

# SINDH HAZARD AND RISK ATLAS

2022

## DISTRICT TANDO ALLAHYAR



DEVELOPED BY  
**PDMA SINDH**

THROUGH  
**SUPARCO**



WITH THE SUPPORT OF



**THE  
WORLD  
BANK**  
IBRD • IDA



# ACKNOWLEDGEMENTS

SUPARCO, the National Space Agency of Pakistan, appreciates the management of PDMA Sindh for envisioning this highly important subject in disaster management and disaster risk reduction. The products of this study are likely to pave the way for disaster risk management in the province on modern lines.

SUPARCO acknowledge and extend special thanks to different departments, which rightly shared the integral data required for this study and made this scientific endeavor possible. In this regard, the efforts of Irrigation Department GoS, Pakistan Bureau of Statistics (PBS), National Disaster Management Authority (NDMA), Board of Revenue GoS, Health Department GoS, Education and Literacy Department GoS and Energy Department GoS are highly valuable.

SUPARCO also extend special thanks to Project Director and Project Coordinator, Sindh Resilience Project (SRP-PDMA) for their valuable inputs and necessary support required during execution of different activities of the project. Moreover the contribution, review and inputs of Dr Sayed Sanaullah Shah (Risk Assessment Expert SRP) are highly significant and commendable.

## -- Disclaimer --

The Sindh Hazard and Risk Atlas, the product of "Multi-Hazard Vulnerability Risk Assessment (MHVRA) Study" developed for Provincial Disaster Management Authority (PDMA) Sindh under Sindh Resilience Project (PDMA Component) by Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) is based on satellite imagery, data and information obtained from concerned departments and verifiable online sources. Every effort have been made to make this study and database free of errors, however, PDMA Sindh or SUPARCO are not liable for any discrepancy in data obtained from various departments. For hazard and risk assessment, recommended subject specific models have been used and results are based on model outputs. The atlas or any part of it is not to be used for legal or litigation matters and commercial use. However, the information contained in the atlas or any part of the atlas can be used without prior permission of PDMA Sindh with proper citation and acknowledgements.

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# FOREWORD

Pakistan is ranked among top ten countries which are likely to be affected by climate change (German Watch, 2020). The Sindh province is exposed to a number of adverse natural events and has experienced a wide range of disasters. The indicative natural hazards include floods, cyclones, droughts, earthquakes, heatwaves and tsunami. As the population and asset base of Sindh has increased, so its economic exposure to natural disasters has also increased, therefore damages and losses resulting from natural disasters in Sindh have exceeded multi-million. Different studies suggest that changing climate scenarios are likely to exacerbate existing natural hazards manifesting in raised temperatures, frequent and intensified rains and spells of drought.

The effective management of disaster risks is therefore, increasingly important for development of resilience against natural disasters in the Province. The Government of Sindh is taking timely actions for preparation against disasters to ensure efficient management of risks. The Sindh Resilience Project (SRP) funded by World Bank is an important milestone in disaster management of the Province. SRP aims to strengthen the capacities and resilience of PDMA, DDMAs and communities to proactively manage the disasters. Various vital activities have been initiated by PDMA, Sindh for enhanced coping capacity. The Multi Hazard Vulnerability Risk Assessment (MHVRA) is one of such activities and foundation for disaster risk management and risk reduction. The overall spectrum of disaster management is supposed to be based on results of MHVRA. The results of MHVRA and Informed Disaster Management Plans are planned to be hosted on Disaster Management Information System (DMIS) accessible to planners, decision makers, communities at disaster risk, academia and researchers and general masses at large. The completion of MHVRA and availability of DMIS will embark a new paradigm in disaster management of the Province.

It is pleasure for both PDMA and SUPARCO to publish Sindh Hazard and Risk Atlas for District Shikarpur. The Atlas will be circulated among concerned quarters especially at grass root level, i.e., DDMA. It is anticipated that this Atlas will serve strategic, operational and tactical requirements for disaster management. Both institutions are determined to achieve the desired objectives of this initiative and will continue cooperation and collaboration for research and development in disaster management which will ultimately benefit the province at large.

# EXECUTIVE SUMMARY

The disaster resilience is contemporary concept implied and reinforced around the world to mitigate the effects of natural hazards. The disaster is nexus of interaction between natural hazards and human ecosystem. It is believed that natural hazard itself does not cause loss or damage rather it is poor human settings which convert hazards into disasters. The resilience is a modern practice in disaster management which proactively engage all strata of society to consider disaster risk reduction at planning stage of every single human development. In a true sense, to achieve the resilience against natural disasters it is utmost important to know nature and intensity of natural hazards in conjunction with human population and ecosystem. The hazard and risk information base are fundamental for disaster risk reduction in particular and disaster management in general.

PDMA, Sindh with the technical assistance of SUPARCO has developed Multi Hazard Vulnerability and Risk Assessment (MHVRA), Disaster Management Information System (DMIS) and MHVRA Informed Disaster Management Plans to feed wide range of disaster management activities in the province.

Though, the outcomes of MHVRA are planned to be hosted on DMIS which will be publicly available on web, however, in order to facilitate District Disaster Management Authorities (DDMAs) the key findings of MHVRA at Union Council (UC) and subsequently at District and Provincial level have been prepared in an Atlas format for achieving operational requirements. These district atlases for entire province are planned to be prepared and produced for subsequent distribution among the concerned quarters.

The development of MHVRA and atlases is based on diversified information sources including Satellite Remote Sensing (SRS), Digital Elevation Model (DEM) and pertinent information collected from concerned departments. The Atlas depicts landuse / landcover, critical infrastructure and facilities, hazard, exposure, vulnerability and risk maps of cyclone and storm surge, drought, earthquake, flood, heatwave and tsunami along with Disaster Management Plans at UC level.

It is anticipated that, in future all strategic, operational and tactical planning concerning to district level disaster management shall be based on these atlases. The DDMAs are encouraged to align disaster management and disaster risk reduction interventions and initiatives referring to risk profiles of UCs / Districts.

# DATA, SOURCES AND PROCESSING

DATA	SOURCES
Satellite Imagery	SPOT 6/7 1.5 meter resolution – 2019/2020
Digital Elevation Model (DEM)	SPOT Stereo 5 meters
Land use / Land cover	Satellite Imagery
Elements at risk (Road, Irrigation, Railways, Petrol Pumps, Power Plants, Education, Health, Industries, and other features)	Satellite imagery and concerned departments
Administrative Boundaries	Board of Revenue, Government of Sindh
Geological Map	Geological Survey of Pakistan (GSP)
Historical Cyclone Tracks	World Meteorological Organization and National Oceanic and Atmospheric Administration (NOAA)
Bathymetry	Pakistan Navy Hydrographic Department and The General Bathymetric Chart of the Oceans (GEBCO)
River Discharge Data	Indus River System Authority (IRSA)
Temperature Data	NASA GMAO MERRA-2 and GEOS 5.12.4 FP-IT
Rainfall Data	Climate Hazard Group InfraRed Precipitation with station data (CHIRPs)
Demographic Data	Pakistan Bureau of Statistics (PBS) and Bureau of Statistics, Government of Sindh
Historical Earthquake and Flood Data	National Disaster Management Authority (NDMA)
Irrigation Network	Sindh Irrigation Department

## METHODOLOGY FLOW CHART



# SOFTWARE AND MODELS

	SOFTWARE / MODEL	OUTPUTS
	<b>HEC-RAS</b>	Flood hazard maps
	<b>GeoCLAW</b>	Tsunami hazard maps
	<b>OpenQuake</b>	Earthquake hazard maps
	<b>R-Studio</b>	Heatwave hazard maps
	<b>QGIS</b>	Exposure, vulnerability and risk maps
	<b>ArcGIS</b>	Exposure, vulnerability and risk maps
	<b>ERDAS Imagine</b>	Enhanced satellite imagery
	<b>ENVI</b>	Enhanced satellite imagery
	<b>E-Cognition</b>	Land cover classification
	<b>TCRM</b>	Cyclone
	<b>CAPRA GIS</b>	Storm surge maps



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# DISTRICT TANDO ALLAHYAR

## AT A GLANCE

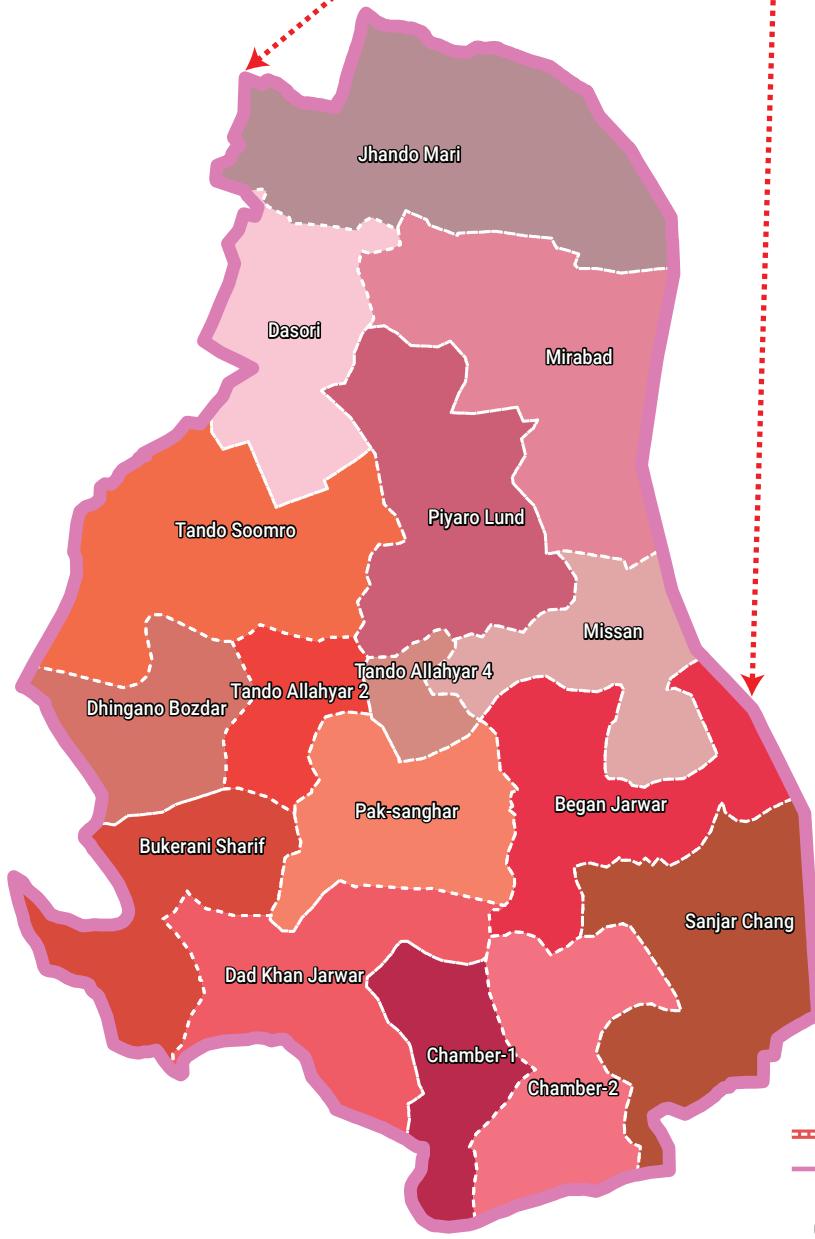
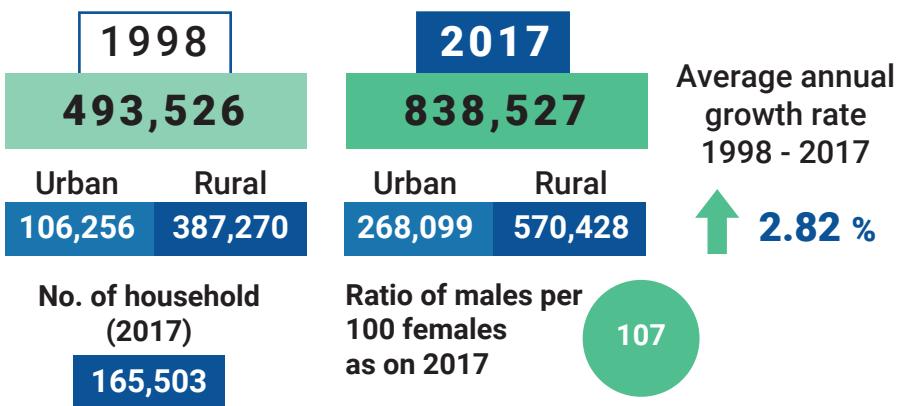
### GEOGRAPHY

 District area in Sq Km	1,512																		
 Coordinates	25° 34' 23" N to 25° 45' 17" N 68° 34' 23" E to 68° 57' 35" E																		
 Surrounding districts	<b>Sanghar</b> in North <b>Mirpurkhas</b> in East <b>Hyderabad</b> and <b>Matiari</b> in West <b>Badin</b> and <b>Tando M. Khan</b> in South																		
 Climate conditions	<b>Hot &amp; Semi-Arid</b>																		
 Coldest and hottest months	<b>January</b> <b>May</b>																		
 Seasonal temperature	<table border="1"> <thead> <tr> <th></th> <th><b>Max. Mean Temp. (°C)</b></th> <th><b>Min. Mean Temp. (°C)</b></th> </tr> </thead> <tbody> <tr> <td><b>Spring</b> (March and April)</td> <td><b>38.92</b></td> <td><b>20.67</b></td> </tr> <tr> <td><b>Dry Summer</b> (May and June)</td> <td><b>43.67</b></td> <td><b>27.54</b></td> </tr> <tr> <td><b>Wet Summer</b> (July to September)</td> <td><b>39.52</b></td> <td><b>26.93</b></td> </tr> <tr> <td><b>Autumn</b> (October and November)</td> <td><b>36.12</b></td> <td><b>19.56</b></td> </tr> <tr> <td><b>Winter</b> (December to February)</td> <td><b>28.34</b></td> <td><b>11.52</b></td> </tr> </tbody> </table>		<b>Max. Mean Temp. (°C)</b>	<b>Min. Mean Temp. (°C)</b>	<b>Spring</b> (March and April)	<b>38.92</b>	<b>20.67</b>	<b>Dry Summer</b> (May and June)	<b>43.67</b>	<b>27.54</b>	<b>Wet Summer</b> (July to September)	<b>39.52</b>	<b>26.93</b>	<b>Autumn</b> (October and November)	<b>36.12</b>	<b>19.56</b>	<b>Winter</b> (December to February)	<b>28.34</b>	<b>11.52</b>
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 Average annual rainfall	<b>141.40 mm/yr</b>																		
 Physiographic features	<b>No Prominent Physiographic Feature Located</b>																		

### LOCATION OF DISTRICT TANDO ALLAHYAR



### DEMOGRAPHY



### ECONOMY

Main employment sources:

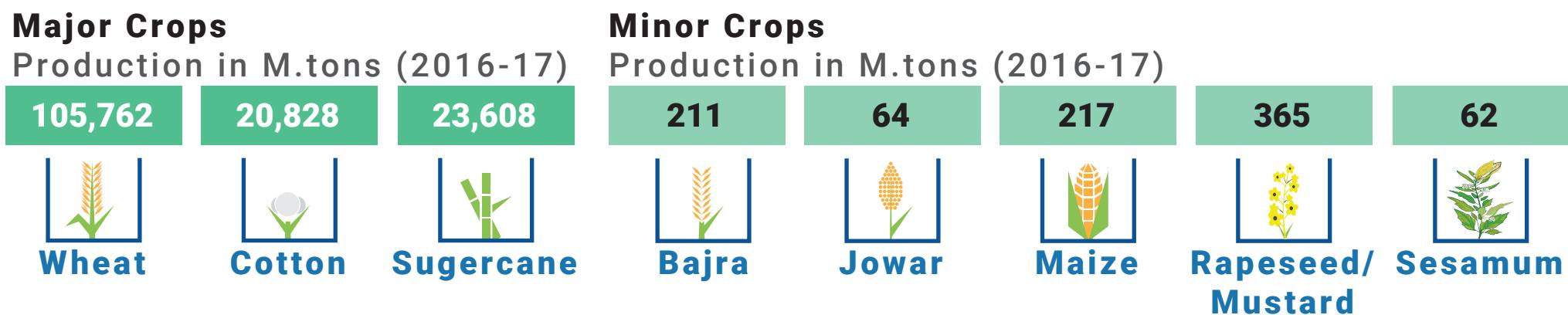


**TEXTILE**

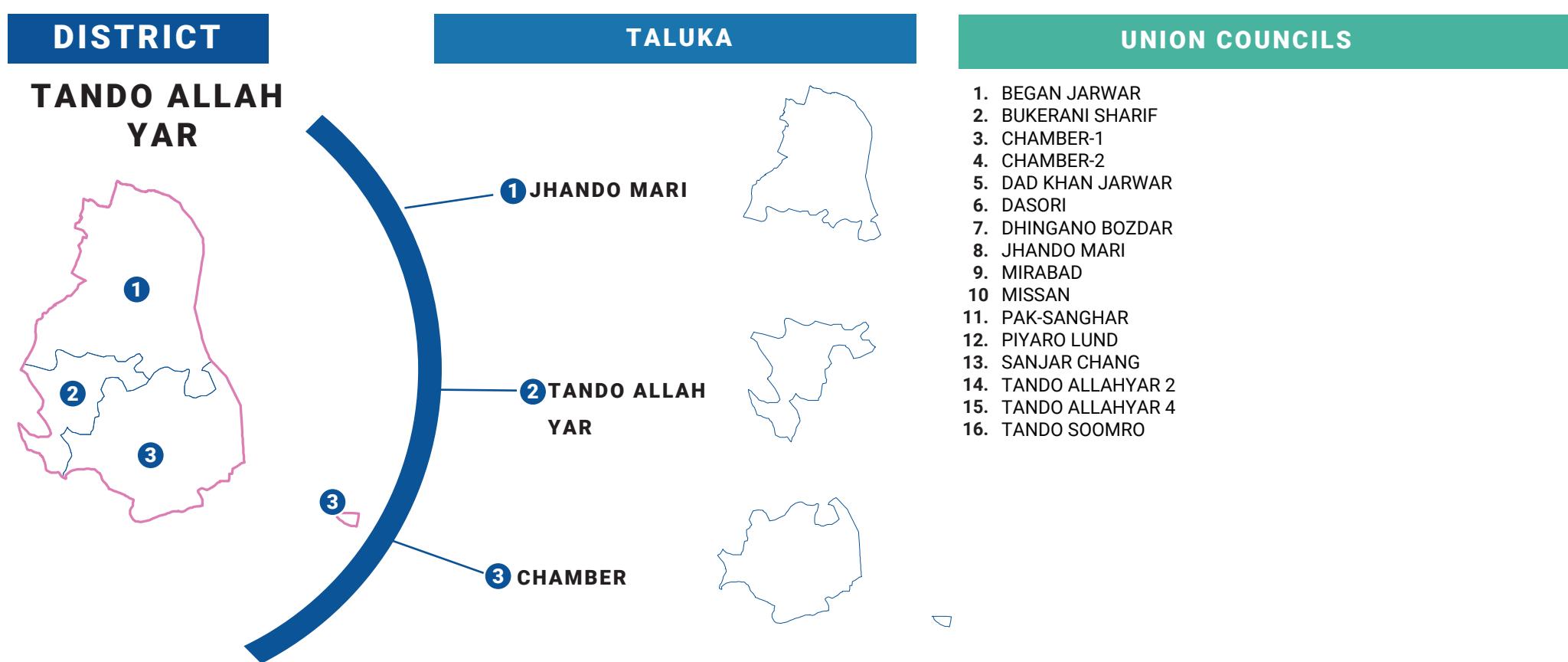


**AGRICULTURE**

Source:  
Board of Revenue, Government of Sindh



## ADMINISTRATIVE SYSTEM



## DISASTER PROFILE<sup>1</sup>

Hazard	Frequency	Severity	Years
Floods /Rain	Monsoon	Medium	2010, 2011, 2012
Earthquake	Rare	Low	2013

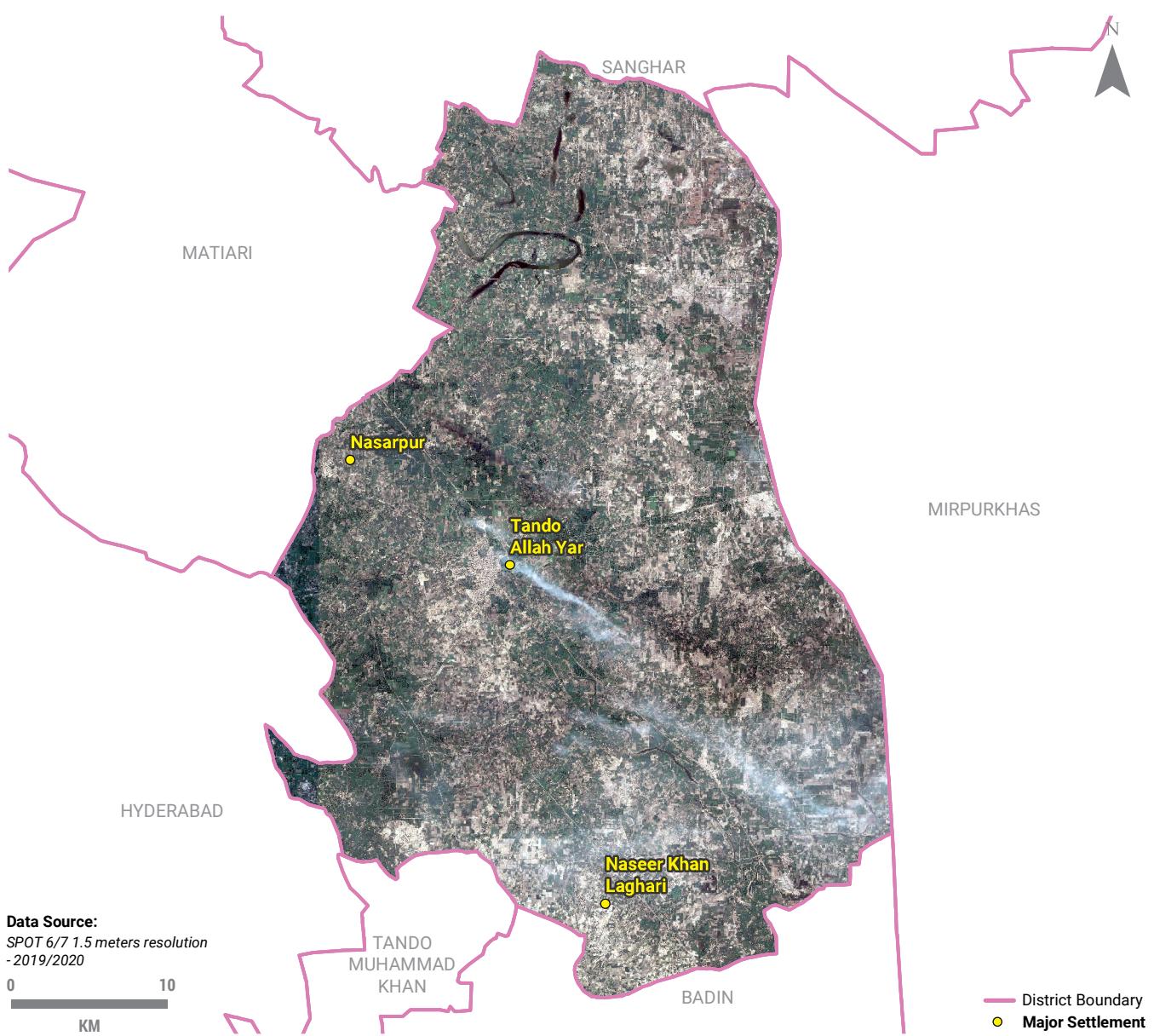
<sup>1</sup> Source: Organizational Capacity Assessment and Development of Capacity Enhancement Plan, 2017-18

2 <https://reliefweb.int/sites/reliefweb.int/files/resources/PESA-Tandoallahyar-Sindh.pdf>

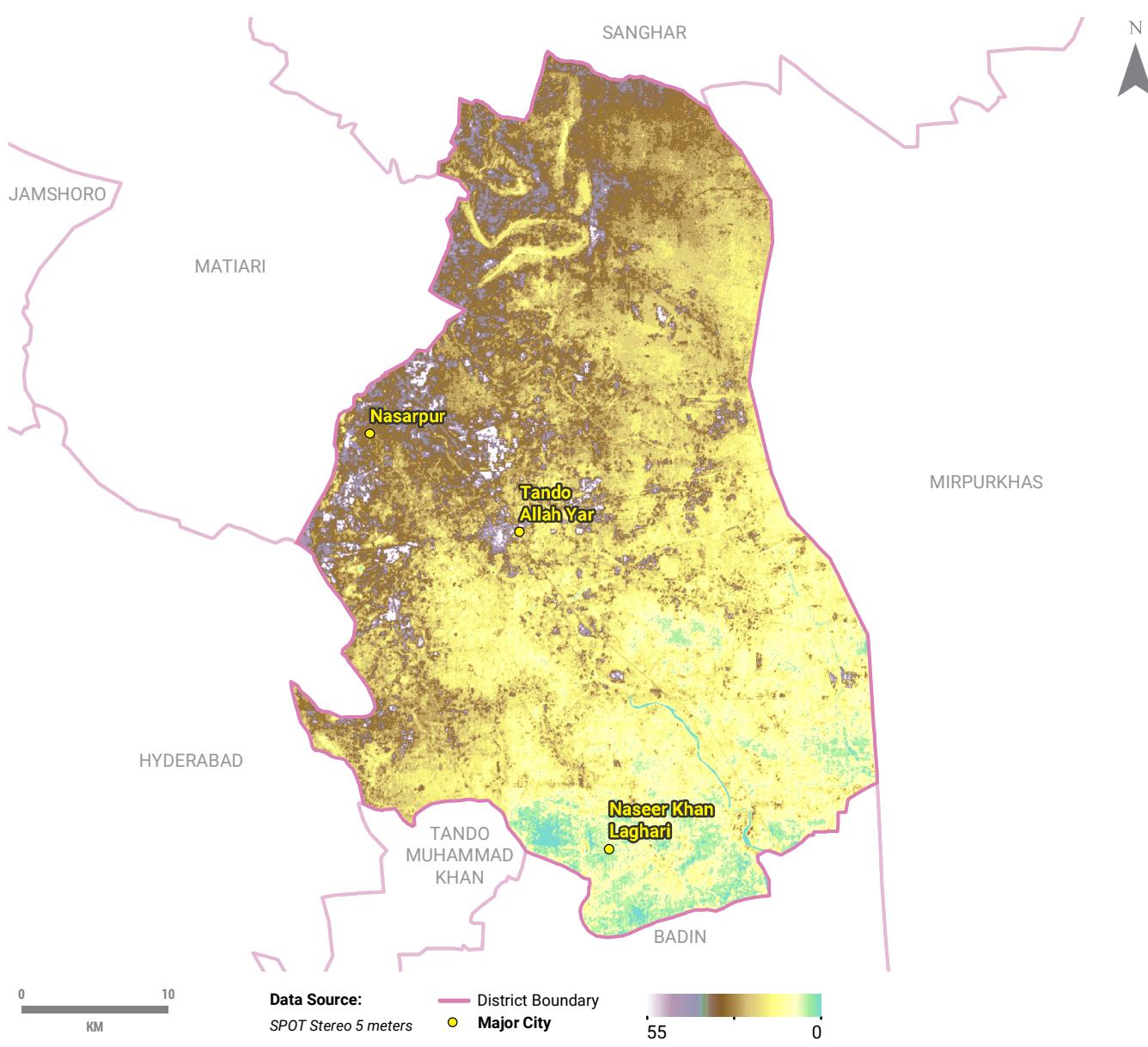
3 <http://www.pdma.gos.pk/floodfacts.pdf>

4 <https://reliefweb.int/sites/reliefweb.int/files/resources/PESA-Tandoallahyar-Sindh.pdf>

