FOREST COVER ATLAS BALOCHISTAN

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WWF

PAKISTAN

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THE FALLEN PANDAS

AAMIR SAEED KHAN

A passionate environmentalist and loving father

Originally hailing from Kohat, Aamir had over 25 years of experience in conducting forest surveys and implementing community-based conservation projects. Aamir was a technical expert in his field and started his career in WWF working in the Salt Range for a decade. He held two Master's degrees, in organic chemistry and forestry from the Pakistan Forest Institute, and was passionate about the protection of natural resources. Known to all for his kind heart and charitable nature, Aamir was a committed disaster relief volunteer, having spent hours in the field to help communities recover and rebuild after the earthquake of 2005 and the floods of 2010. He leaves behind a wife, and three sons, aged 8, 15 and 21.

IFTIKHAR HUSSAIN

Nature enthusiast and loyal friend

Iftikhar had been a part of the Panda family since his internship days at the Chitral field office. A true nature enthusiast, Iftikhar held a Bachelor of Science degree in environmental sciences and had helped the organization with many challenging projects, including work on snow leopards, Ibex, and Markhors. He worked with the staff in WWF-Sweden who remembered him fondly and are shocked at his passing. His dedication towards his work, charismatic personality and humble nature made everyone warm up to him instantly, be it his colleagues, project partners, or the community members he worked with. Iftikhar leaves behind a young, grieving widow and his beloved mother.

RAFIULLAH SWATI

Budding professional and conservationist from early years

With a degree in forestry, Rafiullah joined WWF-Pakistan as an intern, like many of his team members. His passion for forestry was unlike others as he had grown up watching his father working in the same field and protecting forests. Already the team leader of the Hazara team of the National Forest Inventory under the REDD+ project, Rafiullah was highly ambitious by nature and aspired to become an expert in his field.

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ATIF ALI KHAN

Future leader, beloved father and son

Anyone who knew Atif knew he had a bright future ahead of him. Well-organized, talented, and professional, Atif was a gold medalist with an MPhil degree in forestry and rangeland management and was towards the end of completing his PhD degree. He joined the Panda family as an intern and quickly gained confidence and respect within the teams, exhibiting a level of intellect and wisdom unparalleled by his peers. He leaves behind grieving parents, siblings, and a young widow with a four-month-old son.

FARHAN ULLAH AFRIDI

Dedicated, diligent and expectant father

Farhan demonstrated maturity and seriousness towards his duty as a driver. He was also fond of nature and so enjoyed working on WWF assignments as they gave him a chance to explore new areas and be close to nature. Coming from an extremely marginalized background, he could not complete his education. However, he worked hard to provide support to his family and despite his young age, was revered for his professionalism and work ethic.

He is survived by aged parents and a young, pregnant wife.

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ACKNOWLEDGEMENTS

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The Ministry also commends the support provided by the Provincial REDD+ Working Groups representing forestry officials, civil society, INGOs (IUCN and WWF Pakistan), during field data collection and consultation workshops. The coordination and technical supervision provided by Syed Ghulam Qadir Shah, Inspector General Forests / National REDD+ Coordinator and the staff of National REDD+ Office, especially Muhammad Afrasiyab, GIS / MRV Expert and Pervez Manan, NFI Expert is also appreciated.

Last but not the least the Ministry of Climate Change highly appreciates the work of WWF-Pakistan's GIS Lab and Forest Inventory teams in developing the National and Sub-national Forest Cover Atlases under the National REDD+ Office. Moreover, the ministry recognizes and honors the sacrifice of the five WWF-Pakistan's field team members Aamir Saeed Khan, Iftikhar Hussain, Atif Ali Khan, Rafiullah Swati and Farhan Ullah Afridi who lost their lives in a fatal car accident during the course of their duty regarding Forest Inventory and Field Surveys.

GENERAL FOREST SITUATION IN PAKISTAN

Pakistan is mainly a dry land country with 80 percent of its land in arid and semiarid areas. Land Use Change Assessment plays important role in understanding and resolving various environment related issues especially related to the drivers of deforestation and forest degradation. The data generated from satellite images are good source in studying economic impacts of periodic land use changes and productivity, as well as habitat and biodiversity loss, climate variability and other environmental factors. Time Series Analysis from satellite images are therefore considered a more reliable and accurate mean of monitoring and measurements forests and changes to other land uses as compared to traditional methods.The Forest Cover Atlas gives an overall picture of existing forest cover on national and sub-national level. It shows the information on forest cover changes over a period of four years (2016-2020). The information is supported with tables, maps, graphs and charts of forest cover and other land use / land cover classes.

The study revealed that the area of Forest Cover of the country increased from 4,005,180 (4.56%) of the total area (87,910,600 ha) of Pakistan including AJ&K and GB to 4,113,657 (4.68%) hectares from the year 2016 to 2020. This increase of 1,08,477 hectares in the country's forest cover is the result of extensive tree plantation initiatives at the federal and provincial levels to reduce deforestation and enhance national tree cover such as the Ten Billion Tree Tsunami Programme – Phase – I Up-scaling of Green Pakistan Programme (Revised), and the large-scale mangrove restoration along the coast by the Sindh Province. According to this study, the overall deforestation in Pakistan for the reference period of 2016–2020 was found as 44,028.5 hectares, with an average annual rate of 11,007.1 hectares.

Forest Area and Carbon Stock (2016-2020)

Forest Type	2016	2020		
	Area (ha)	Area (ha)	C Density (tC/ha)	Carbon Stock (Mt C)
Sub-Alpine	97,945	102,320	66.22	6.78
Dry Temperate	1,031,503	1,057,651	101.57	107.42
Dry Temperate Juniper and Chilghoza	225,996	228,193	65.87	15.03
Moist Temperate	550,303	556,525	120.92	67.29
Sub-Tropical Chir Pine	633,983	639,786	89.15	57.03
Subtropical Broadleaved (Scrub)	999,776	1,025,130	57.01	58.44
Riverine	117,872	112,878	42.2	4.77
Tropical Thorn	103,333	116,017	35.24	4.09
Mangrove	133,816	157,357	238.85	37.59
Irrigated Plantation	60,672	66,774	69.05	4.61
Farm Plantation (GB Only)	49,981	51,026	56.35	2.88
Total	**4,005,180**	**4,113,657**	**942.43**	**365.93**

Overall Emissions and Removals from Forests (2016-2020)

Forest type	Emissions from deforestation (Mt CO2e)	Emissions from forest degradation (Mt CO2e)	Removals from enhancement (Mt CO2e)	Removals from improvement in forest cover density (Mt CO2e)	Net balance (Mt CO2e)
Sub-Alpine	0.11	1.71	0.05	0.41	1.35
Dry Temperate	0.69	19.98	0.16	18.25	2.25
Dry Temperate Juniper And Chilghoza	0.04	3.49	0	0.56	2.96
Moist Temperate	0.23	12.31	0.07	5.32	7.15
Sub-Tropical Chir Pine	0.33	6.79	0.05	2.17	4.89
Subtropical Broadleaved (Scrub)	0.16	4.33	0.05	3.14	1.32
Riverine	0.36	0.12	0.18	0.07	0.24
Tropical Thorn	0.08	0.32	0.04	0.4	-0.04
Mangrove	0.04	0.07	0.96	0.41	-1.26
Total	**2.03**	**49.12**	**1.57**	**30.73**	**18.86**

Emissions from Deforestation and Removals from Afforestation/Reforestation (2016-2020)

Forest type	Deforestation (ha)	Emissions (Mt CO2e)	Enhancement (ha)	Removals (Mt CO2e)	Net balance emissions/ removals (Mt CO2e)
Sub-Alpine	744.66	0.1	4,872.06	0.05	0.05
Dry Temperate	3,674.47	0.69	18,138.96	0.16	0.53
Dry Temperate Juniper and Chilghoza	294.84	0.04	281.52	0	0.03
Moist Temperate	959.94	0.24	4,462.77	0.07	0.17
Sub-Tropical Chir Pine	2,332.61	0.33	4,572.78	0.05	0.27
Subtropical Broadleaved (Scrub)	5,398.51	0.16	6,981.35	0.05	0.11
Riverine	25,989.00	0.36	27,945.00	0.18	0.18
Tropical Thorn	3,914.53	0.08	18,783.03	0.04	0.04
Mangrove	719.97	0.04	30,193.22	0.96	-0.92
Total	**44,028.53**	**2.02**	**116,230.69**	**1.56**	**0.46**

Emissions from Forest Degradation and Removals from Enhancement within existing Forest (2016-2020)

Forest type	Degradation (ha)	Emissions (Mt CO2e)	Enhancement (ha)	Removals (Mt CO2e)	Net Emissions/ Removals (Mt CO2e)
Sub-Alpine	18,706	1.74	4,351.70	0.41	1.28
Dry Temperate	182,691	19.94	133,673.30	18.25	1.74
Dry Temperate Juniper And Chilghoza	55,884	3.48	7,996.90	0.56	2.93
Moist Temperate	107,928	12.3	35,928.90	5.32	6.99
Sub-Tropical Chir Pine	117,516	6.82	40,674.40	2.17	4.62
Subtropical Broadleaved (Scrub)	119,662	4.29	125,237	3.13	1.2
Riverine	12,276	0.12	11,243	0.07	0.05
Tropical Thorn	11,898	0.32	16,111.70	0.4	-0.09
Mangrove	4,270	0.06	34,539	0.41	-0.34
Total	**630,831**	**49.07**	**409,755.90**	**30.72**	**18.38**

STANDARDS & METHODOLOGY

Province wise Satellite based Land / Use Land cover, mainly focused on forests, of Pakistan was developed using Mid-resolution Remote Sensing Satellite (Landsat 8) cloud free data for the reference year of 2016 and 2020. Free and Open Source Software (FOSS) including OpenForis Collect Earth and QGIS were utilized to generate activity data (AD). A Non-parametric regression model such as Random Forest was used to classify the satellite imagery into IPCC's six LULC classes. The standard and harmonised definitions of forest, deforestation, forest degradation, and other IPCC land use categories (cropland, grassland, settlement, wetland and other land) used in creating the Activity Data (AD) are as follows.

Forest:

"A minimum area of land of 0.5 ha with a tree crown cover of more than 10 % comprising trees with the potential to reach a minimum height of 2 meters. This will also include existing irrigated plantations as well as areas that have already been defined as Forests in respective legal documents and expected to meet the required thresholds as defined in the national Forest definition of Pakistan."

Cropland:

This category includes arable and tillage land, and agro-Forestry systems where vegetation falls below the thresholds used for the Forest Land category, consistent with the selection of national definitions.

Grassland:

This category includes rangelands and pastureland that is not considered as Cropland. It also includes systems with vegetation that fall below the threshold used in the Forest Land category and which are not expected to exceed, without human intervention, the threshold used in the Forest Land category. The category also includes all Grassland from wild lands to recreational areas as well as agricultural and silvo-pastoral systems, subdivided into managed and unmanaged consistent with national definitions.

Settlement:

This category includes all developed land, including transportation infrastructure and human settlements of any size, unless they are already included under other categories. This should be consistent with the selection of national definitions.

Other Land:

This category includes bare soil, rock, ice, and all unmanaged land areas that do not fall into any of the other five categories. It allows the total of identified land areas to match the national area, where data is available. This atlas describes the techniques and methodology to develop digital database of different LULC classes and prepare LULC maps. The overall methodology comprised of acquisition and processing of satellite images, Systematic Sample generation, Visual interpretation of samples, ROI generation, Classification, Post-processing, Accuracy Assessment and Change Detection.

Forest Degradation:

"Human induced long-term losses within Forest persisting for at least 4 years or more due to change in tree canopy cover i.e., open (11-30%), Sparse (31-50%), Medium (51-70 %) Dense (>70 %) resulting in reduction of Forest carbon stock and not qualifying as deforestation.

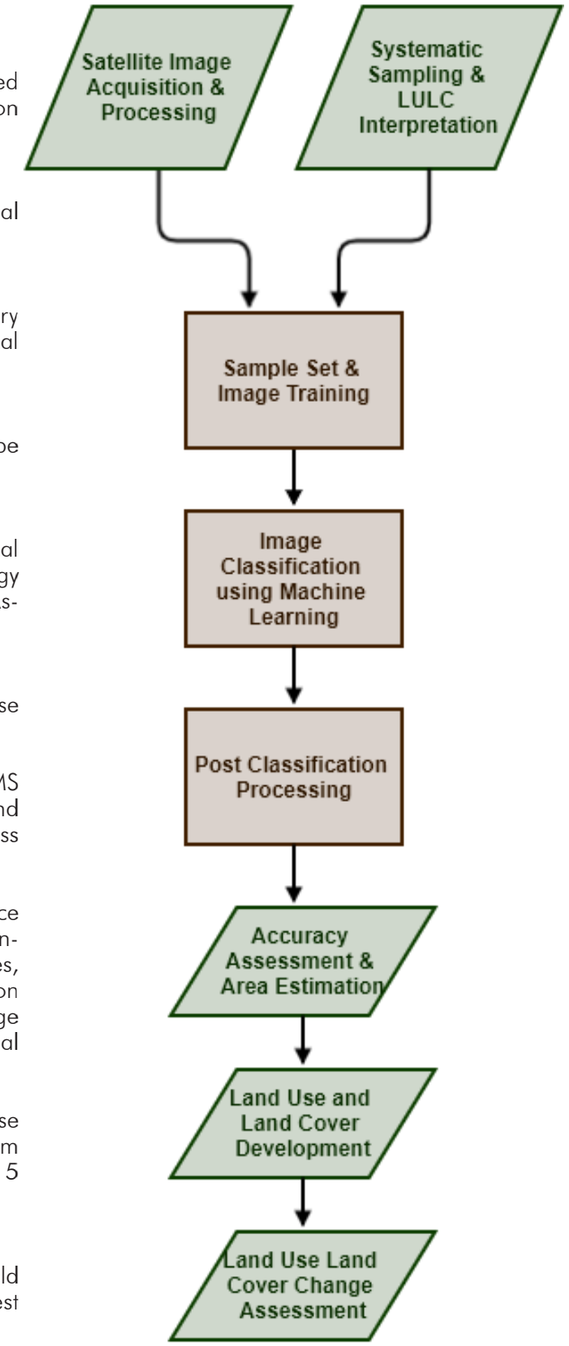
Satellite Land Monitoring System (SLMS) supports countries in development of systems to implement REDD+ interventions aligned with the National REDD+ Strategies and Action Plans. SLMS is one of the three functions of Measurement, Reporting and Verification (MRV) to continuously monitoring land by supporting National Forest Monitoring System (NFMS). Land use / land cover and land use change analysis data are the basis for activity Data (AD) which are fundamental input to national Greenhouse gas inventories (GHGi), essential for measuring progress towards climate action goals.

For the development of LULC, Total 130 (65 images for each year) freely available and cloud free (less than 10%) Satellite images of Landsat-8 L2SP (Collection 2 level 2 and Tier 1 Science Product) covering whole Pakistan were downloaded from the USGS Earth Explorer web portal (https://earthexplorer.usgs.gov). After image acquisition, FAO's Sample collection tool "OpenForis Collect Earth" was used for the interpretation of systematically generated 10'x10' or 5'x5' sample grids to generate training and validations samples. In addition to systematic samples, manual training samples were also taken in cases where misclassification or a low number of samples against a particular class were observed. Then, from systematic and manual plots, Region of Interest (ROI) polygons containing spectral signature against each plot as seed for classification were generated. 70% of the generated ROIs were then used as training samples for image classification and remaining 30% for the accuracy assessments. Random Forest classifier algorithm in QGIS environment was applied to classify the imagery into National and sub-national forest cover maps.

In the post-processing phase, a sieve of two pixels was applied to LULC rasters to reduce noise such as 'salt and pepper' effects. Accuracy assessment and area estimation of the Land Use and Land Cover maps were conducted using the sample of reference observations of the study area. The classification results were further improved by utilising historic LULCs, Feedback from provincial forest departments, field data and experts' ground knowledge. Pixel based Change analysis tool in QGIS was used to estimate the deforestation and enhancement. A sieve of 5 pixels was applied to the deforestation/enhancement rasters to extract the rate of deforestation and enhancement at the national as well as sub-national levels.

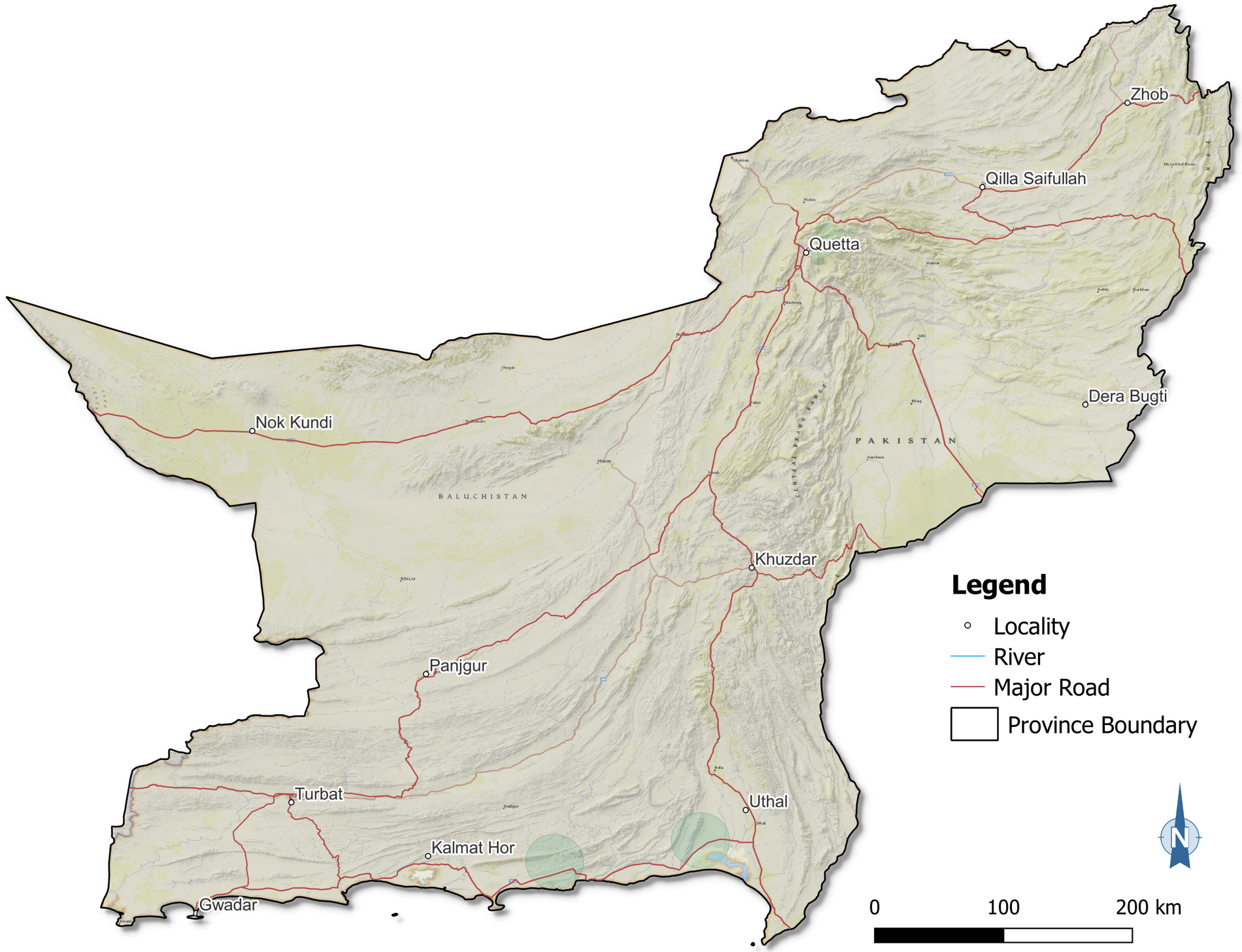
Deforestation:

Deforestation is defined as the direct human induced conversion of Forest to non-Forest (UNFCCC) or the permanent reduction of the tree canopy cover below the minimum 10% threshold (FAO, 2015). In scope of Pakistan's first FREL submission, deforestation assessment has been based on changes in natural Forests and exclude irrigated plantations, though the notified Forest definition includes irrigated plantations as one of the Forest types.



Standard templates were designed in QGIS to develop the national and sub national forest cover maps and change maps. Sub national LULC rasters were utilized to develop National scale Forest cover map. Change detection maps for the deforestation and enhancement in the provinces were generated from the change analysis rasters of the reference year of 2016 and 2020.

