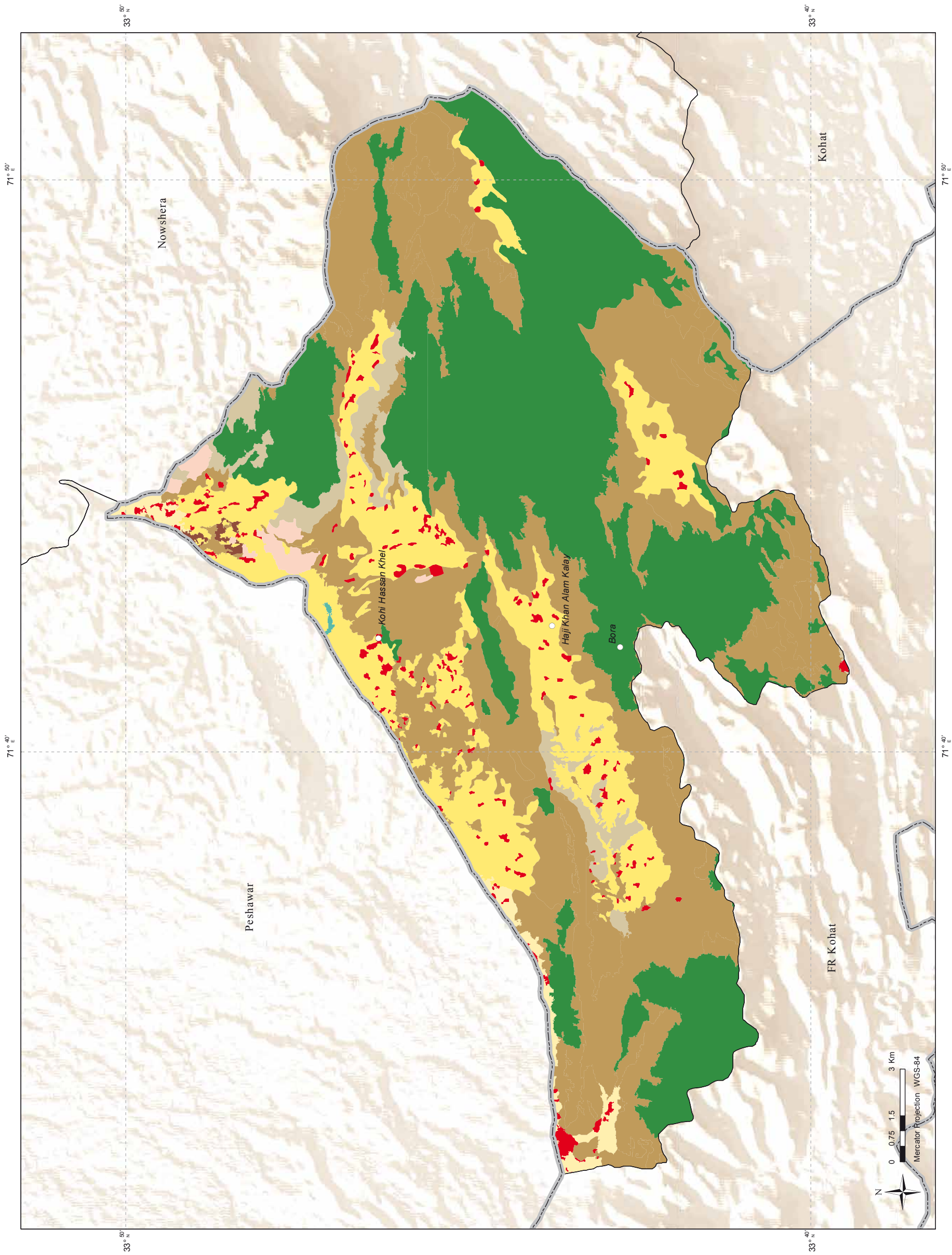
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN FR