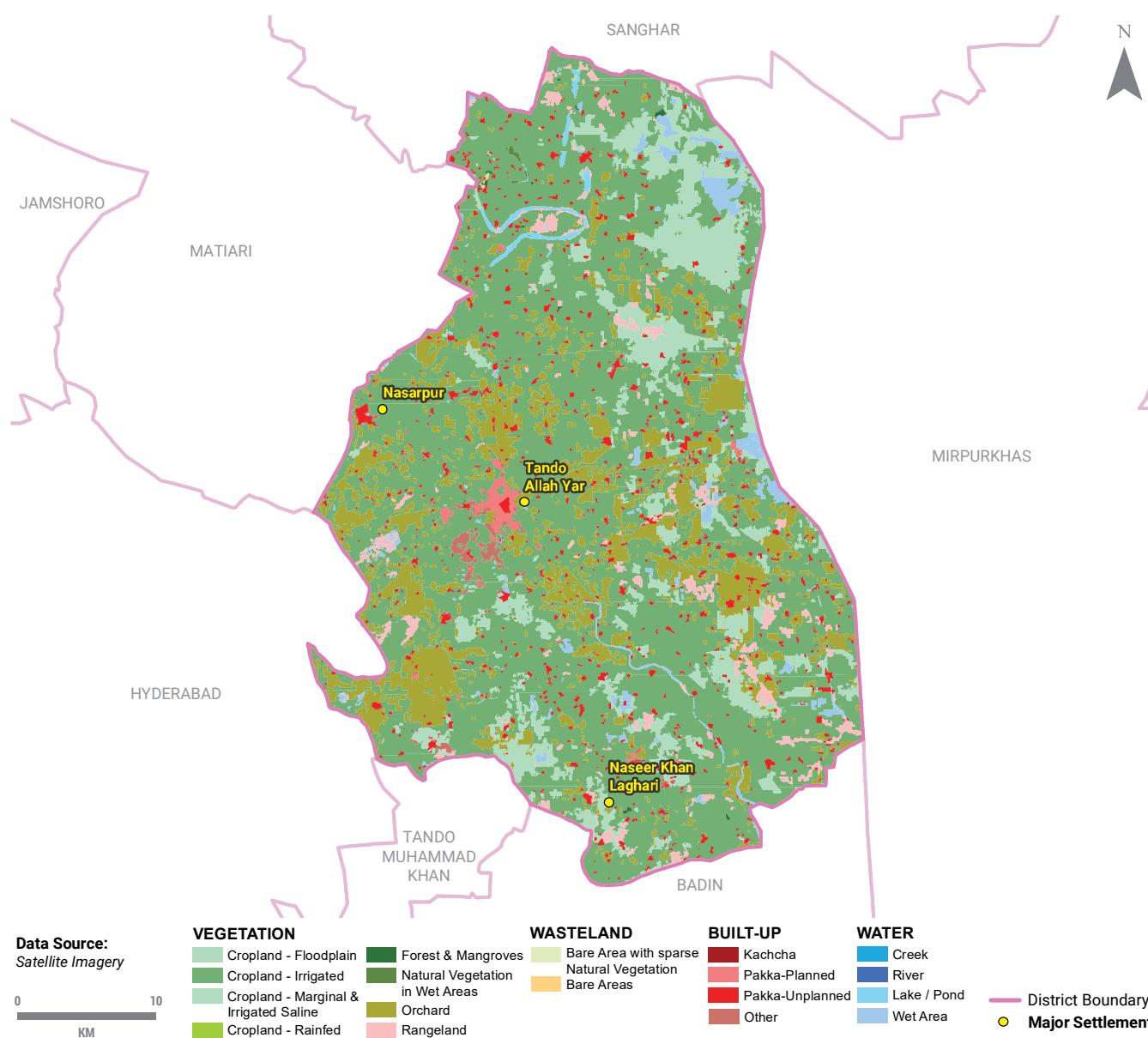
## SATELLITE IMAGERY



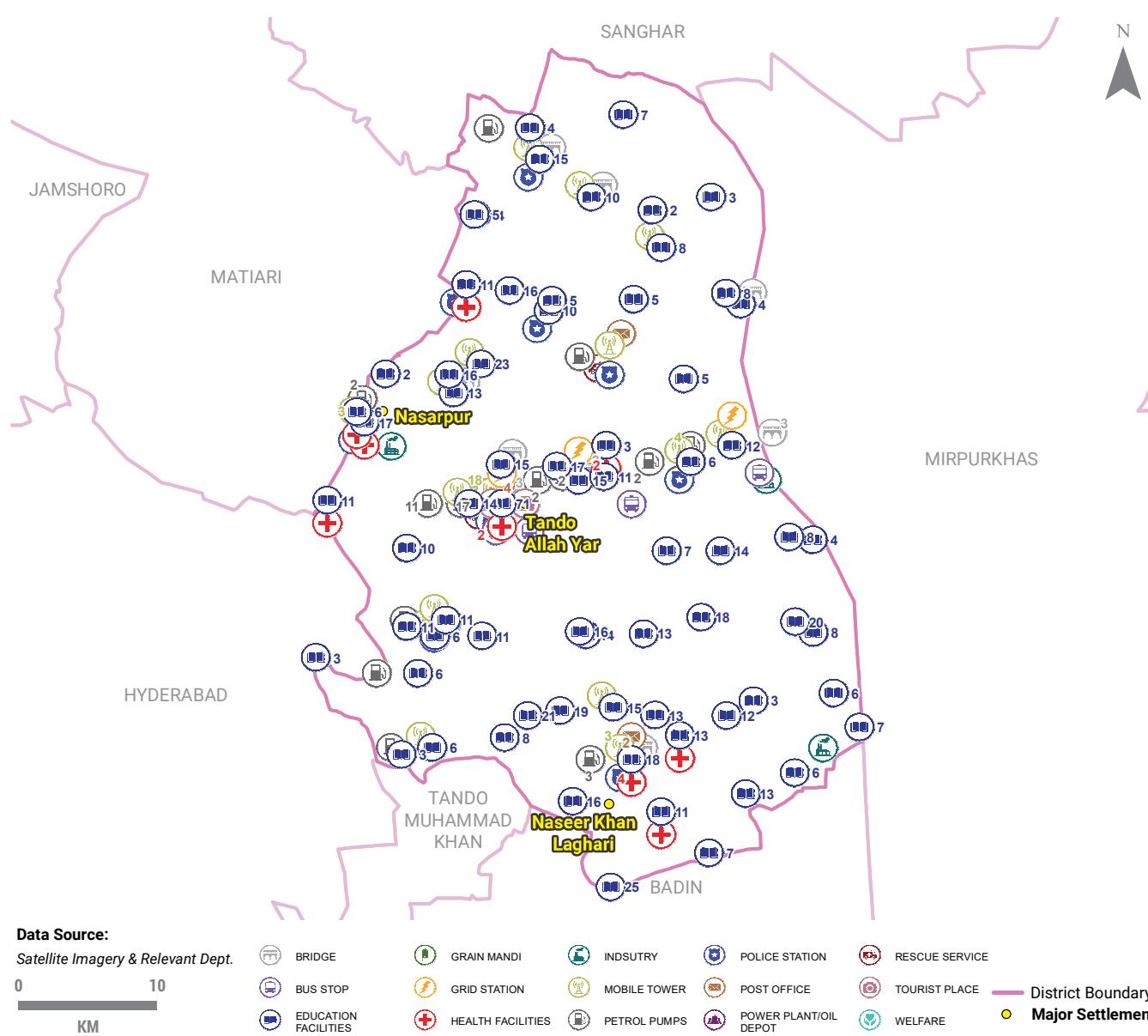
## DIGITAL ELEVATION MODEL



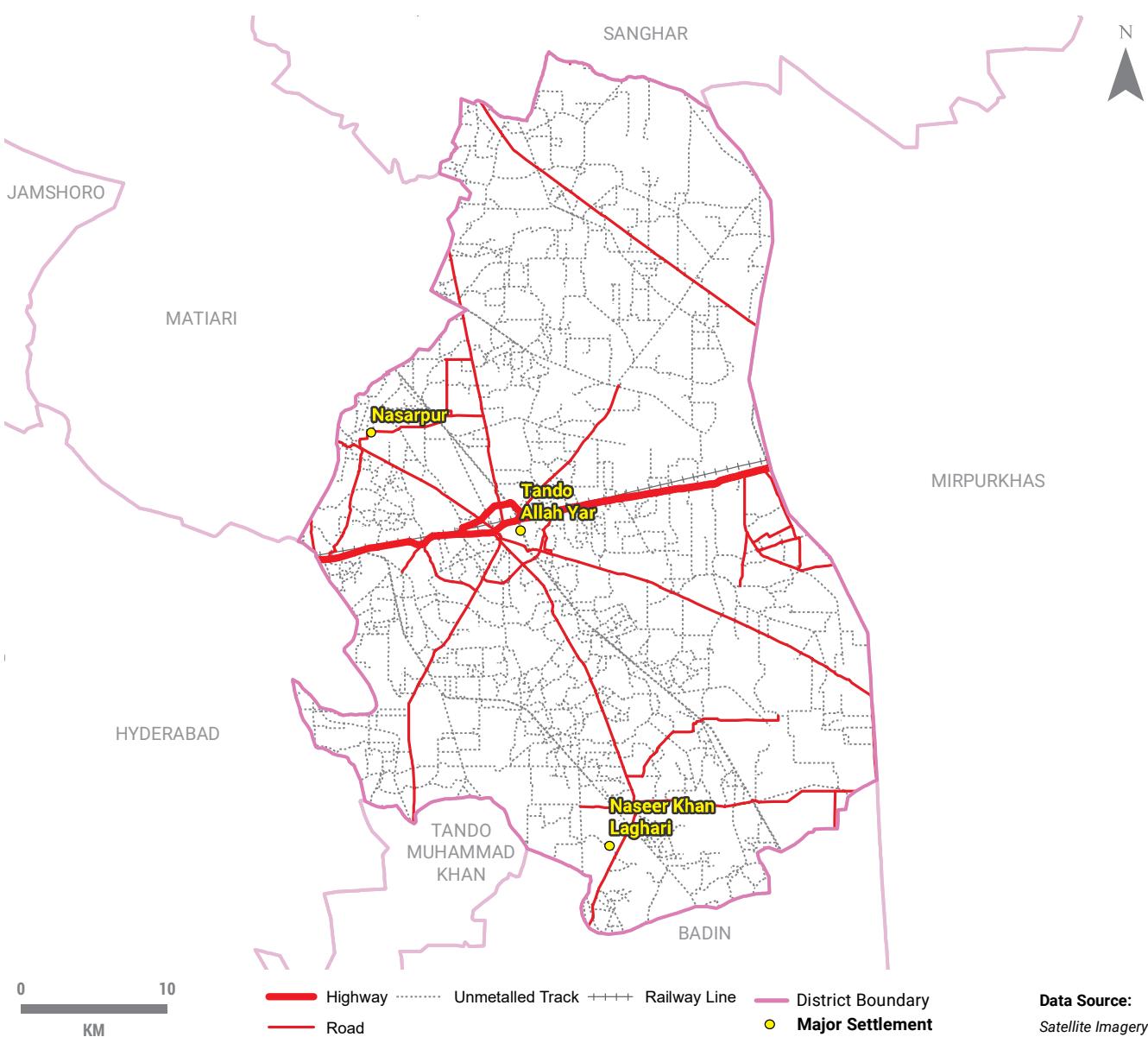
# LAND USE / LAND COVER



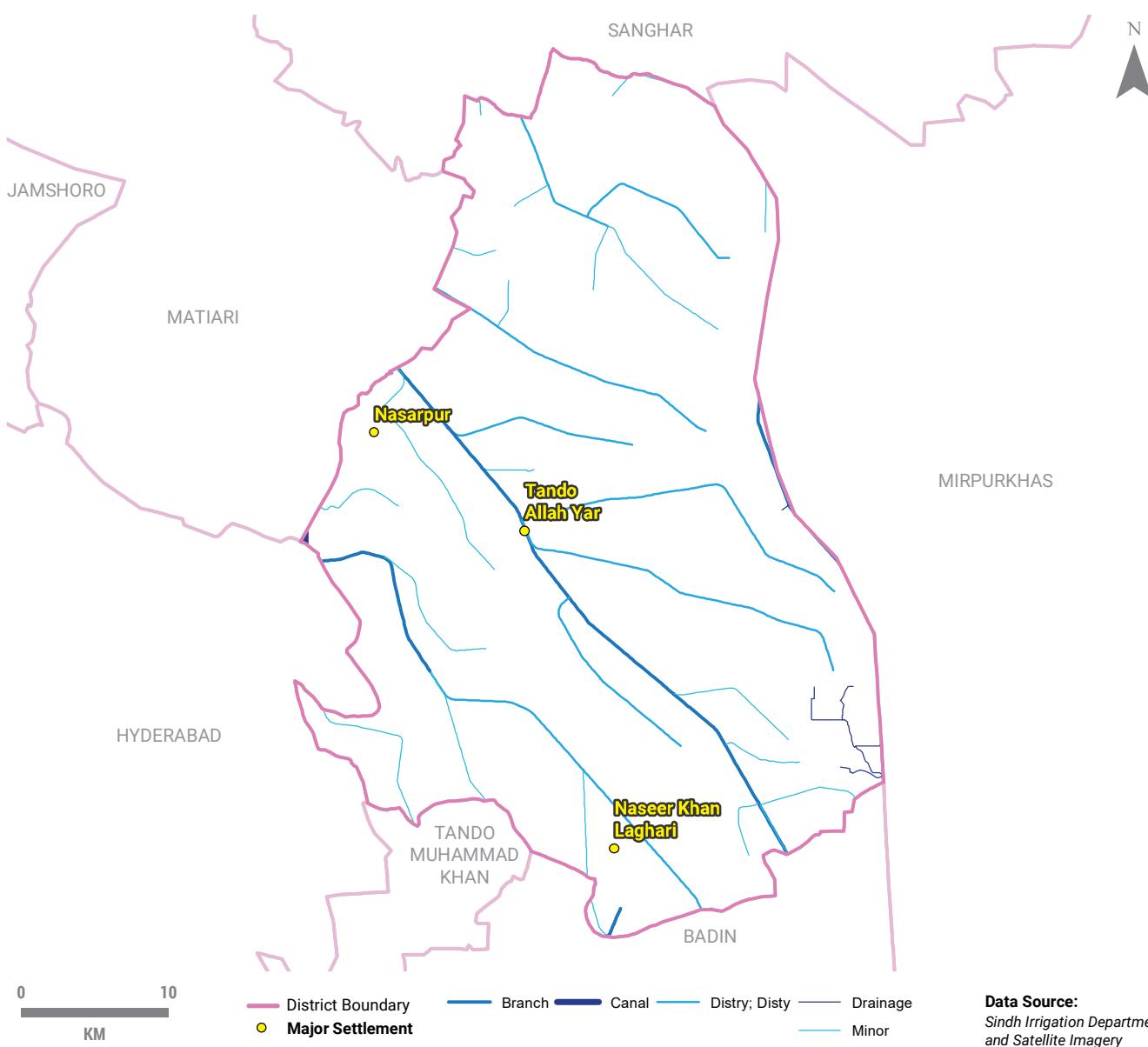
# CRITICAL INFRASTRUCTURE



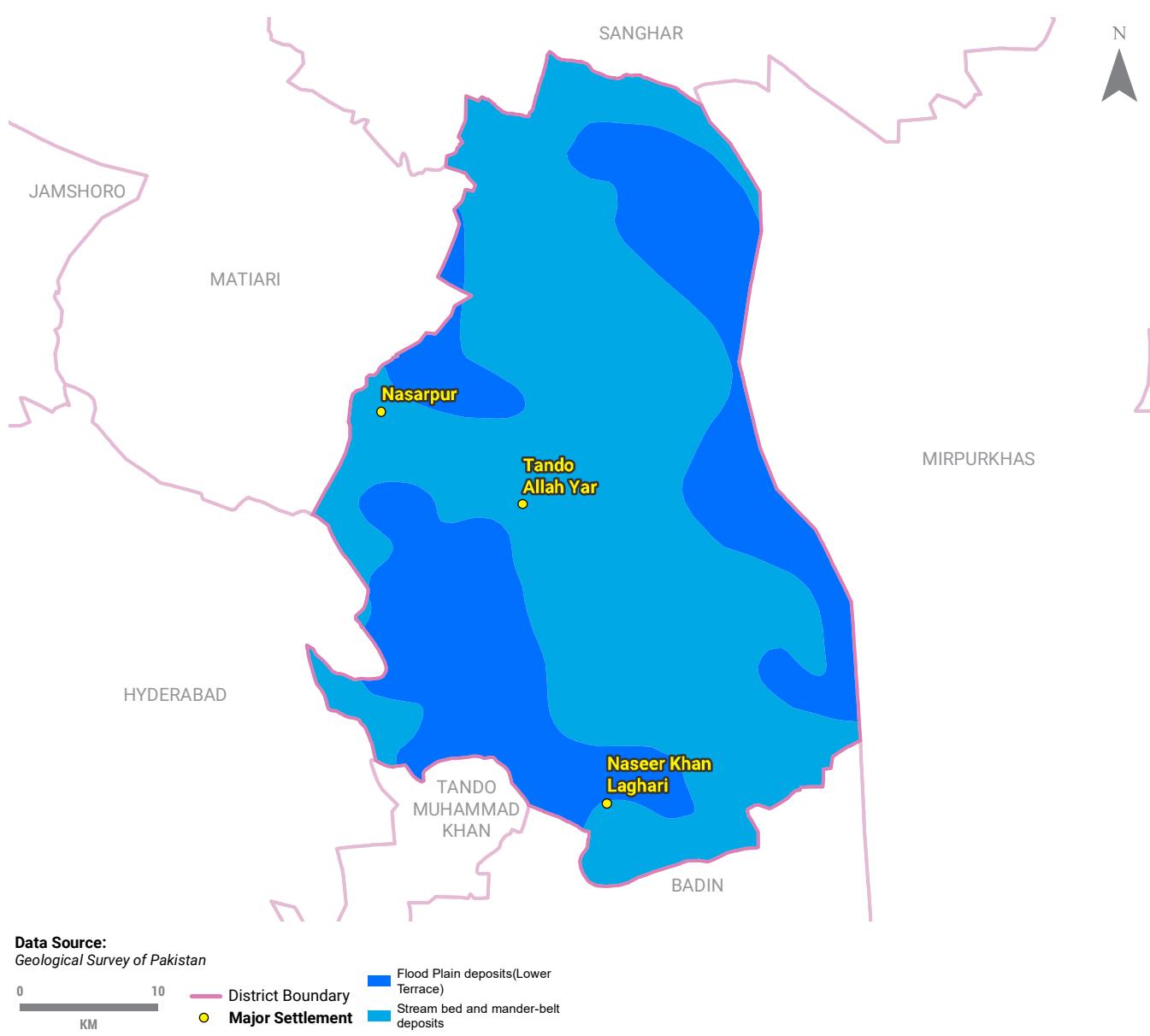
# TRANSPORTATION NETWORK



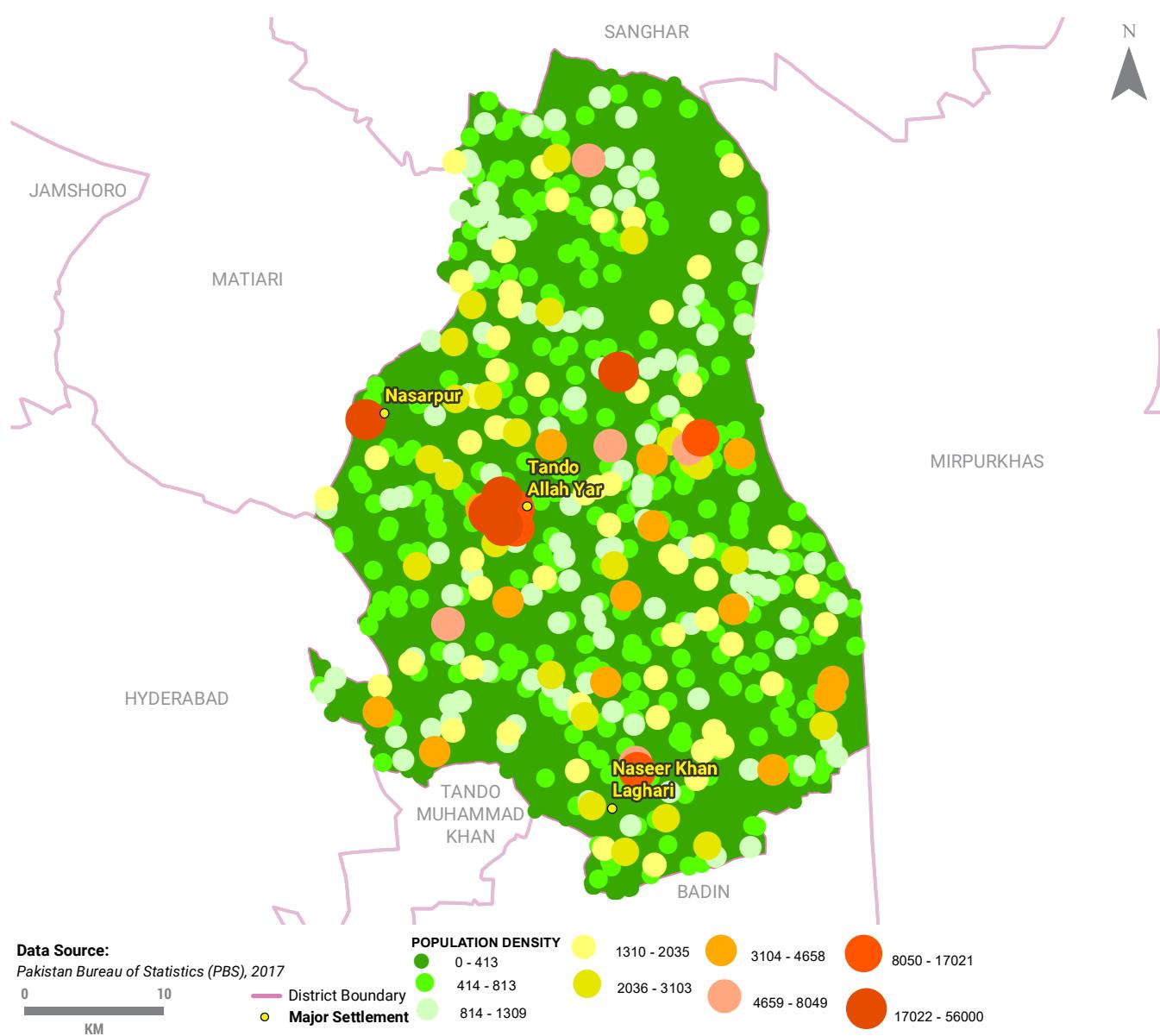
# IRRIGATION AND DRAINAGE



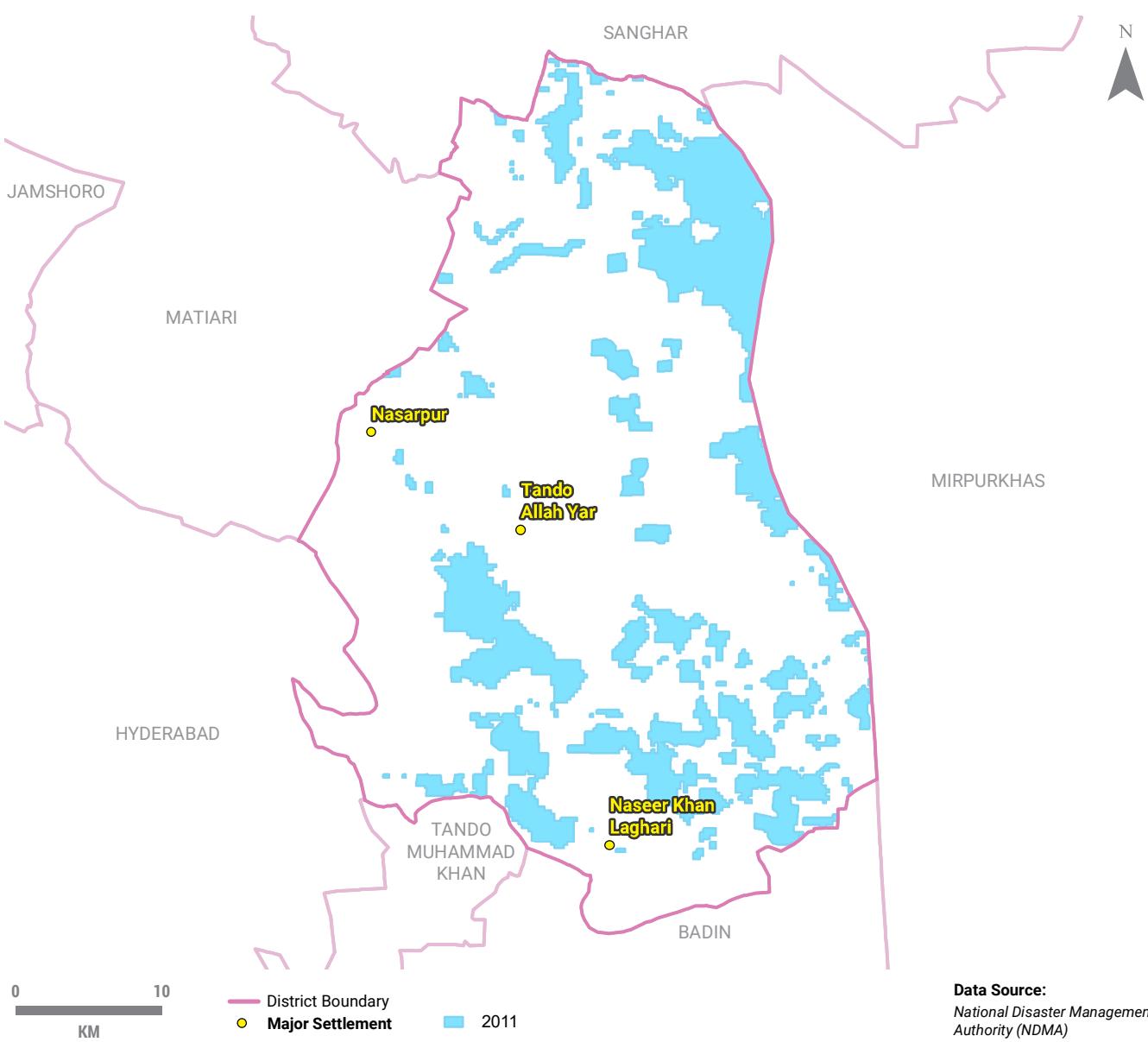
## GEOLOGICAL MAP



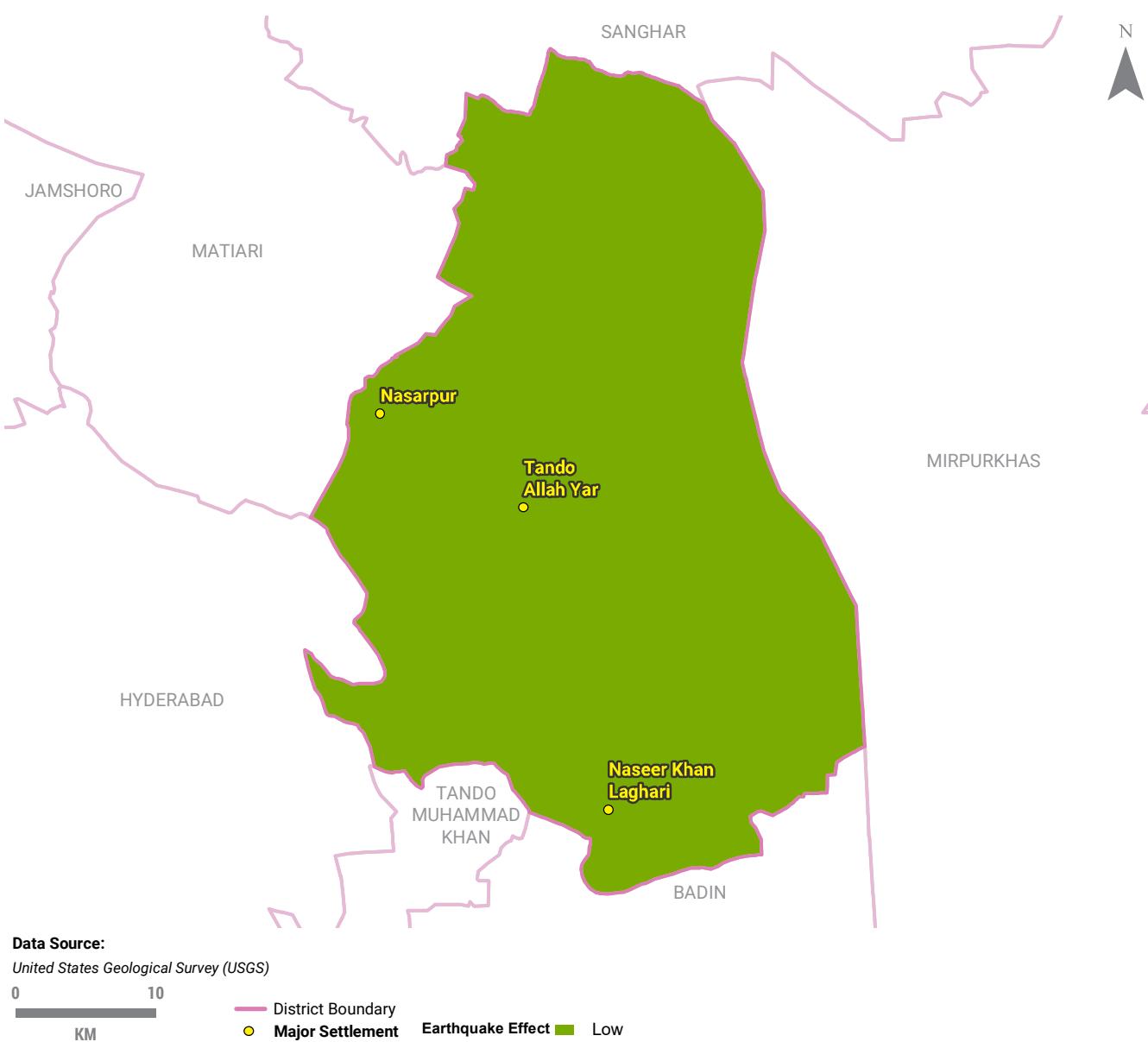
## POPULATION DENSITY



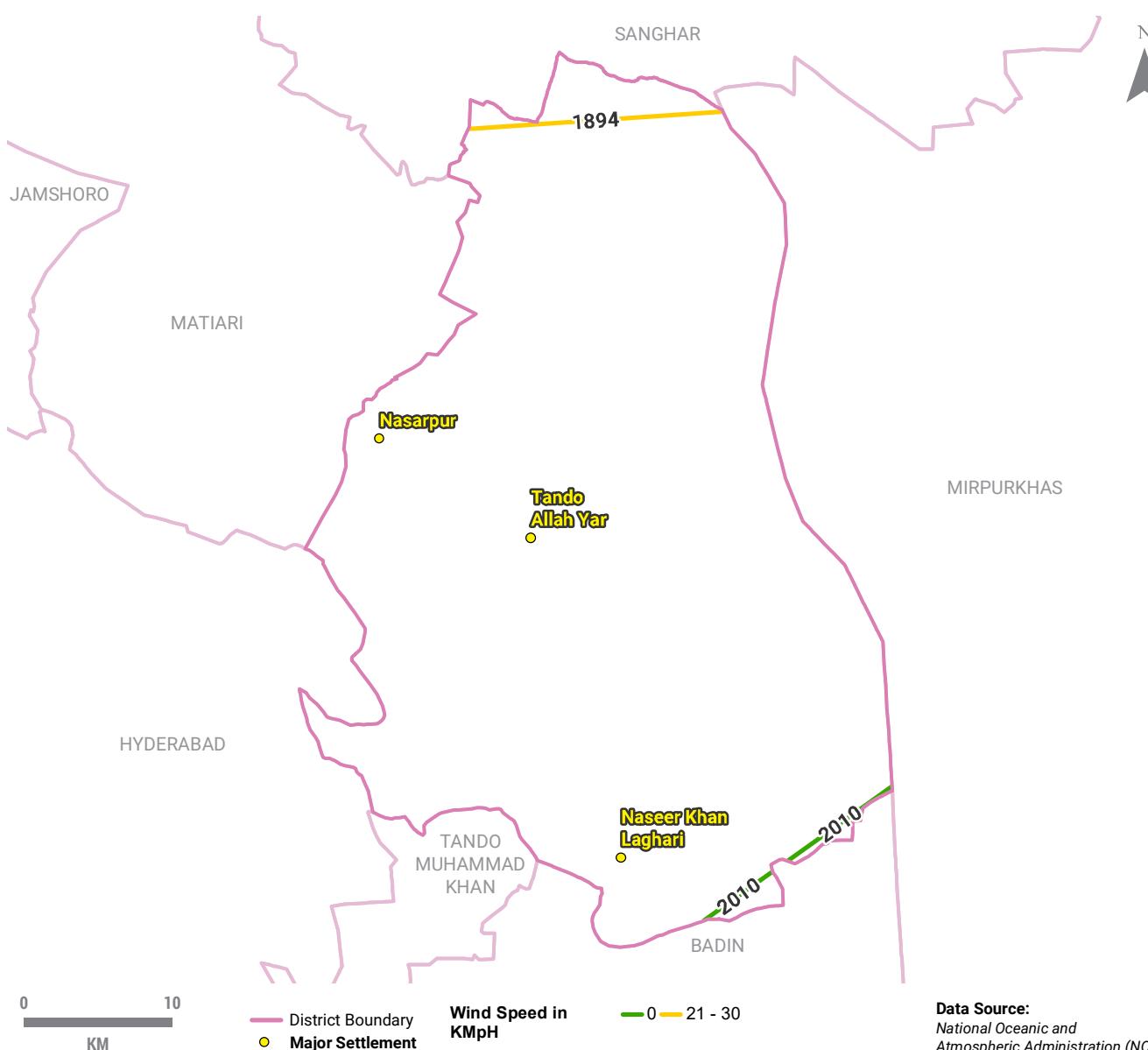
## HISTORICAL FLOOD EXTENTS



## HISTORICAL EARTHQUAKE EVENTS



# HISTORICAL CYCLONE TRACKS



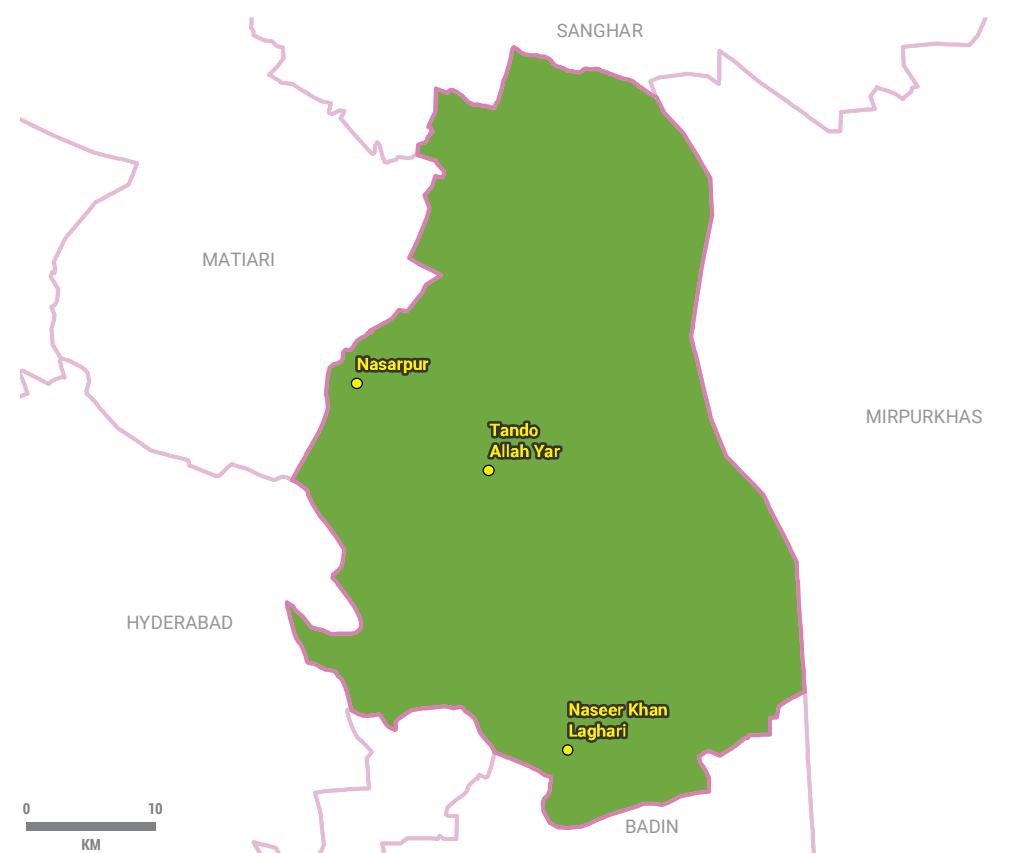
# HAZARD, VULNERABILITY AND RISK

## FLOOD

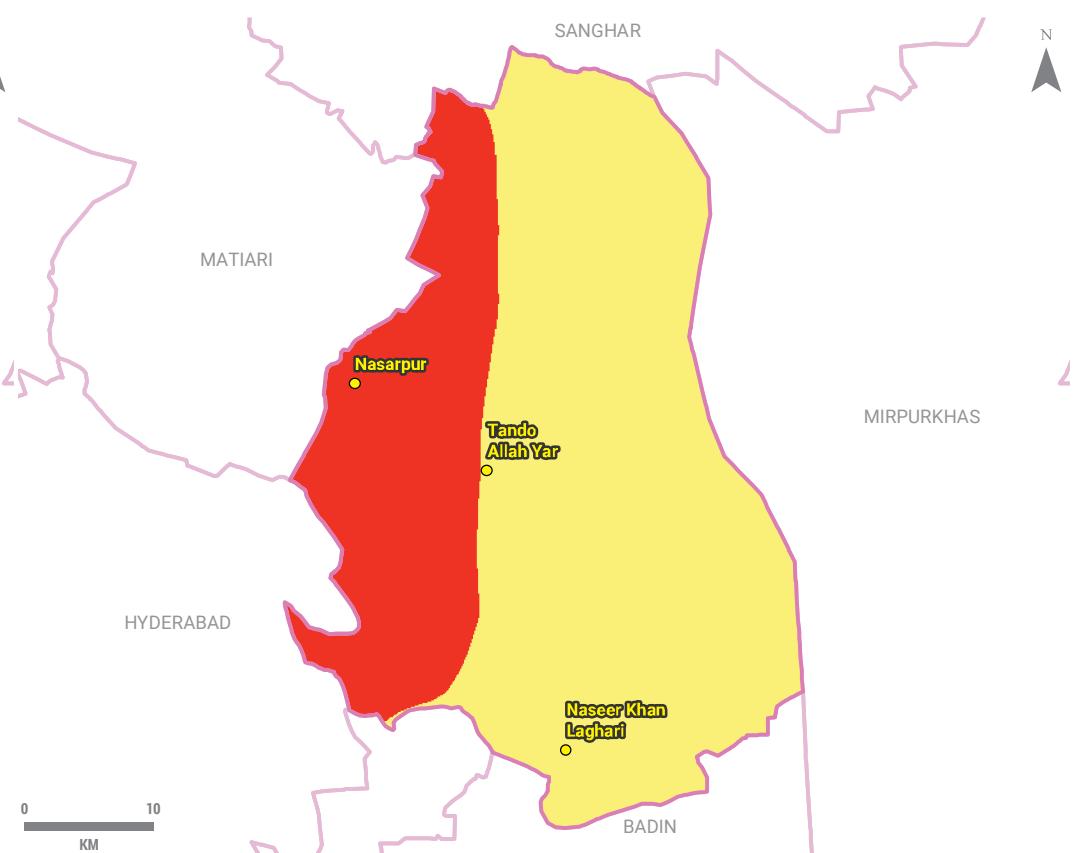
There is no hazard / risk of riverine flood in this district, however it is prone to the floods occurring due to heavy rainfall and embankment breaches