TOPOGRAPHIC MAP OF BALOCHISTAN



GEOGRAPHY OF BALOCHISTAN

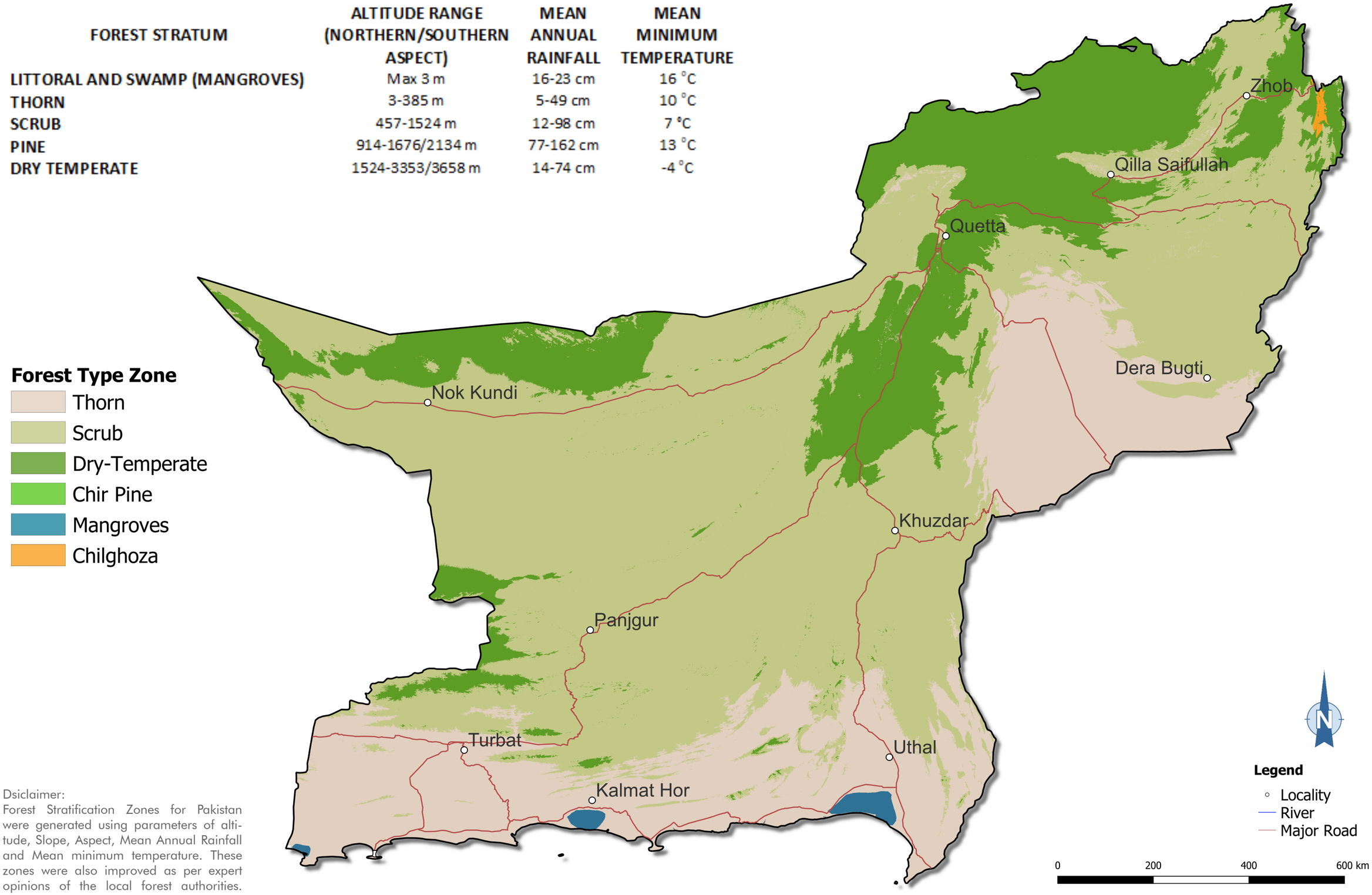
By area Balochistan is the largest province of Pakistan and is located between 61° 00′–70° 30′ E, 25°–32° N and has a total area of 347,190 km^2. The total population of the province is 12.34 million. Administratively, the province is divided into 26 districts. Mean Temperature of Baluchistan is 24 °C and mean annual rainfall is 160 mm (Pakistan Meteorological Department 2022).

Major part of Province contains mountains in the northern corner while desert in the south region and 800km coastline starting from Lesbela district to Gwadar. Baluchistan contains very low forest cover which is almost less than 2 percent area of the province. About 47% of the area is open ground and exposed rocks while 27% is rangelands (SUPARCO & FAO 2022). Major forest types are Dry temperate Juniper and Chilghoza Forests, Subtropical Broadleaved (Scrub) Forests, Tropical Thorn Forests and Mangroves Forests.

Balochistan is located at the eastern edge of the Iranian plateau and is the largest province in term of geographical area. The southern region of the province is known as Makran, while the central is Kalat. The neighboring regions of Balochistan are Iran in the west, Afghanistan and Khyber Pakhtunkhwa Province in the north, the Punjab and Sindh provinces in the east, whereas Arabian Sea lies in the south.
The climate of the province is very harsh. Summer is hot and dry, especially in arid zones of Chagai and Kharan districts. The plain areas are also very hot in summer with temperatures rising as high as 50°C. the highest temperature of 53°C has been recorded in Sibi on 26th May 2010. The population density is very low due to the rugged mountainous terrain and scarcity of water.
Despite vast spead deserts, some parts of the province have unique forest of the country. The forests are comprised of Junper forests found in Ziarat and Kalat. Chalghoza and Blue Pine Forest are found in Zhob while Scrub Forests are confined to Kohlu, Ziarat, Qilla Saifullah, Qilla Abdullah, Quetta, Kalat, Zhob, Musakhel and Khuzdar. The dominant species are Olive, Pistachio and Acacias. Desert scrubs are confined to Kharan and Chagai. The main species are Tamarix and Haloxylon. The tropical throne forests exist in Sibi, Jhal Magsi, Bolan, Dera Bugti and Panjgur. The species found in these forests are Prosopix and Acacia.

FOREST STRATIFICATION OF BALOCHISTAN

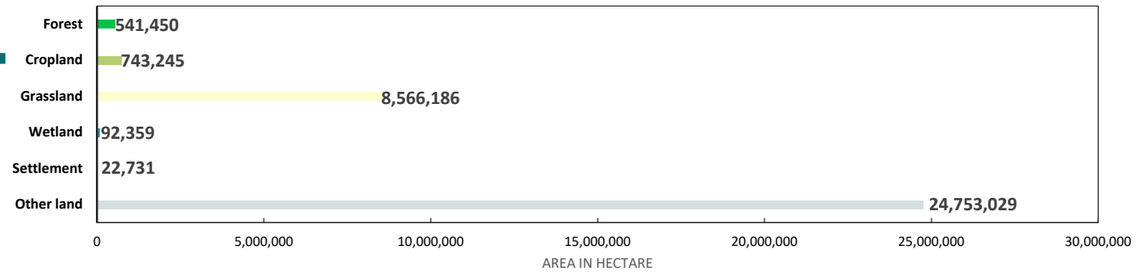
FOREST STRATUM	ALTITUDE RANGE (NORTHERN/SOUTHERN ASPECT)	MEAN ANNUAL RAINFALL	MEAN MINIMUM TEMPERATURE
LITTORAL AND SWAMP (MANGROVES)	Max 3 m	16-23 cm	16 °C
THORN	3-385 m	5-49 cm	10 °C
SCRUB	457-1524 m	12-98 cm	7 °C
PINE	914-1676/2134 m	77-162 cm	13 °C
DRY TEMPERATE	1524-3353/3658 m	14-74 cm	-4 °C

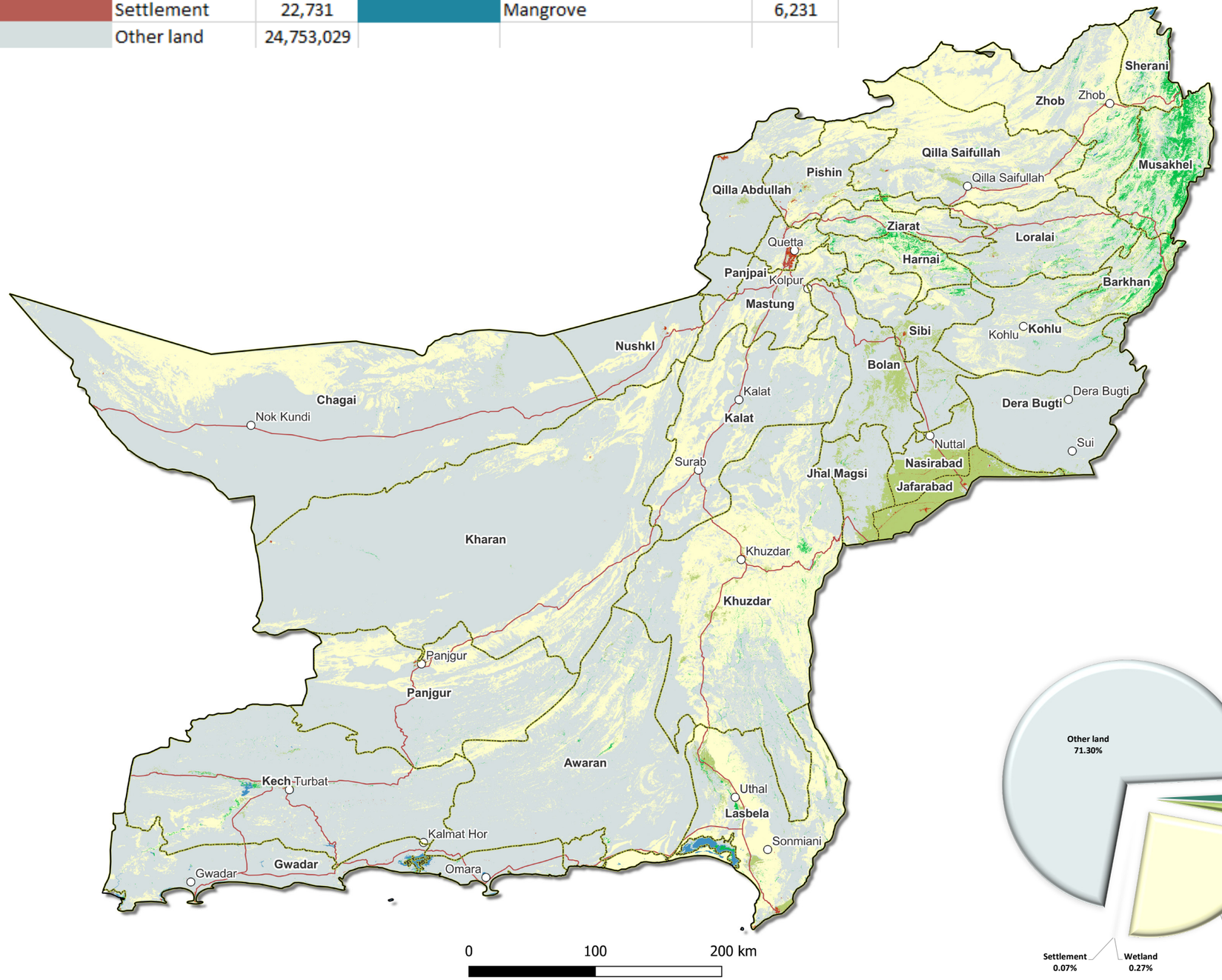


Dsiclaimer:
Forest Stratification Zones for Pakistan were generated using parameters of altitude, Slope, Aspect, Mean Annual Rainfall and Mean minimum temperature. These zones were also improved as per expert opinions of the local forest authorities.

BALOCHISTAN LULC MAP - 2016

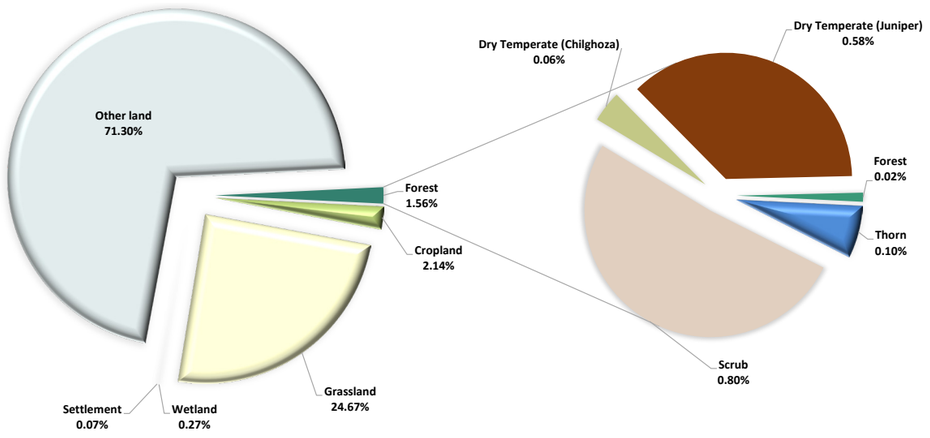
	Land cover Type	Area (ha)		Forest Type	Area (ha)
	Forest	541,450		Thorn	35,954
	Cropland	743,245		Scrub	277,164
	Grassland	8,566,186		Dry Temperate (Chilghoza)	21,589
	Wetland	92,359		Dry Temperate (Juniper)	200,512
	Settlement	22,731		Mangrove	6,231
	Other land	24,753,029			





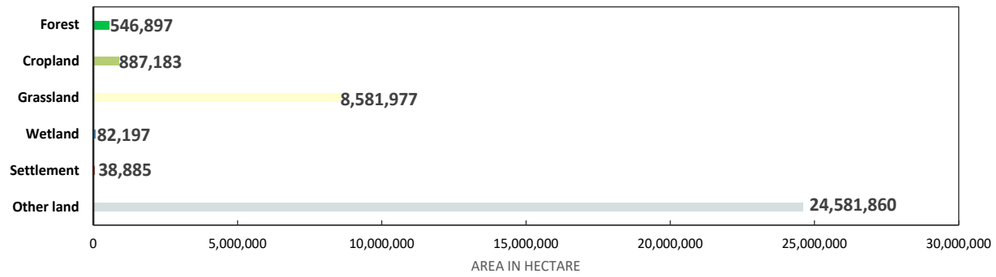
Legend

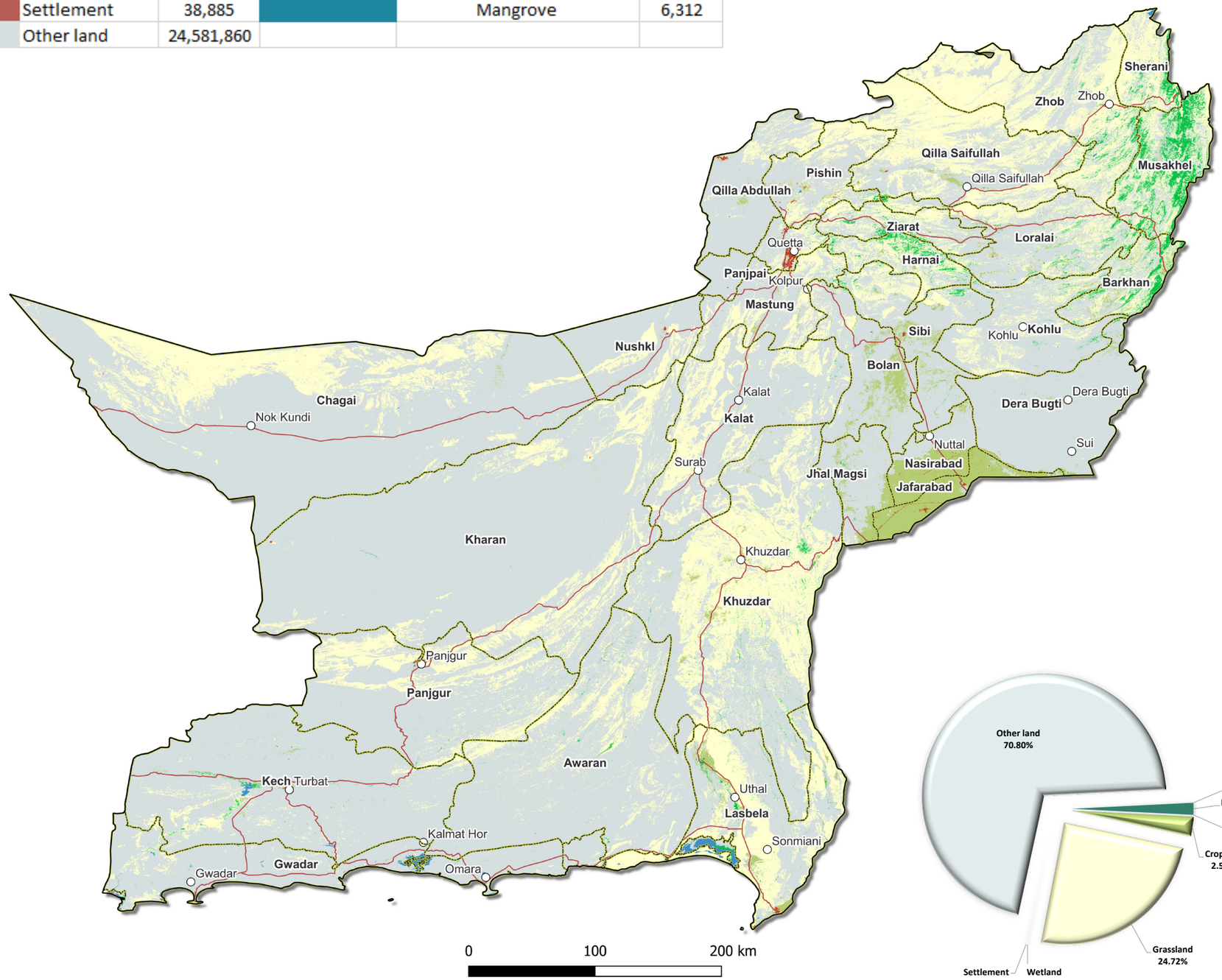
- Locality
- River
- Major Road
- District Boundary
- Province Boundary



BALOCHISTAN LULC MAP - 2020

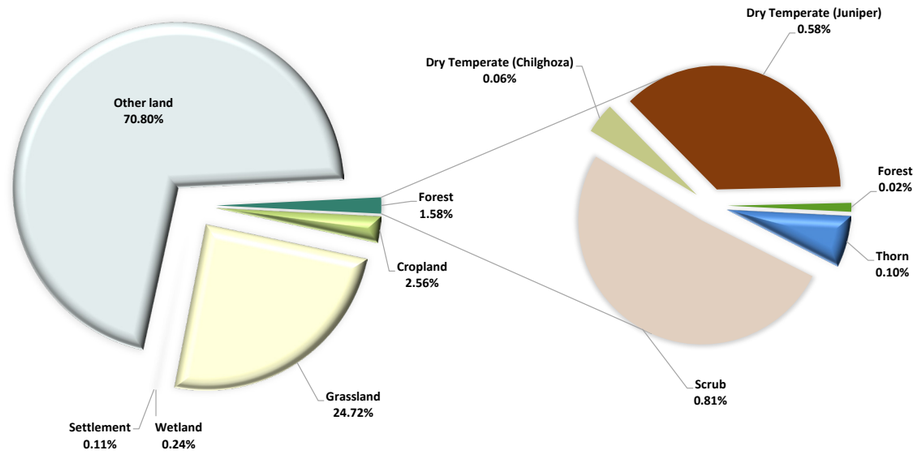
	Land cover Type	Area (ha)		Forest Type	Area (ha)
	Forest	546,897		Thorn	36,308
	Cropland	887,183		Scrub	280,040
	Grassland	8,581,977		Dry Temperate (Chilghoza)	21,760
	Wetland	82,197		Dry Temperate (Juniper)	202,477
	Settlement	38,885		Mangrove	6,312
	Other land	24,581,860			