Legend	km ²	%
Orchards	2.05	0.8
Crop Irrigated	3.73	1.4
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	0.00	0.0
Crop Rainfed	41.79	16.2
Forest - Natural Trees and Mangroves	92.53	35.8
Natural Vegetation in Wet Areas	0.12	0.0
Range Lands - Natural Shrubs and Herbs	105.42	40.8
Built-up	4.06	1.6
Bare Areas	0.43	0.2
Bare Areas with Sparse Natural Vegetation	8.48	3.3
Wet Areas	0.00	0.0
Snow and Glaciers	0.00	0.0
Grand Total	258.62	



FR TANK

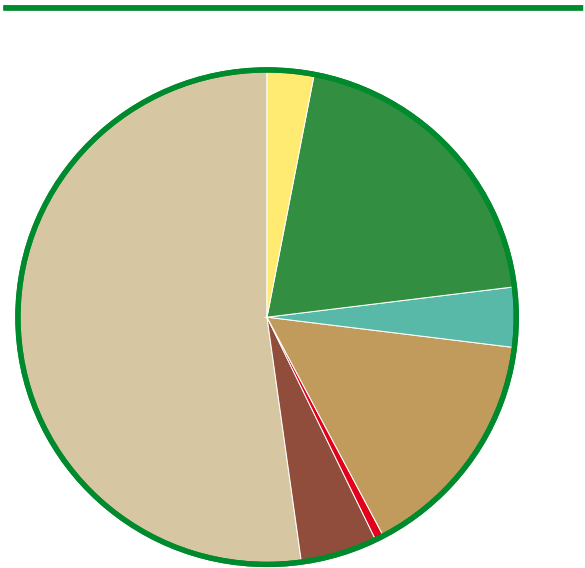
FR Tank shares its southeastern boundary with the settled district of Tank and is thus named after it. The Bhitanni Hills are extremely rough and almost devoid of greenery. The climate of the area is moderate. Most of the agriculture land is rainfed except the land of Sohbaty Katch area, where farmers get water from Tank Zam Dam for irrigation purpose. The total road infrastructure in FR Tank covers a total of 292 km, out of which metalled roads comprise 218 km and 74 km are shingled roads. FR Tank is administered by the District Coordination Officer (DCO) of Tank district.