## METEOROLOGICAL DROUGHT

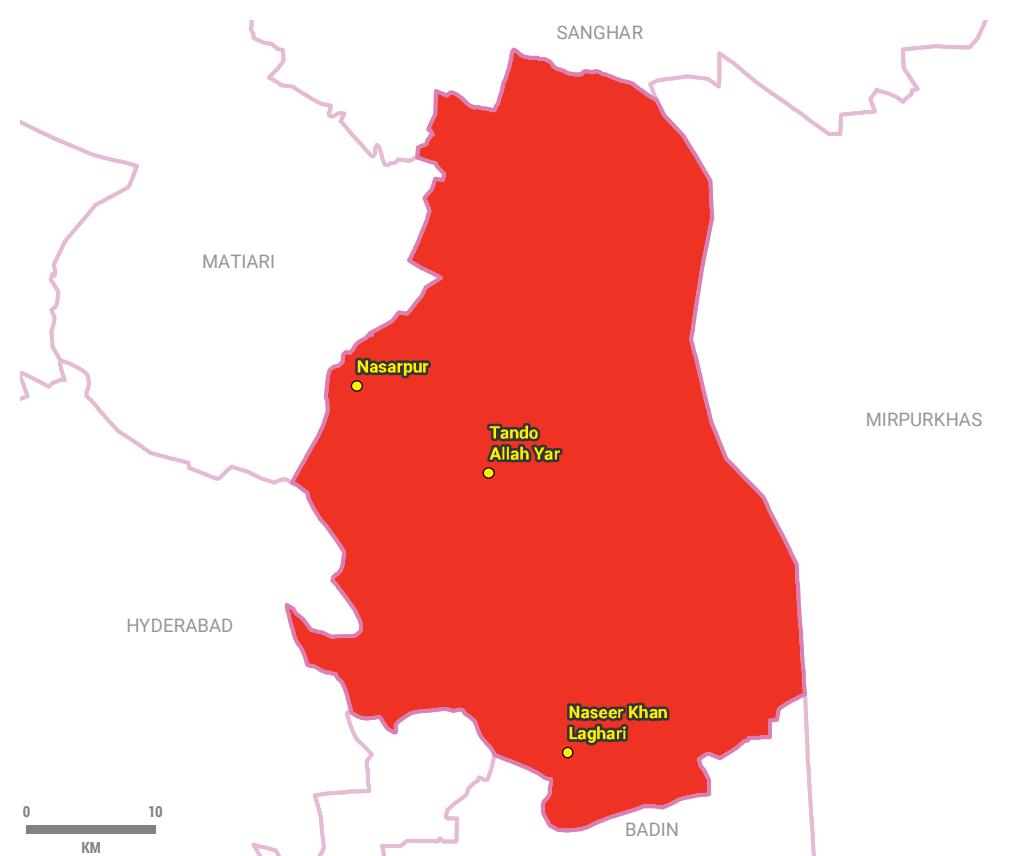
### HAZARD 05 YEARS



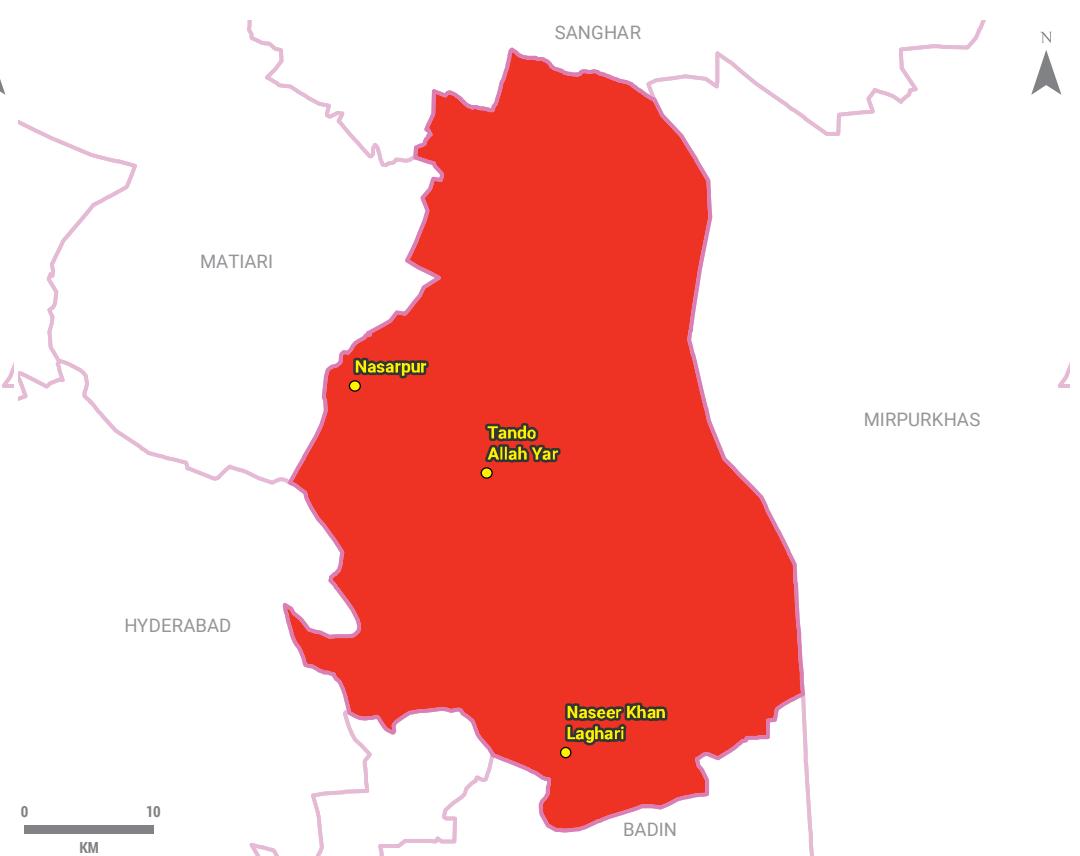
### HAZARD 10 YEARS



### HAZARD 25 YEARS



### HAZARD 50 YEARS

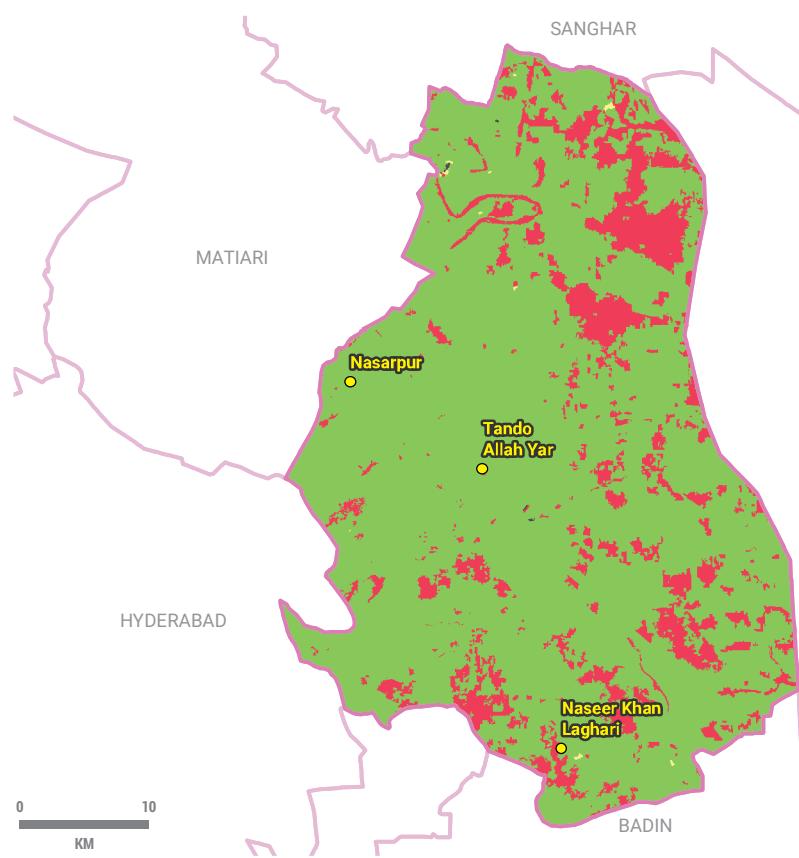


#### HAZARD

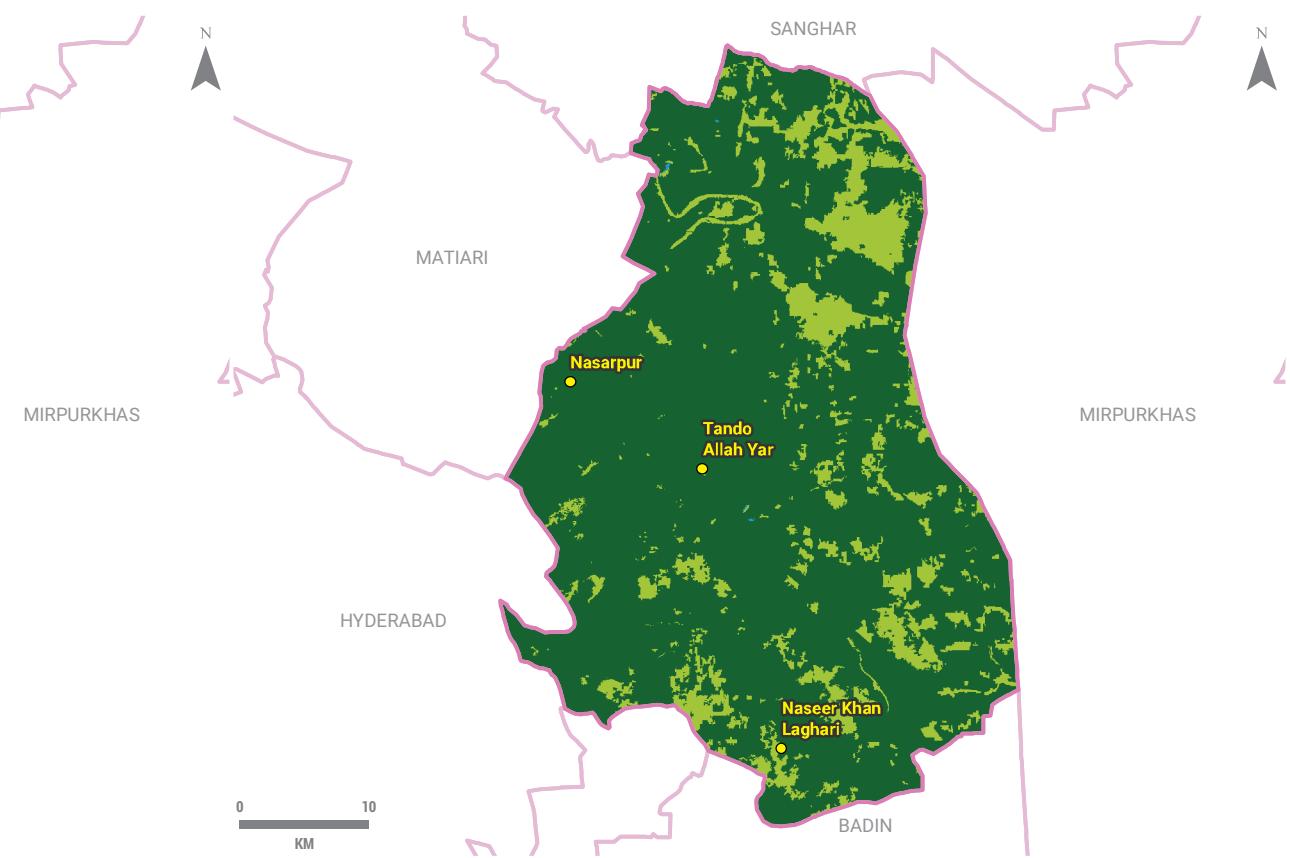
No Hazard    Mild    Moderate    Severe    Extreme