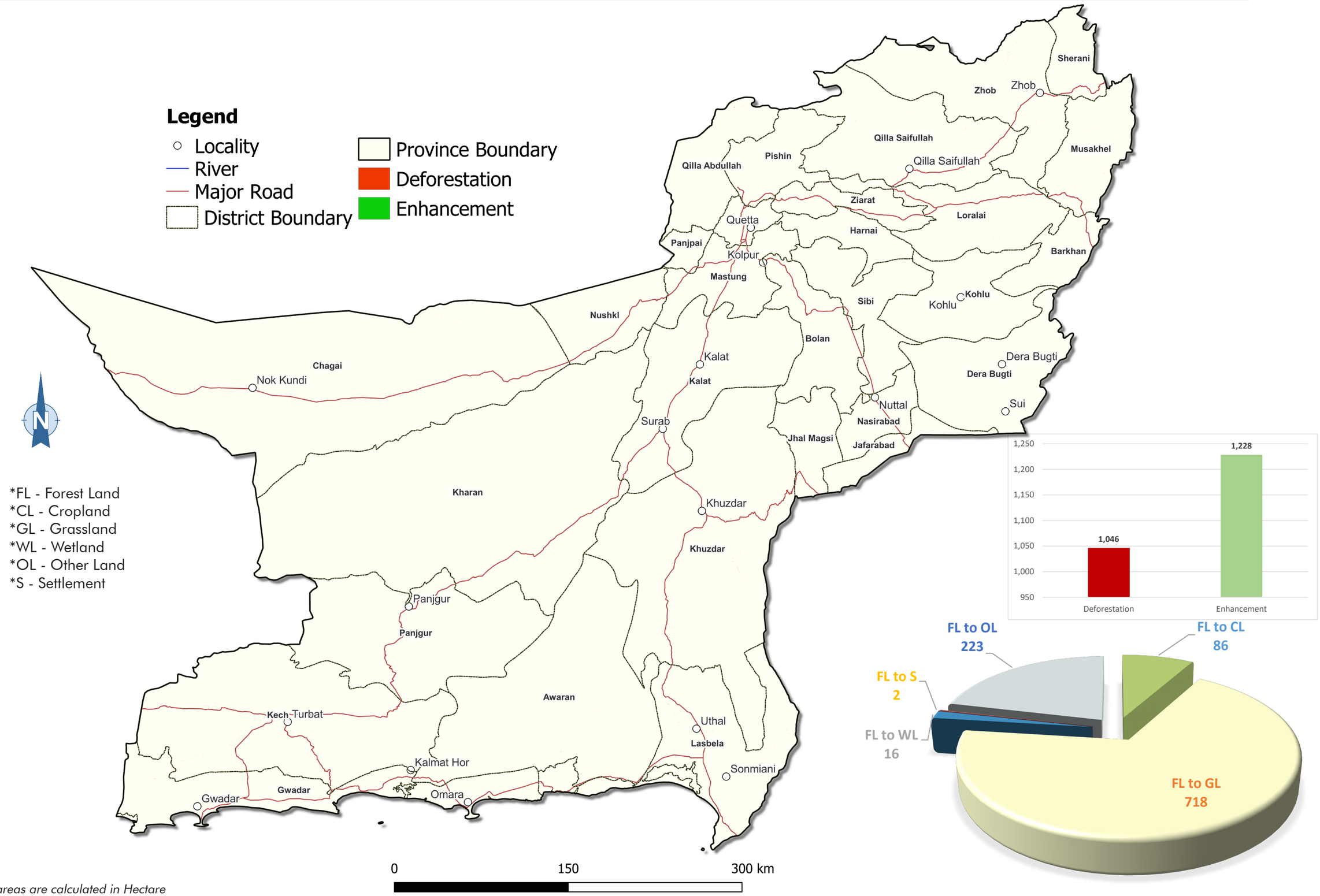


Legend

- Locality
- River
- Major Road
- District Boundary
- Province Boundary



CHANGE DETECTION MAP OF BALOCHISTAN (2016-2020)

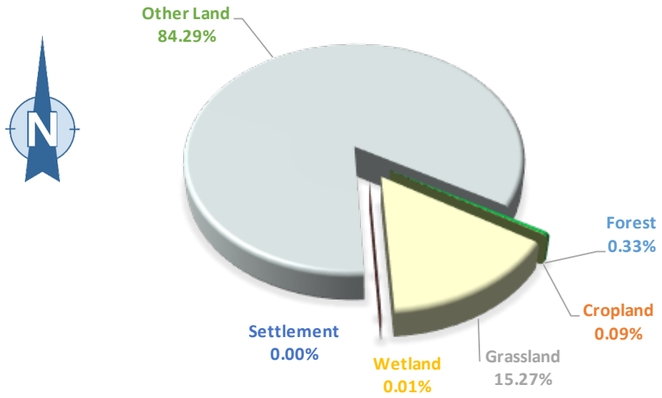


** All areas are calculated in Hectare*

DISTRICT-WISE FOREST COVER ATLAS

BALOCHISTAN

AWARAN DISTRICT LULC MAP - 2020



Kharan

Khuzdar

Panjgur

Pelar

Awaran

Chagai

Jhal Jhao

Awaran

Kech

Lasbela

Gwadar

* All areas are calculated in hectare

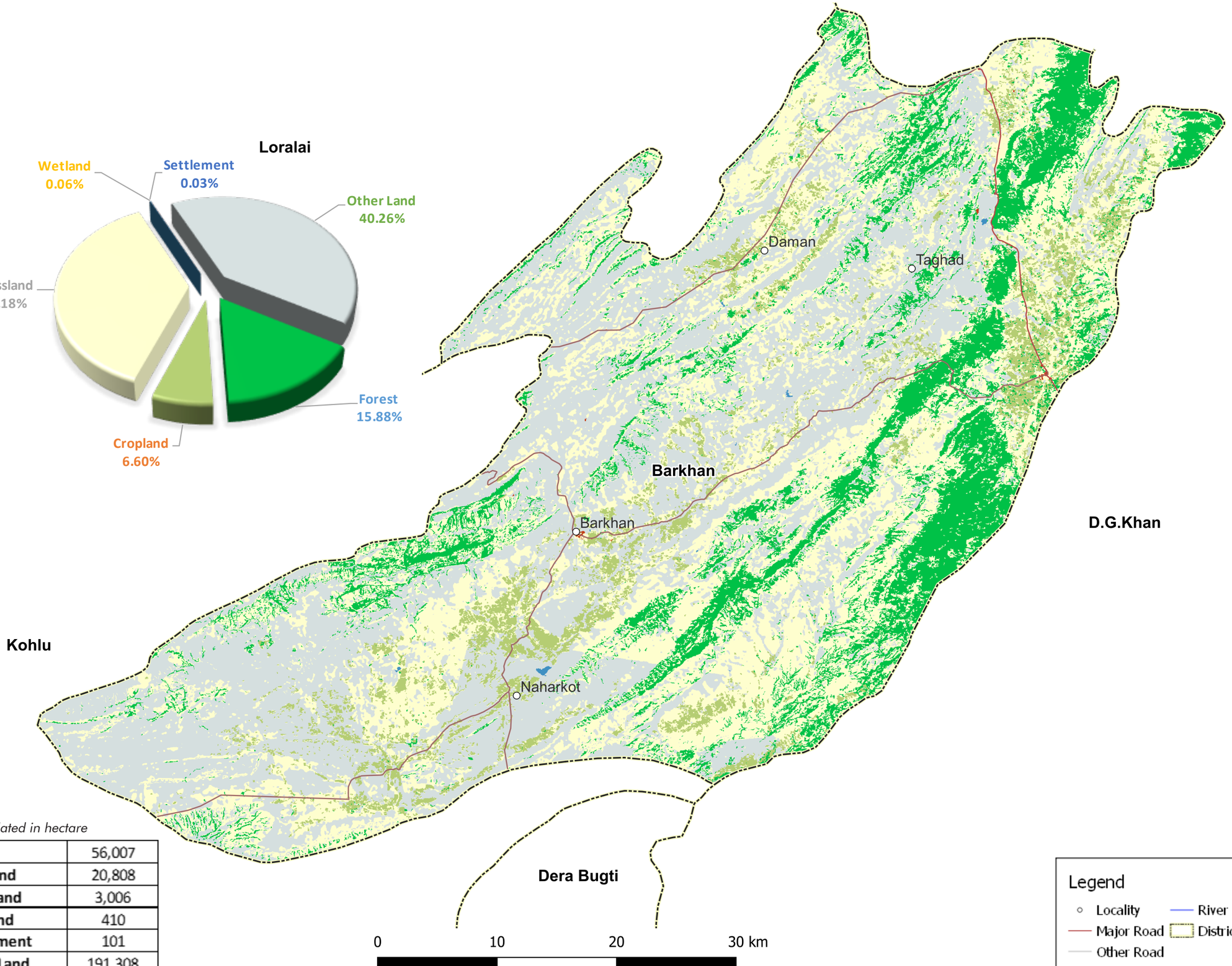
	Forest	7,493
	Cropland	2,911
	Grassland	8,722
	Wetland	478
	Settlement	99
	Other Land	2,841,360

0 40 80 120 km

Legend

Locality
River
Major Road
District Boundary
Other Road

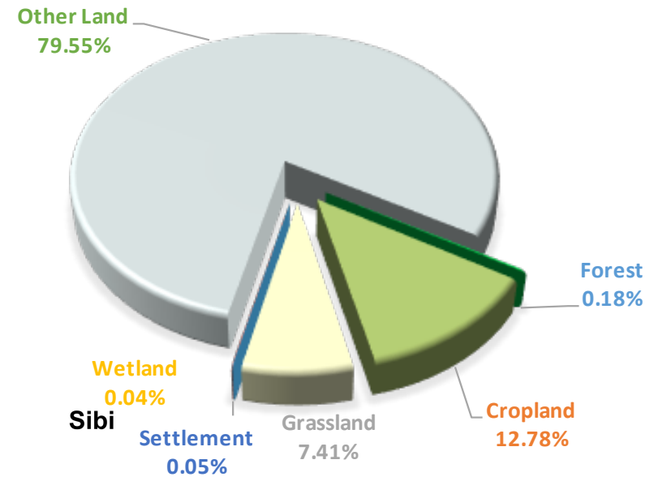
BARKHAN DISTRICT LULC MAP - 2020



** All areas are calculated in hectare*

	Forest	56,007
	Cropland	20,808
	Grassland	3,006
	Wetland	410
	Settlement	101
	Other Land	191,308

BOLAN DISTRICT LULC MAP - 2020



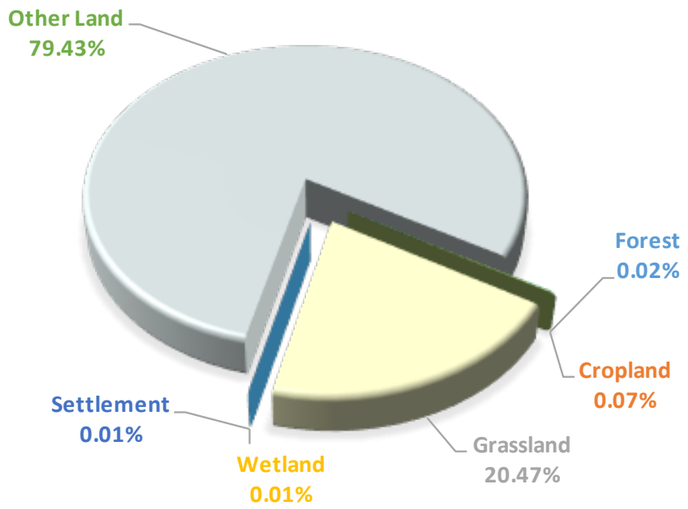
** All areas are calculated in hectare*

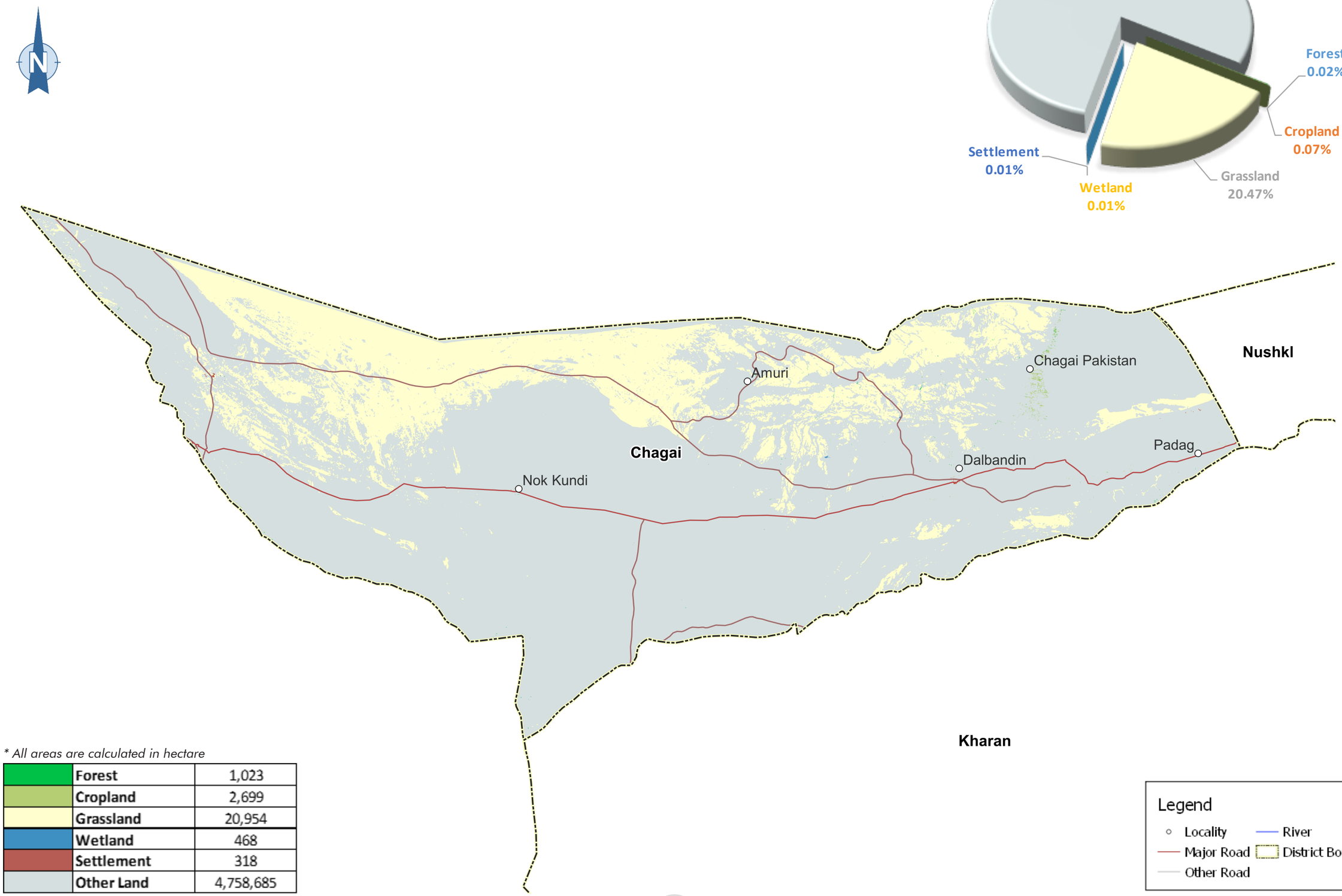
	Forest	1,365
	Cropland	78,906
	Grassland	1,144
	Wetland	490
	Settlement	405
	Other Land	708,596

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

CHAGAI DISTRICT LULC MAP - 2020

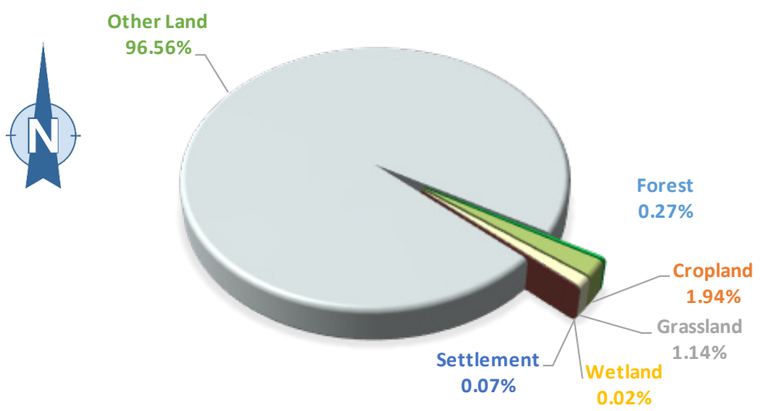


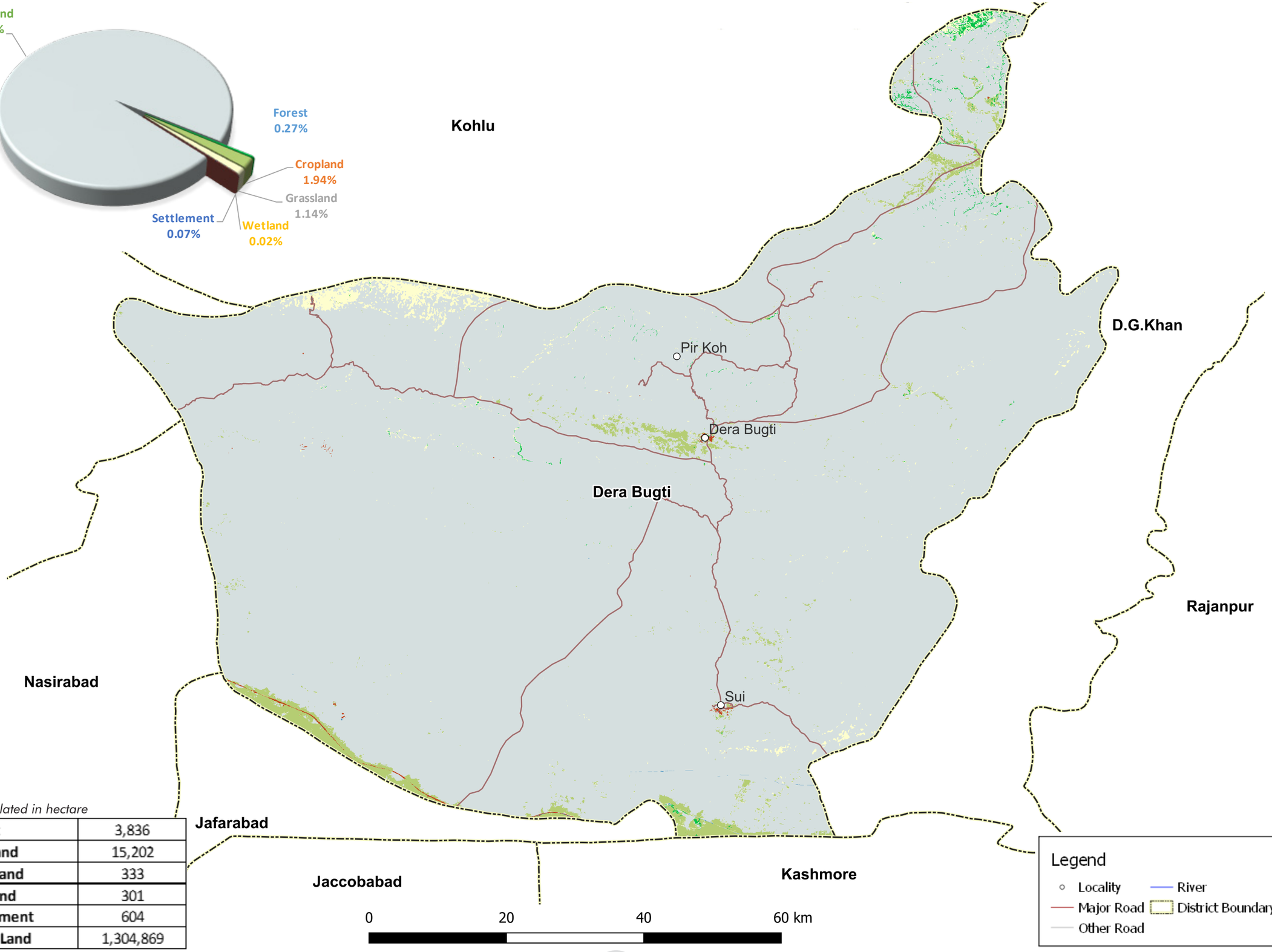


** All areas are calculated in hectare*

	Forest	1,023
	Cropland	2,699
	Grassland	20,954
	Wetland	468
	Settlement	318
	Other Land	4,758,685