INDEX MAP



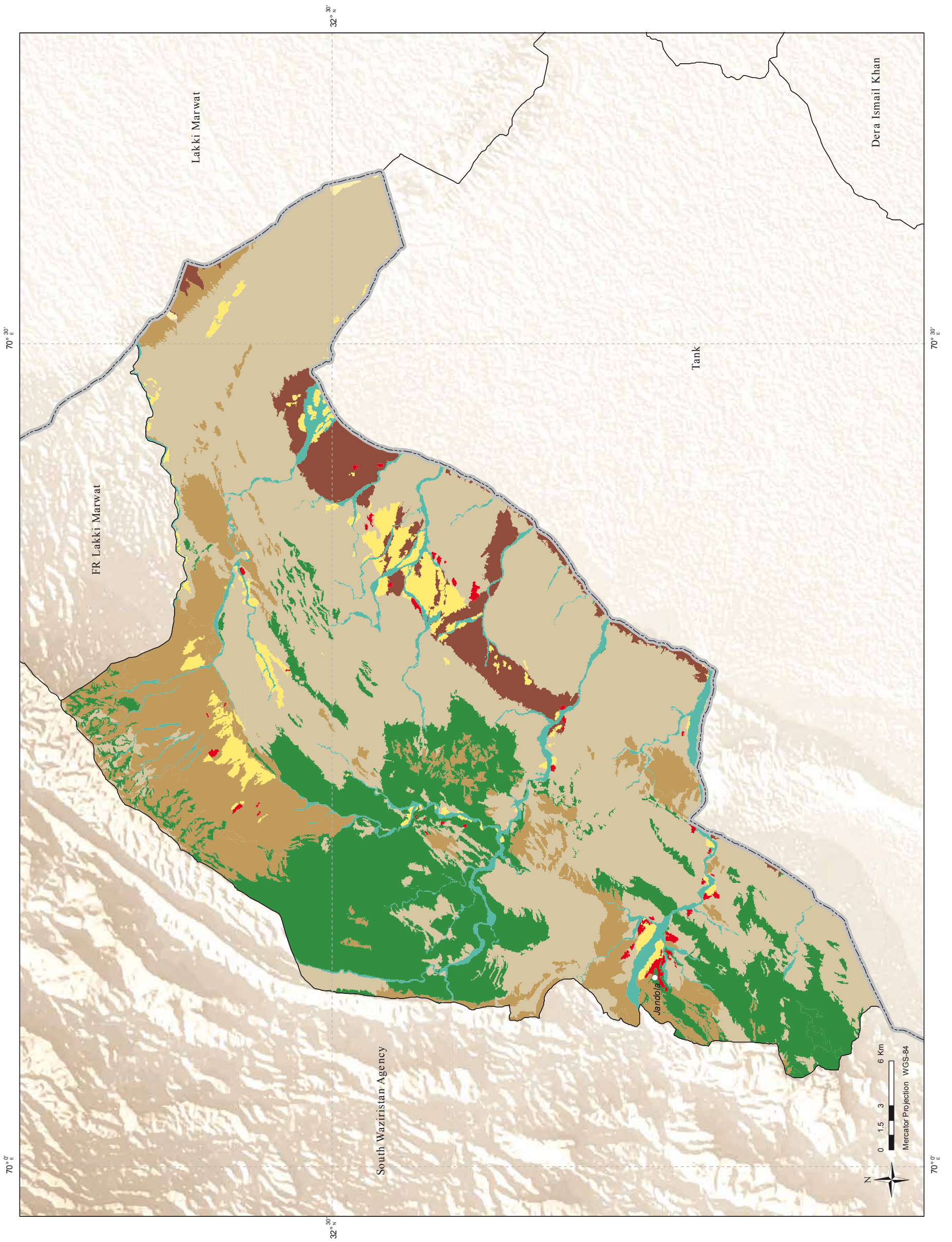
Source: www.panoramio.com

LAND COVER IN PERCENTAGE



DISTRIBUTION OF LAND COVER IN FR

Legnd	km ²	%
Orchards	0.00	0.0
Crop Irrigated	1.16	0.1
Crop Marginal and Irrigated Saline	0.00	0.0
Crop in Flood Plain	0.00	0.0
Crop Rainfed	34.58	3.1
Forest - Natural Trees and Mangroves	221.32	20.1
Natural Vegetation in Wet Areas	40.83	3.7
Range Lands - Natural Shrubs and Herbs	170.65	15.5
Built-up	4.70	0.4
Bare Areas	54.55	5.0
Bare Areas with Sparse Natural Vegetation	570.96	52.0
Wet Areas	0.00	0.0
Snow and Glaciers	0.00	0.0
Grand Total	1,098.74	



The Government of Pakistan, with support from its cooperating partners, has initiated a comprehensive program to address the improvement in agricultural statistical reporting utilizing auxiliary data from Earth Observation satellites.

The project “Agricultural Information System - Building Provincial Capacity in Pakistan for Crop Estimation, Forecasting and Reporting based on the integral use of Remotely Sensed Data” focuses on enhancing and improving current systems based on the integral use of remotely sensed data into the existing data collection, analysis and dissemination systems; as well as the development of complementary systems to validate the use of satellite remotely-sensed data for area estimation and yield forecasting.

The land cover mapping was considered as a critical component of the area frame development and evolution. Many agricultural applications require detailed, updated, reliable and accurate baseline on land cover to support spatial monitoring and to evaluate ecosystem and landscape dynamics. Particularly in agriculture a reliable land cover model of the present status of land utilization can significantly assist the development and support statistical applications.

FAO with the Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) and the Crop Reporting Services (CRS), has successfully supported the development of a harmonized land cover database. The land cover atlases of Punjab, Sindh, Khyber Pakhtunkhwa provinces & Federally Administered Tribal Areas have been developed and the series will be continued to provide a complete coverage of the country.

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