## METEOROLOGICAL DROUGHT

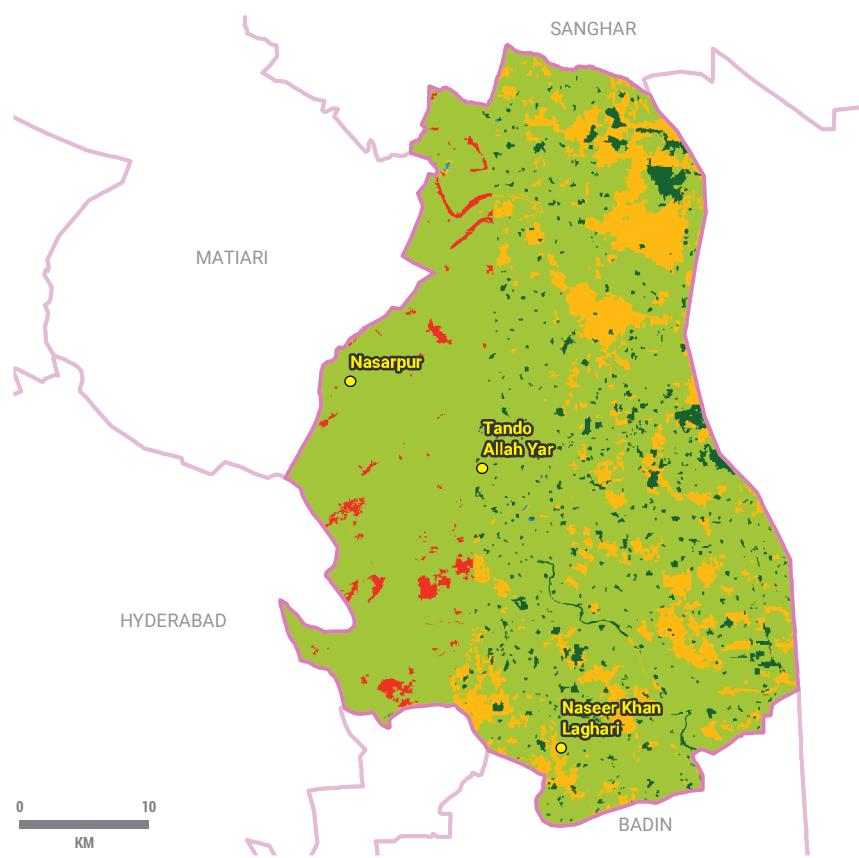
## VULNERABILITY



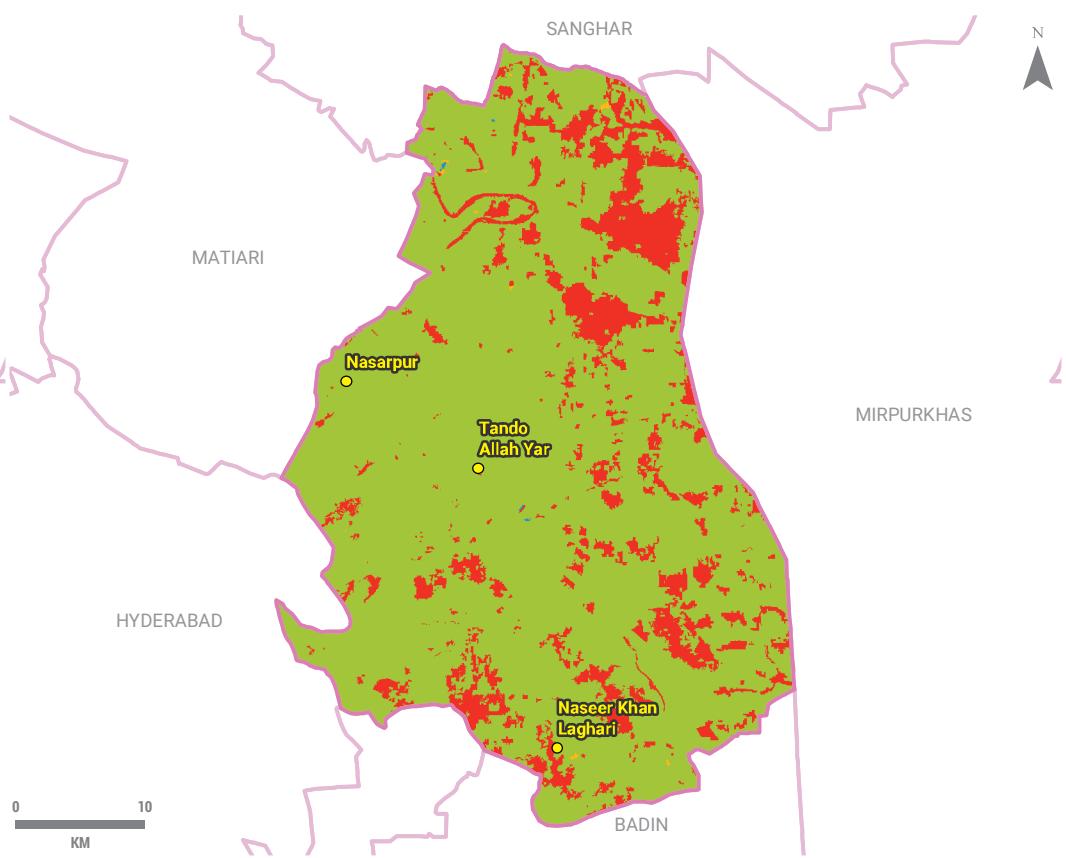
## RISK 05 YEARS



## RISK 10 YEARS



## RISK 25 YEARS



## VULNERABILITY

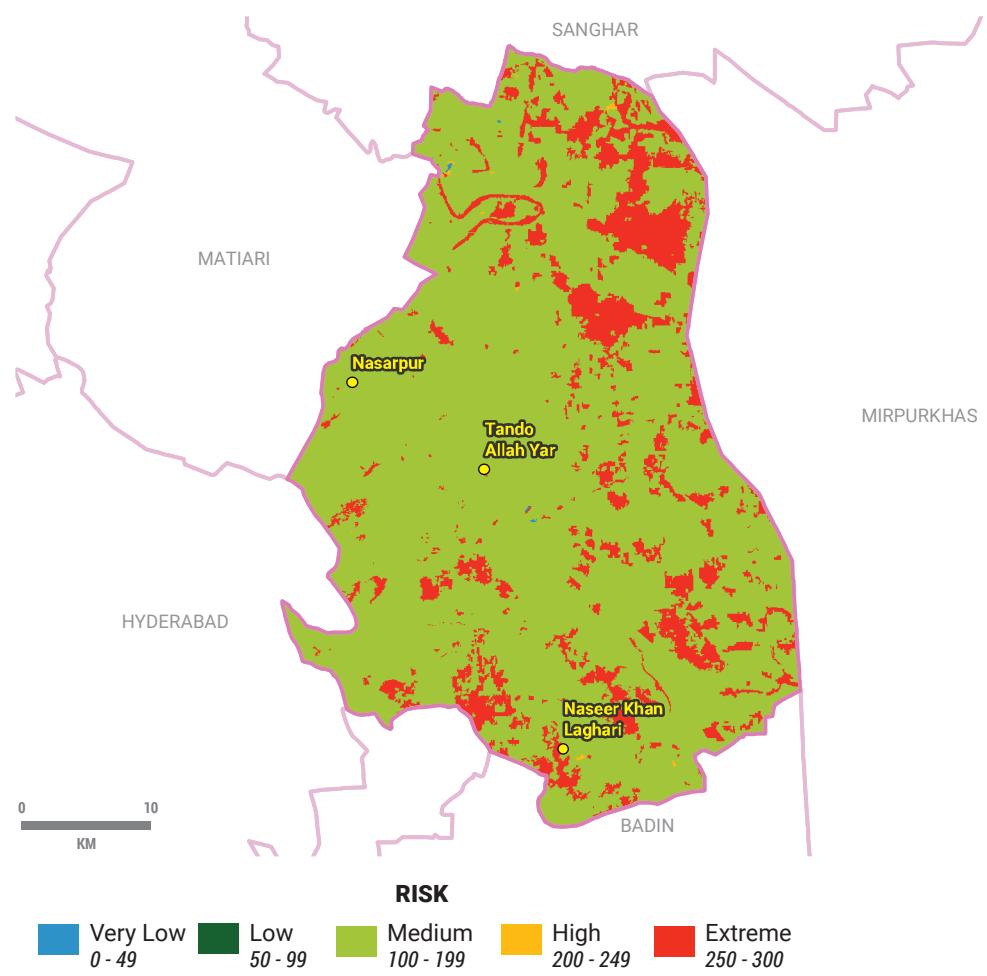


## RISK



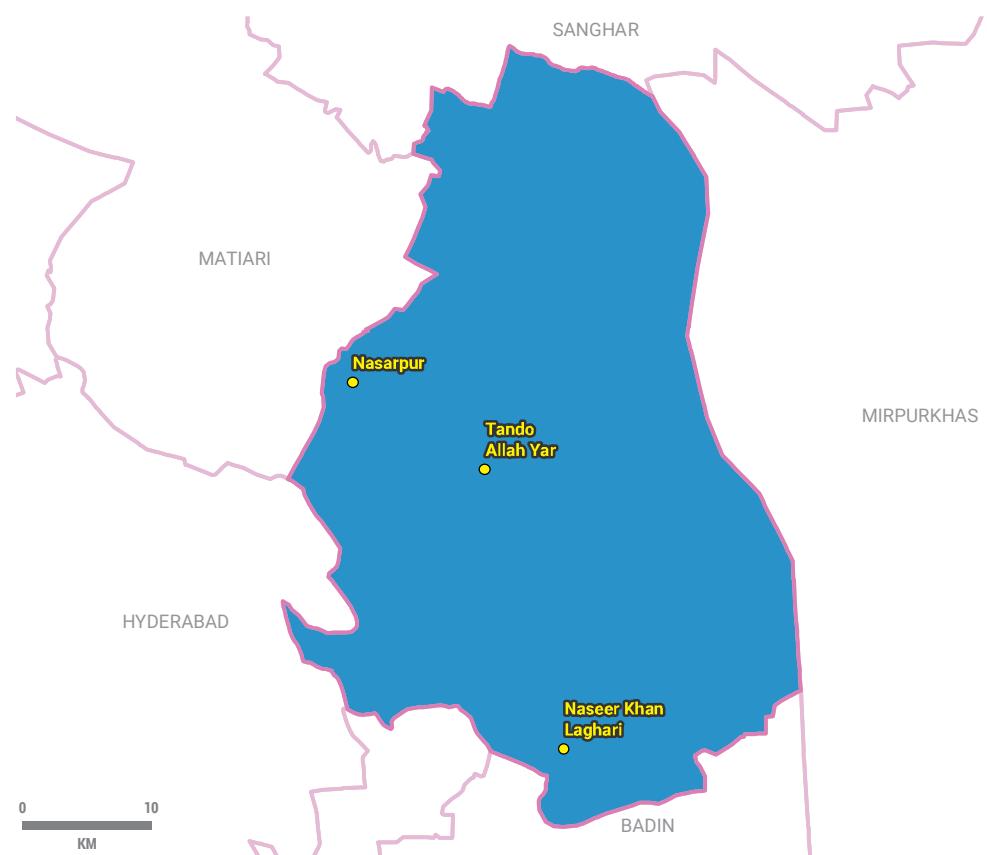
# METEOROLOGICAL DROUGHT

## RISK 50 YEARS

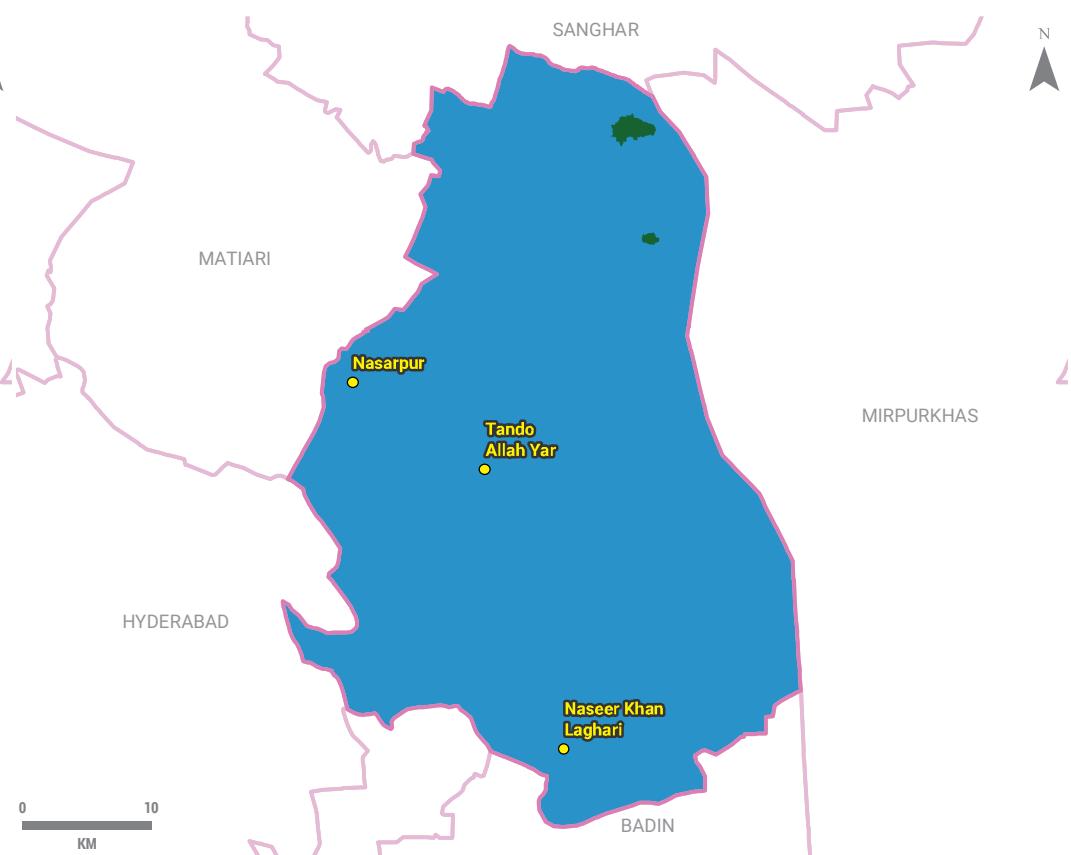


# AGRICULTURAL DROUGHT

## HAZARD 05 YEARS

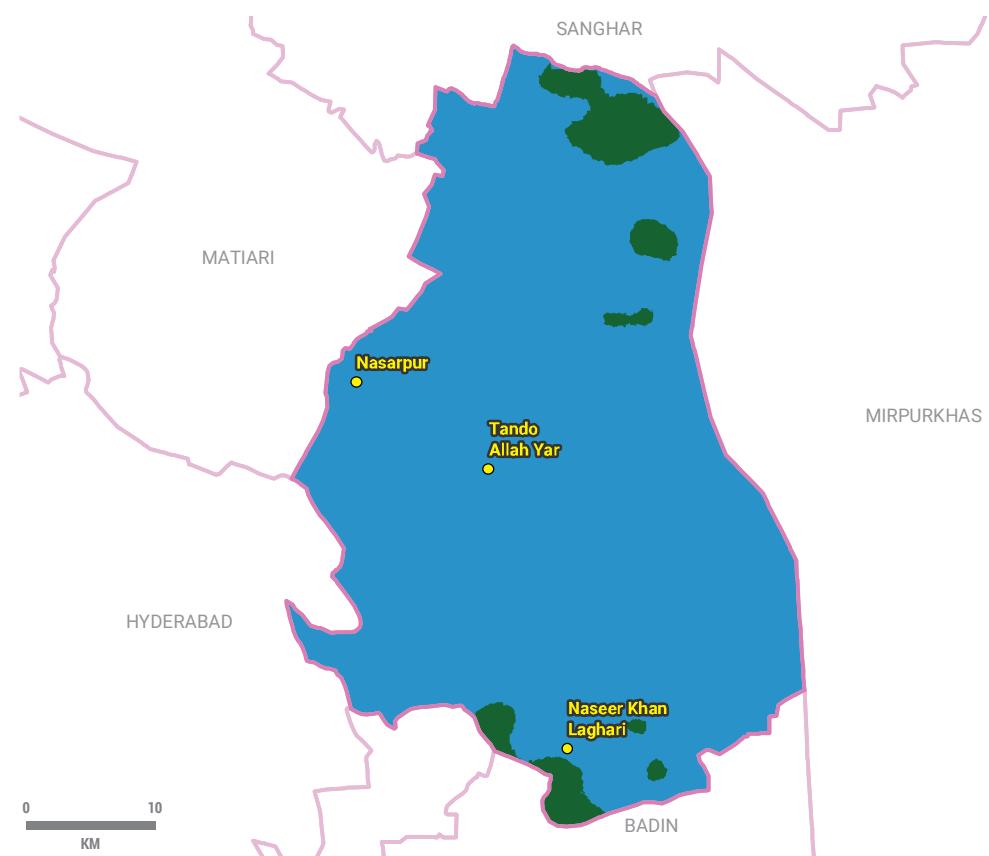


## HAZARD 10 YEARS

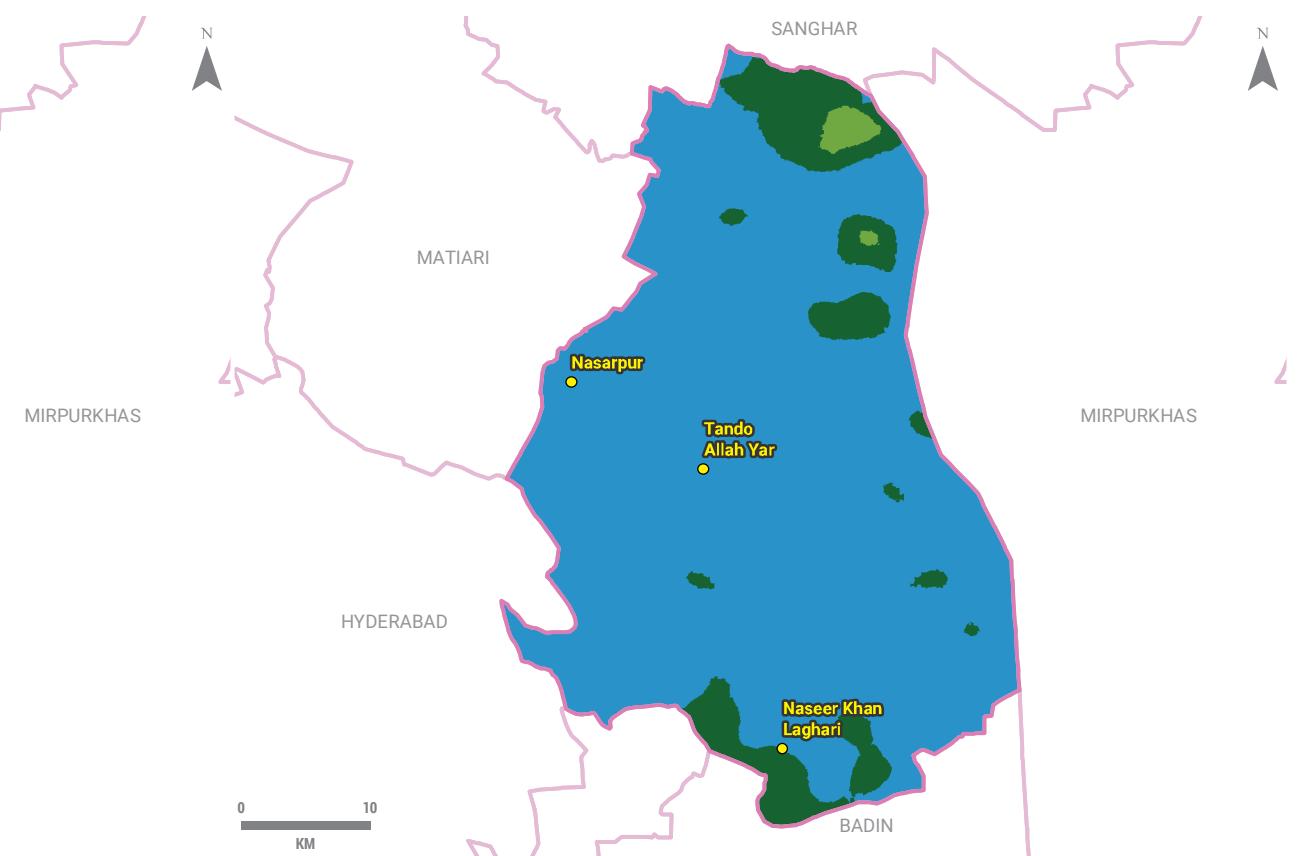


## AGRICULTURAL DROUGHT

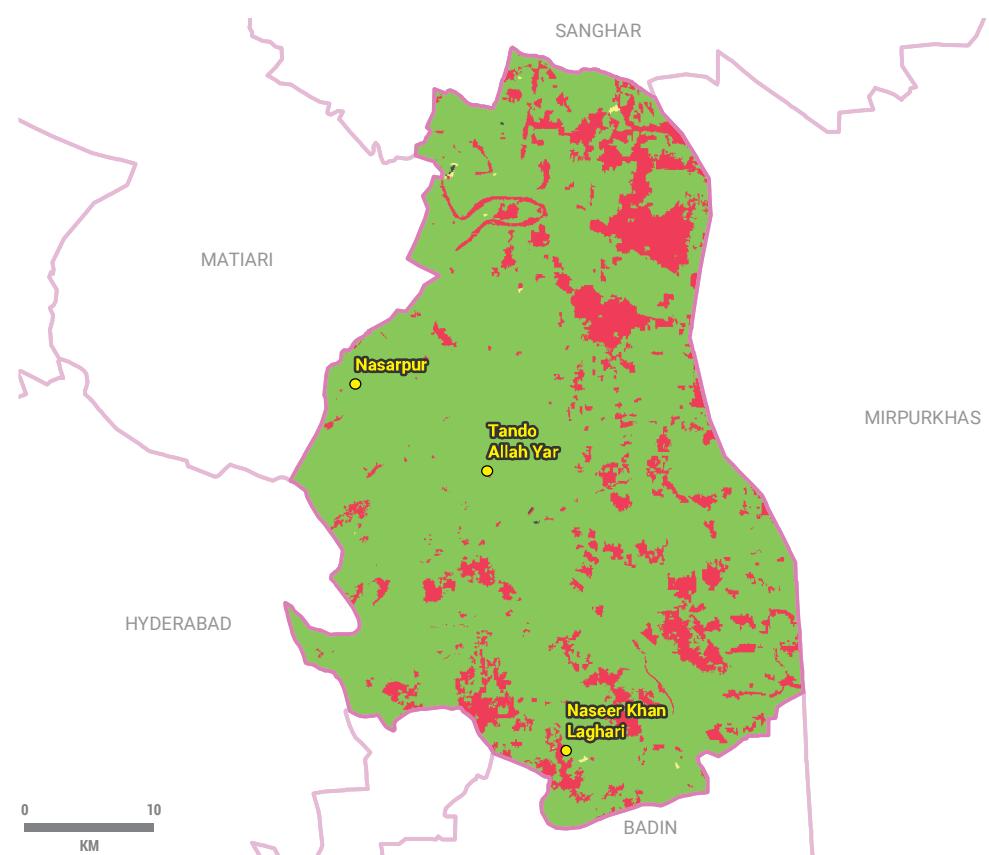
## HAZARD 25 YEARS



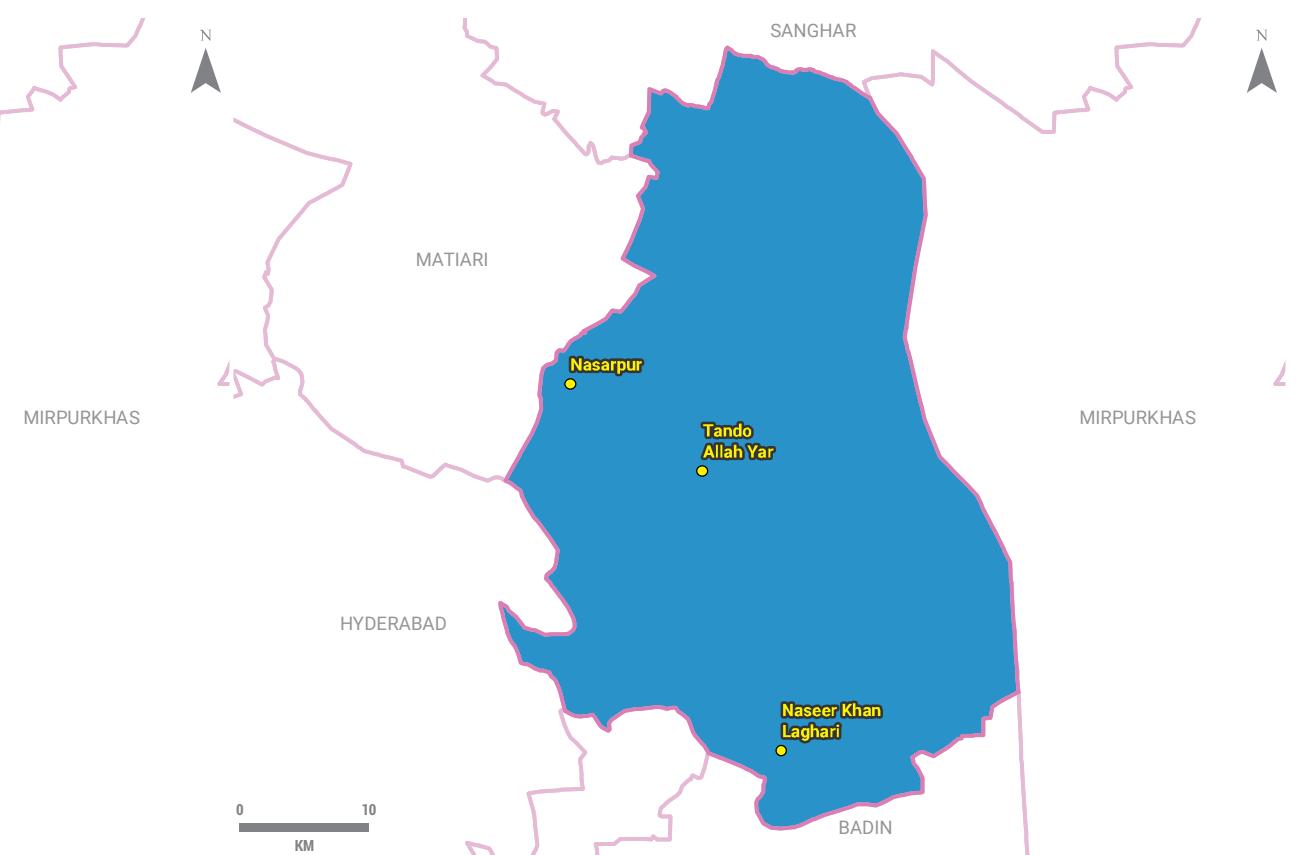
## HAZARD 50 YEARS



## VULNERABILITY



## RISK 05 YEARS



**HAZARD**

No Hazard	Mild	Moderate
Severe	Extremely	

**VULNERABILITY**

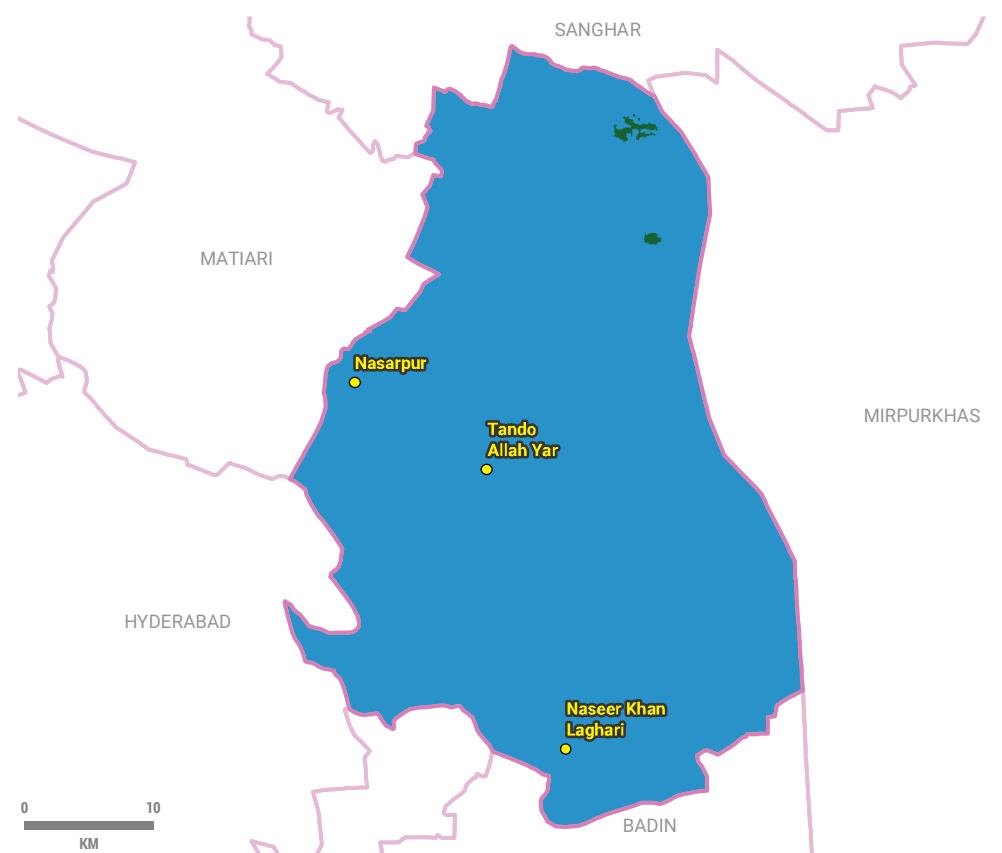
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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**RISK**

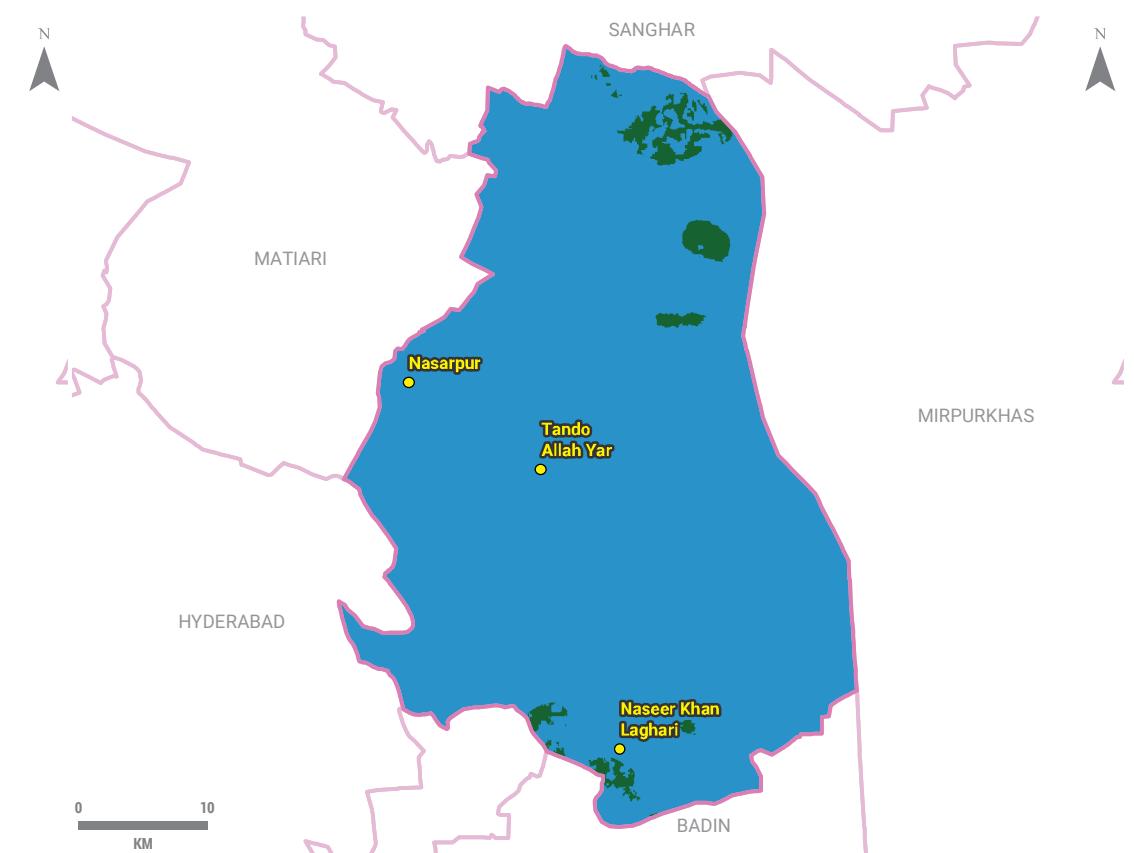
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

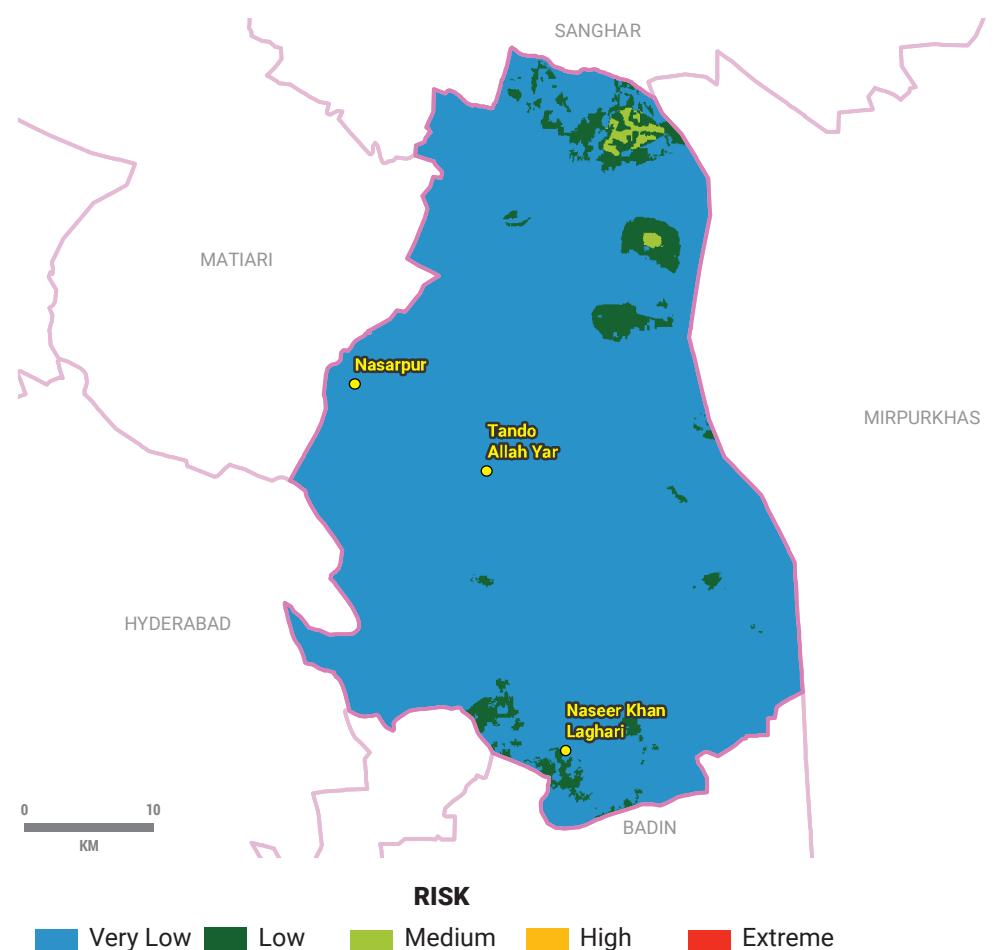
## RISK 10 YEARS



## RISK 25 YEARS



## RISK 50 YEARS

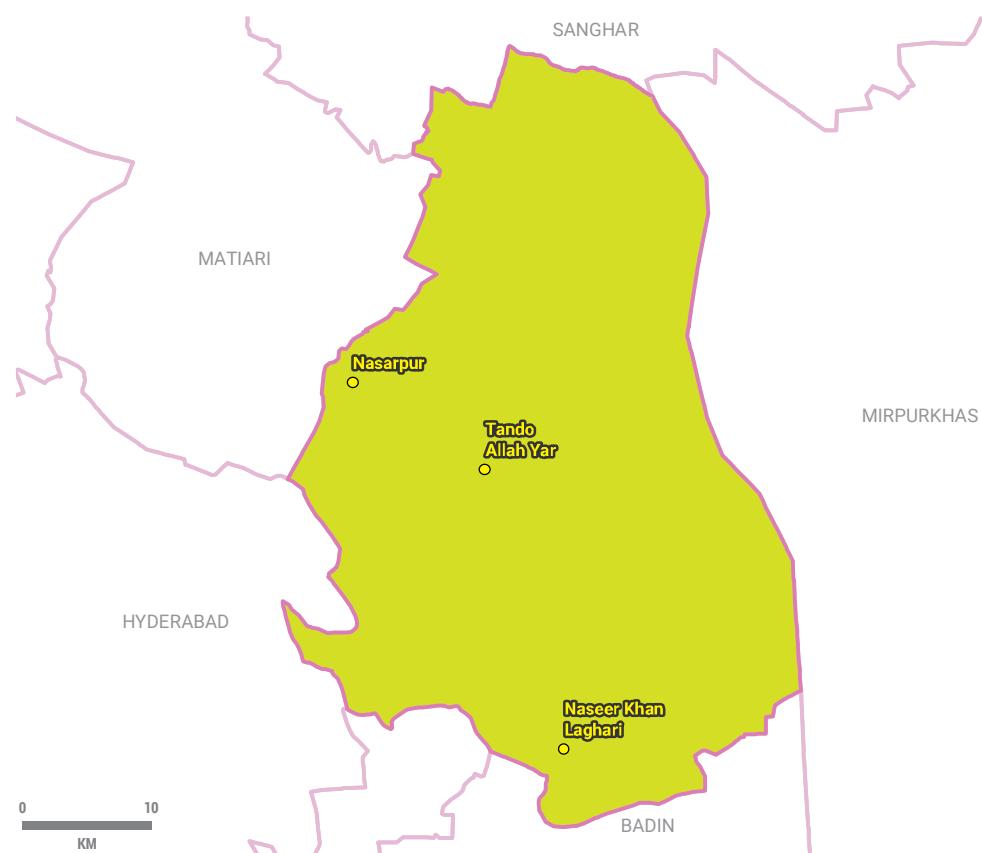


**RISK**

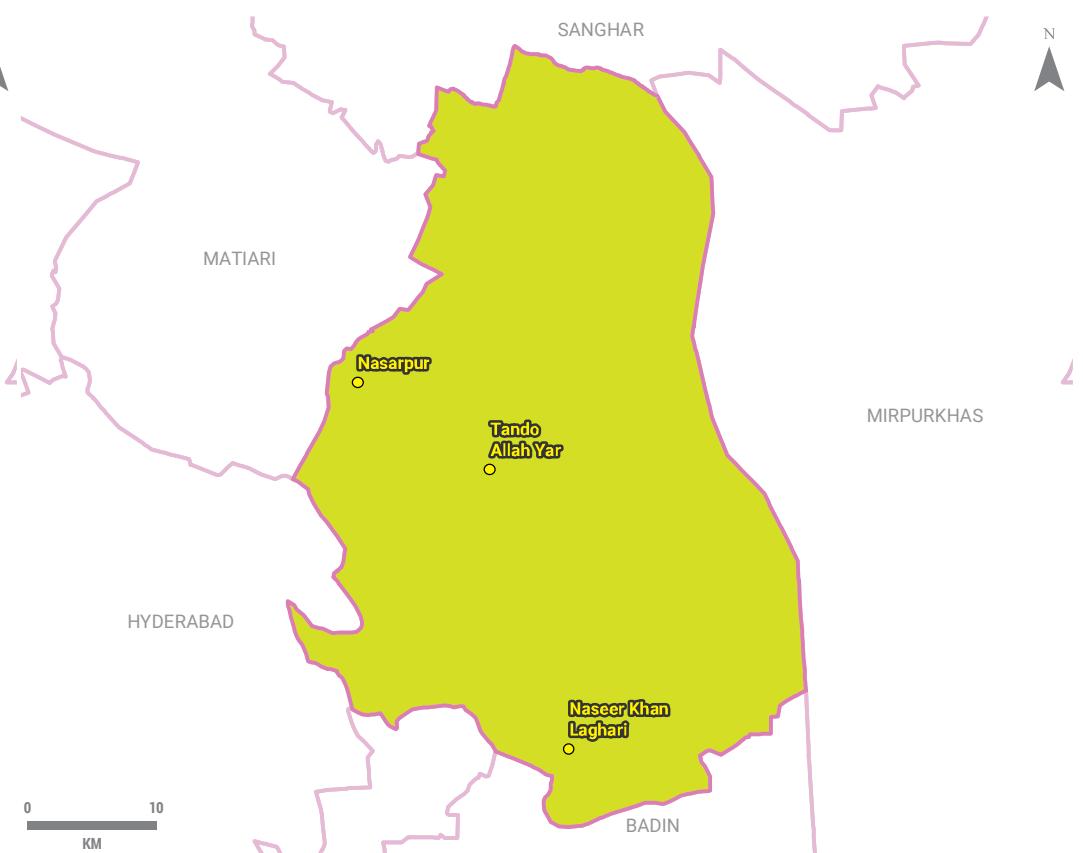
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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## HEATWAVE

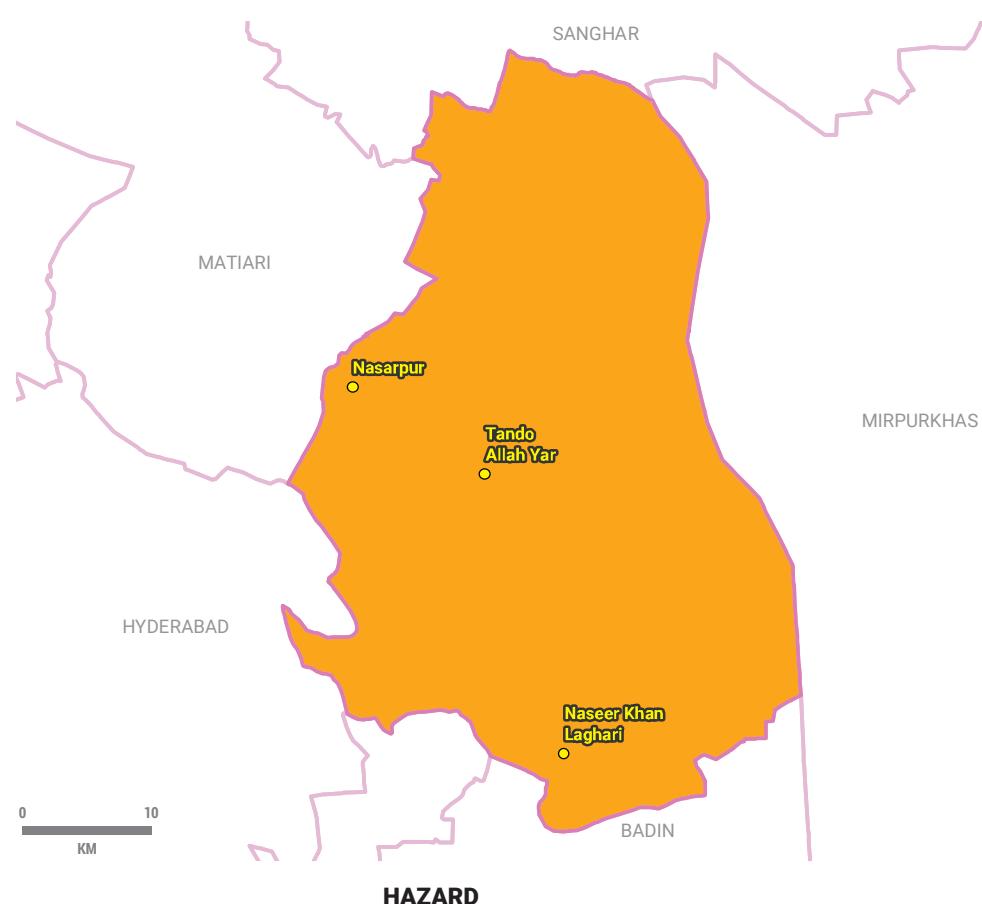
## HAZARD 05 YEARS



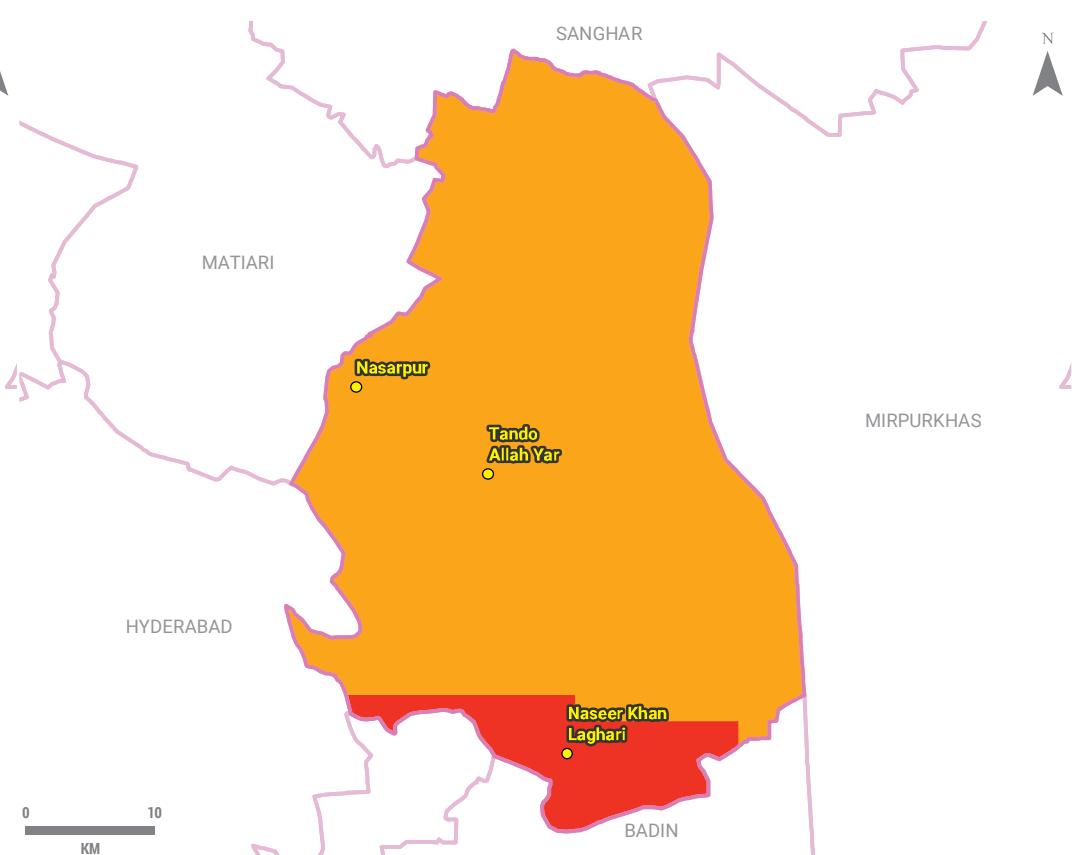
## HAZARD 10 YEARS



## HAZARD 25 YEARS



## HAZARD 50 YEARS

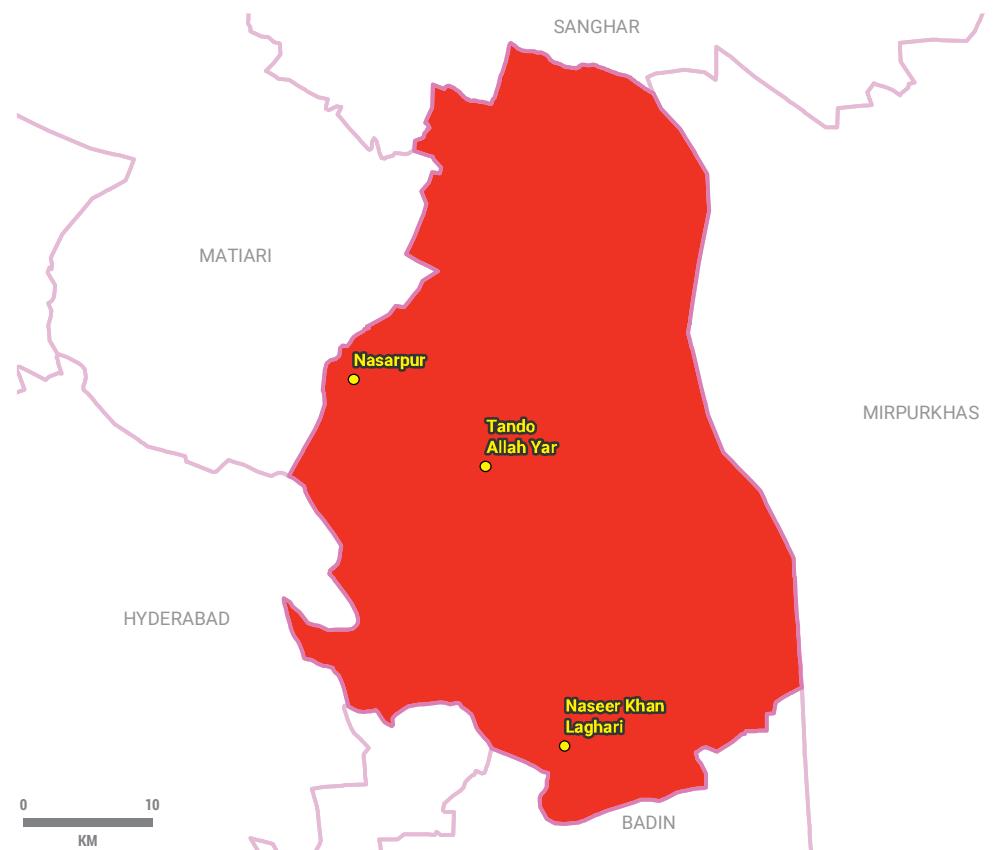


**HAZARD**

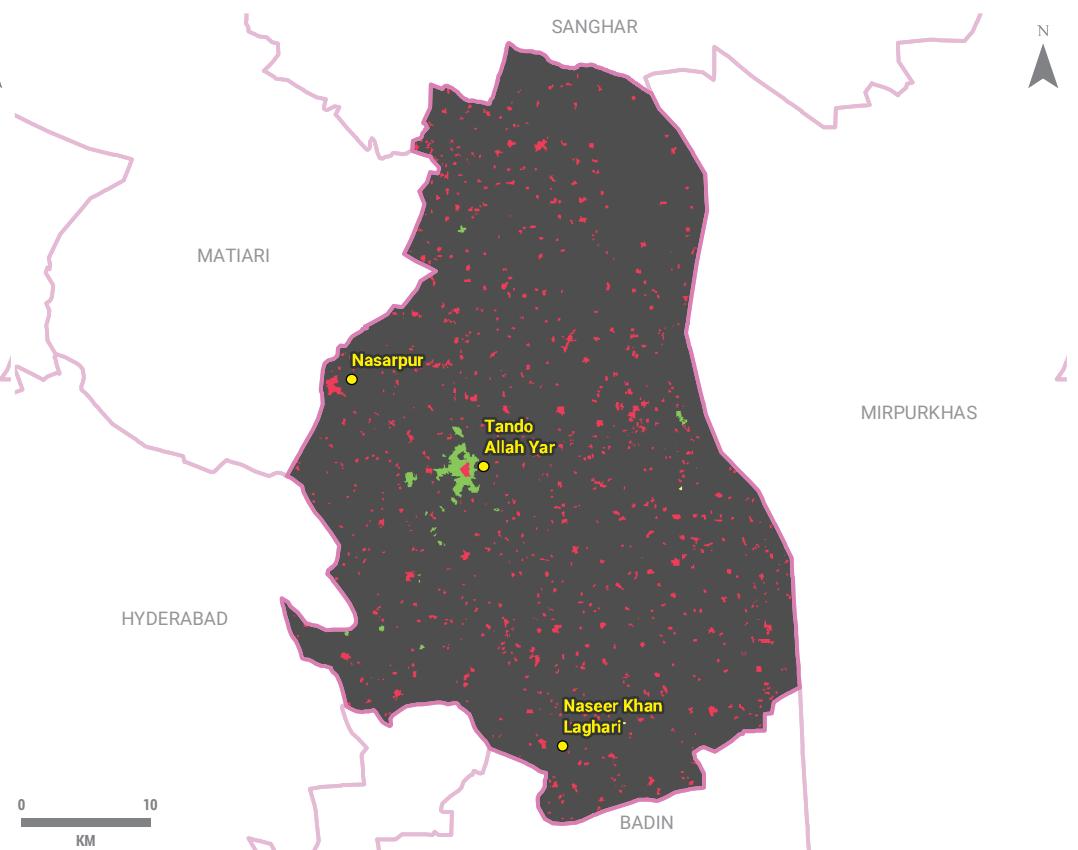
Normal    Moderate    High    Severe    Extreme

# HEATWAVE

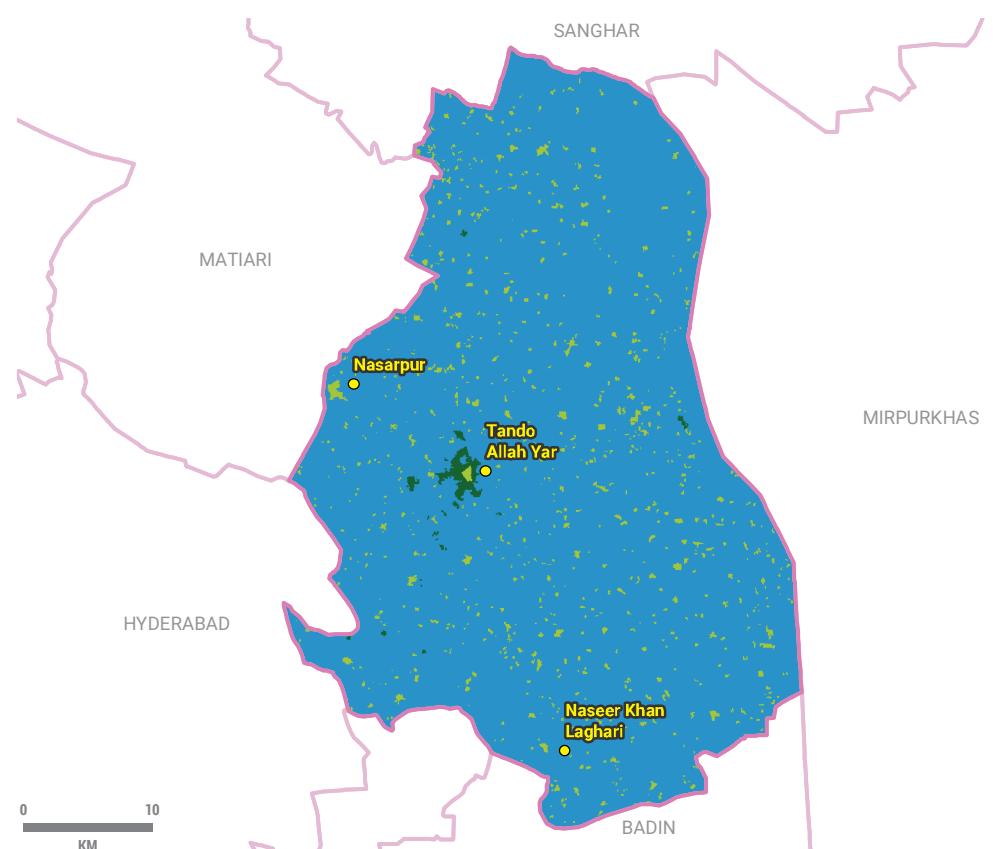
## HAZARD 100 YEARS



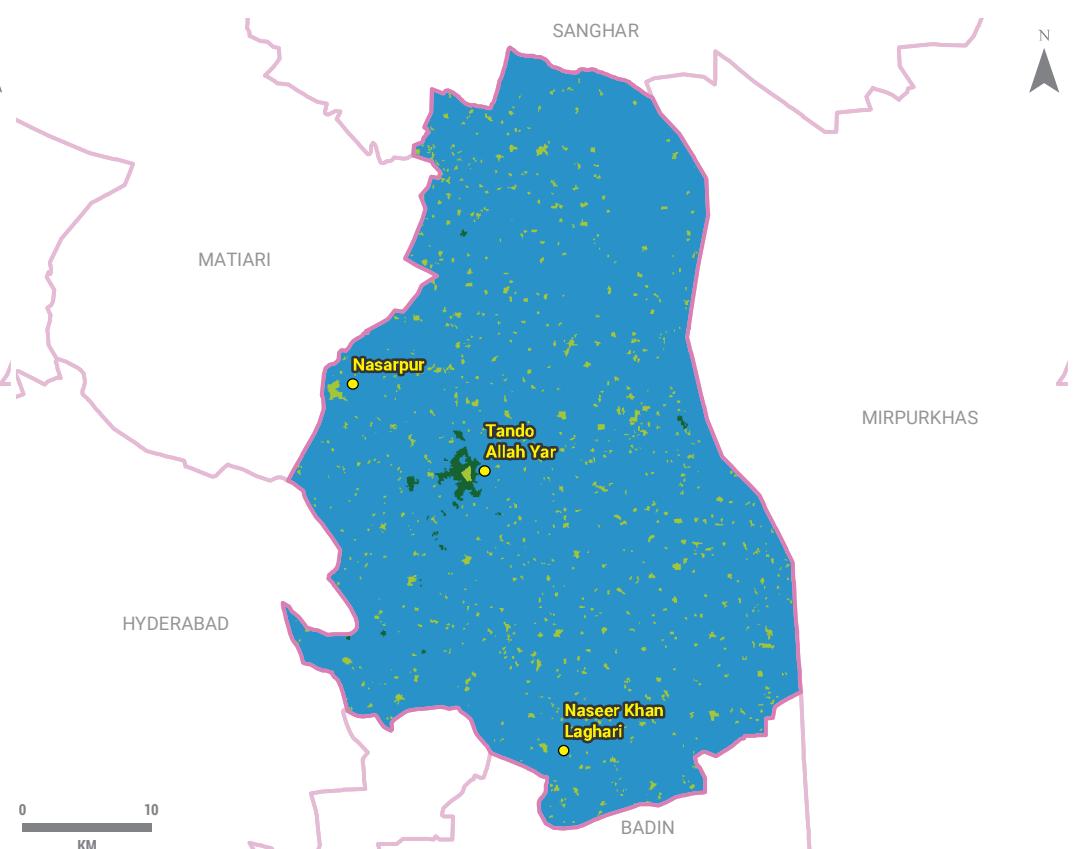
## VULNERABILITY



## RISK 05 YEARS



## RISK 10 YEARS



<b>HAZARD</b>			<b>VULNERABILITY</b>			<b>RISK</b>					
Normal	Moderate	High	None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100	Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
Severe	Extreme										