DERA BUGTI DISTRICT LULC MAP - 2020

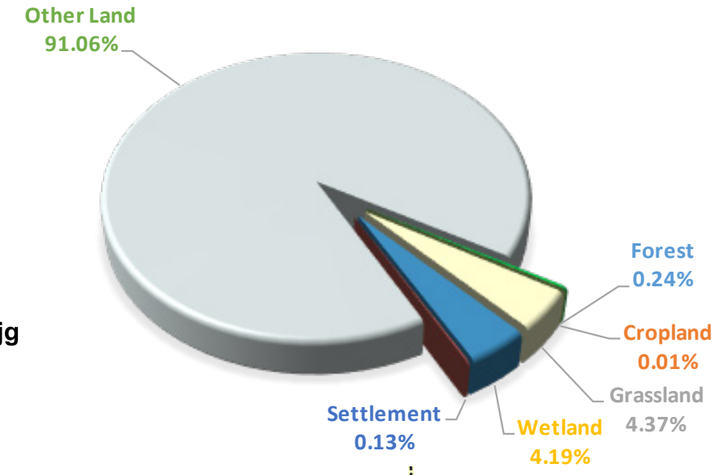


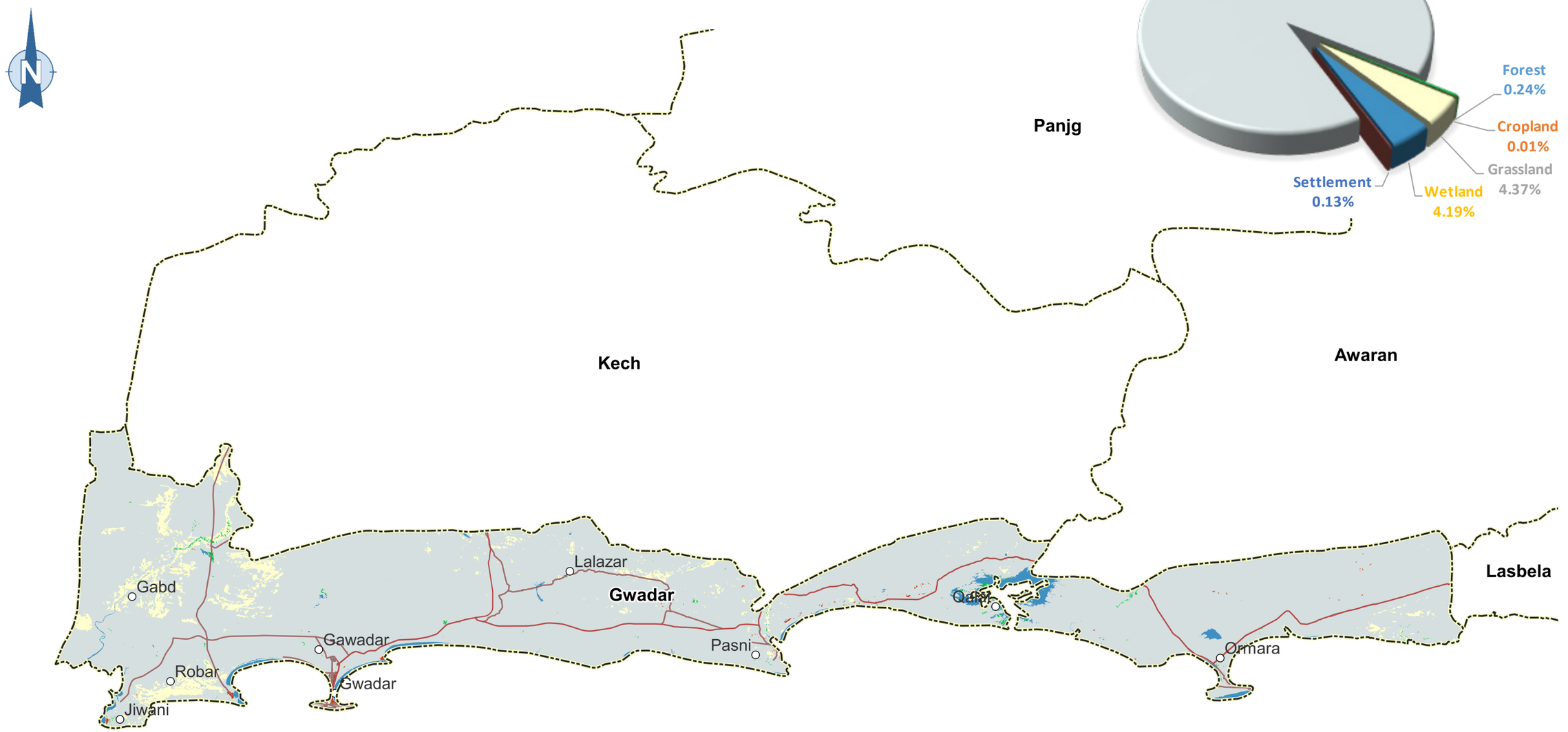


** All areas are calculated in hectare*

	Forest	3,836
	Cropland	15,202
	Grassland	333
	Wetland	301
	Settlement	604
	Other Land	1,304,869

GWADAR DISTRICT LULC MAP - 2020





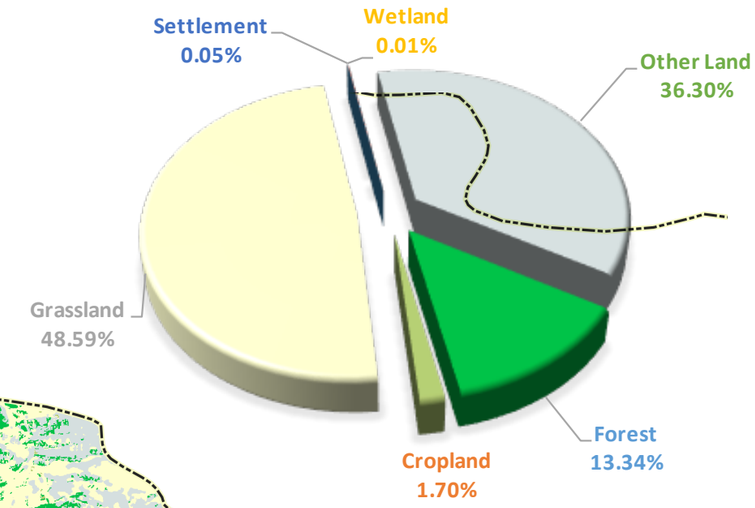
** All areas are calculated in hectare*

	Forest	2,682
	Cropland	160
	Grassland	1,189
	Wetland	80,793
	Settlement	1,764
	Other Land	1,437,613

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

HARNAI DISTRICT LULC MAP - 2020



Ziarat

Shahrag

Harnai

Gachina

Harnai

Mastung

Loralai

Sibi

Bolan

0 10 20 30 km

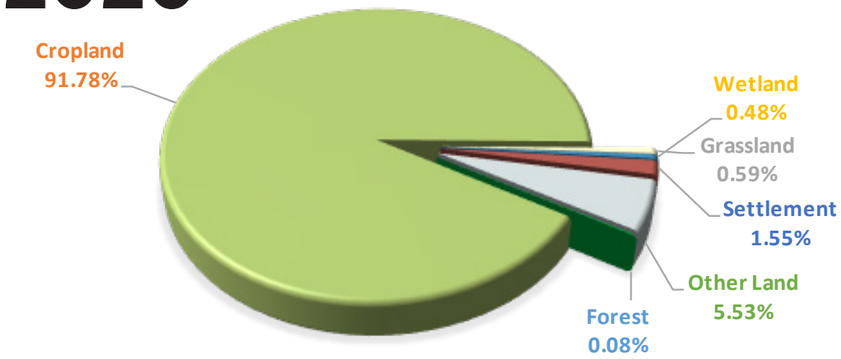
* All areas are calculated in hectare

	Forest	41,192
	Cropland	4,852
	Grassland	3,353
	Wetland	47
	Settlement	178
	Other Land	154,265

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

JAFARABAD DISTRICT LULC MAP - 2020



Nasirabad

Jhal Magsi

Sohabatpur

Bhand

Dera Allah Yar

Hafeezabad

Jafarabad

Hadeero

Jaccobabad

Kashmore

Shikarpur

Qambar Shahdad kot

Larkana

Sukkur

0 20 40 60 km

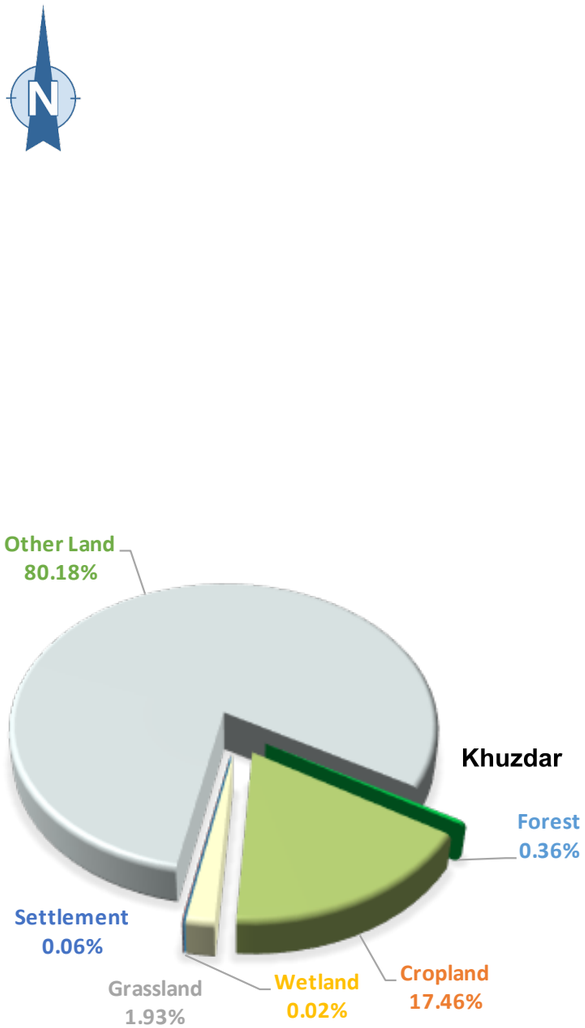
Legend

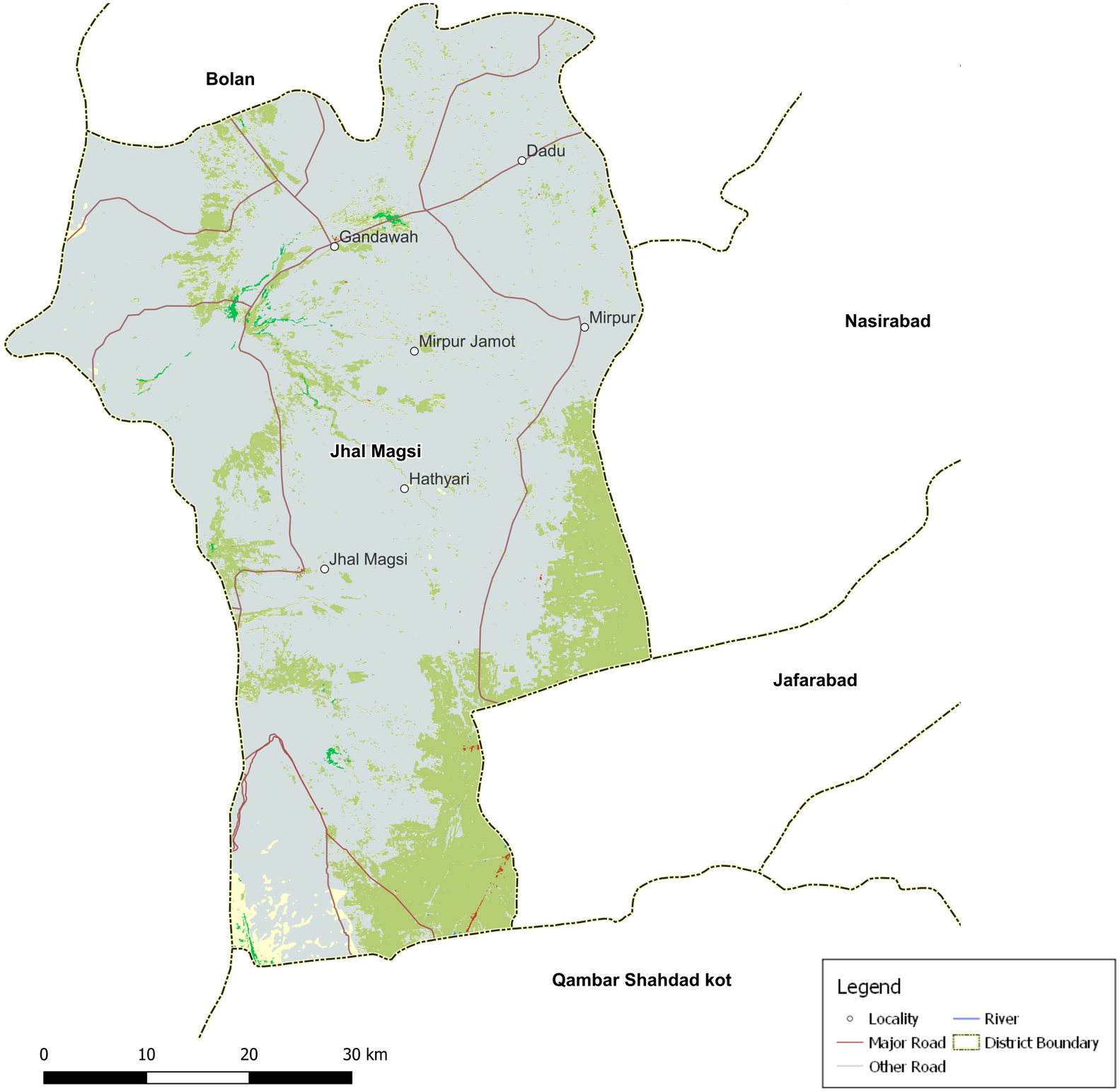
Locality
River
Major Road
District Boundary
Other Road

** All areas are calculated in hectare*

	Forest	184
	Cropland	202,735
	Grassland	24
	Wetland	2,138
	Settlement	4,371
	Other Land	20,274

JHAL MAGSI DISTRICT LULC MAP - 2020

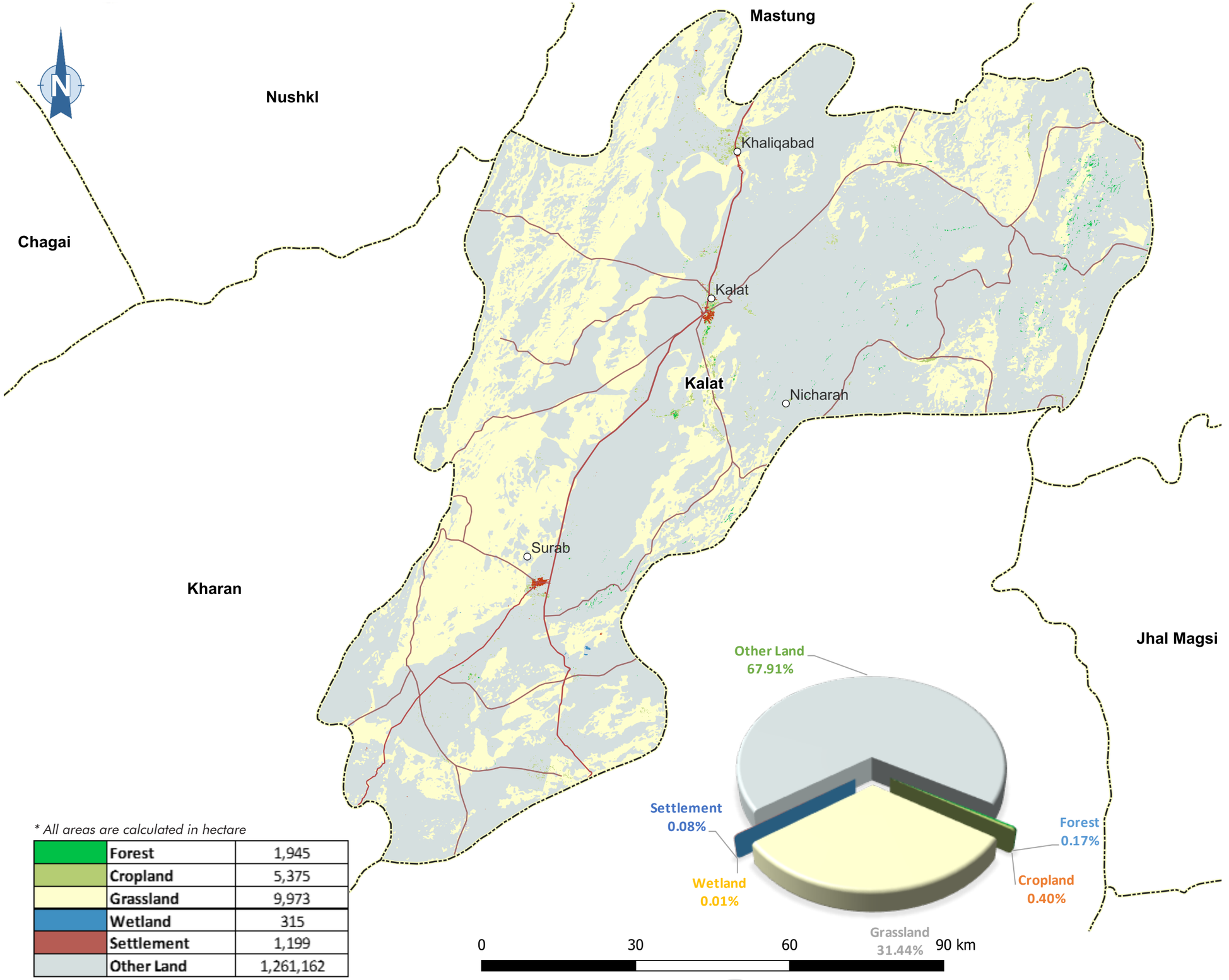




** All areas are calculated in hectare*

	Forest	1,232
	Cropland	58,457
	Grassland	167
	Wetland	95
	Settlement	219
	Other Land	414,432

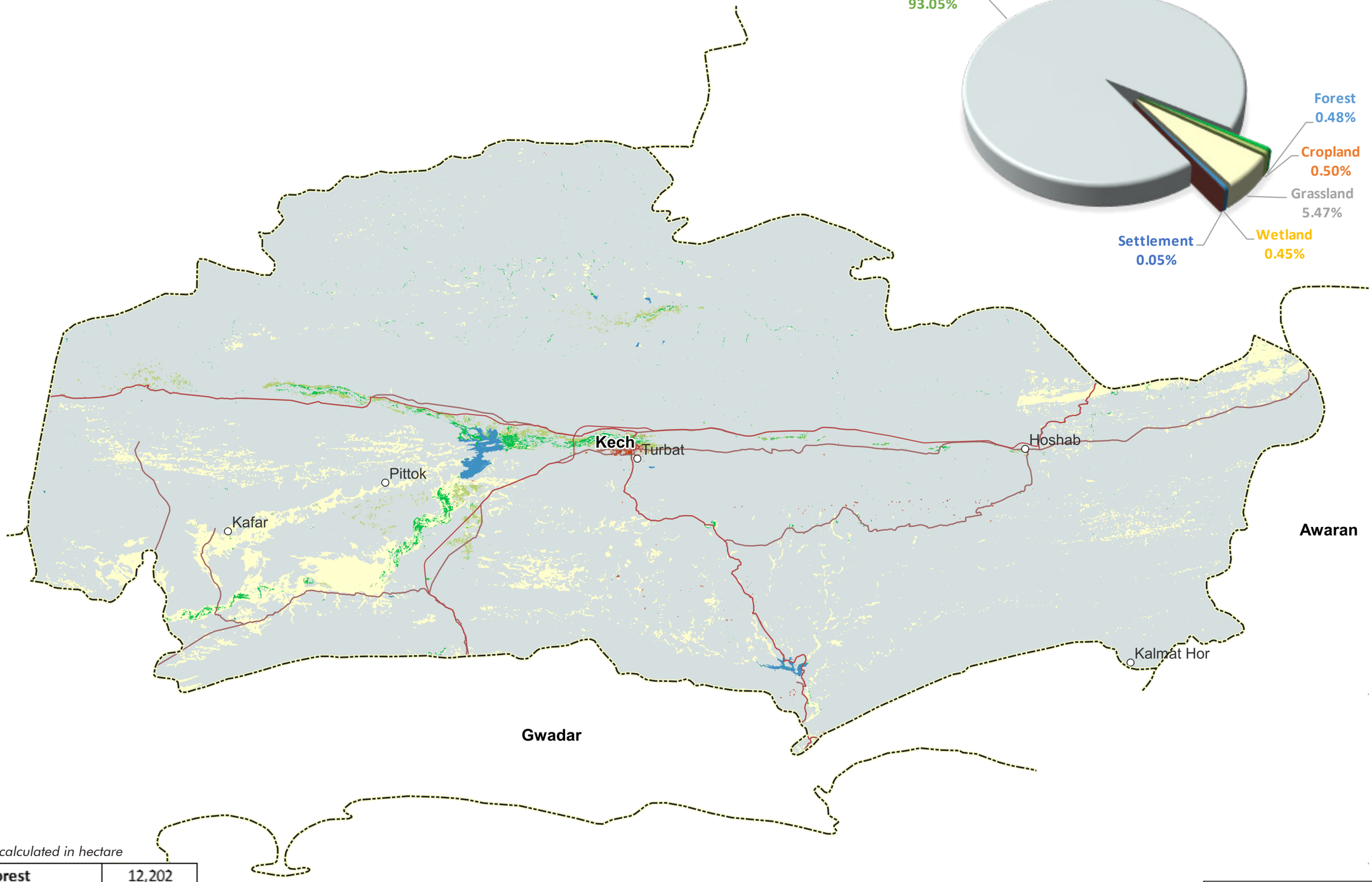
KALAT DISTRICT LULC MAP - 2020



** All areas are calculated in hectare*

	Forest	1,945
	Cropland	5,375
	Grassland	9,973
	Wetland	315
	Settlement	1,199
	Other Land	1,261,162

KECH DISTRICT LULC MAP - 2020



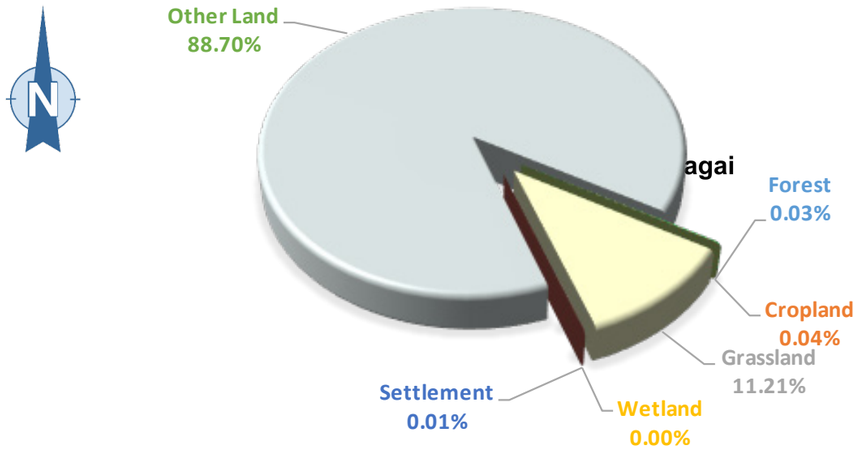
** All areas are calculated in hectare*

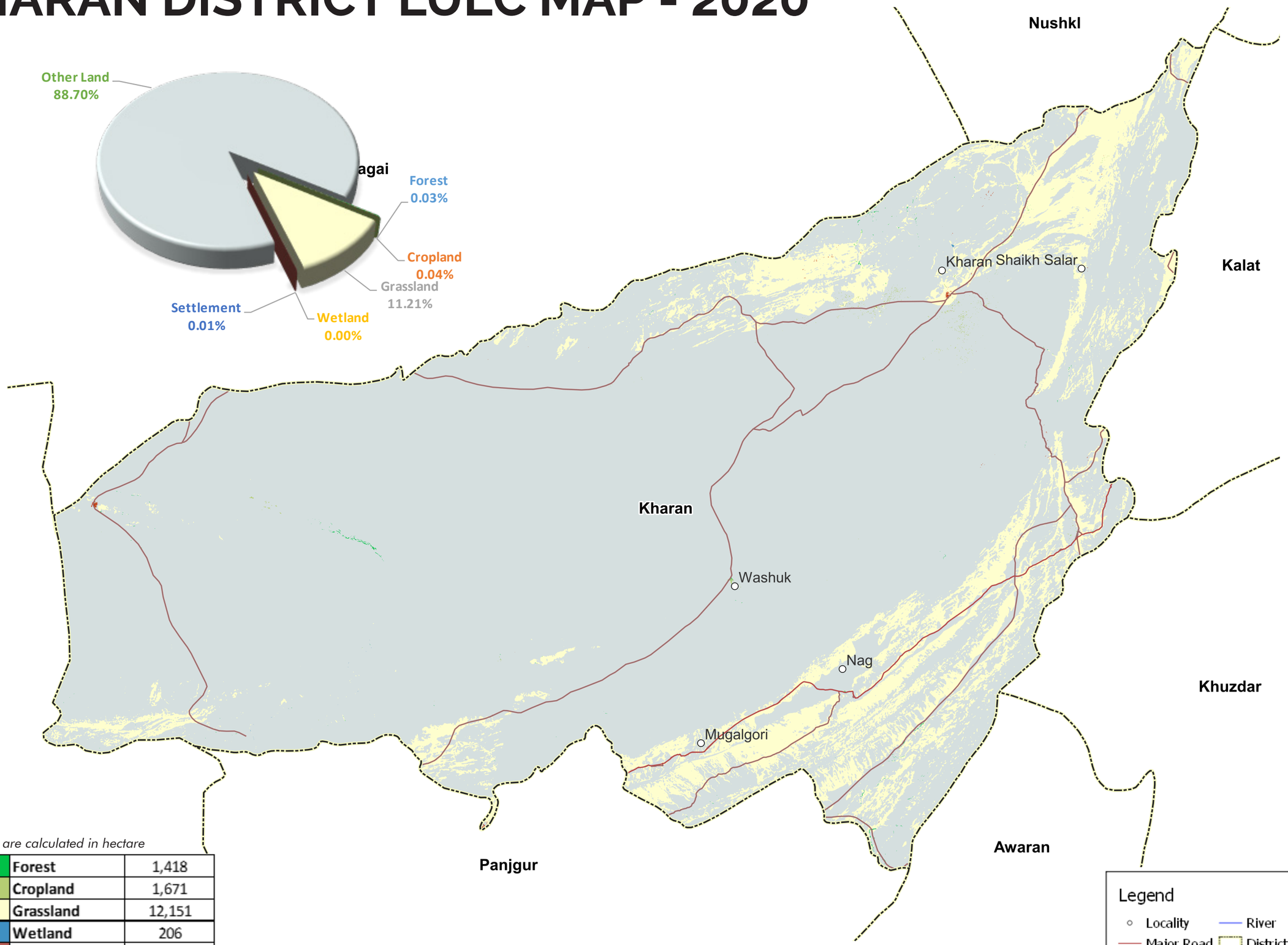
	Forest	12,202
	Cropland	11,465
	Grassland	3,052
	Wetland	20,848
	Settlement	1,323
	Other Land	3,096,043

0 30 60 90 km

Legend
- Locality
- River
- Major Road
- District Boundary
- Other Road

KHARAN DISTRICT LULC MAP - 2020

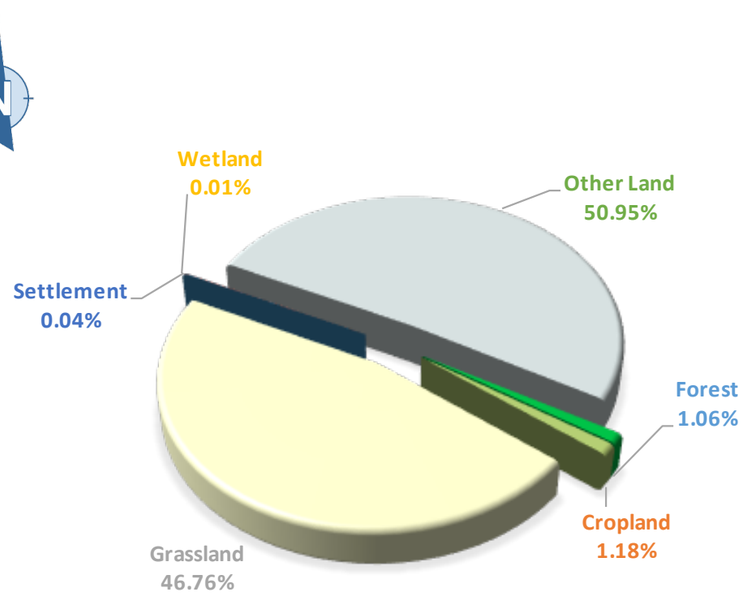


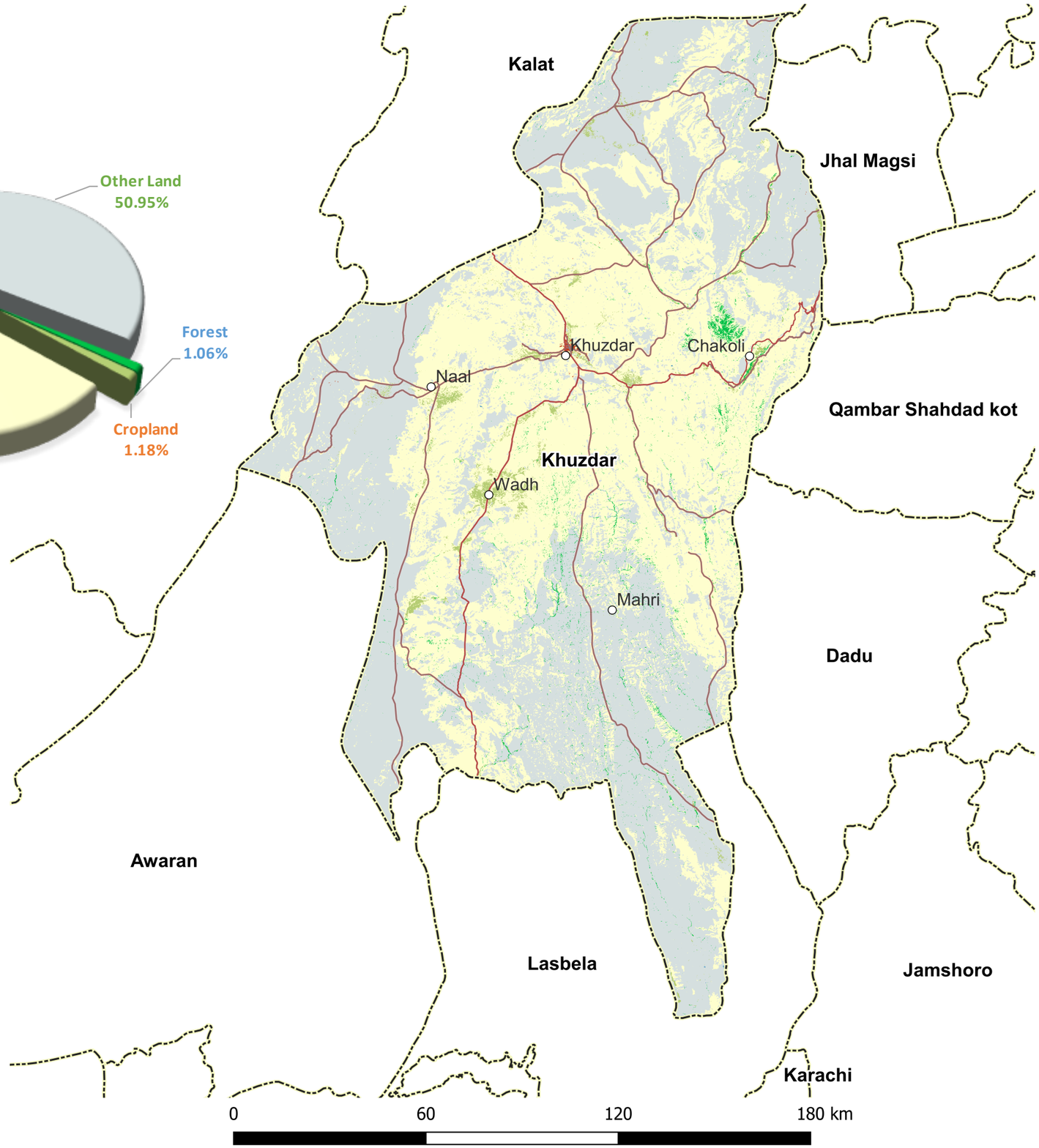


** All areas are calculated in hectare*

	Forest	1,418
	Cropland	1,671
	Grassland	12,151
	Wetland	206
	Settlement	699
	Other Land	5,662,964

KHUZDAR DISTRICT LULC MAP - 2020



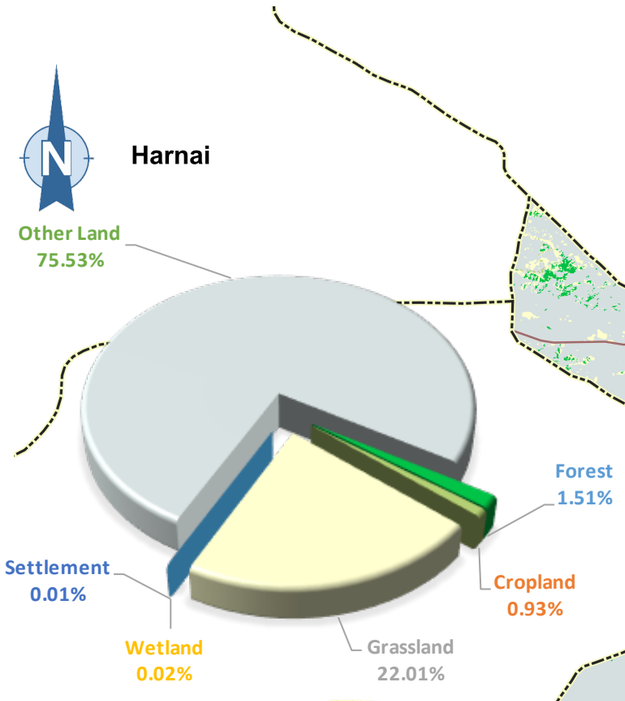


** All areas are calculated in hectare*

	Forest	33,887
	Cropland	33,365
	Grassland	32,936
	Wetland	483
	Settlement	1,591
	Other Land	2,113,585

Legend
- Locality
- River
- Major Road
- District Boundary
- Other Road

KOHLU DISTRICT LULC MAP - 2020



Loralai

Harnai

Barkhan

Kohlu

Mawand

Kohlu

Sibi

D.G.Khan

Kahan

Dera Bugti

** All areas are calculated in hectare*

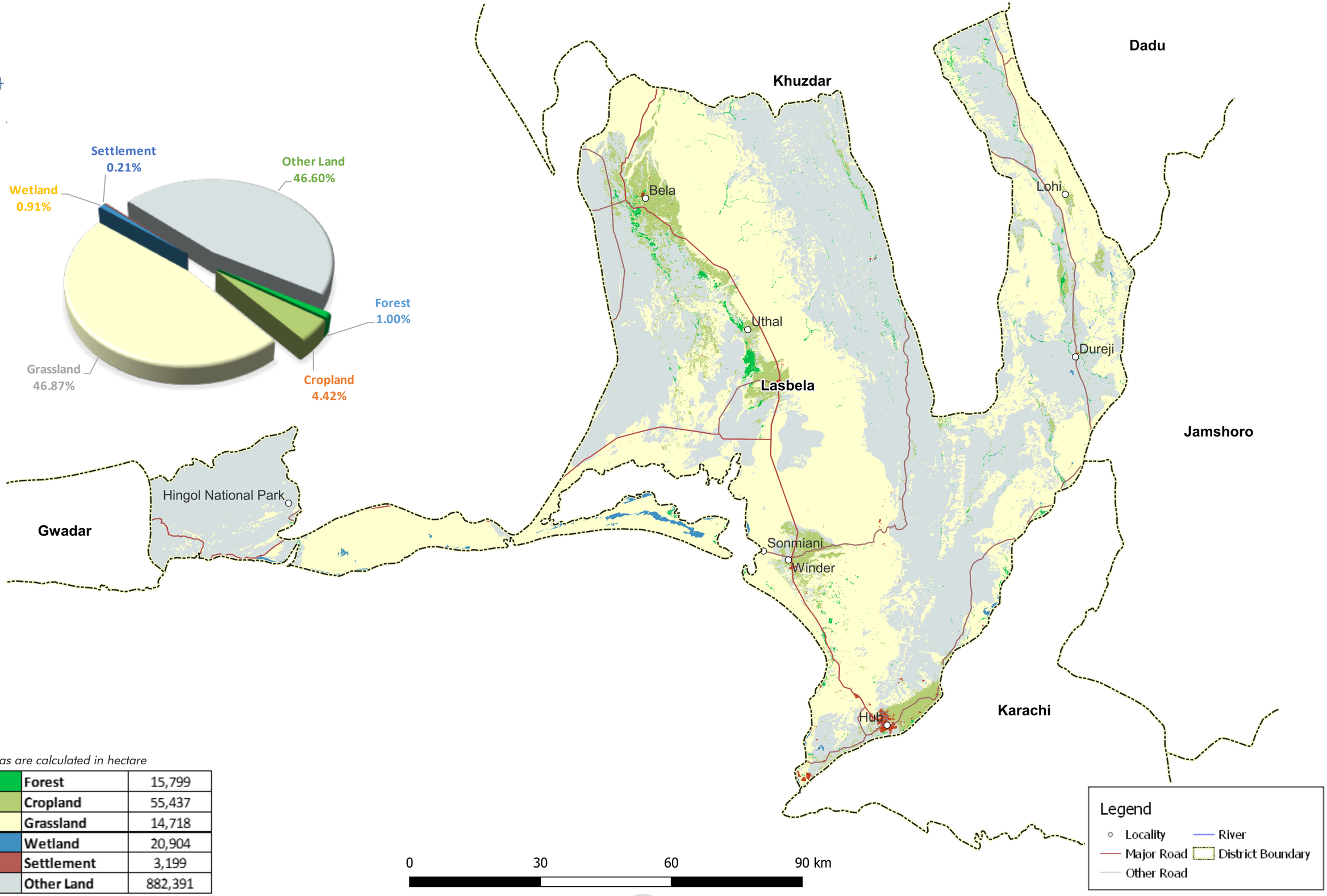
	Forest	12,801
	Cropland	6,396
	Grassland	3,751
	Wetland	209
	Settlement	65
	Other Land	781,510

0 20 40 60 km

Legend

Locality
River
Major Road
District Boundary
Other Road

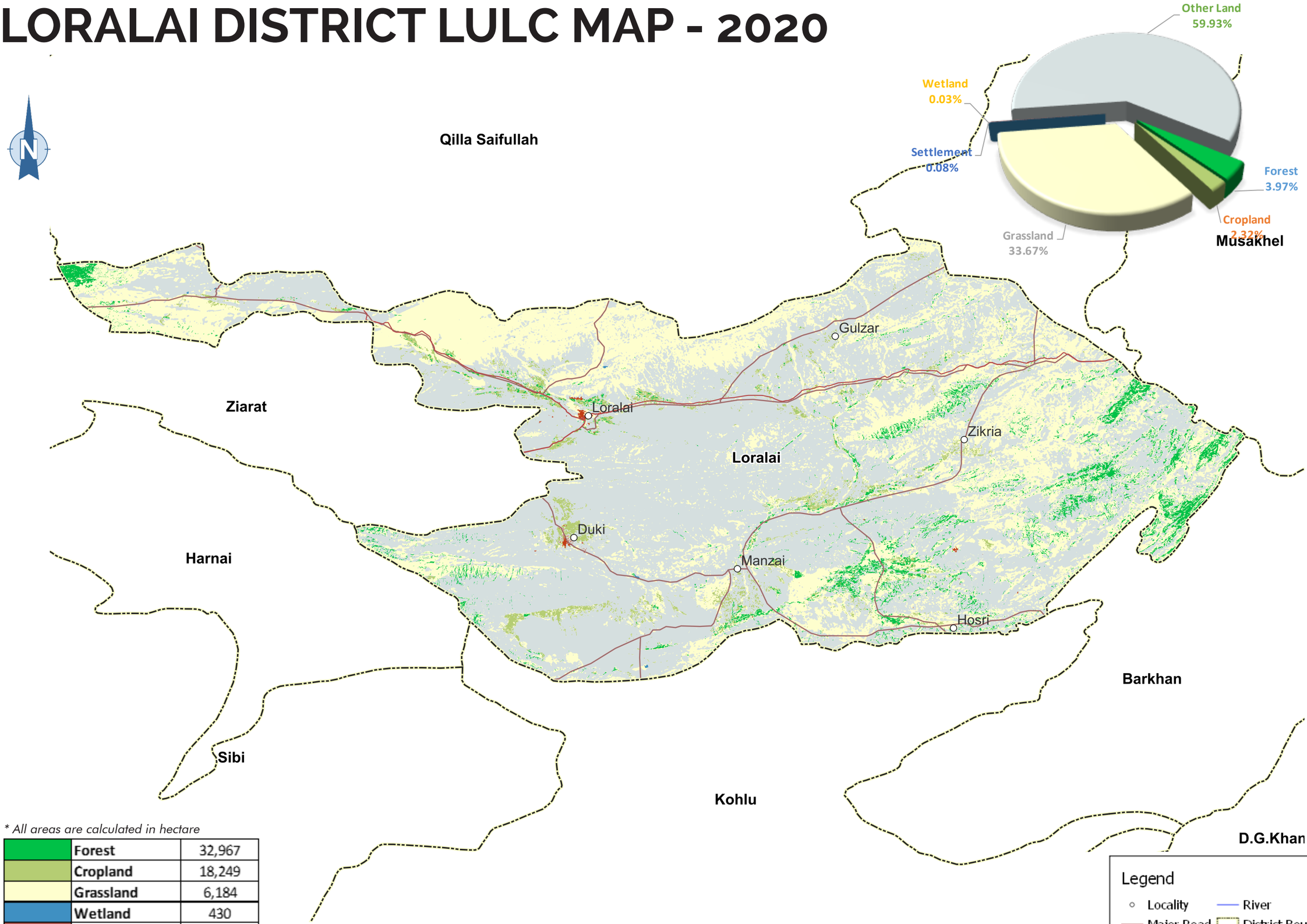
LASBELA DISTRICT LULC MAP - 2020



** All areas are calculated in hectare*

	Forest	15,799
	Cropland	55,437
	Grassland	14,718
	Wetland	20,904
	Settlement	3,199
	Other Land	882,391