## HEATWAVE

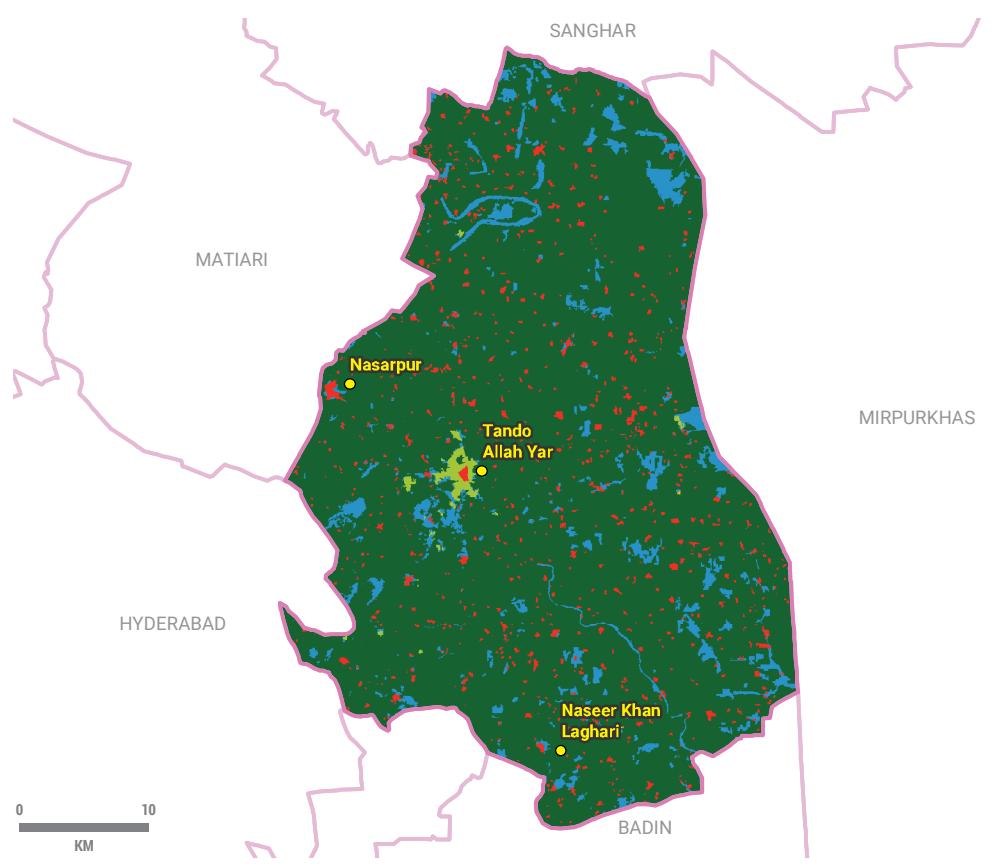
## RISK 25 YEARS



## RISK 50 YEARS



## RISK 100 YEARS

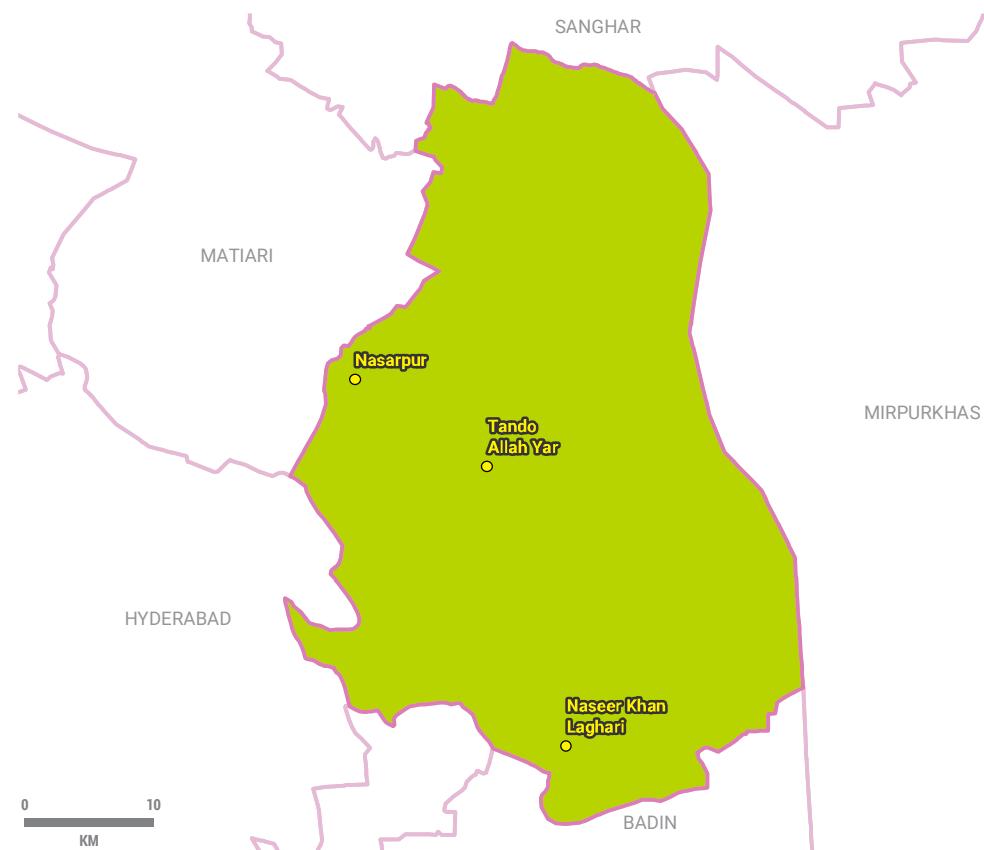


## RISK

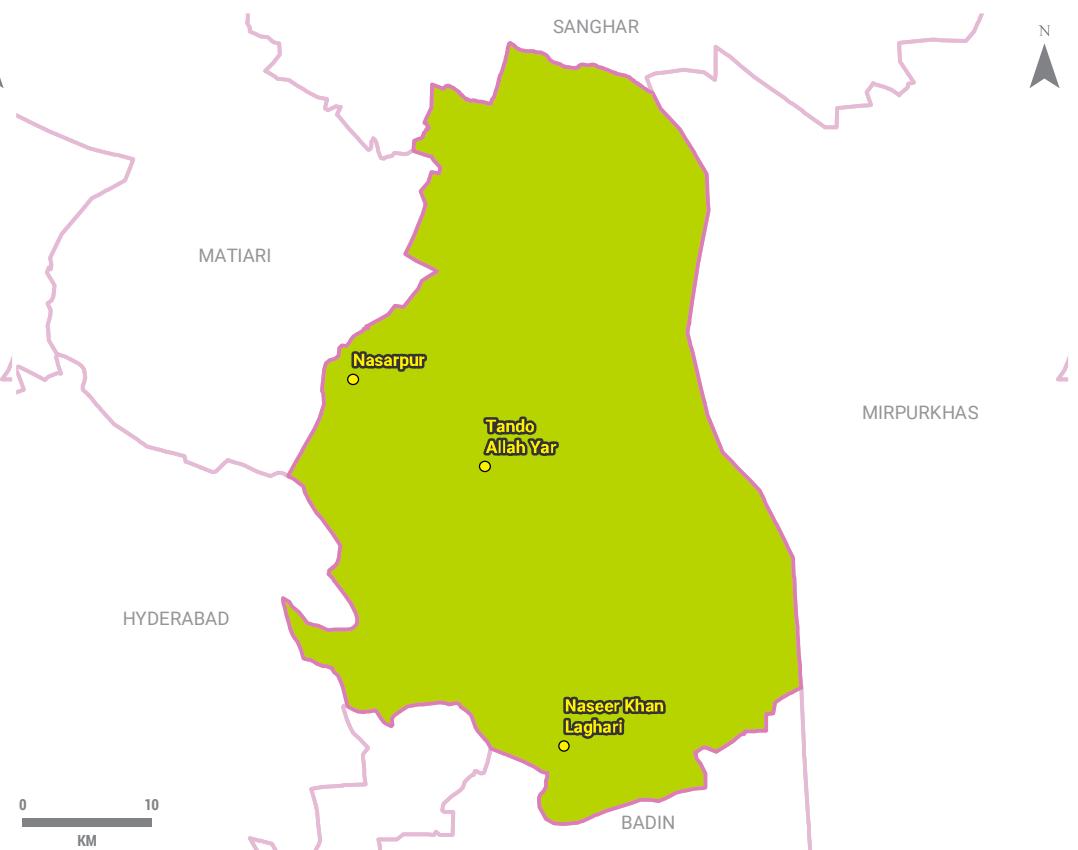
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# CYCLONE

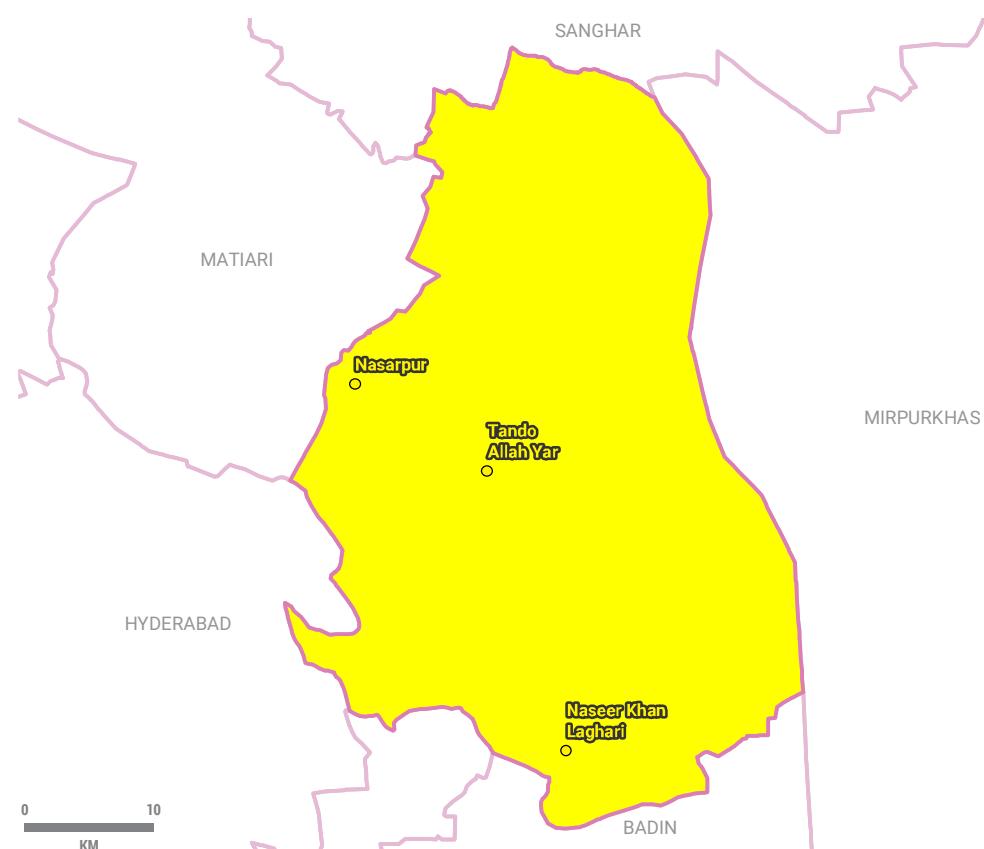
## HAZARD 25 YEARS



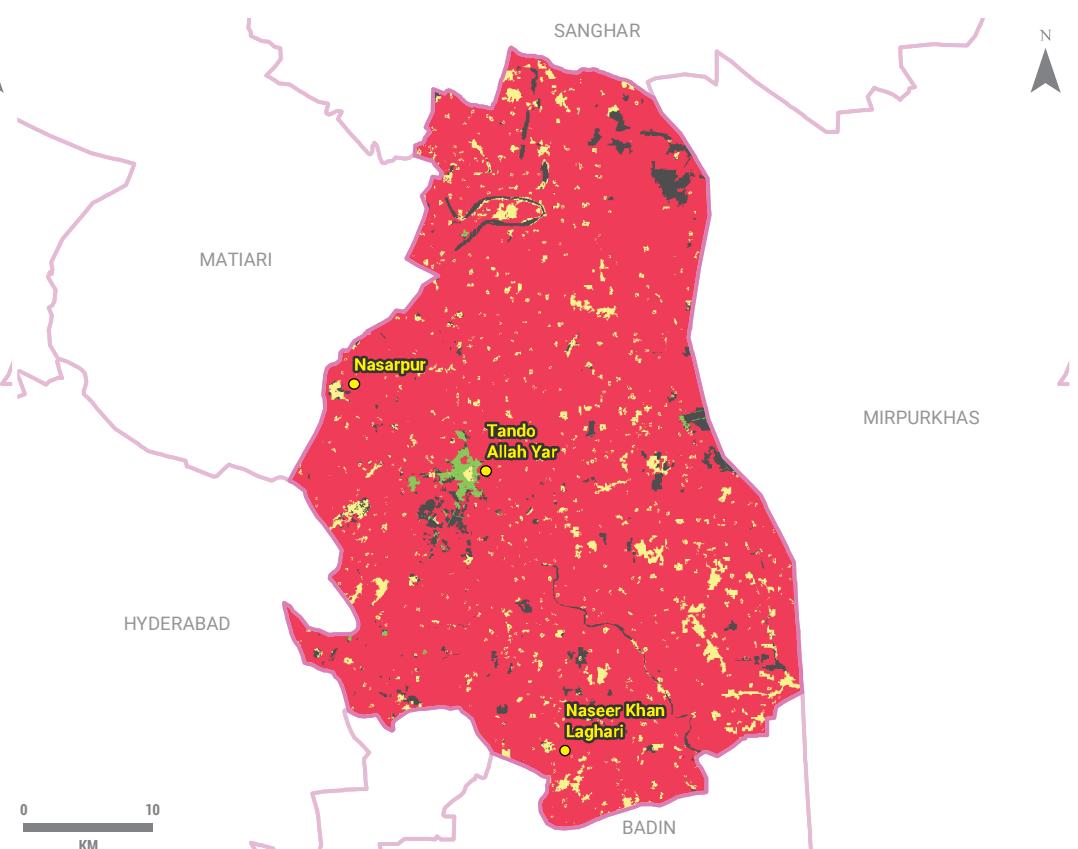
## HAZARD 100 YEARS



## HAZARD 500 YEARS



## VULNERABILITY



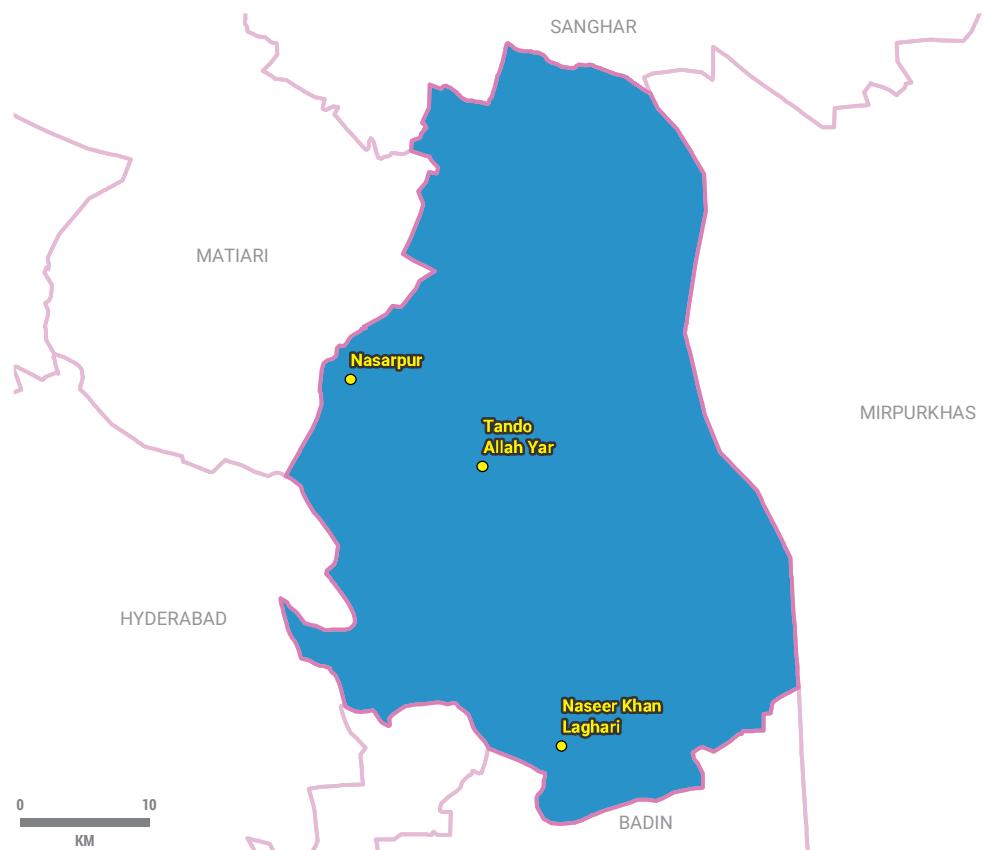
### HAZARD

Calm Wind	Tropical Depression	Tropical Storm	Cat-1 TC	Cat-2 TC	Cat-3 TC	Cat-4 TC	Cat-5 TC	None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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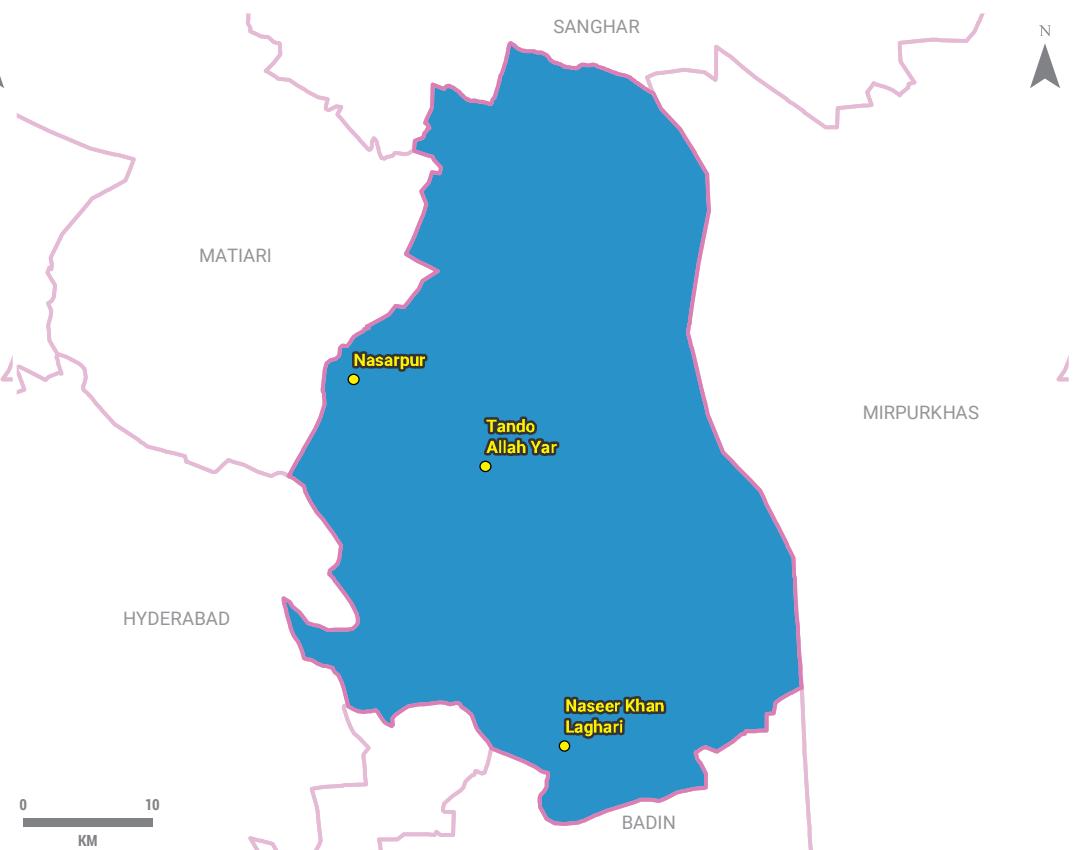
### VULNERABILITY

## CYCLONE

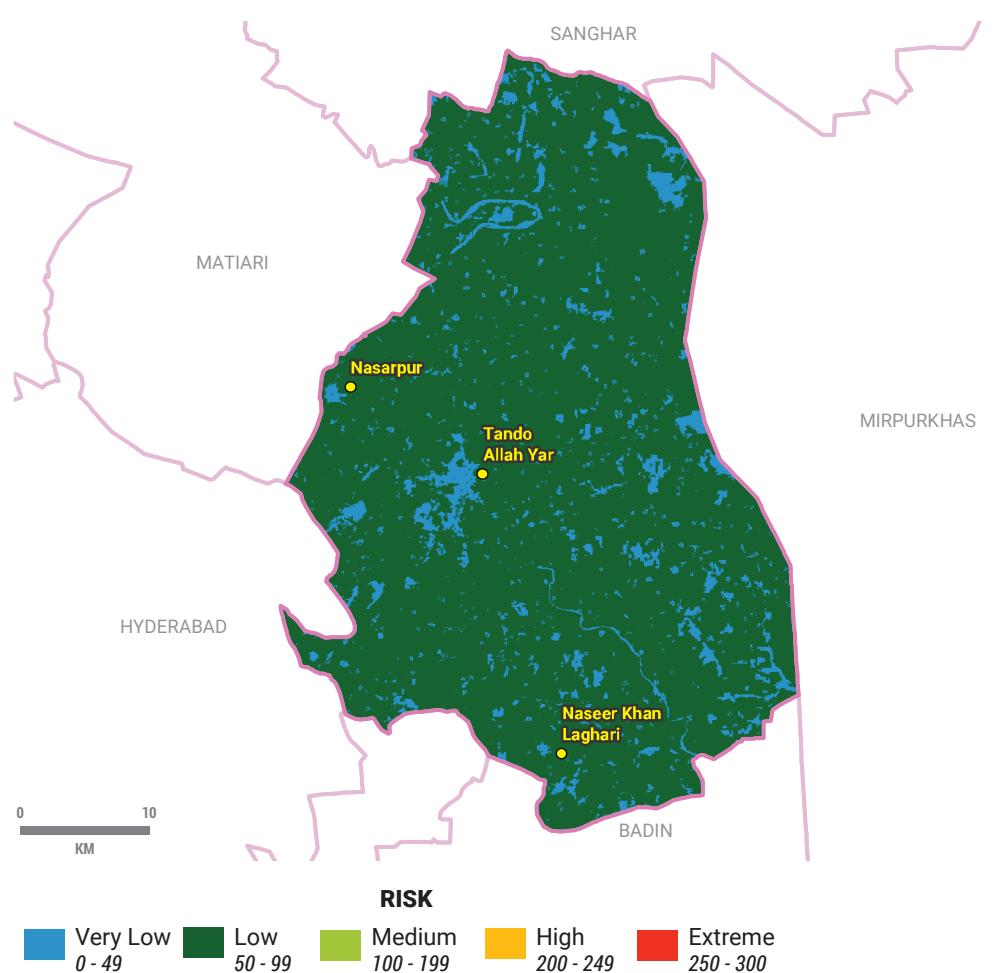
## RISK 25 YEARS



## RISK 100 YEARS



## RISK 500 YEARS



## RISK

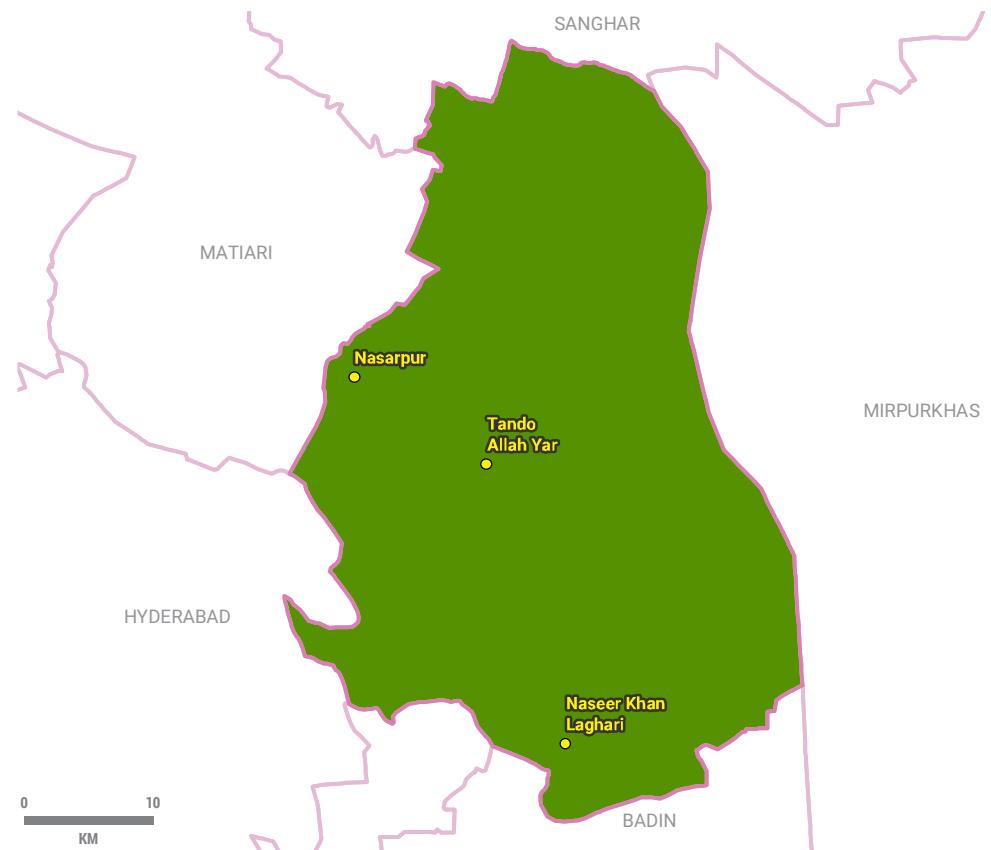
	Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300

# STORM SURGE

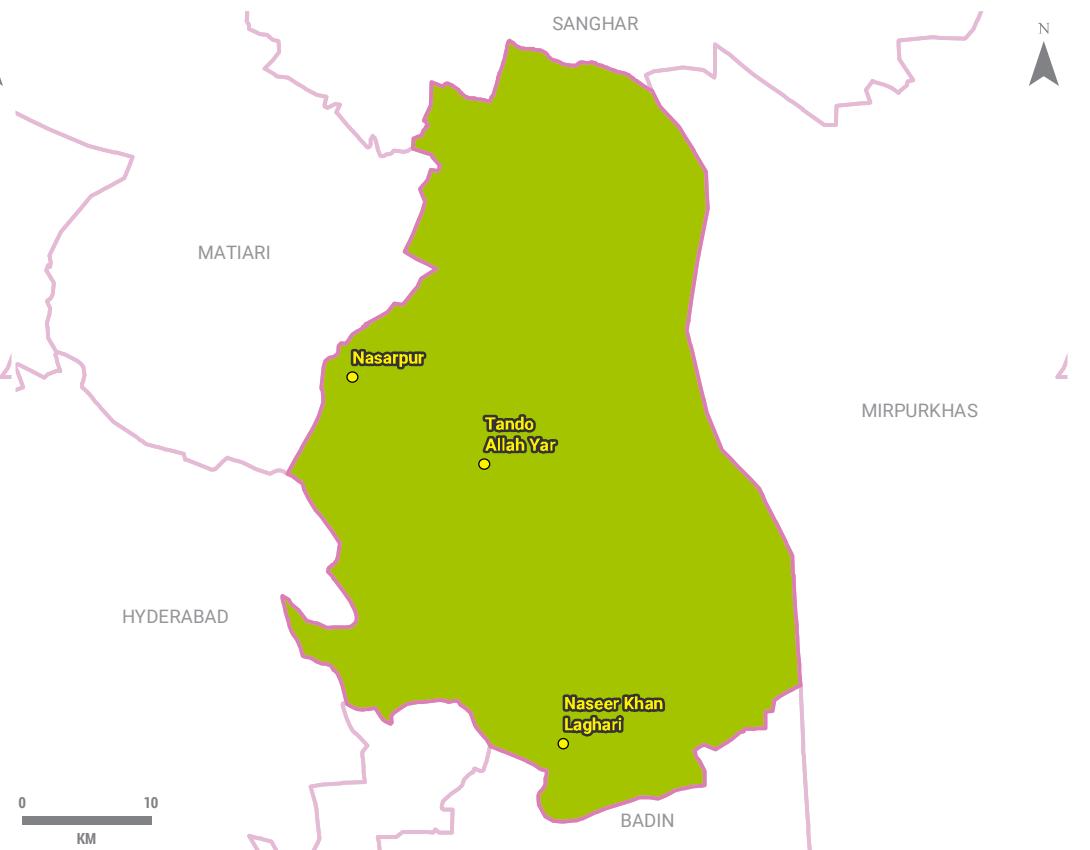
There is no hazard / risk of storm surge in this district

# EARTHQUAKE

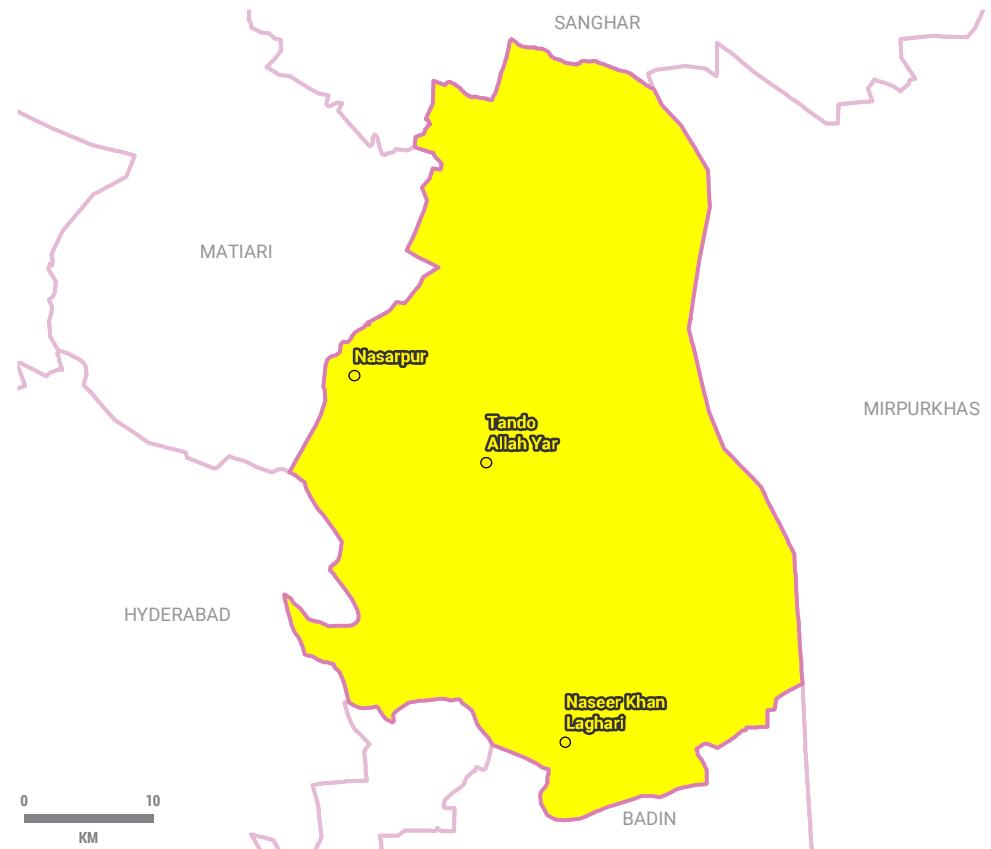
## HAZARD 95 YEARS



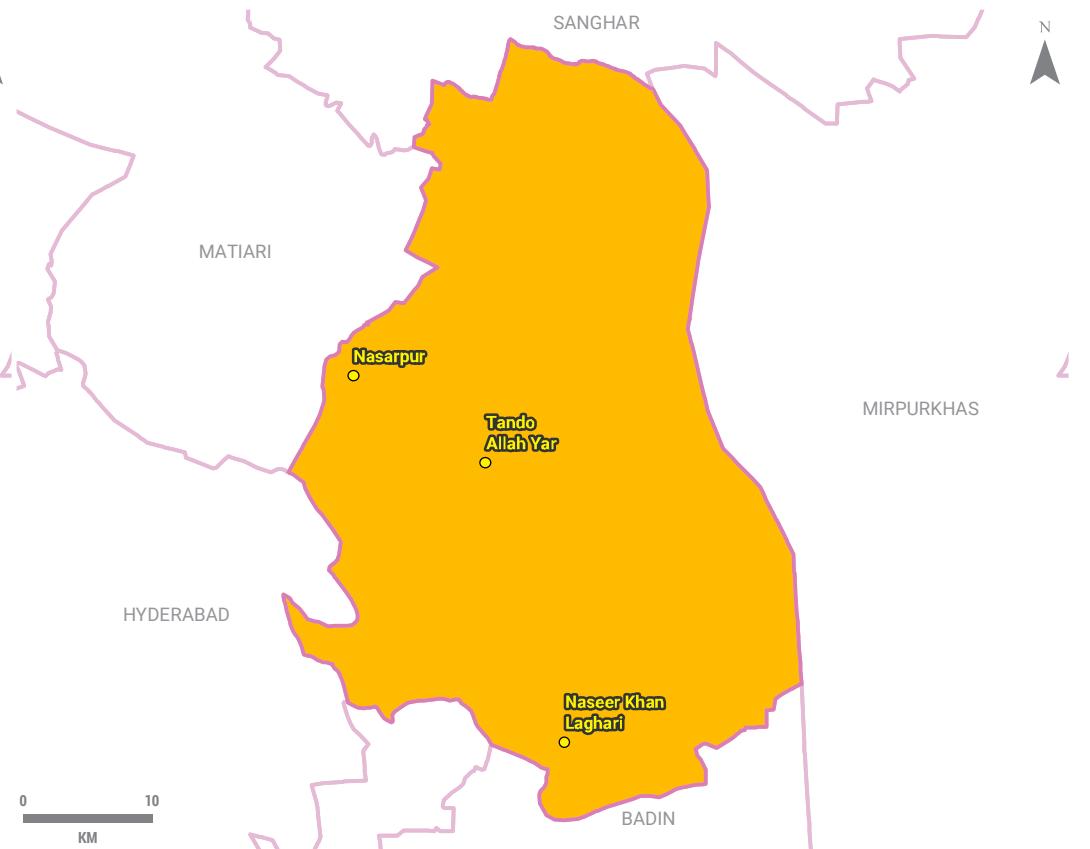
## HAZARD 475 YEARS



## HAZARD 975 YEARS



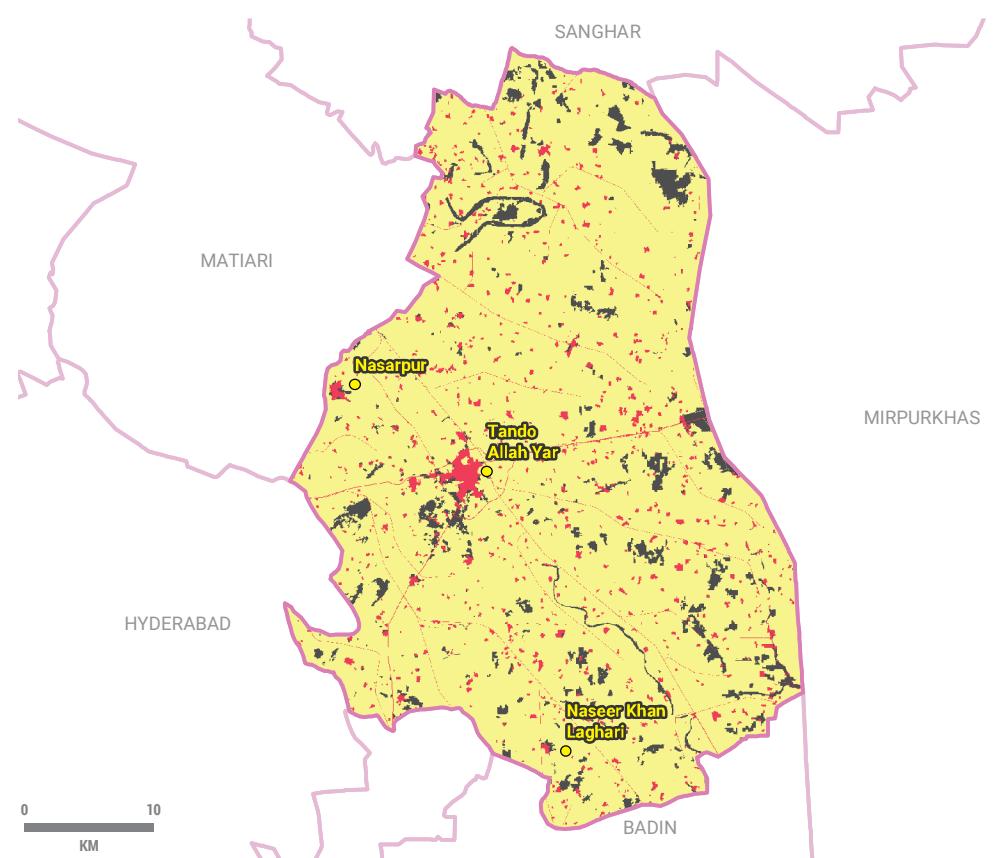
## HAZARD 2475 YEARS



HAZARD ZONE	ZONE 1	ZONE 2A	ZONE 2B	ZONE 3	ZONE 4	ZONE 5	ZONE 6
PGA VALUE (ACCELERATION)	0.05 - 0.08	0.08 - 0.16	0.16 - 0.24	0.24 - 0.32	>0.32 - 0.45	0.45 - 0.50	0.50 - 0.54
POTENTIAL DAMAGE	Very Light	Very Light-Light	Moderate	Moderate	Moderate-Heavy	Moderate-Heavy	Moderate-Heavy