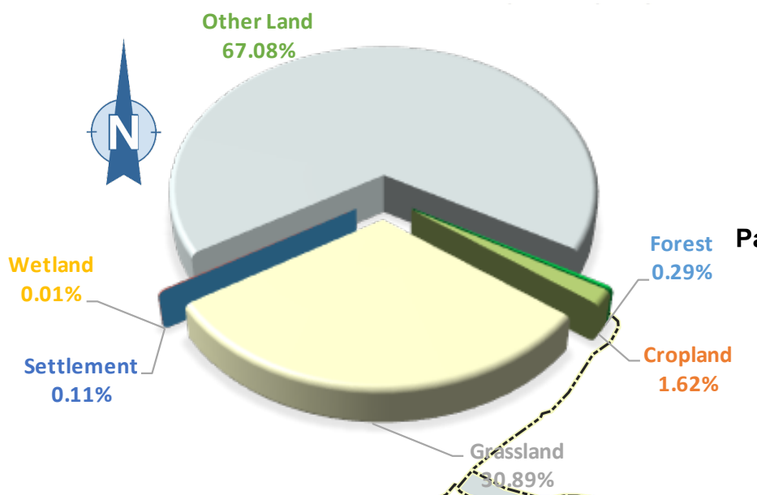
LORALAI DISTRICT LULC MAP - 2020



** All areas are calculated in hectare*

	Forest	32,967
	Cropland	18,249
	Grassland	6,184
	Wetland	430
	Settlement	707
	Other Land	649,715

MASTUNG DISTRICT LULC MAP - 2020



Harnai
Dagari
Panjpai
Mastung
Sibi
Mastung
Khad koocha
Nushkl
Bolan
Kalat

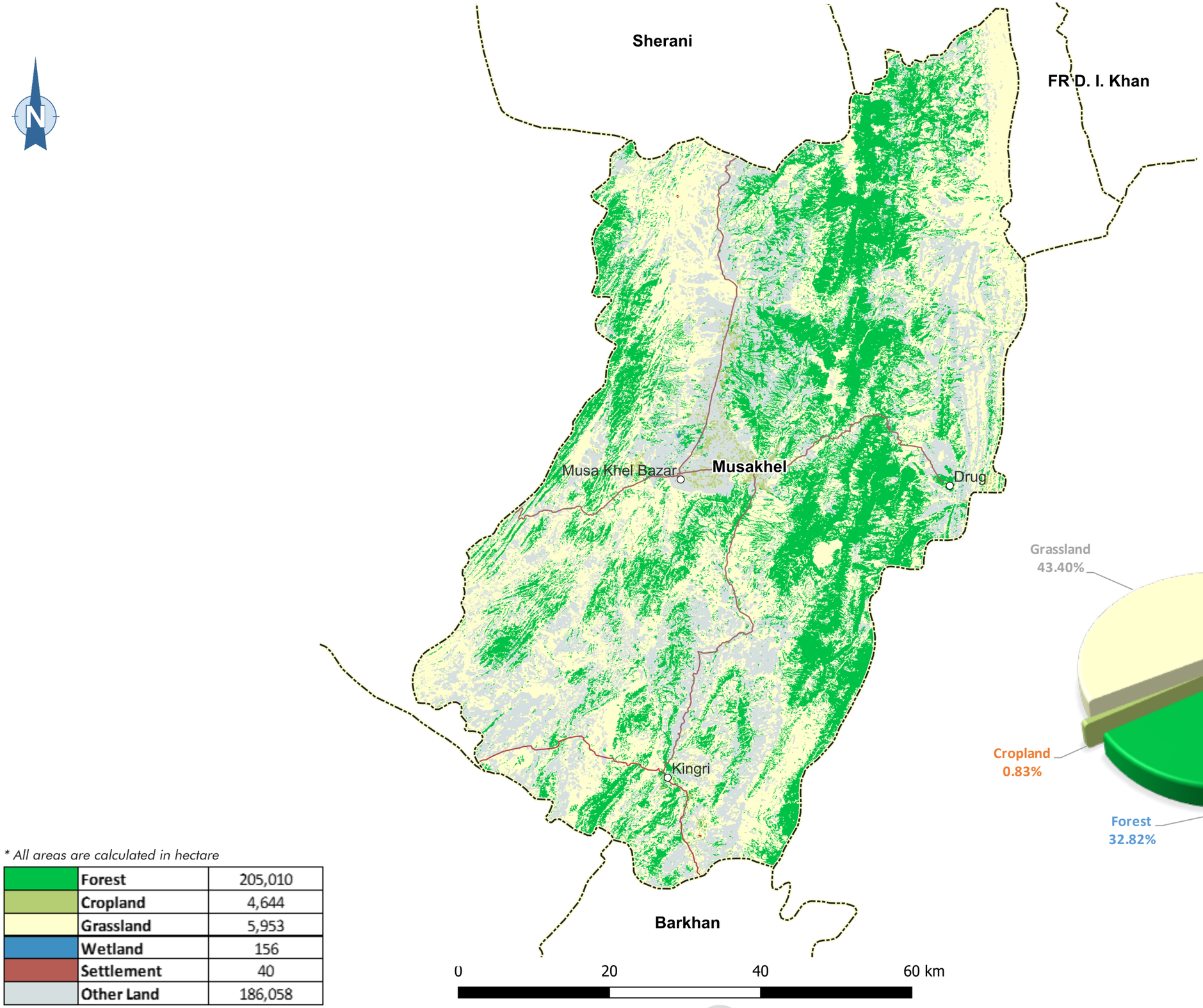
* All areas are calculated in hectare

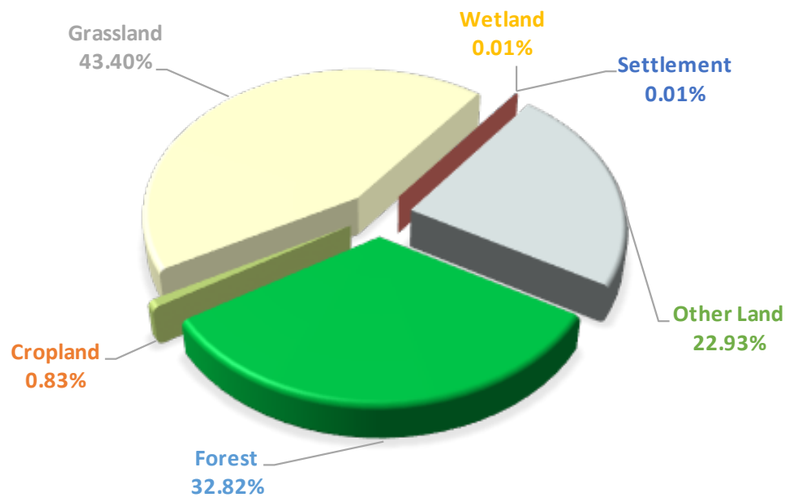
	Forest	1,531
	Cropland	8,508
	Grassland	3,929
	Wetland	54
	Settlement	698
	Other Land	519,174

0 10 20 30 km

Legend
Locality
River
Major Road
District Boundary
Other Road

MUSAKHEL DISTRICT LULC MAP - 2020





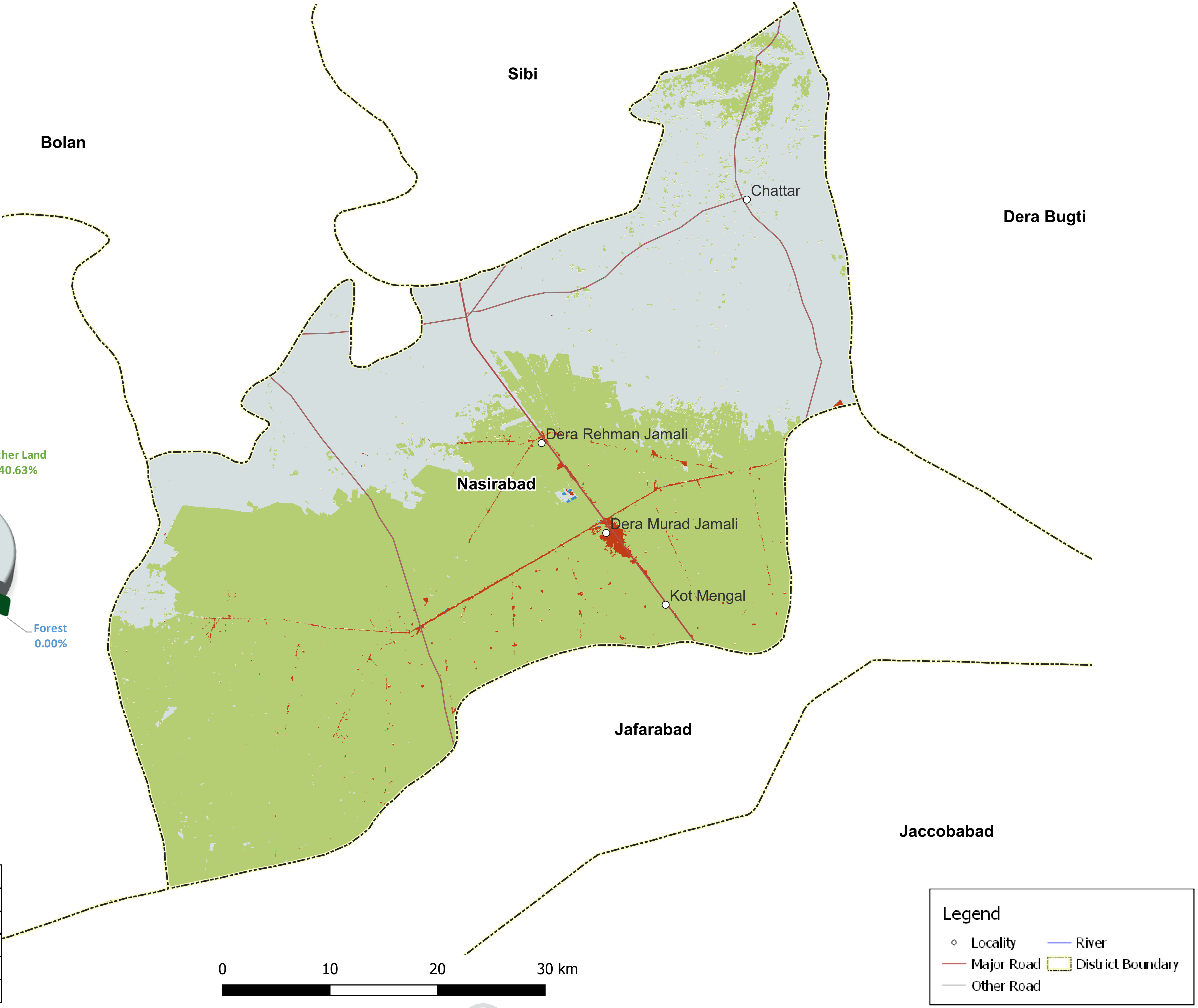
** All areas are calculated in hectare*

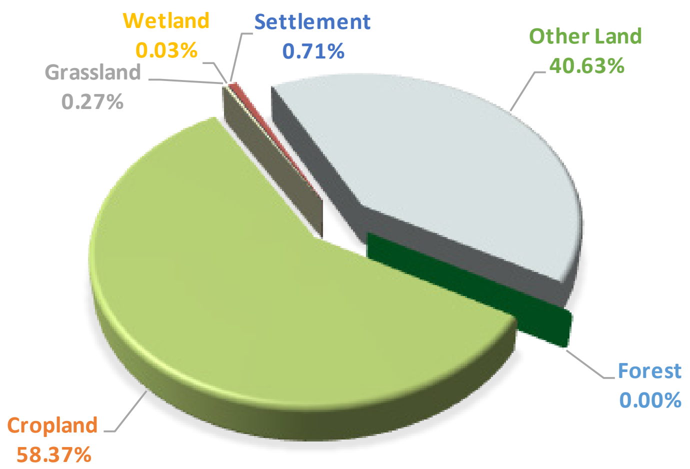
	Forest	205,010
	Cropland	4,644
	Grassland	5,953
	Wetland	156
	Settlement	40
	Other Land	186,058

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

NASIRABAD DISTRICT LULC MAP - 2020

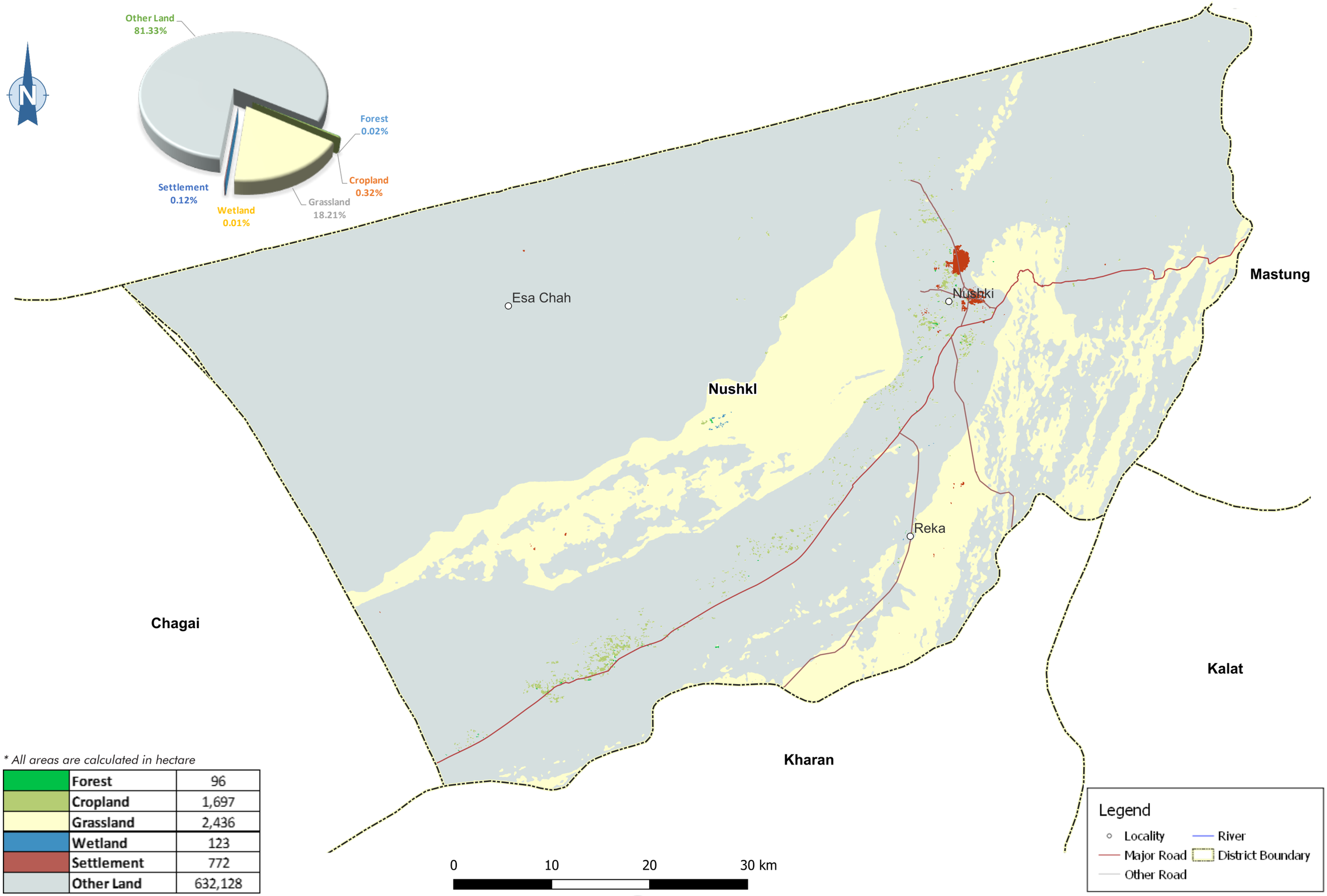




* All areas are calculated in hectare

	Forest	0
	Cropland	173,167
	Grassland	19
	Wetland	188
	Settlement	2,779
	Other Land	172,767

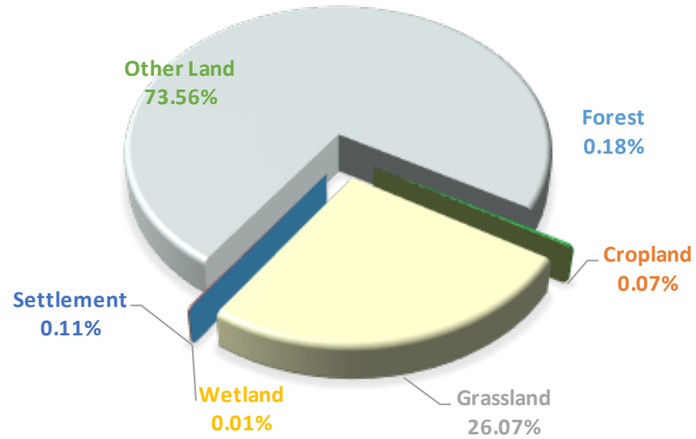
NUSHKI DISTRICT LULC MAP - 2020

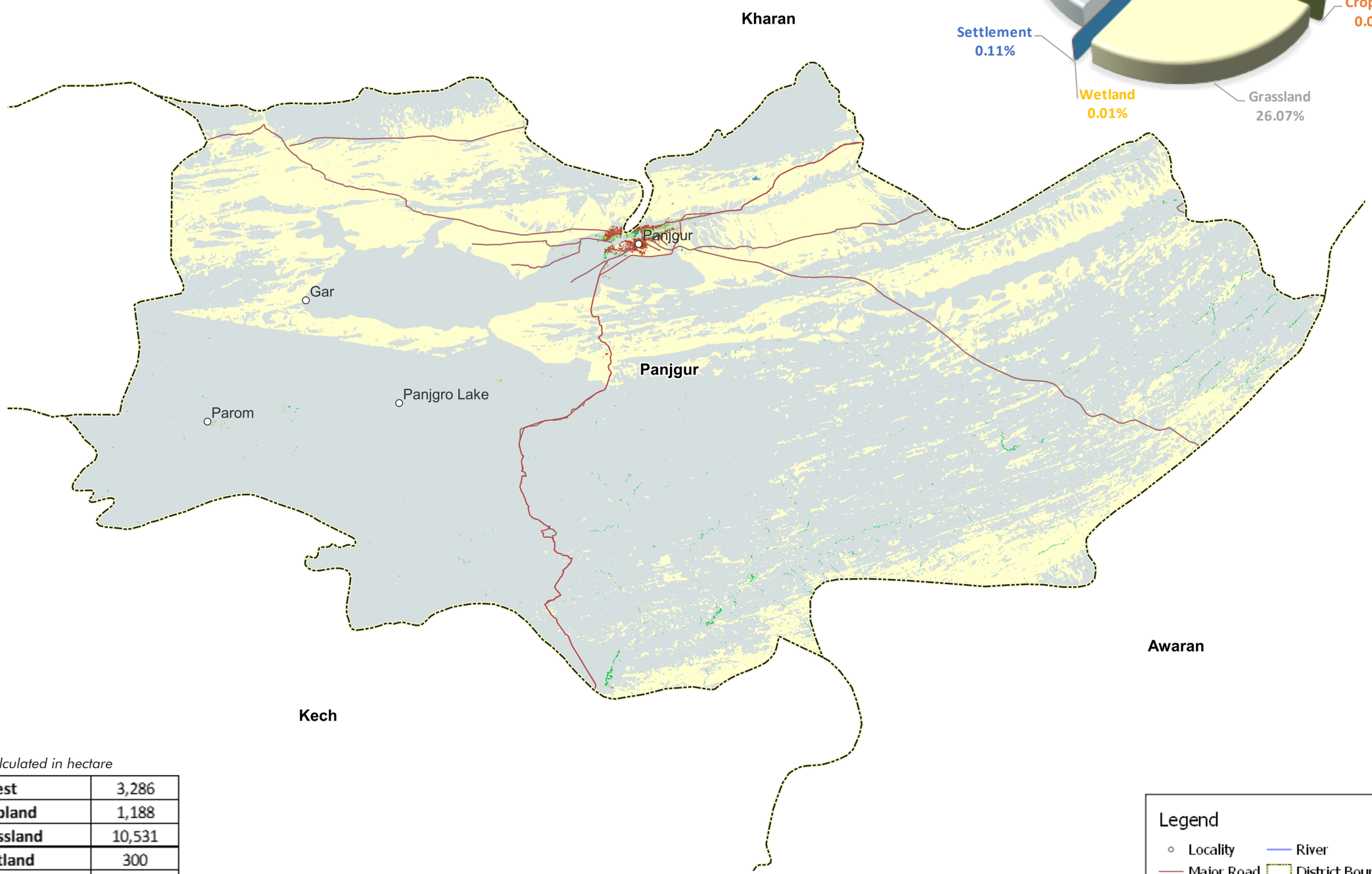


** All areas are calculated in hectare*

	Forest	96
	Cropland	1,697
	Grassland	2,436
	Wetland	123
	Settlement	772
	Other Land	632,128