## EARTHQUAKE

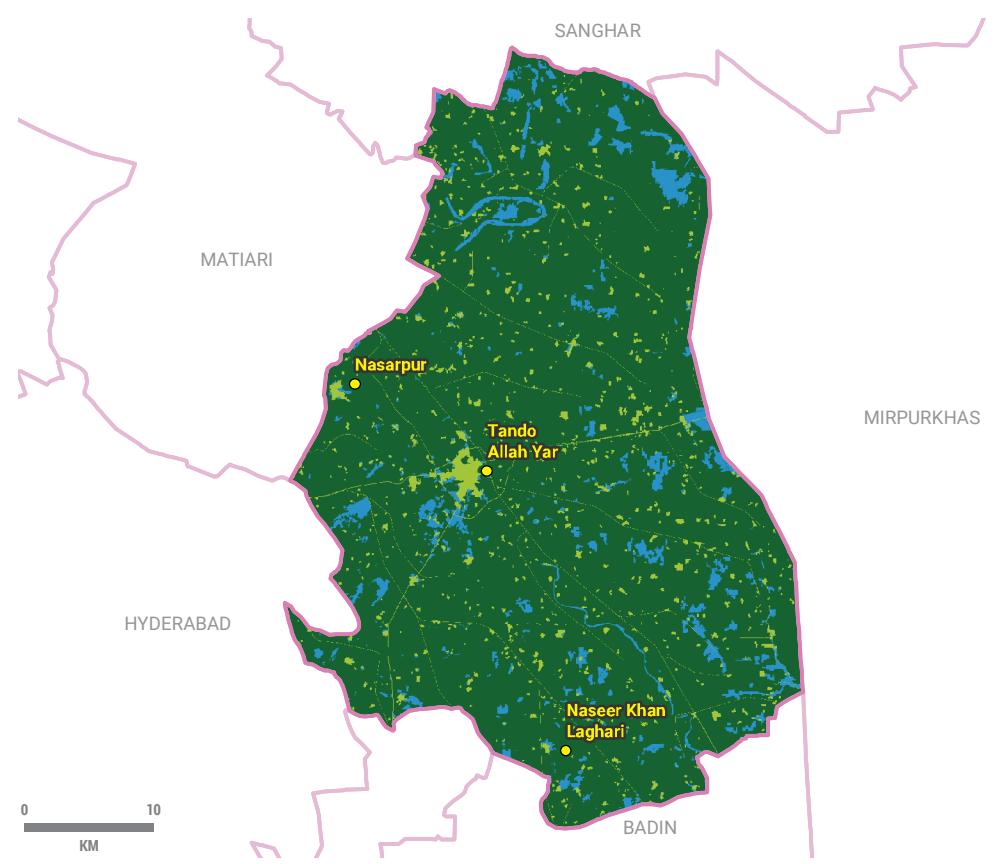
## VULNERABILITY



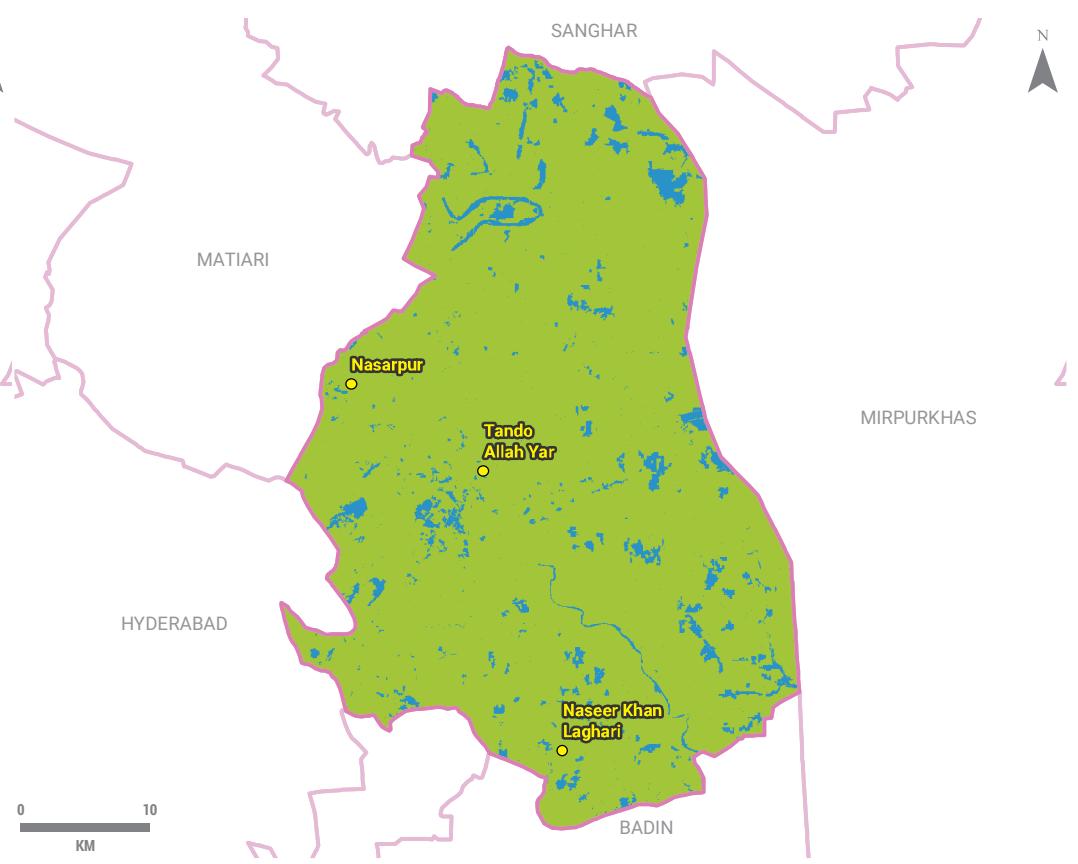
## RISK 95 YEARS



## RISK 475 YEARS



## RISK 975 YEARS



**VULNERABILITY**

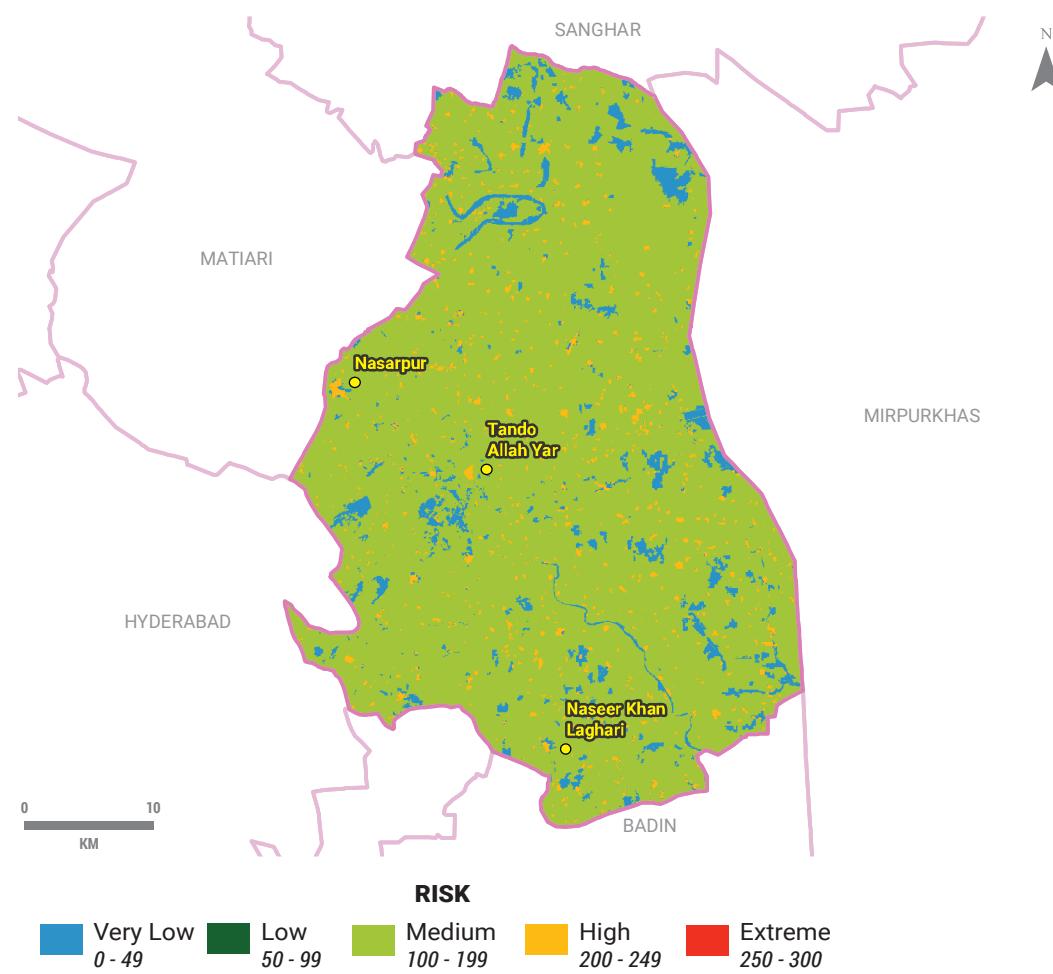
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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**RISK**

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# EARTHQUAKE

## RISK 2475 YEARS

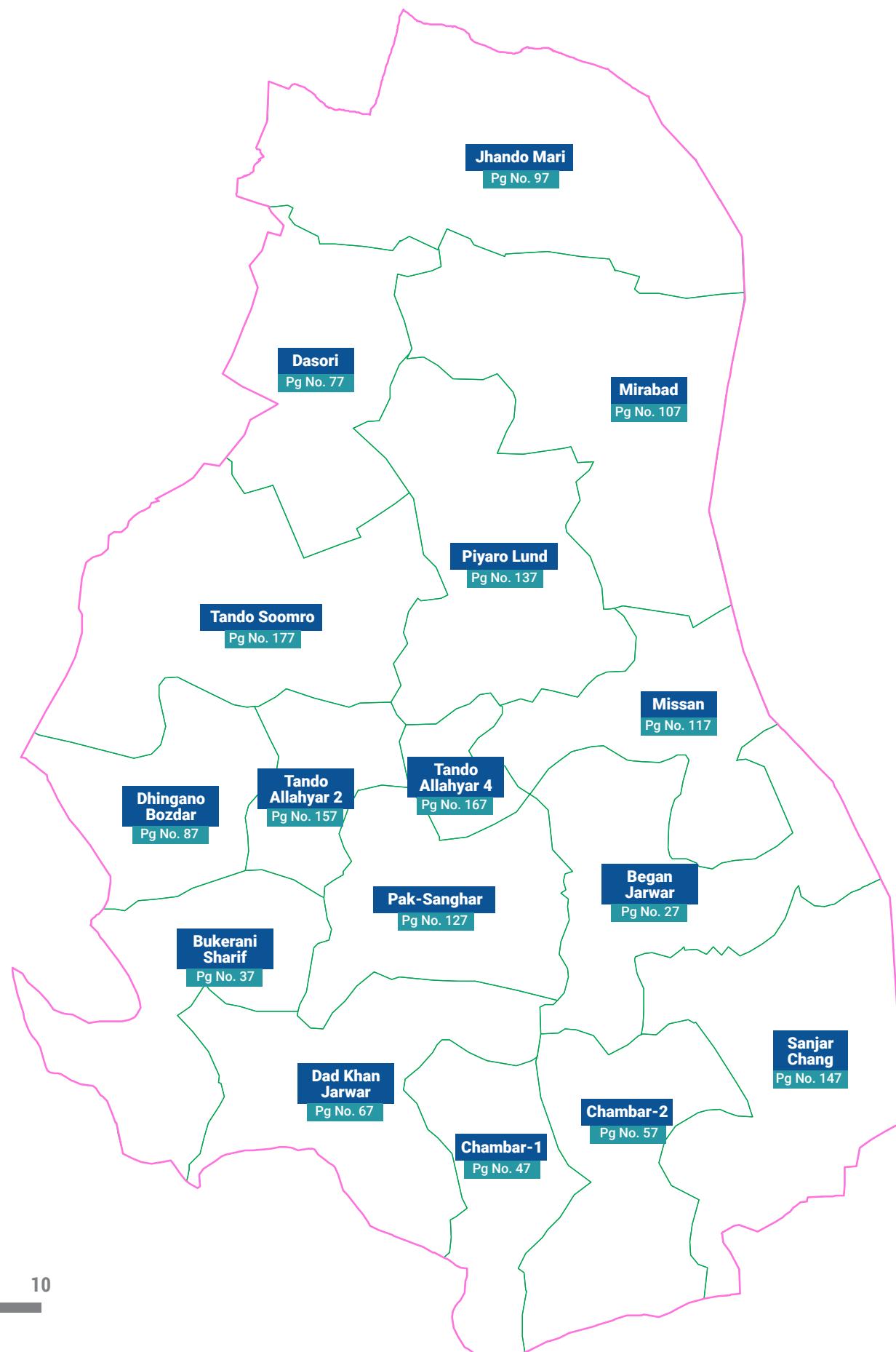


# TSUNAMI

There is no hazard / risk of tsunami in this district

# INDEX MAP

## DISTRICT TANDO ALLAHYAR



Union Council	Pg. No.	Union Council	Pg. No.	Union Council	Pg. No.	Union Council	Pg. No.
Began Jarwar	27	Dad Khan Jarwar	67	Mirabad	107	Sanjar Chang	147
Bukerani Sharif	37	Dasori	77	Missan	117	Tando Allahyar 2	157
Chamber-1	47	Dhingano Bozdar	87	Pak-sanghar	127	Tando Allahyar 4	167
Chamber-2	57	Jhando Mari	97	Piyaro Lund	137	Tando Soomro	177

# UC WISE HAZARD AND RISK ASSESSMENT





## UC - BEGAN JARWAR

 Union Council area in sq. km

105

 Surrounding UCs / Features

**MISSAN** in North  
**CHAMBER-2** in South  
**MIRPURKHAS DISTRICT** in East  
**SANJAR CHANG** in South East  
**PAK-SANGHAR** in West

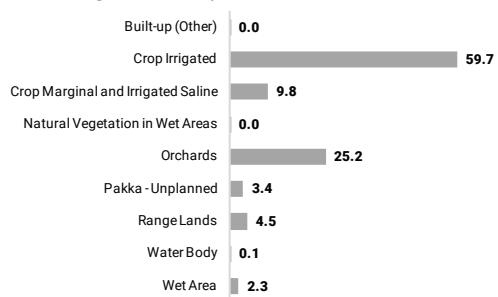
 Population

2017 approx. **44,493**

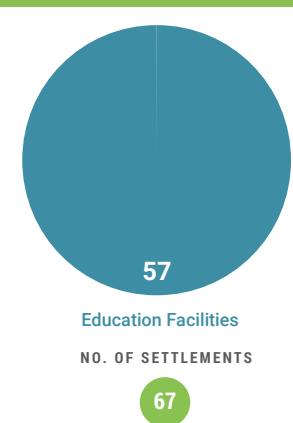
 No. of household

2017 approx. **8,867**

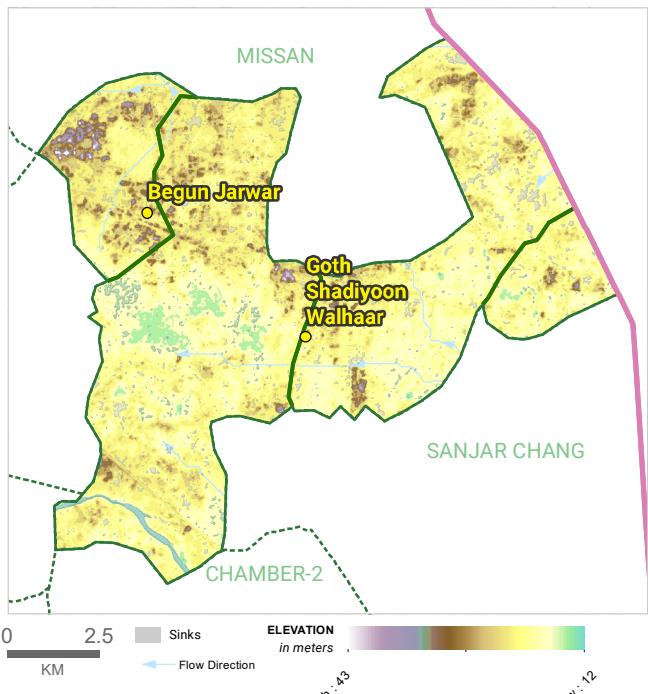
**Land Use Land Cover**  
coverage area in sq.km



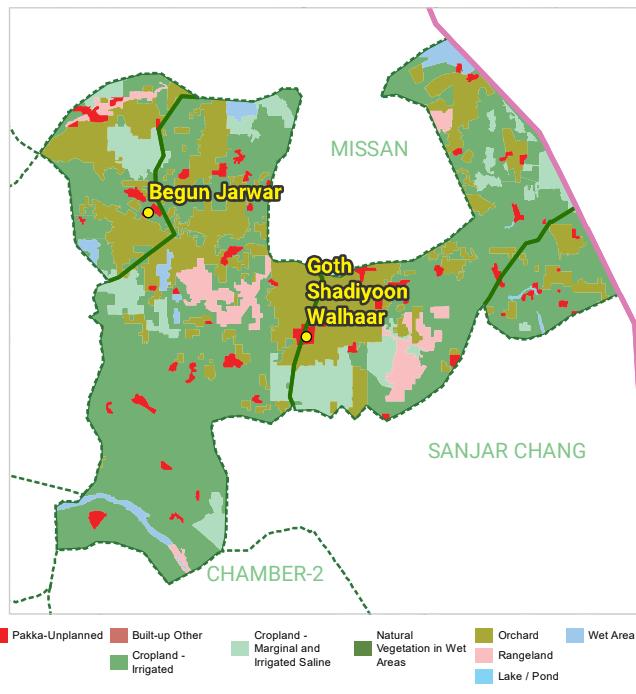
**Critical Infrastructure**



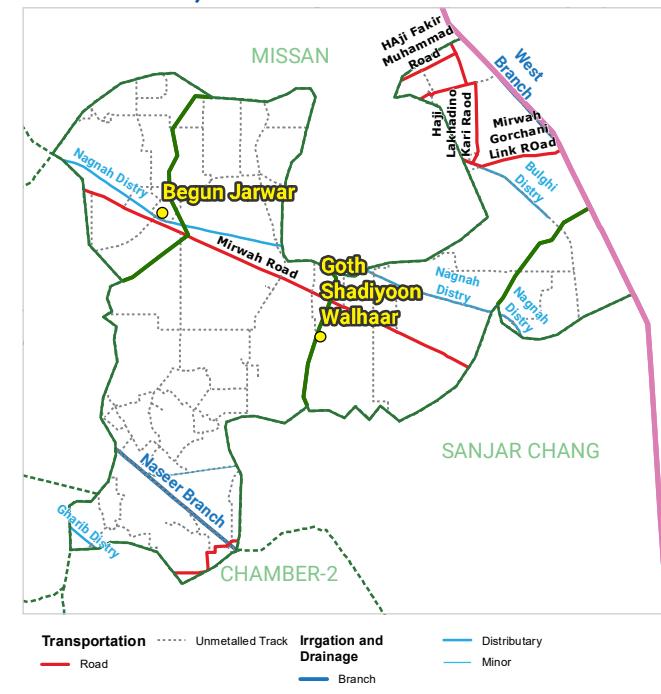
## DEM AND FLOW DIRECTION



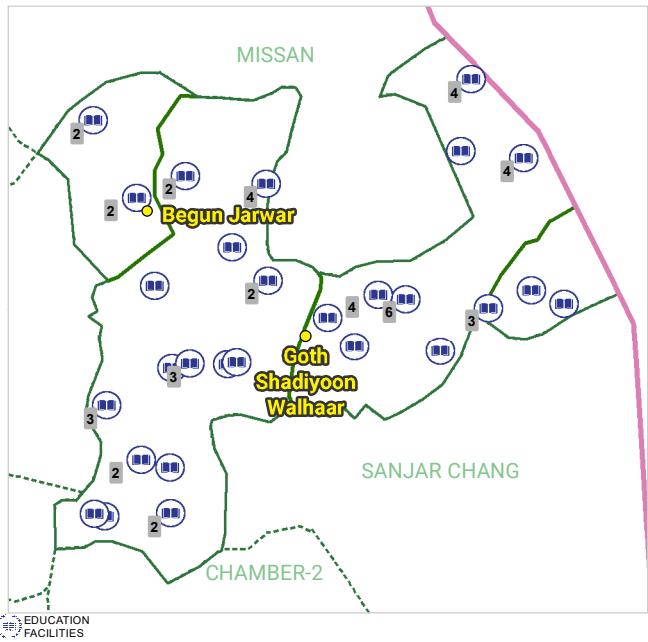
## LAND USE / LAND COVER



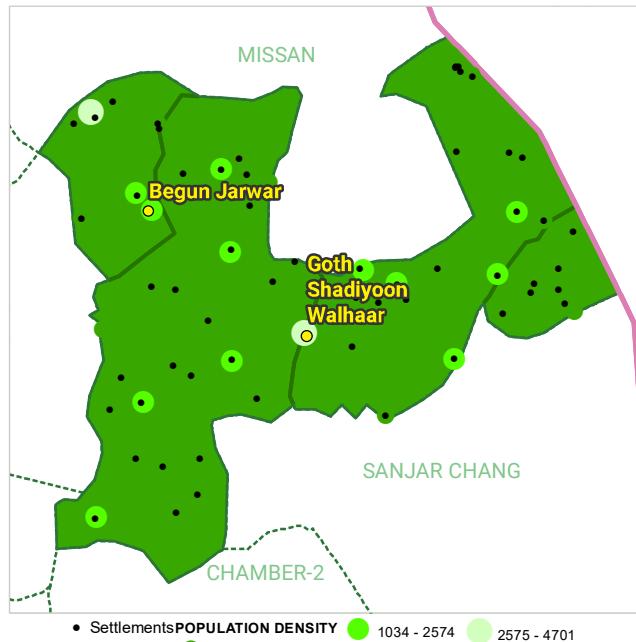
## TRANSPORT, IRRIGATION AND DRAINAGE



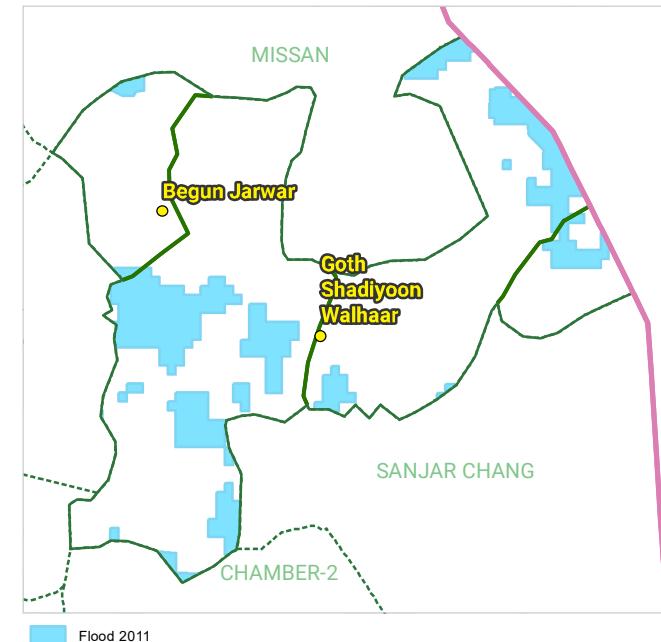
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

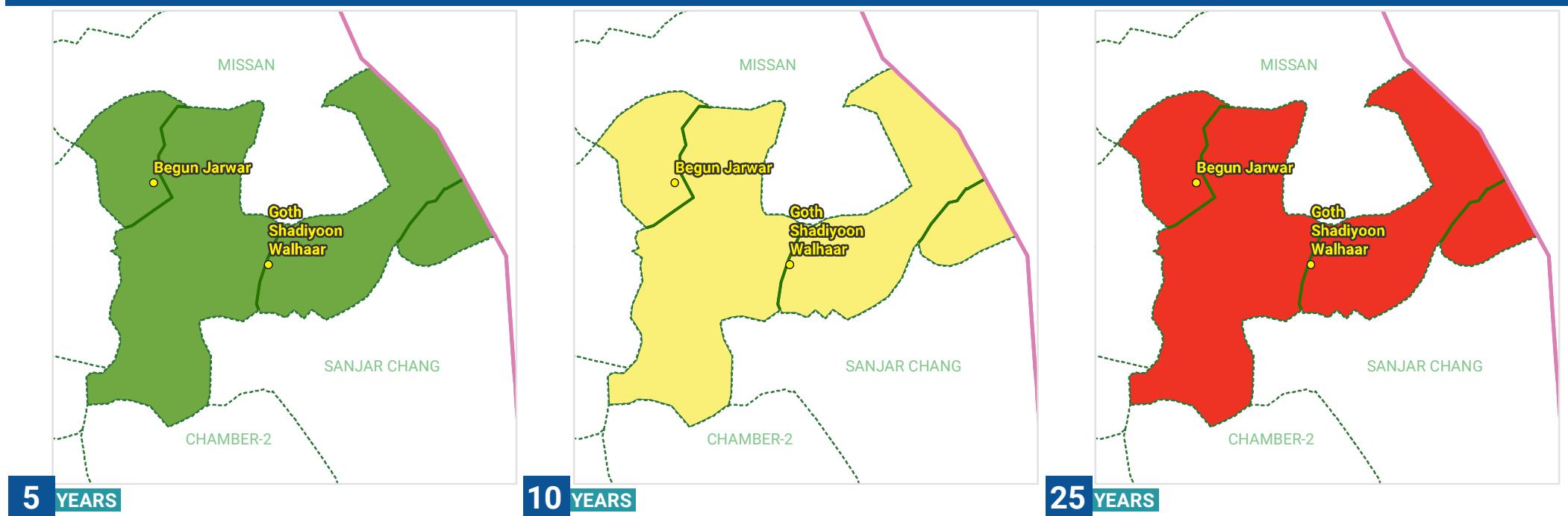


## FLOOD

THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

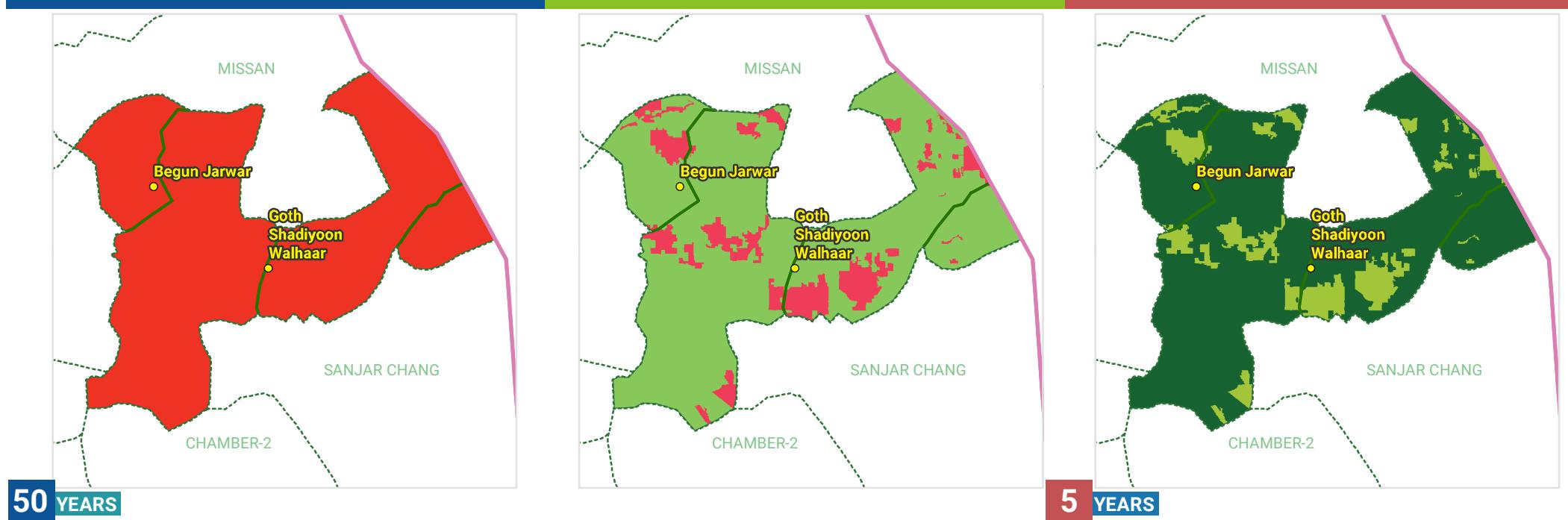
## HAZARD AT DIFFERENT RETURN PERIODS



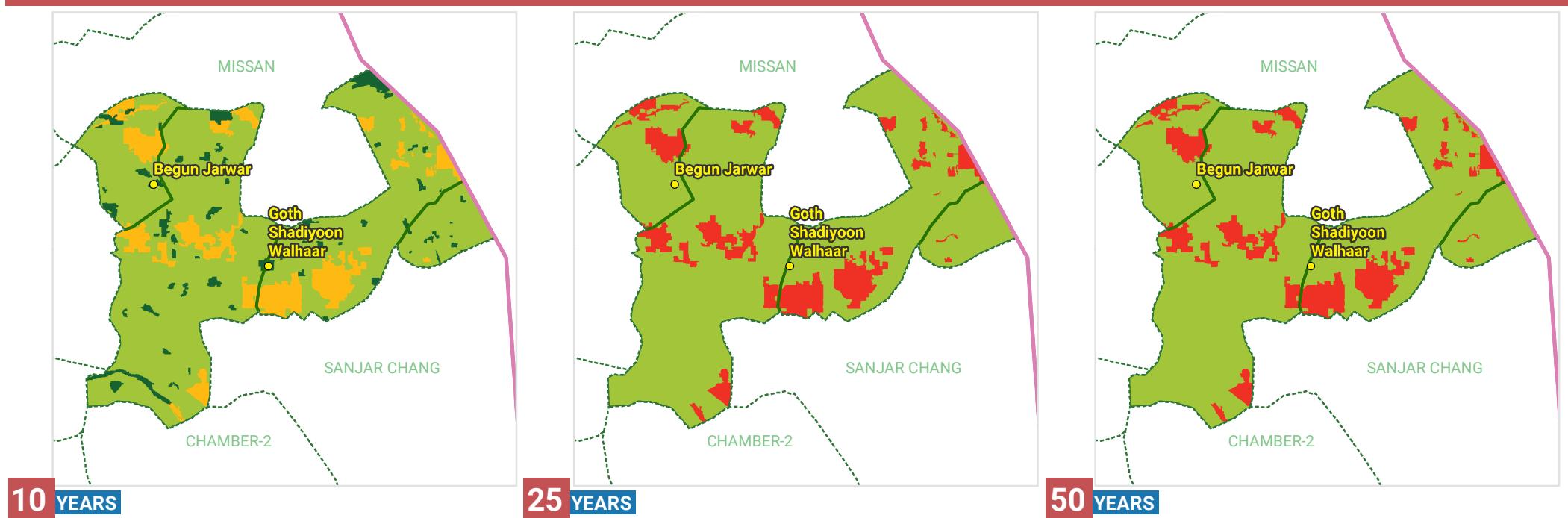
## HAZARD

## VULNERABILITY

## RISK



## RISK AT DIFFERENT RETURN PERIODS



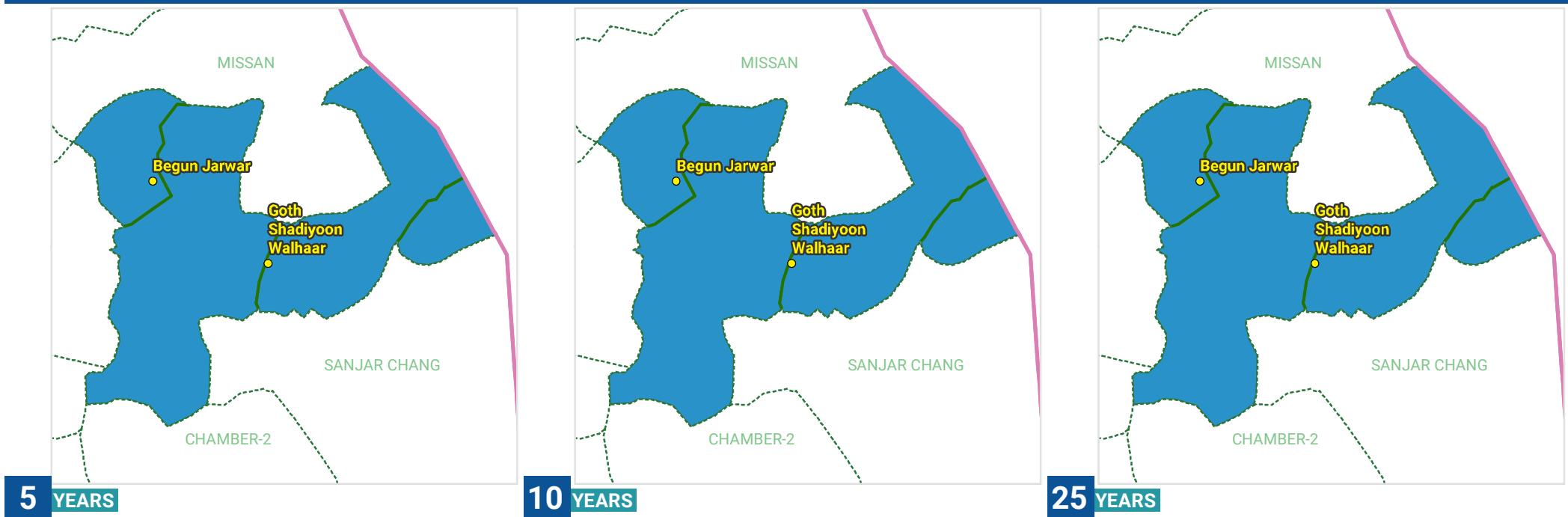
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

67	8867	44493	94.78	0	0	0.00	4.48
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.08	2.30						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

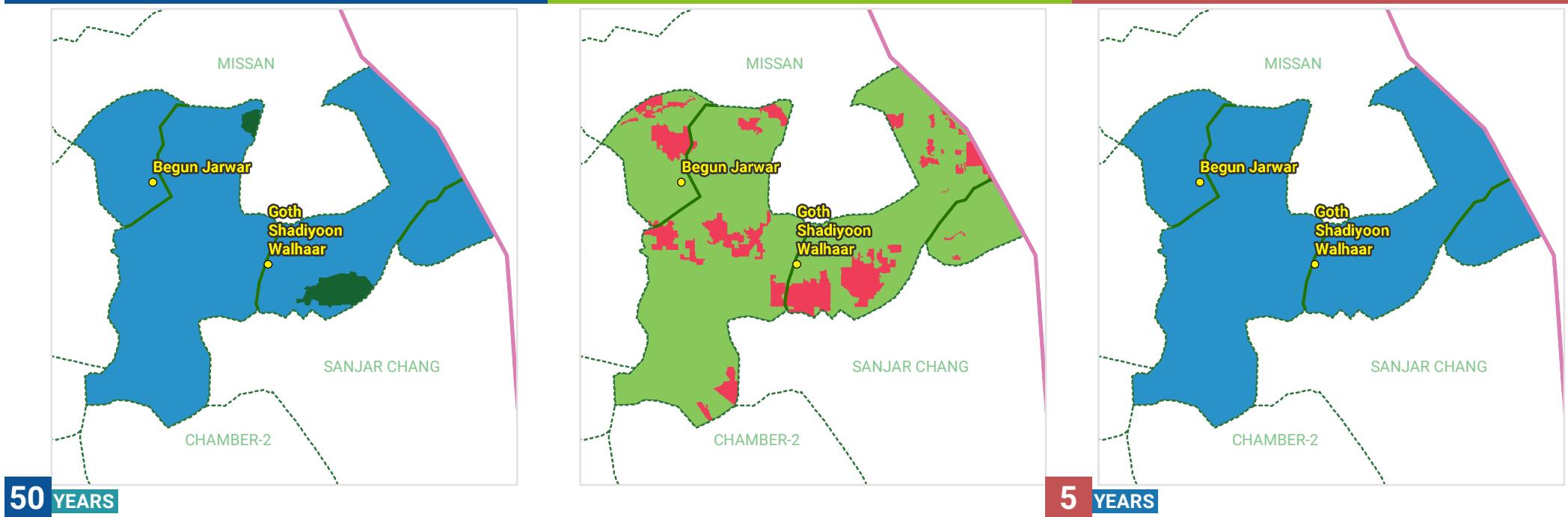
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

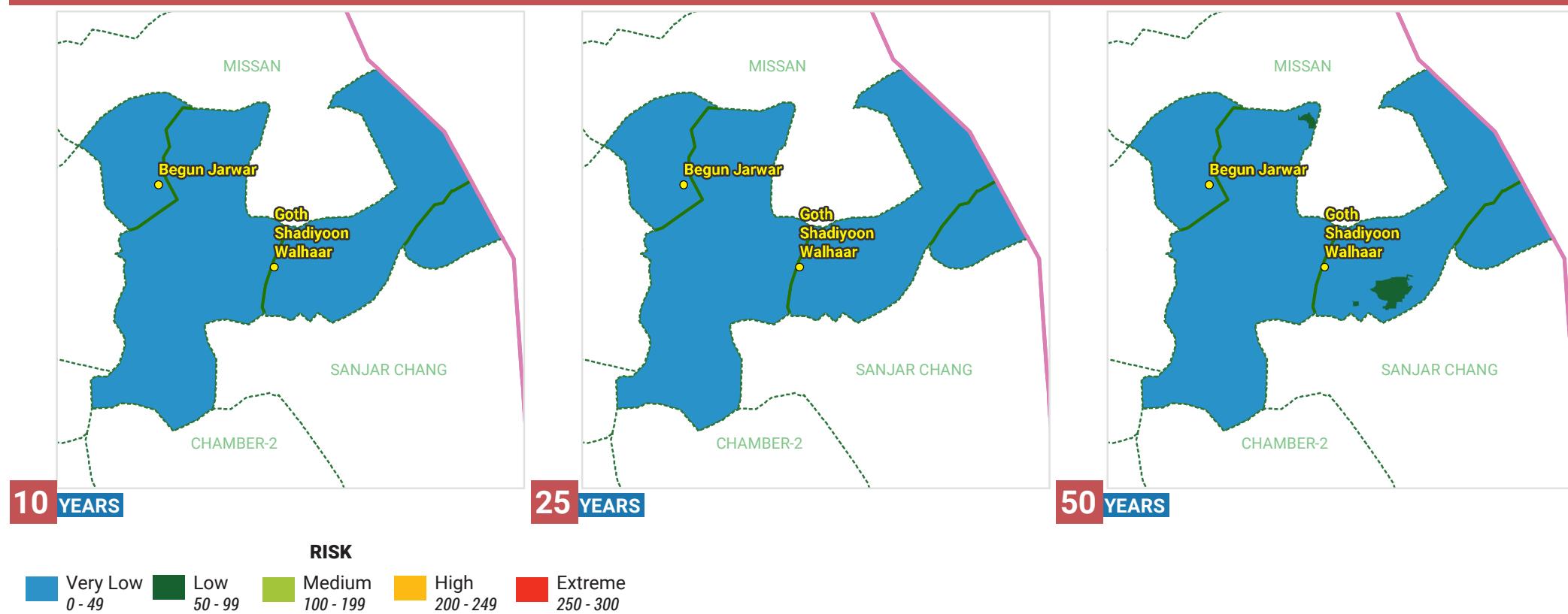
## VULNERABILITY

## RISK

No Hazard	Mild	Moderate	None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100	Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
Severe	Extremely Severe										

# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



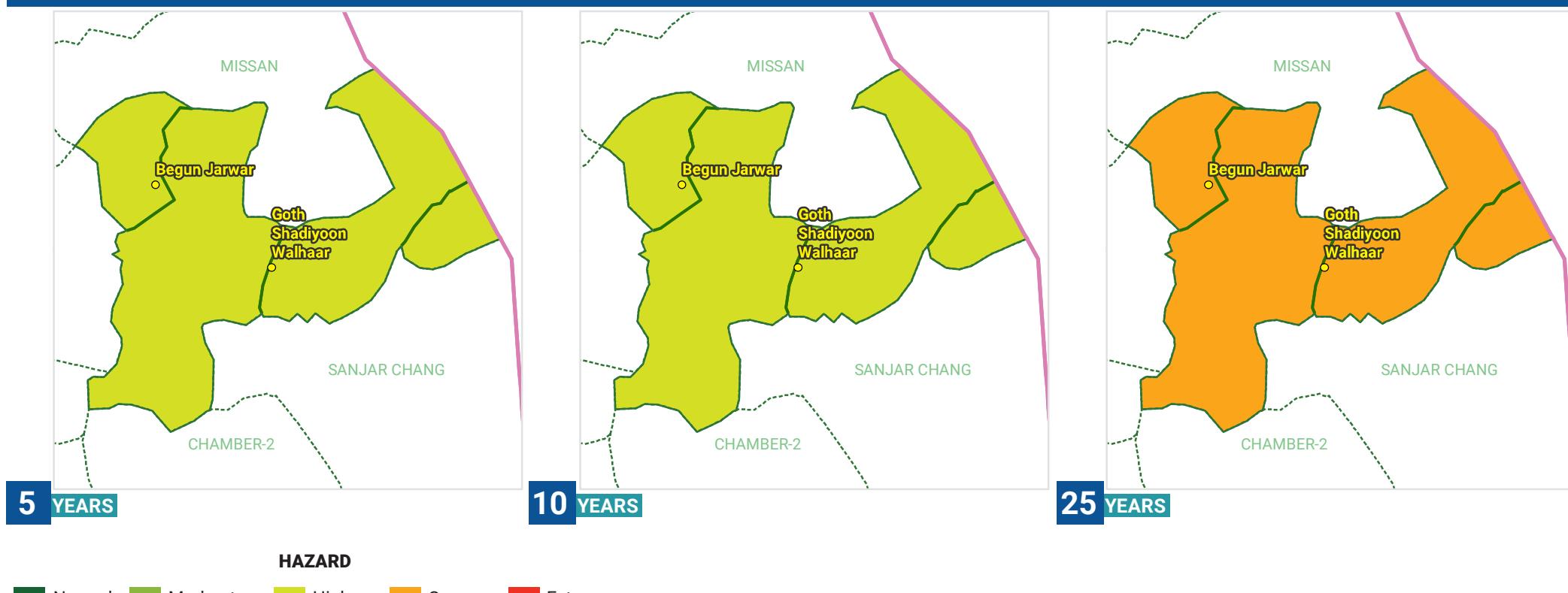
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

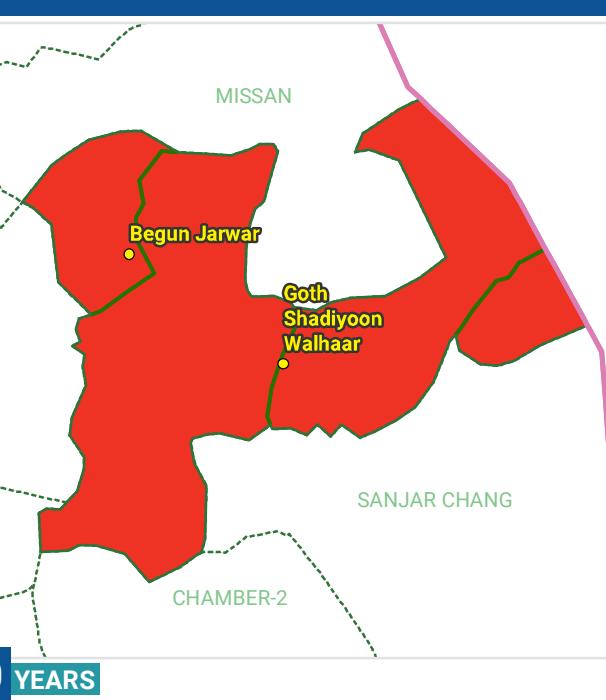
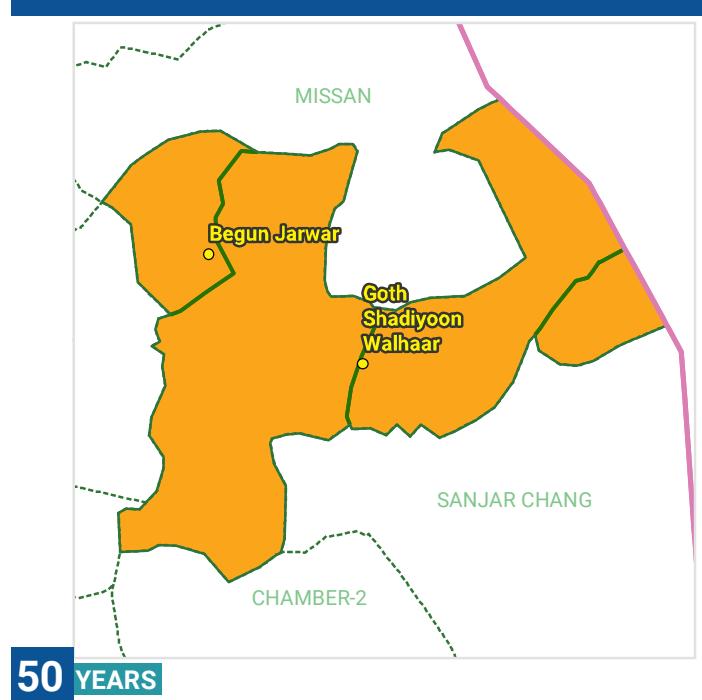
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0	0	0.77	0	0	0	1.05
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

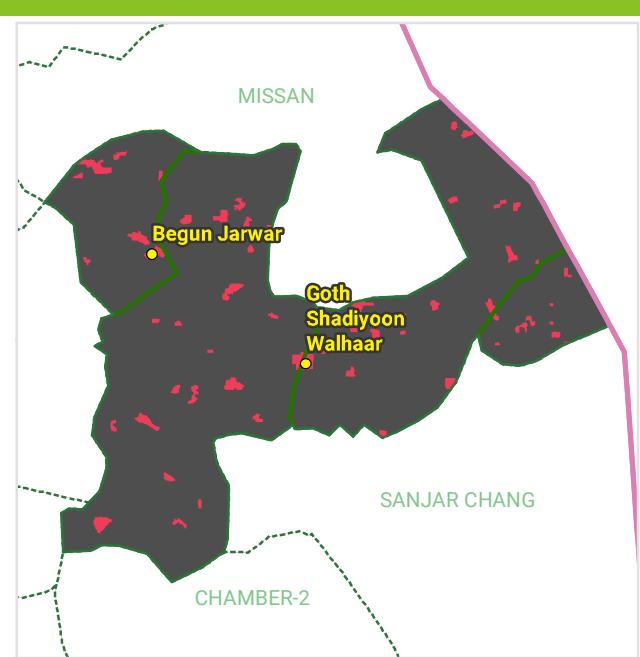
## HAZARD AT DIFFERENT RETURN PERIODS



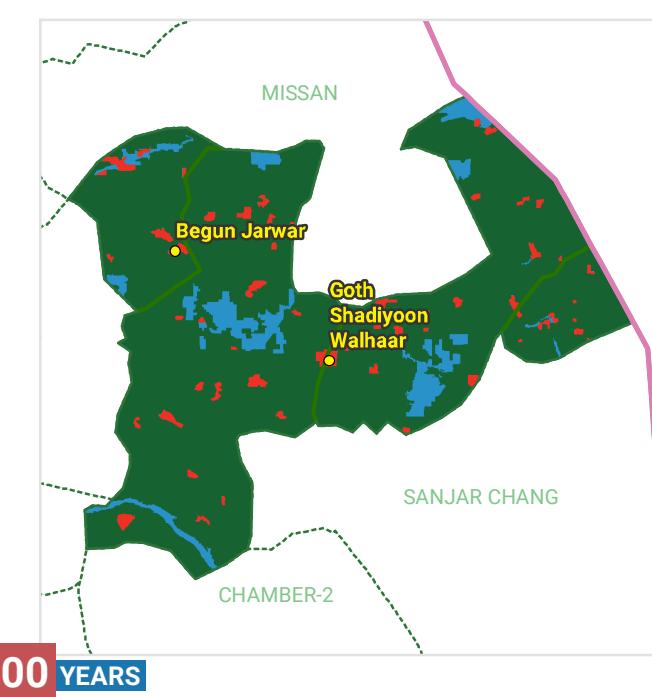
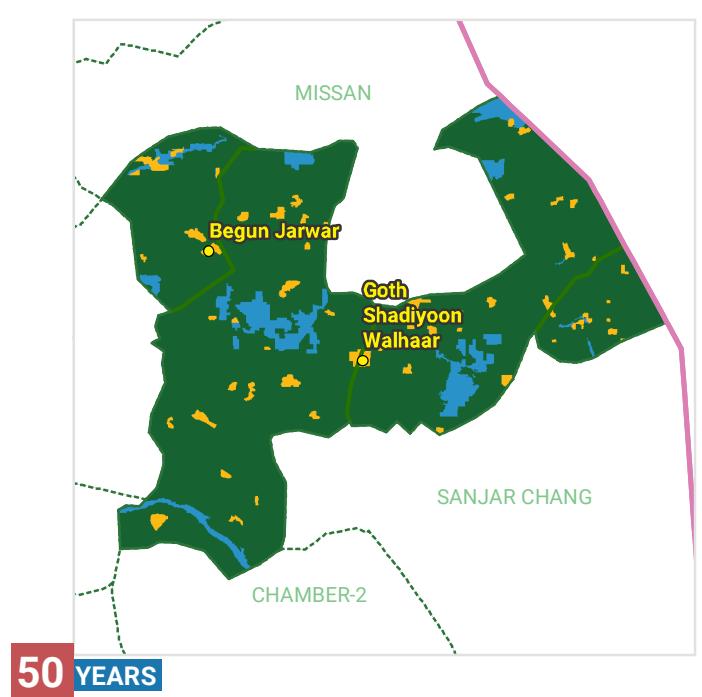
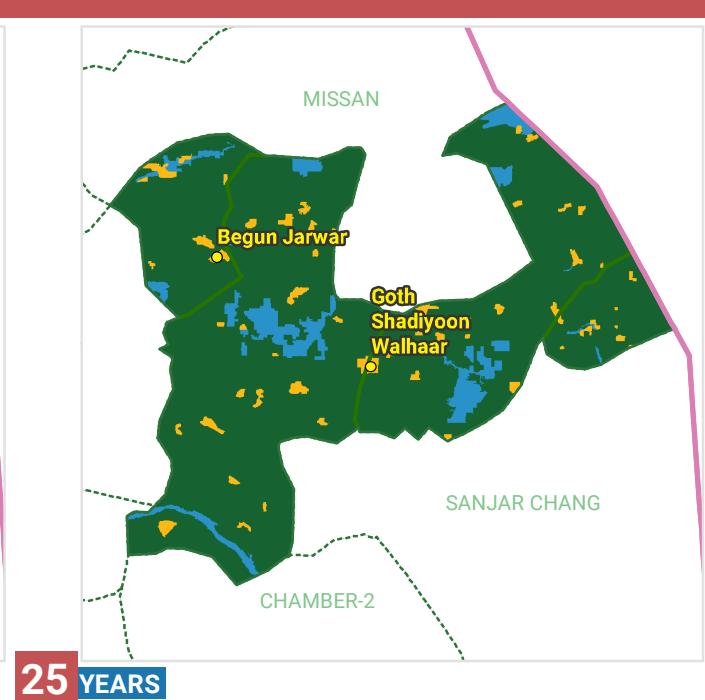
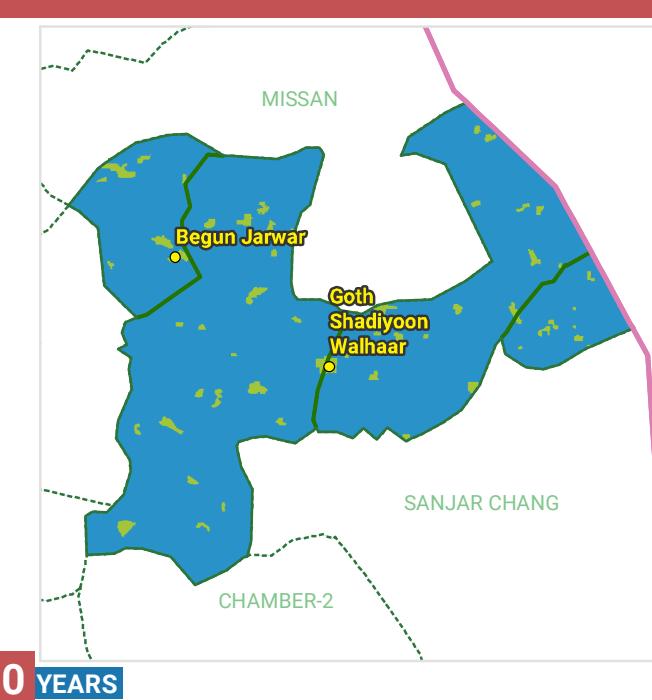
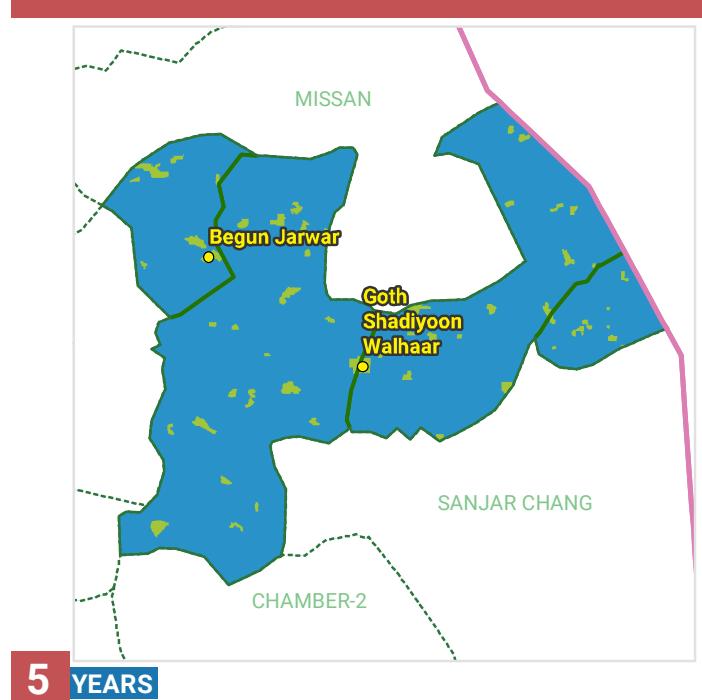
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal  
Severe

## HAZARD

Moderate  
Extreme

## HAZARD

High

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

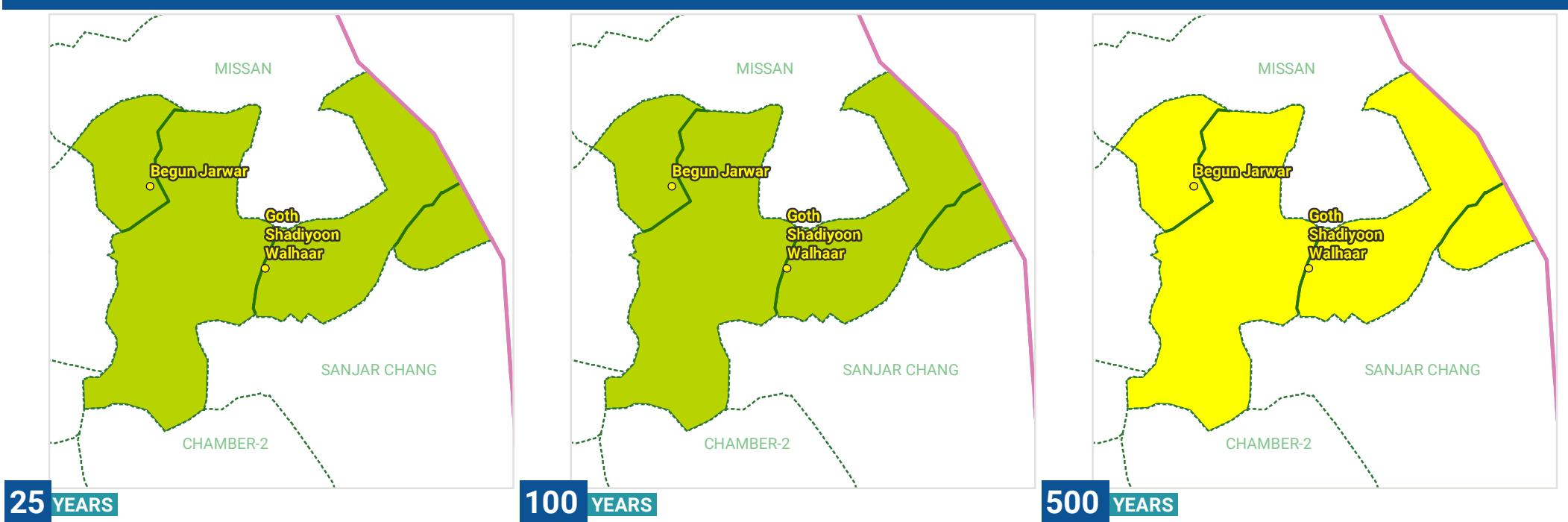
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

65	8827	44277	94.59	0	0	3.43
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

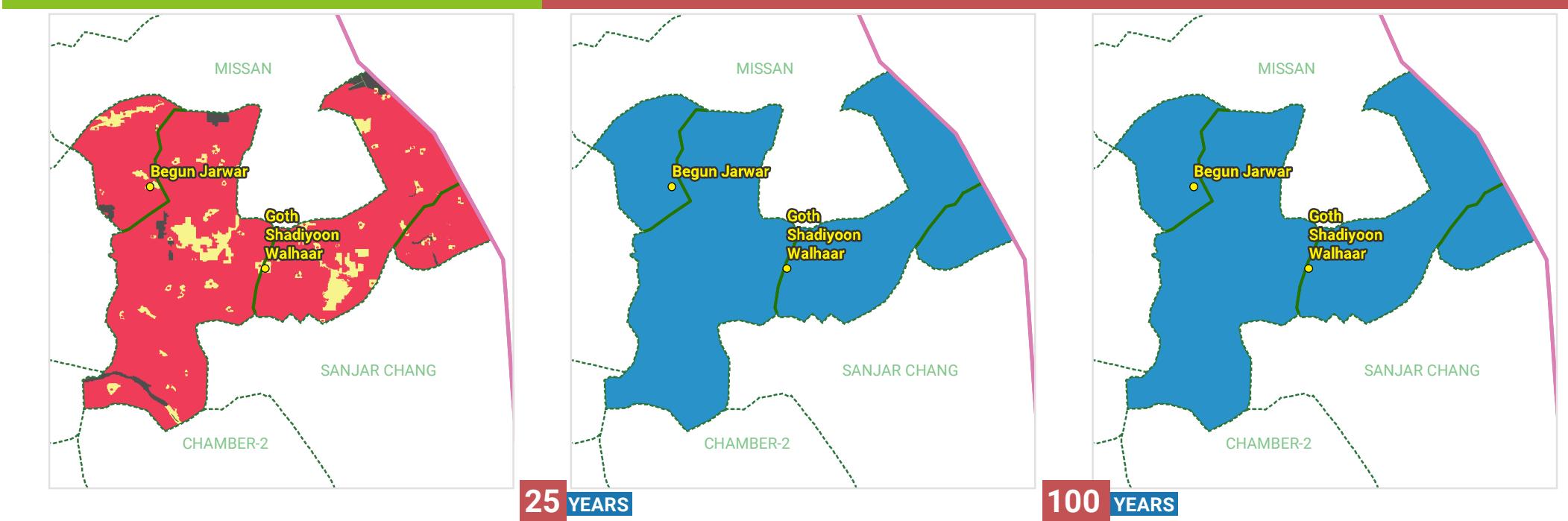
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

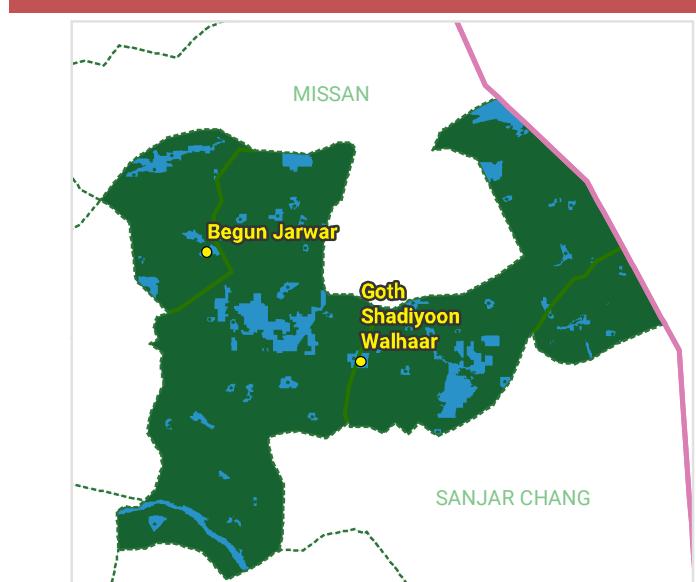
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

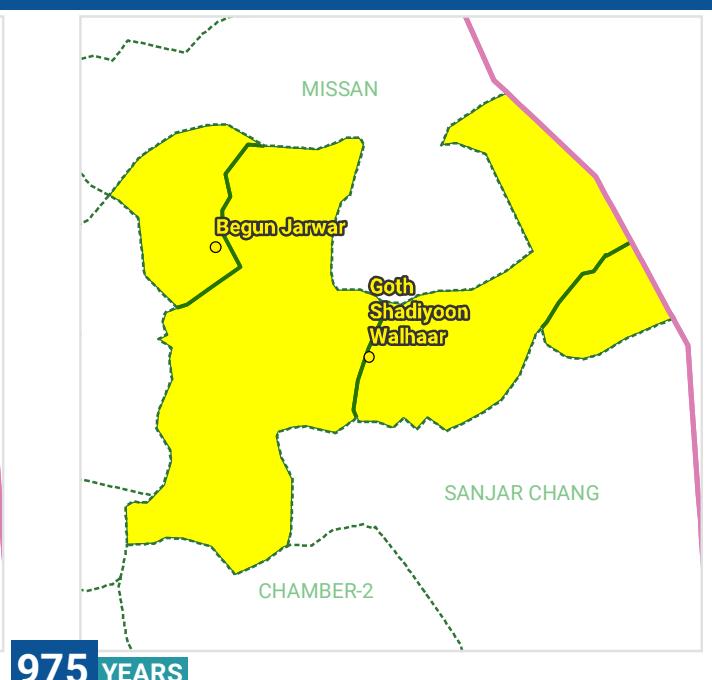
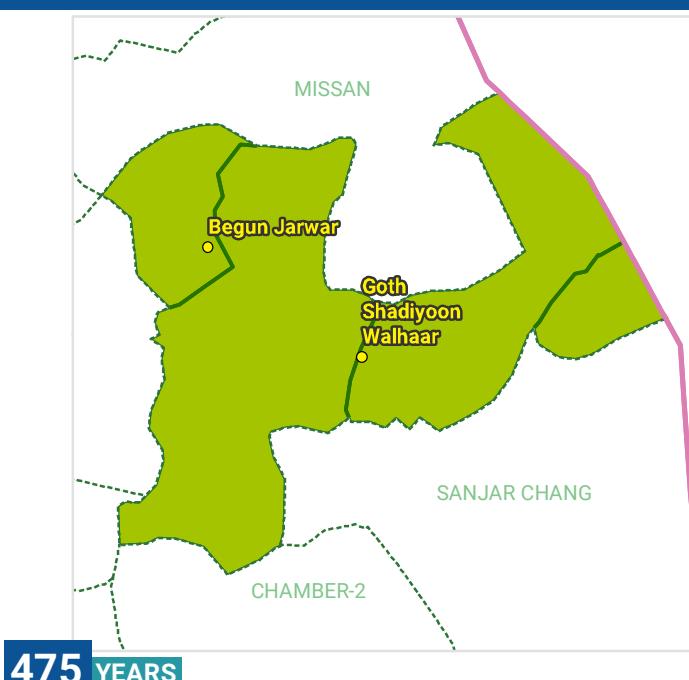
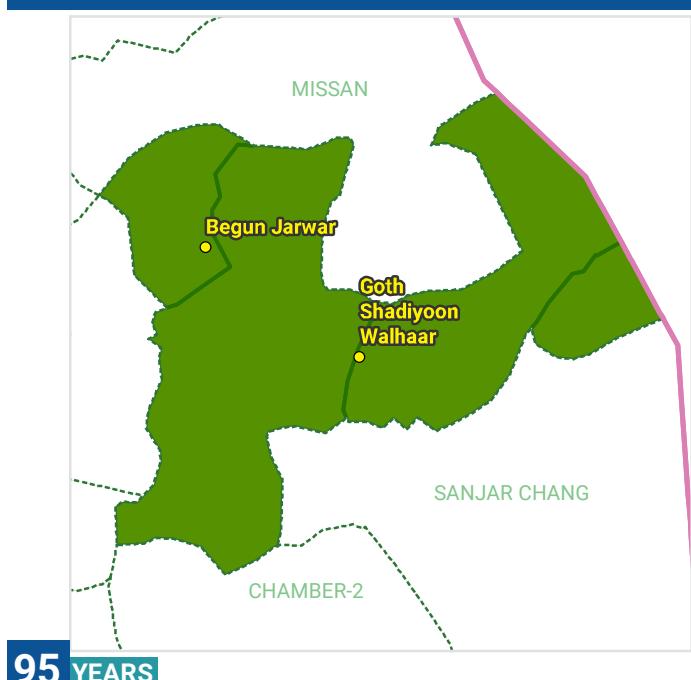
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