PANJGUR DISTRICT LULC MAP - 2020



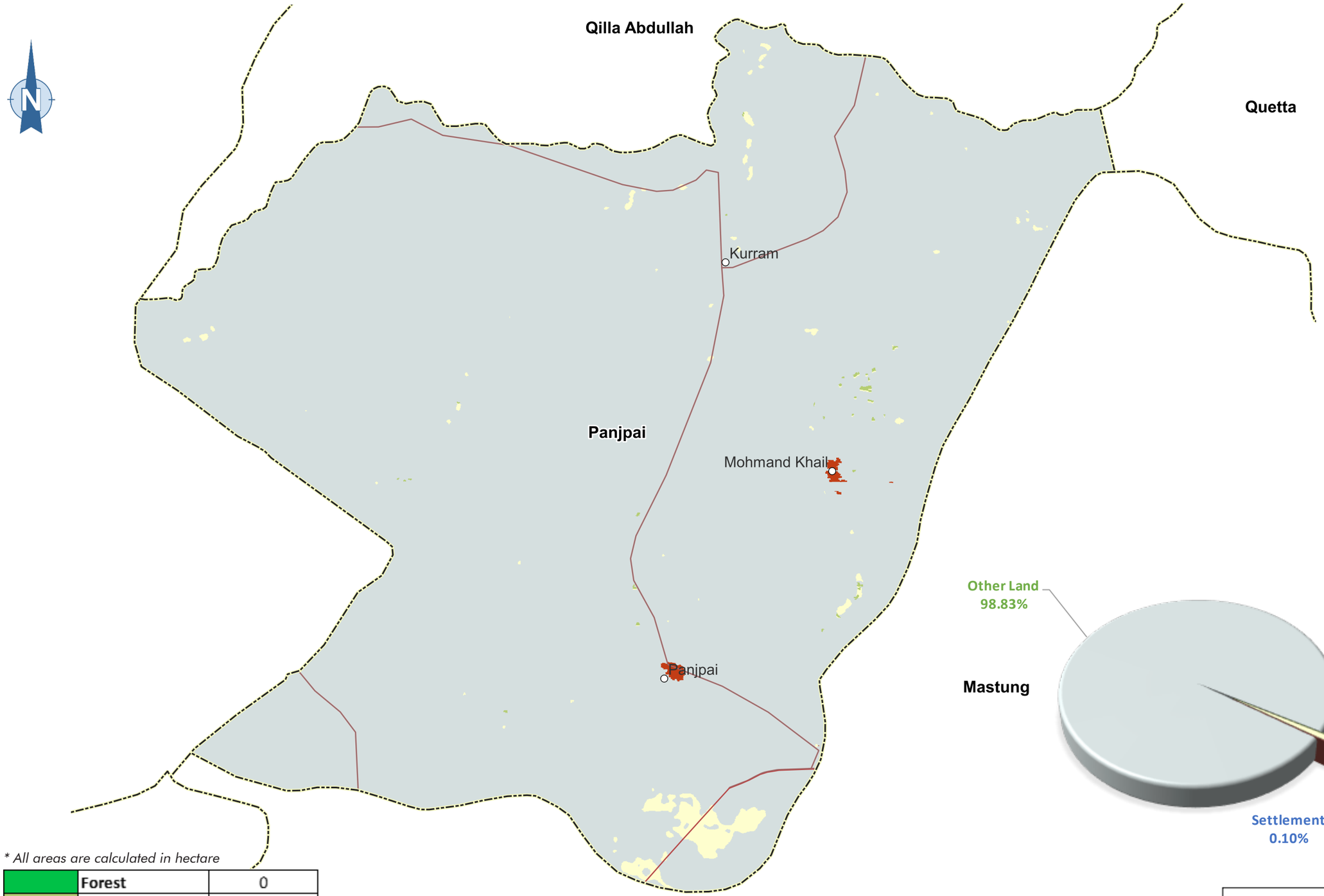


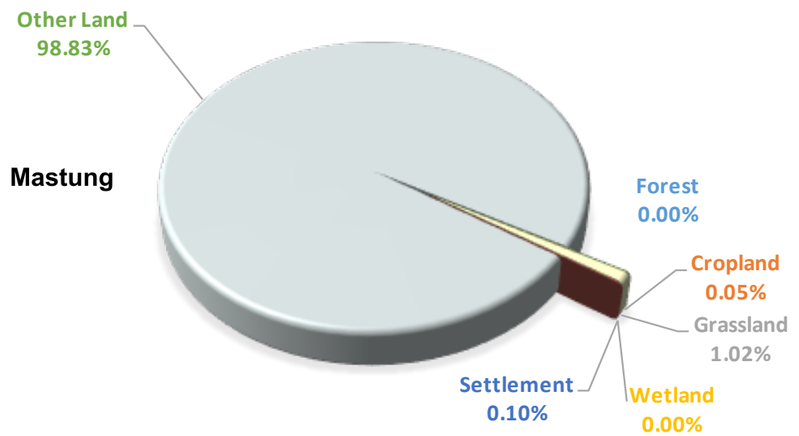
** All areas are calculated in hectare*

	Forest	3,286
	Cropland	1,188
	Grassland	10,531
	Wetland	300
	Settlement	2,146
	Other Land	1,753,257

Legend
- Locality
- River
- Major Road
- District Boundary
- Other Road

PANJPAI DISTRICT LULC MAP - 2020





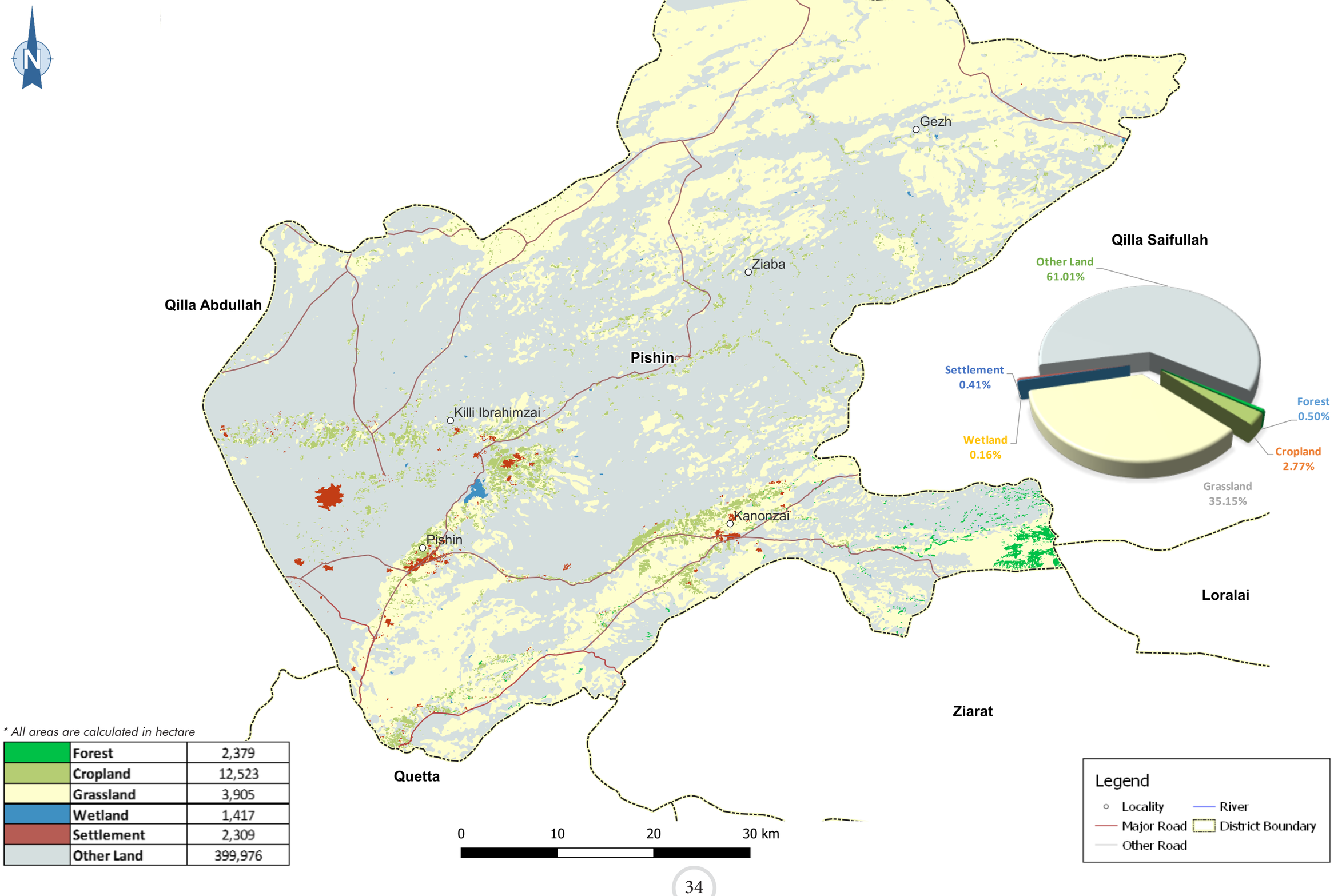
** All areas are calculated in hectare*

	Forest	0
	Cropland	57
	Grassland	23
	Wetland	0
	Settlement	137
	Other Land	152,686

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

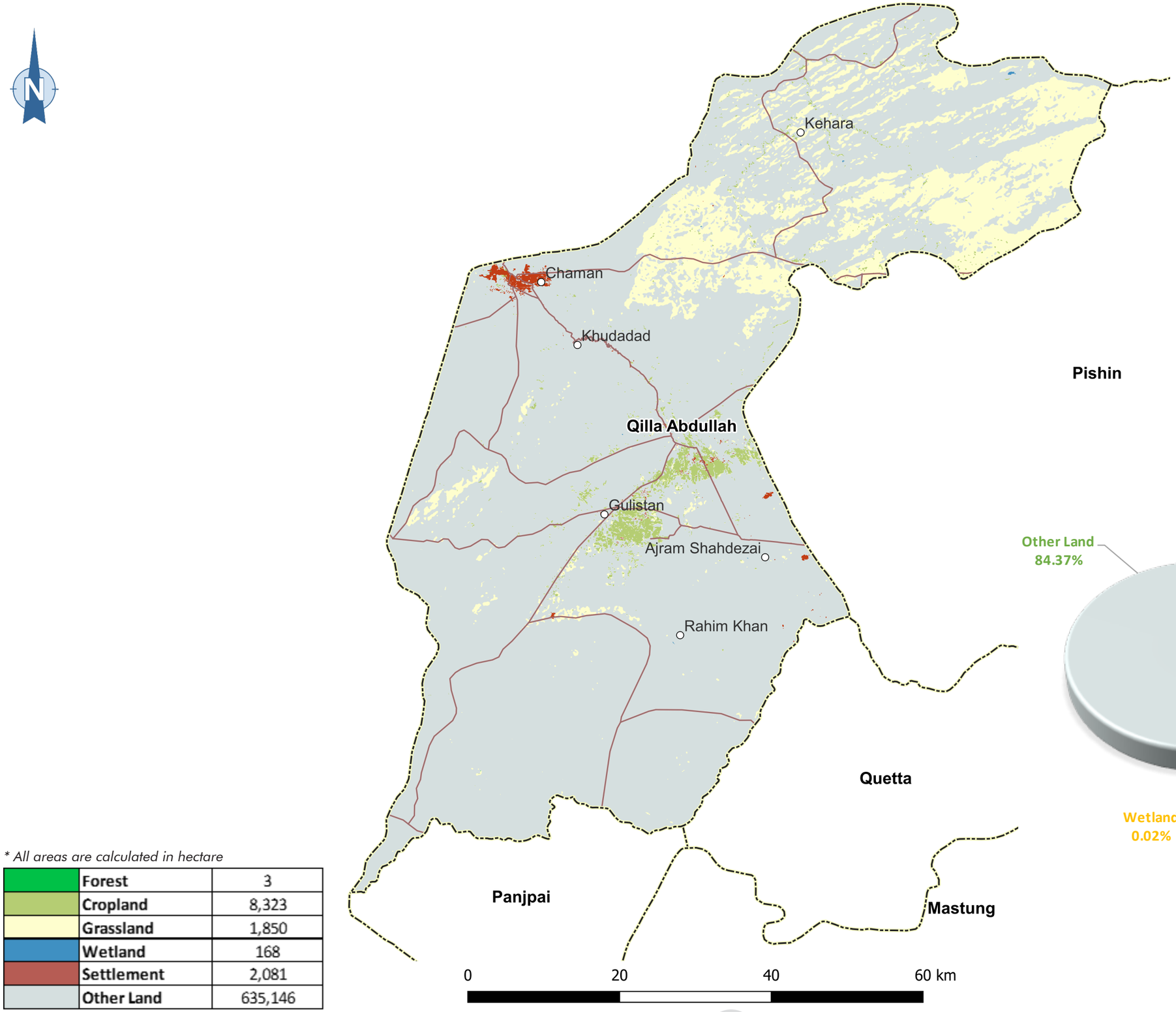
PISHIN DISTRICT LULC MAP - 2020

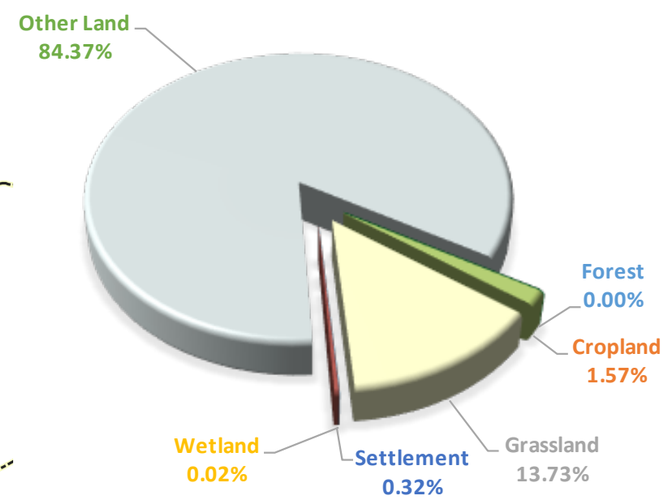


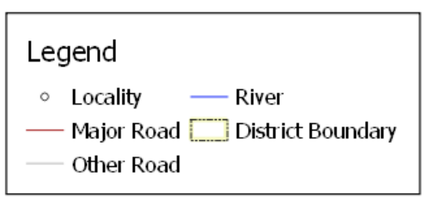
** All areas are calculated in hectare*

	Forest	2,379
	Cropland	12,523
	Grassland	3,905
	Wetland	1,417
	Settlement	2,309
	Other Land	399,976

QILLA ABDULLAH DISTRICT LULC MAP - 2020



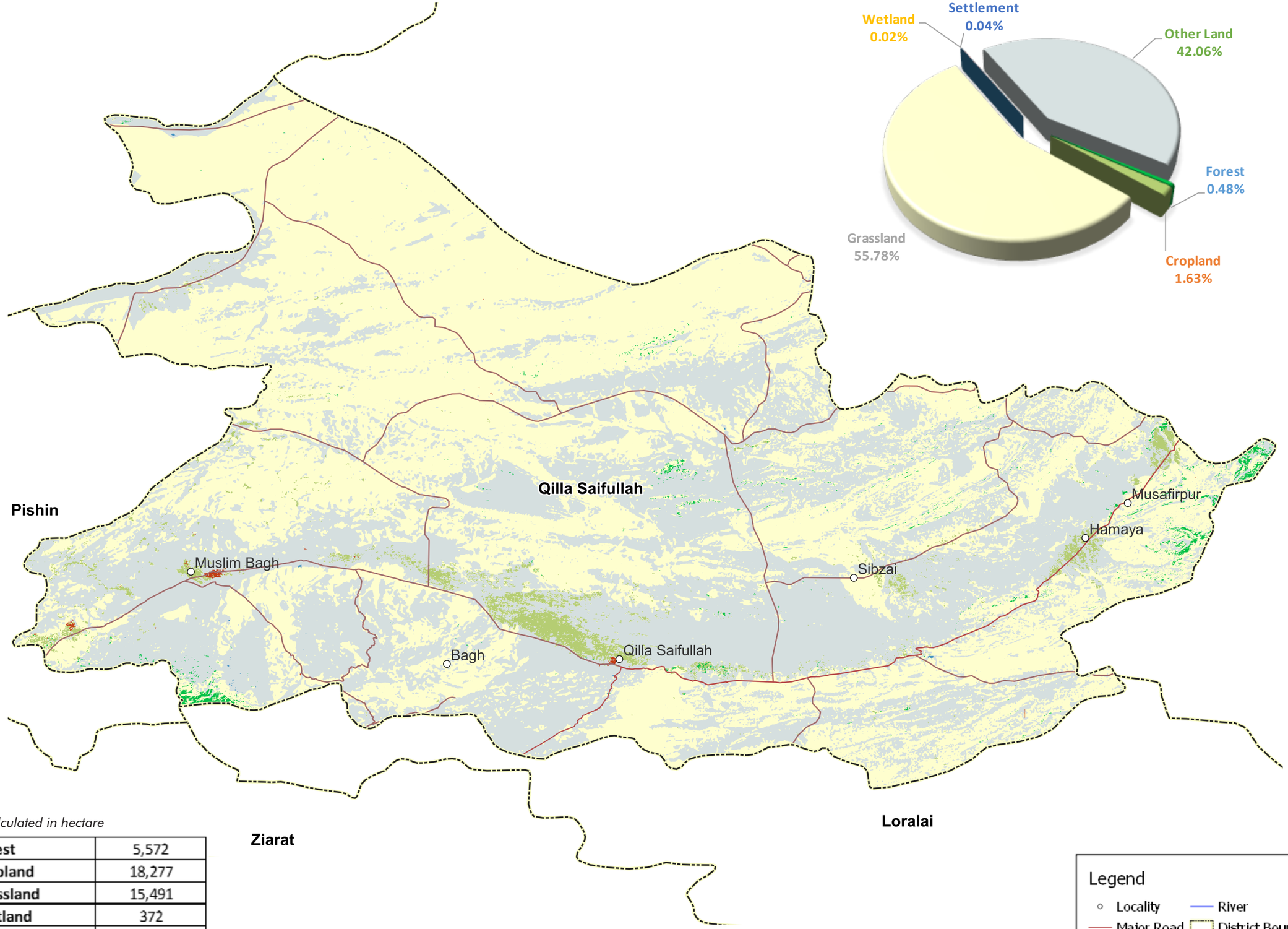




** All areas are calculated in hectare*

	Forest	3
	Cropland	8,323
	Grassland	1,850
	Wetland	168
	Settlement	2,081
	Other Land	635,146

QILLA SAIFULLAH DISTRICT LULC MAP - 2020

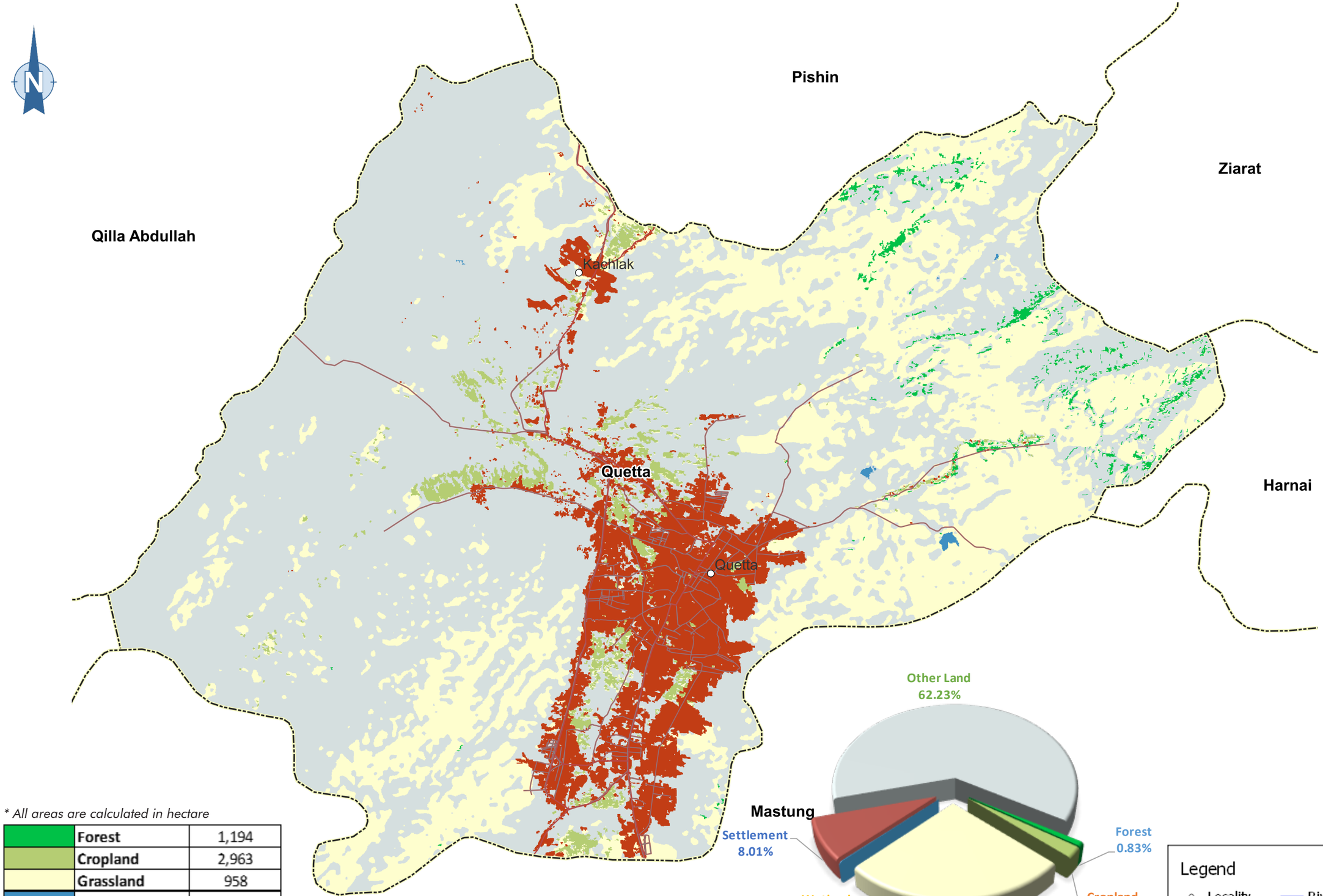


** All areas are calculated in hectare*

	Forest	5,572
	Cropland	18,277
	Grassland	15,491
	Wetland	372
	Settlement	507
	Other Land	697,364

Legend
- Locality
- River
- Major Road
- District Boundary
- Other Road

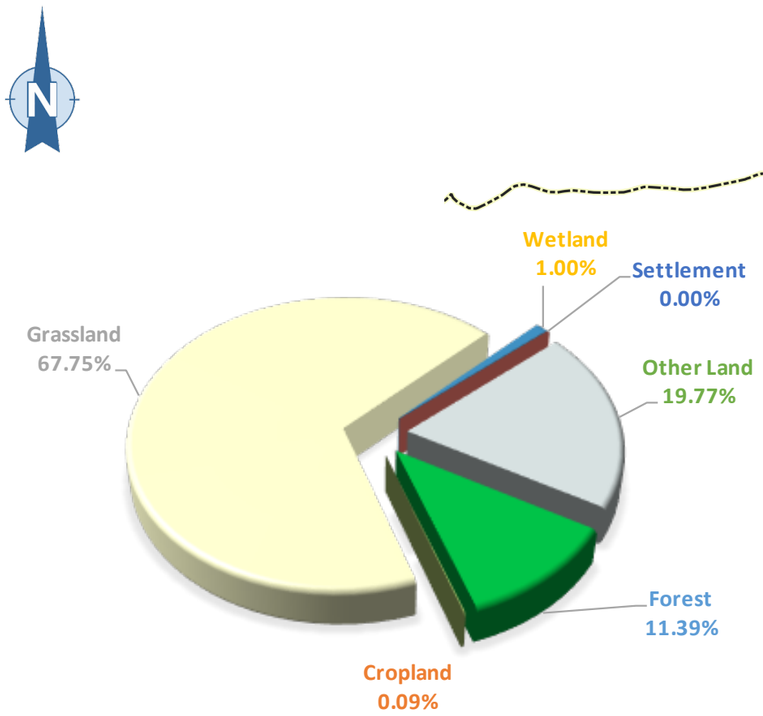
QUETTA DISTRICT LULC MAP - 2020

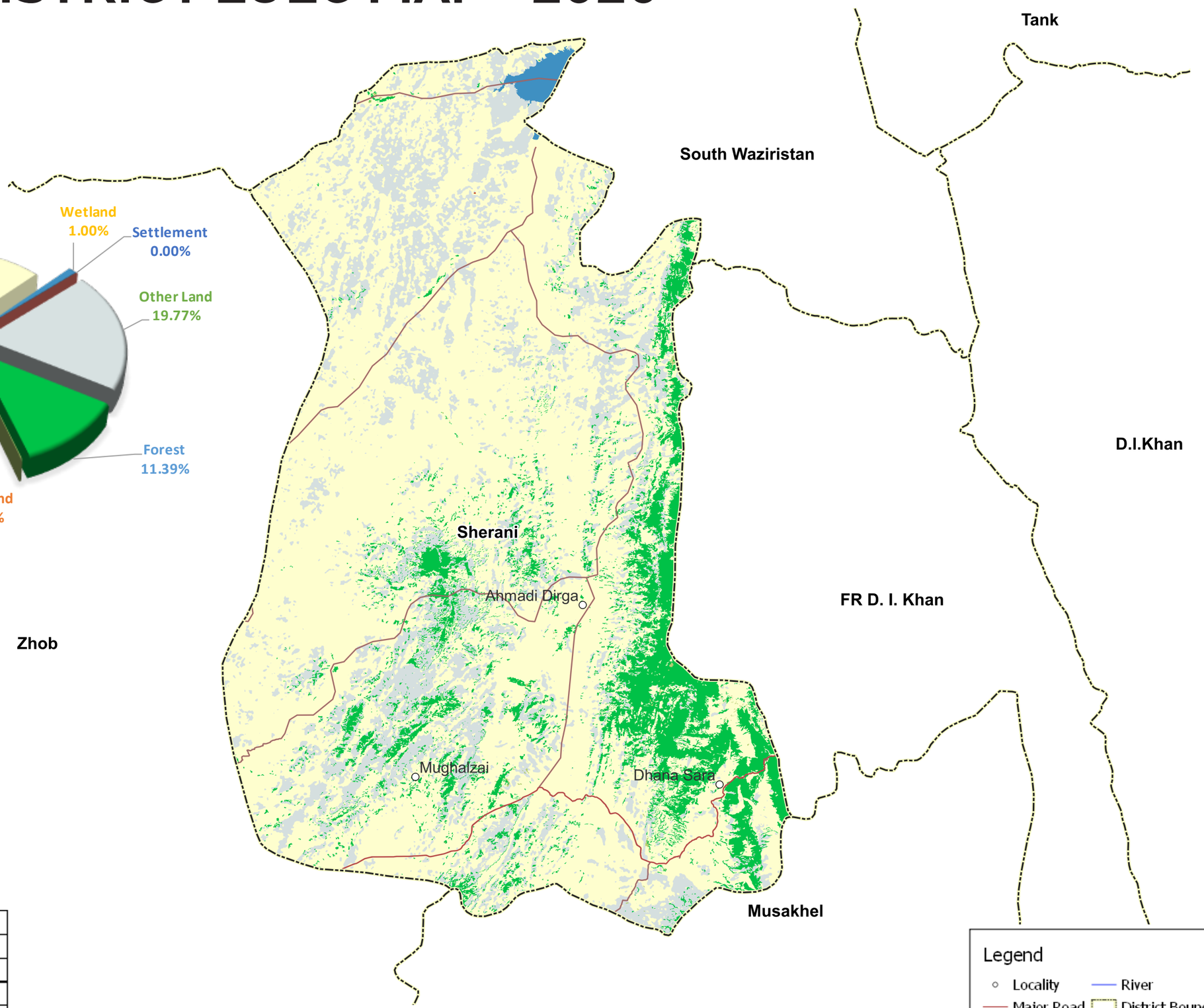


** All areas are calculated in hectare*

	Forest	1,194
	Cropland	2,963
	Grassland	958
	Wetland	310
	Settlement	14,196
	Other Land	128,359

SHERANI DISTRICT LULC MAP - 2020

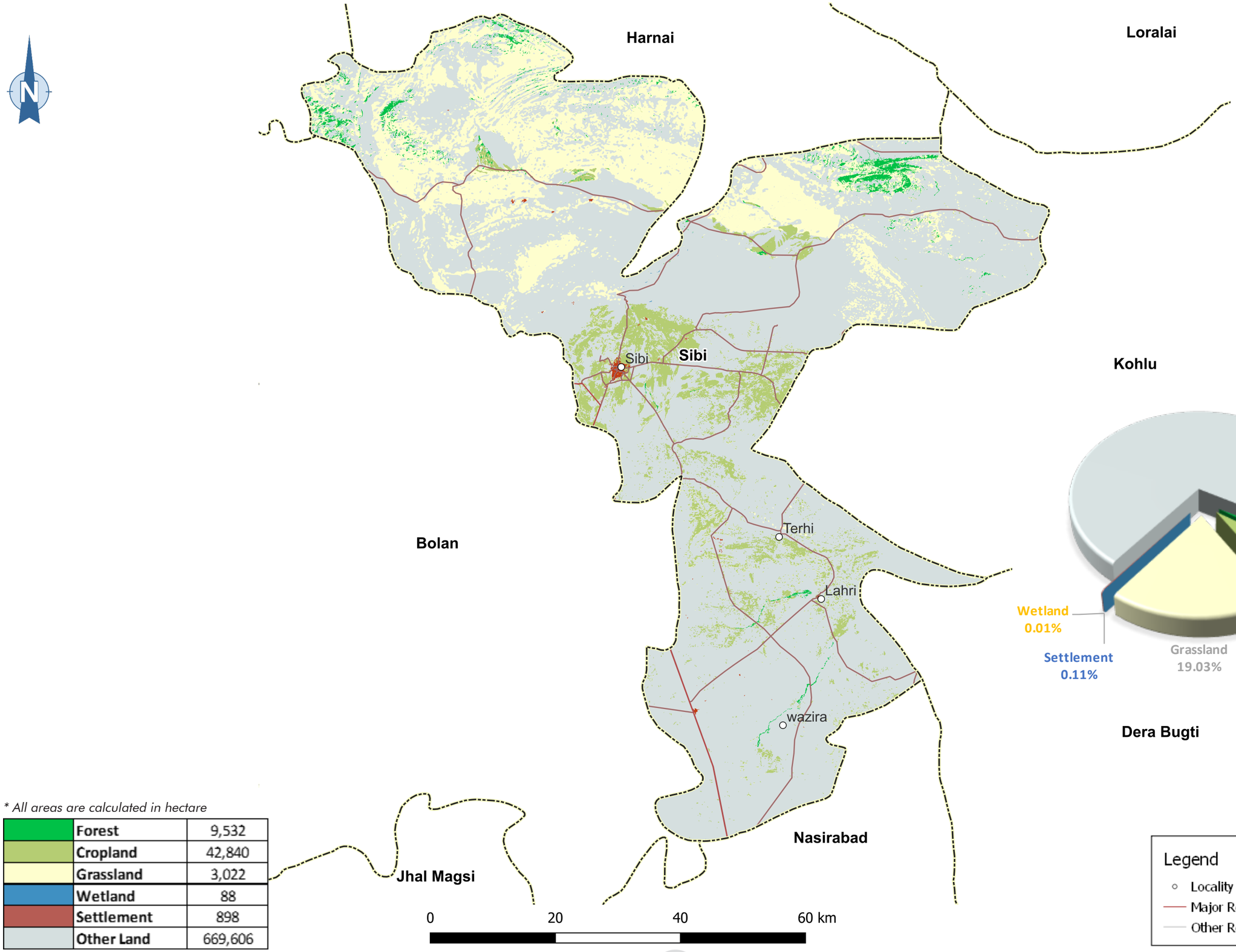


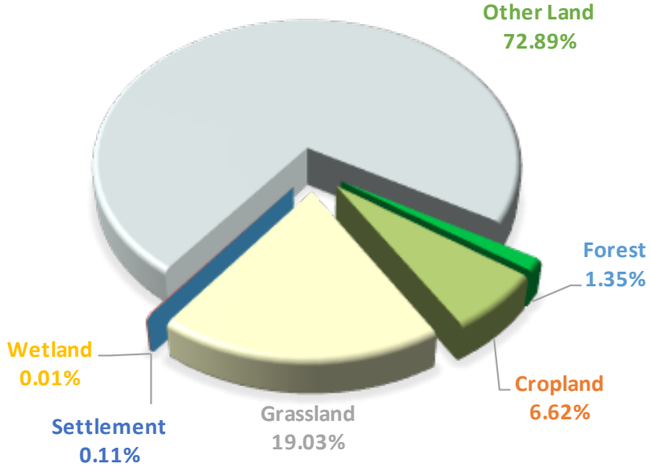


** All areas are calculated in hectare*

	Forest	34,421
	Cropland	226
	Grassland	4,530
	Wetland	5,330
	Settlement	2
	Other Land	78,197

SIBI DISTRICT LULC MAP - 2020





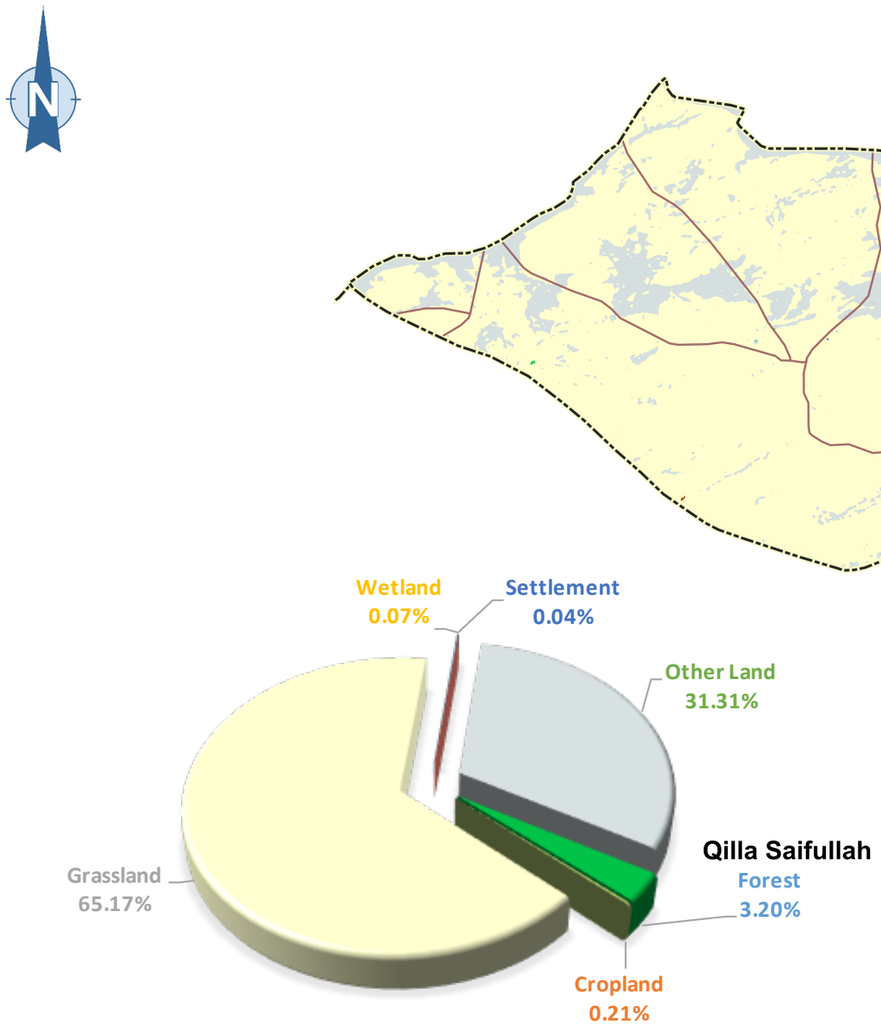
** All areas are calculated in hectare*

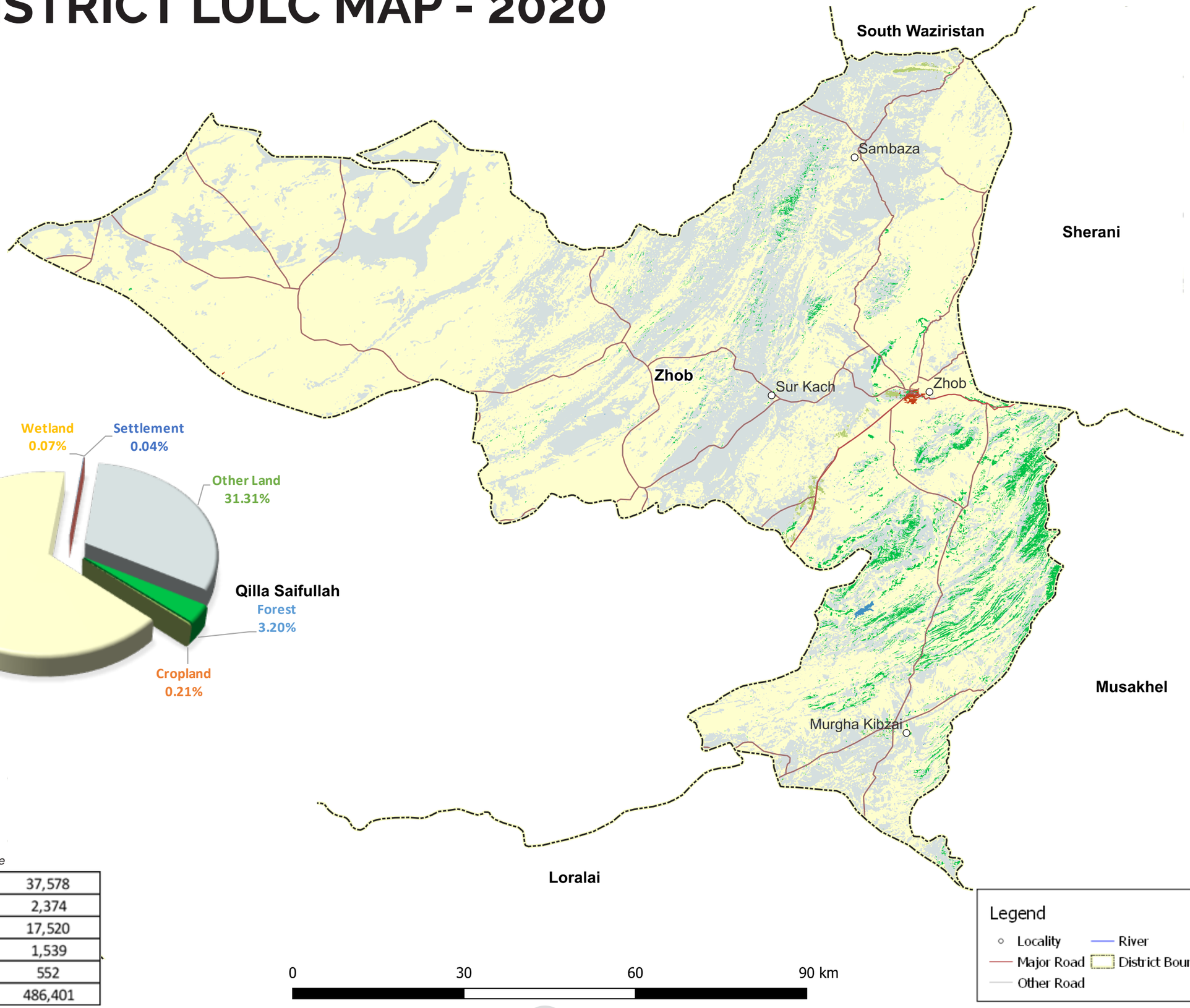
	Forest	9,532
	Cropland	42,840
	Grassland	3,022
	Wetland	88
	Settlement	898
	Other Land	669,606

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

ZHOB DISTRICT LULC MAP - 2020

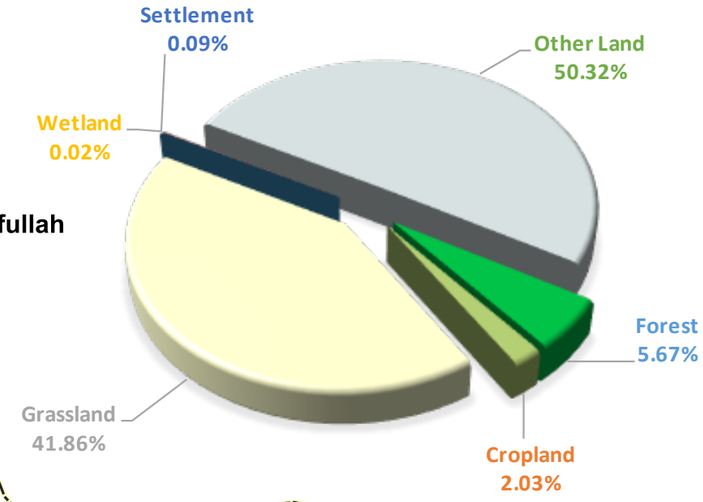




** All areas are calculated in hectare*

	Forest	37,578
	Cropland	2,374
	Grassland	17,520
	Wetland	1,539
	Settlement	552
	Other Land	486,401

ZIARAT DISTRICT LULC MAP - 2020



Qilla Saifullah

Pishin

Ahmadun

Kawas

Ziarat

Ziarat

Poi

Sinjawi

Loralai

Quetta

Harnai

Mastung

Sibi

0 10 20 30 km

Legend

- Locality
- River
- Major Road
- District Boundary
- Other Road

** All areas are calculated in hectare*

	Forest	20,261
	Cropland	6,005
	Grassland	3,136
	Wetland	150
	Settlement	355
	Other Land	217,951