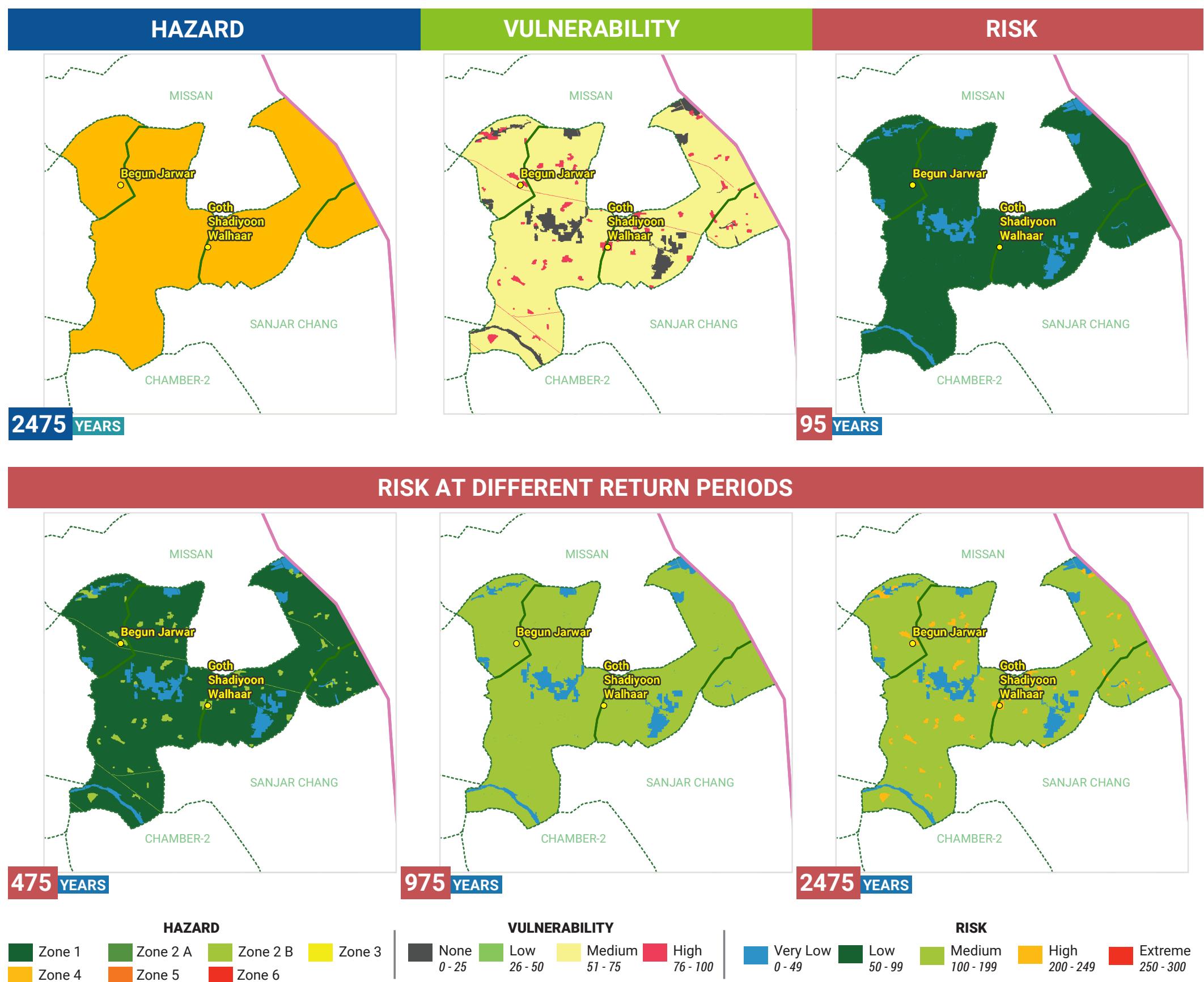
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

# EARTHQUAKE



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

67	8803	44166	94.64	0	0	0.00	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
3.42	0.13	143.53	0	24.52	0	0	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
57	0	0	0	0	0	0	0
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - BUKERANI SHARIF

Union Council area in sq. km

88

Surrounding UCs / Features **DHINGANO BOZDAR** in North  
**PAK-SANGHAR** in North East  
**DAD KHAN JARWAR** in South East  
**TANDO MUHAMMAD KHAN** in South  
**HYDERABAD DISTRICT** in West

Population

2017 approx. 35,518

No. of household

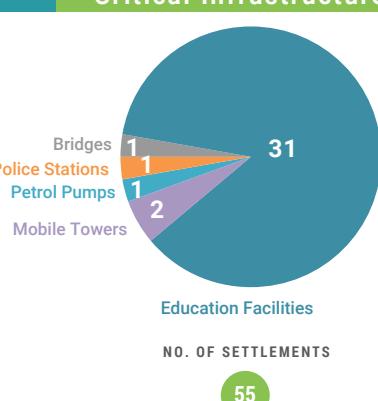
2017 approx. 6,892

## Land Use Land Cover

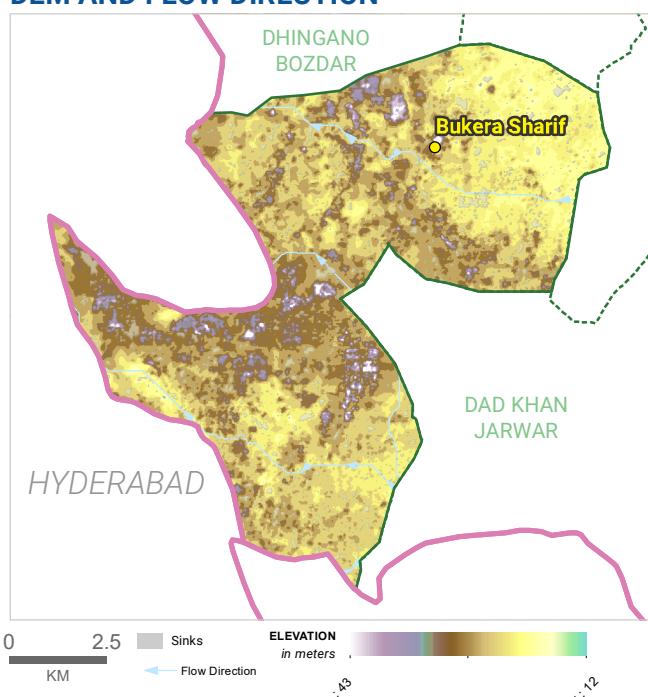
coverage area in sq.km

Built-up (Other)	0.7
Crop Irrigated	49.3
Crop Marginal and Irrigated Saline	5.5
Orchards	27.6
Pakka-Planned	0.1
Pakka-Unplanned	2.1
Range Lands	2.1
Water Body	0.1
Wet Area	0.6

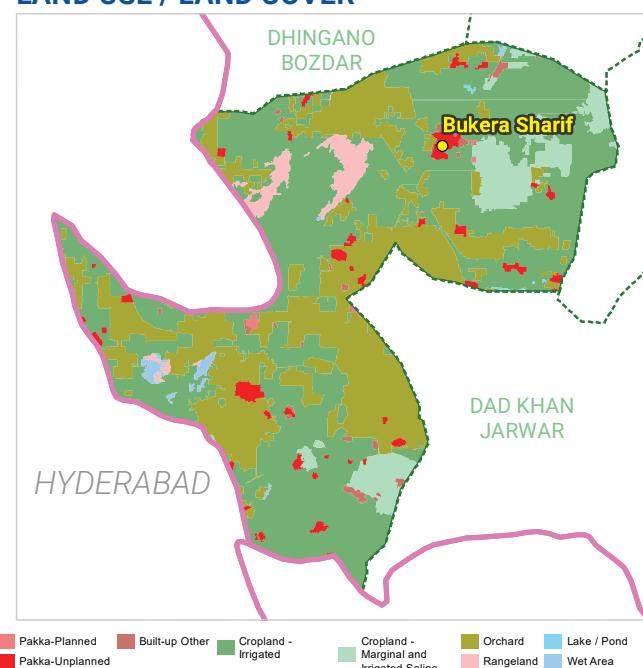
## Critical Infrastructure



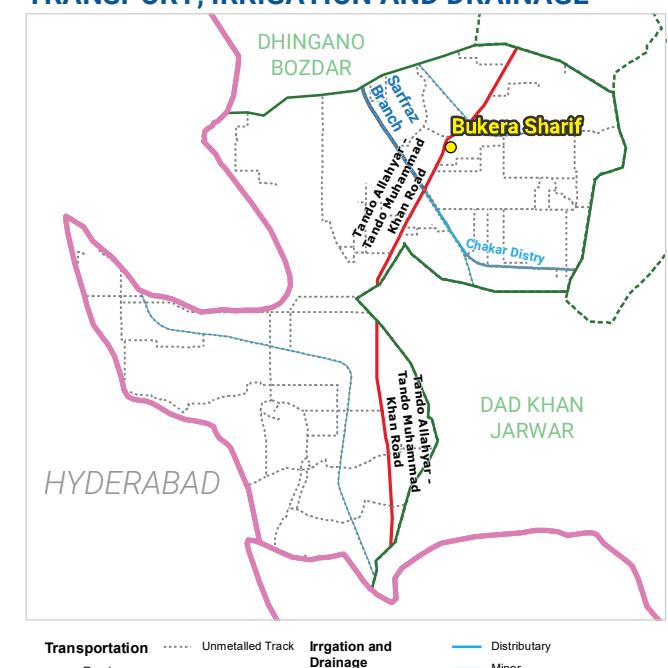
## DEM AND FLOW DIRECTION



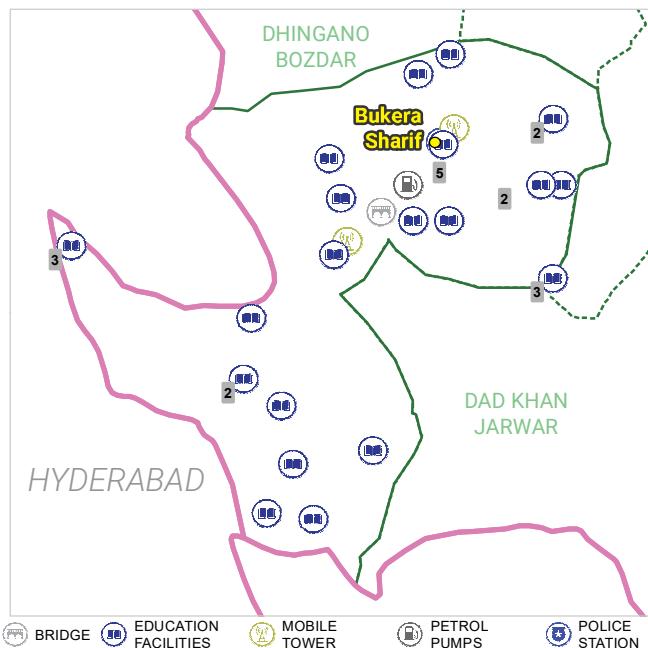
## LAND USE / LAND COVER



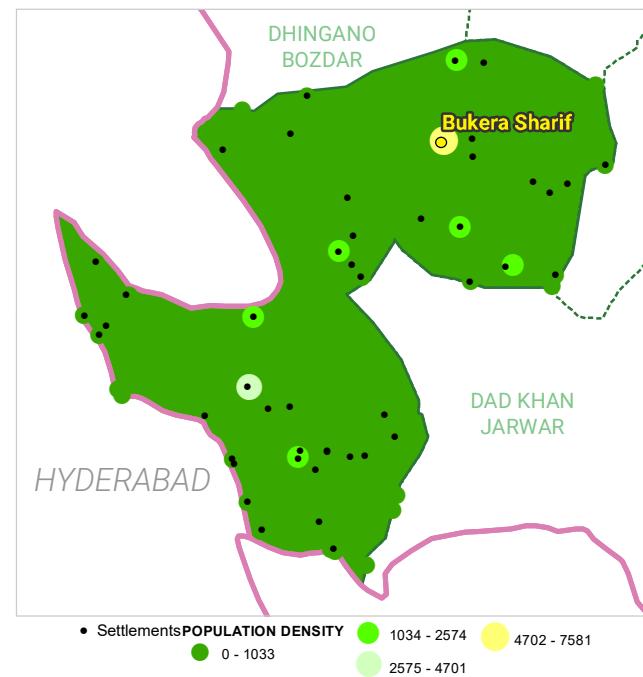
## TRANSPORT, IRRIGATION AND DRAINAGE



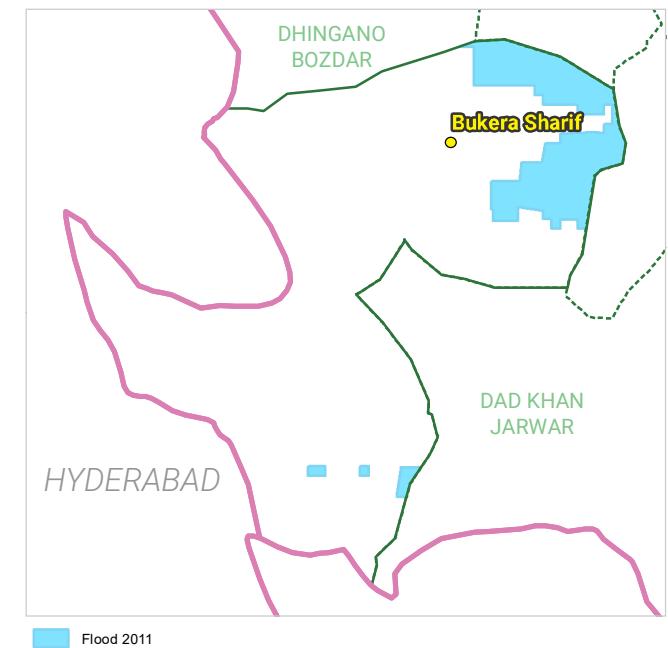
## CRITICAL INFRASTRUCTURE



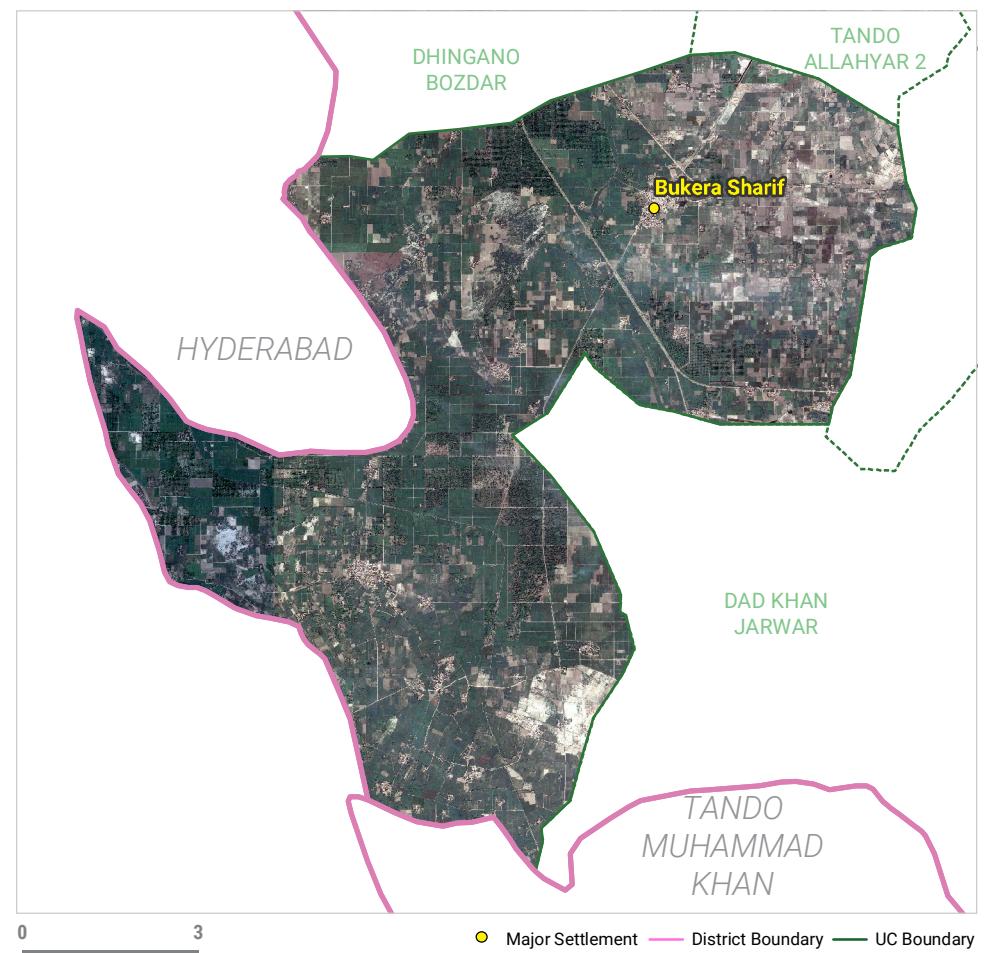
## POPULATION DENSITY



## PAST HAZARDS

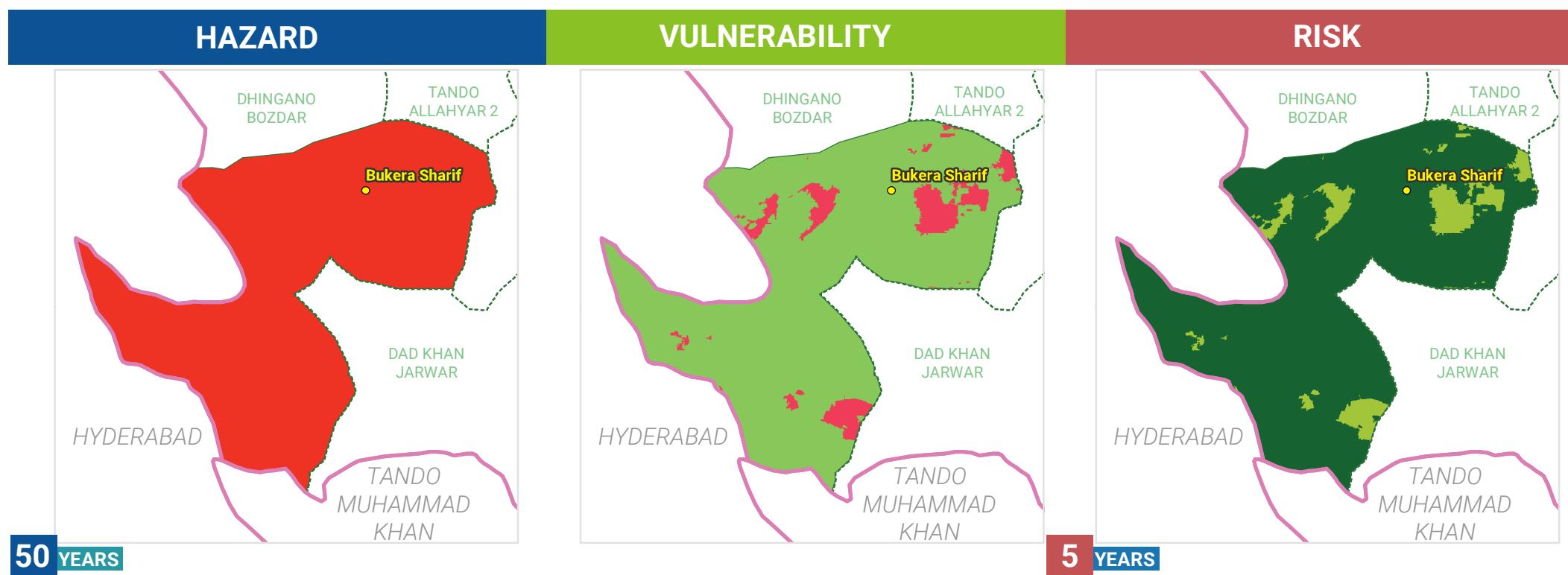
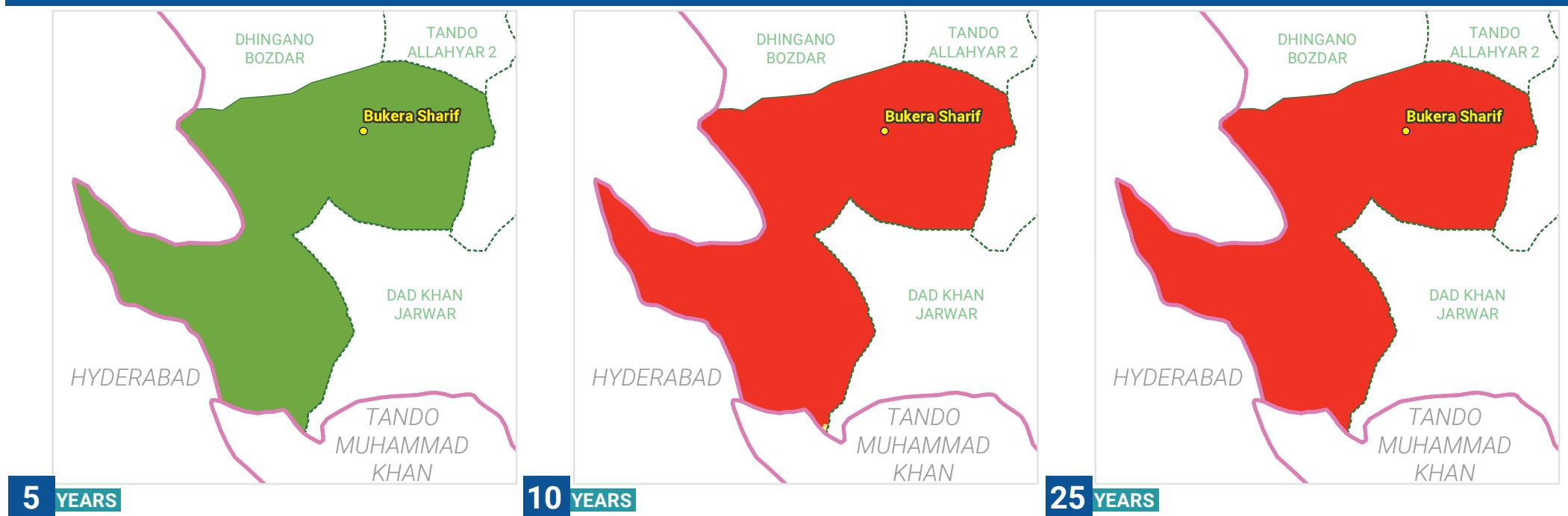
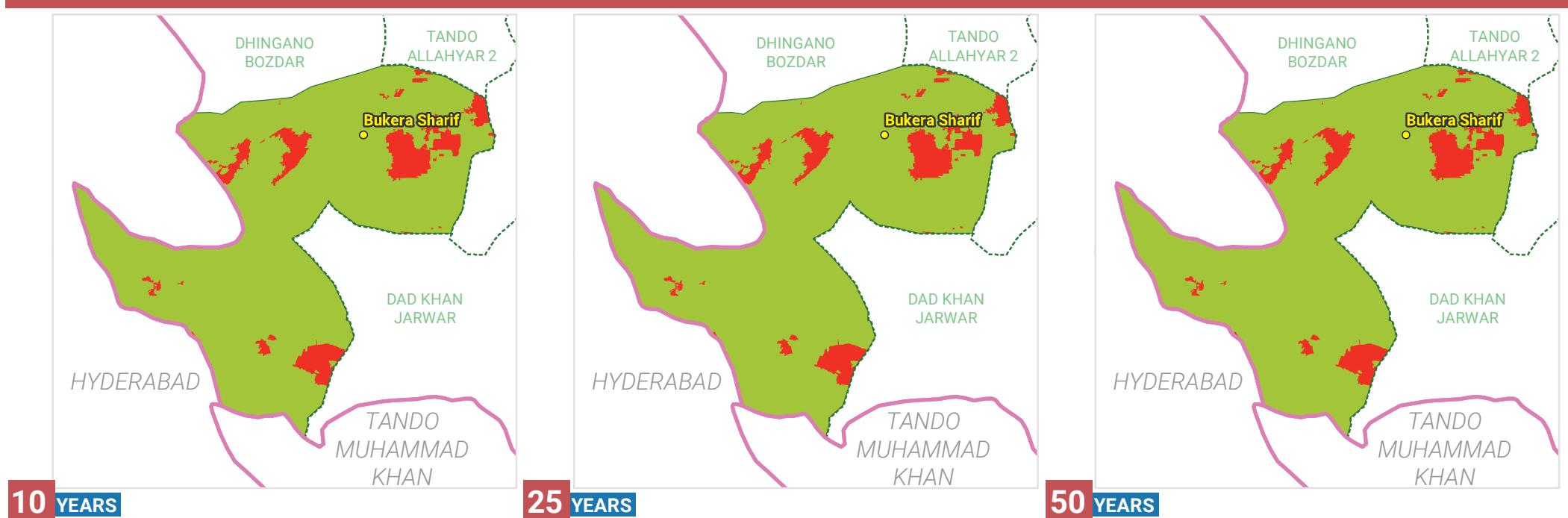


## SATELLITE IMAGERY



**FLOOD**

**THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES**

**METEOROLOGICAL DROUGHT****HAZARD AT DIFFERENT RETURN PERIODS****RISK AT DIFFERENT RETURN PERIODS**

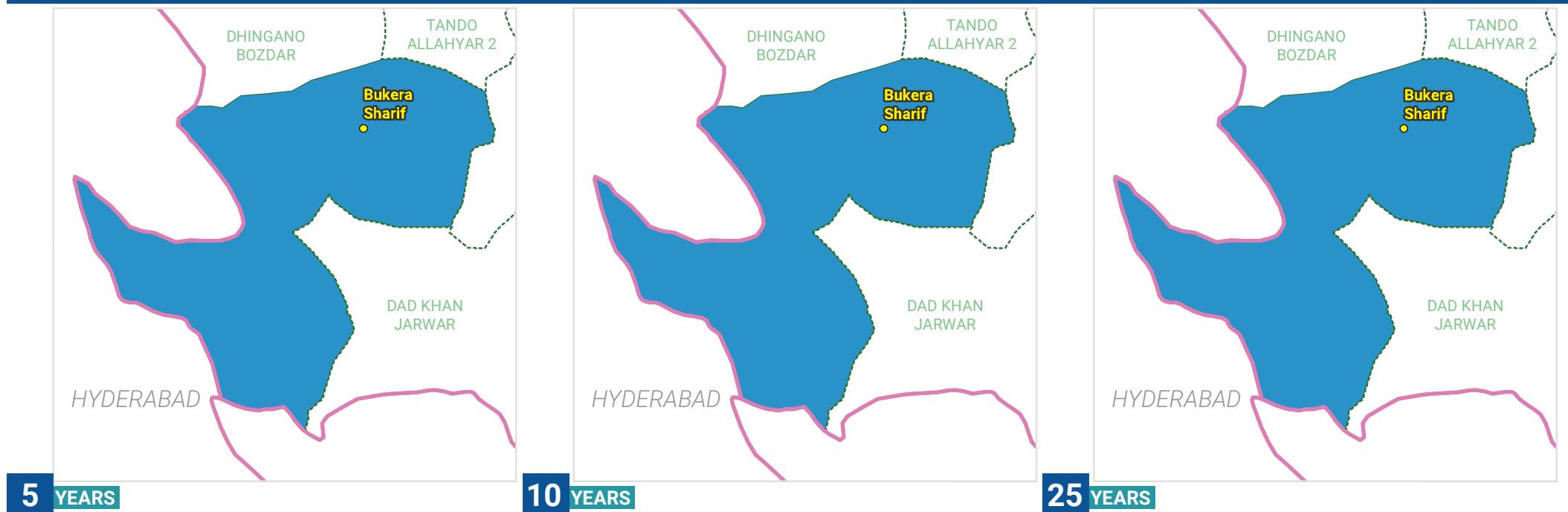
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

55	6892	35518	82.39	0	0	0	2.07
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.07	0.55						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

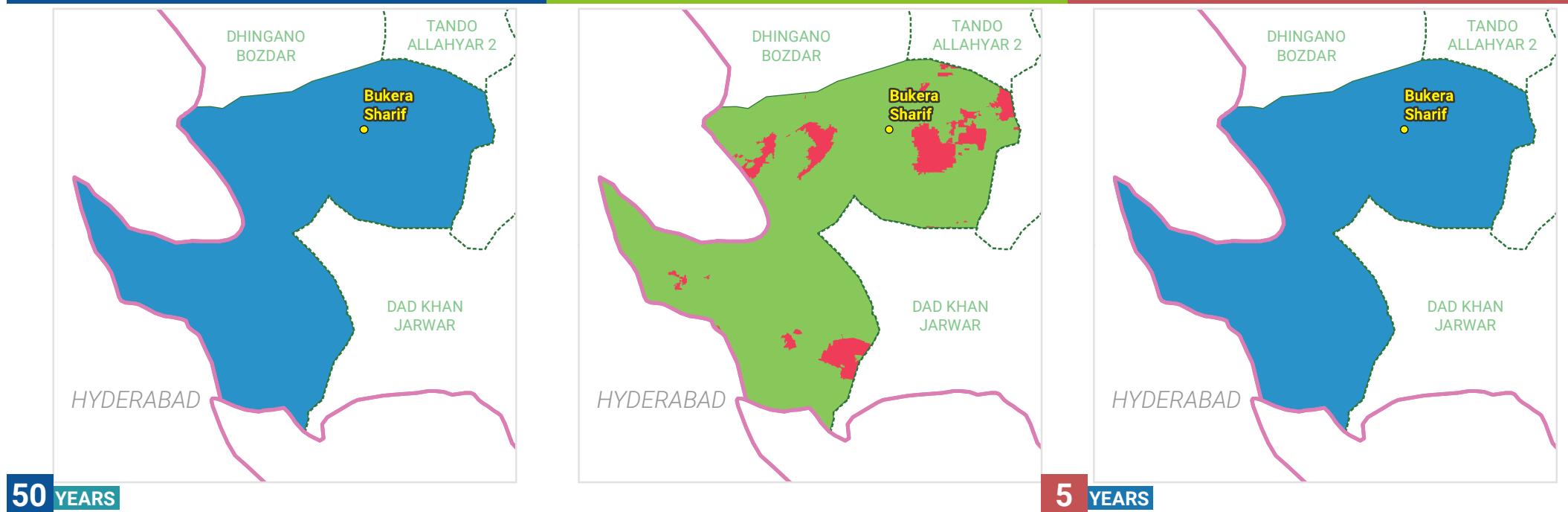
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

No Hazard	Mild	Moderate
Severe	Extreme	

## VULNERABILITY

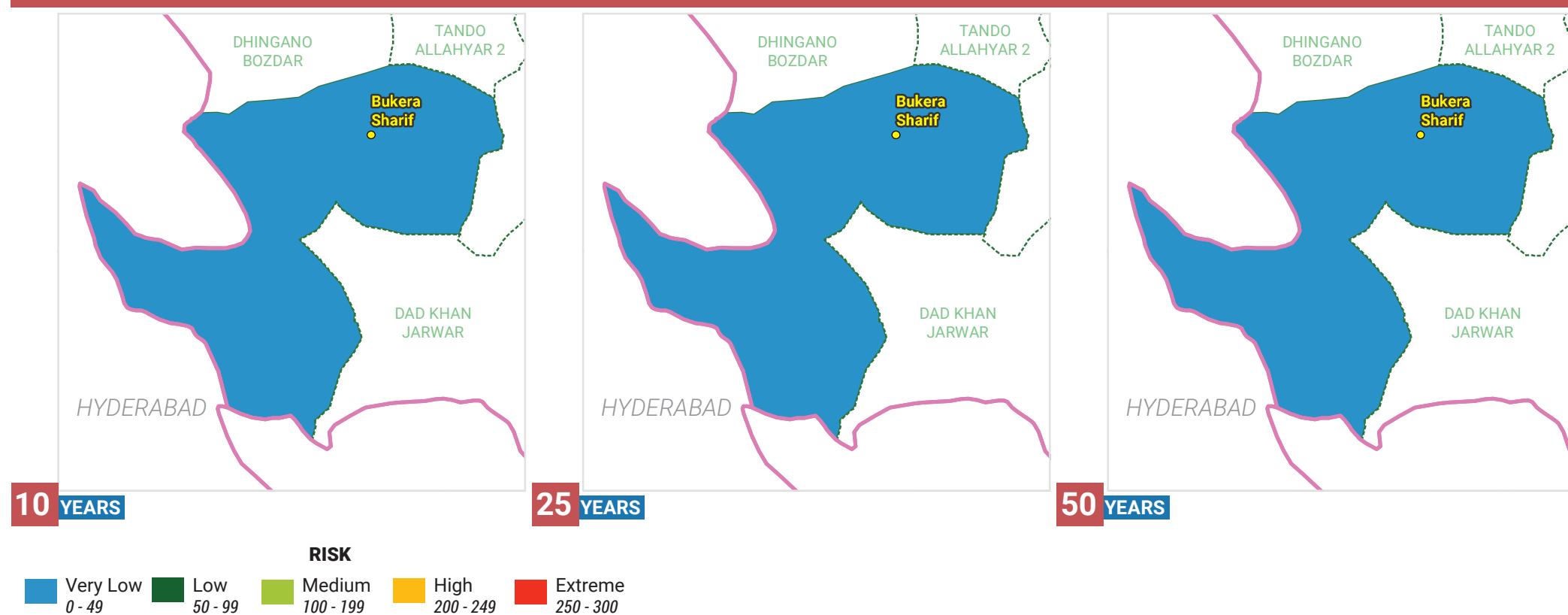
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



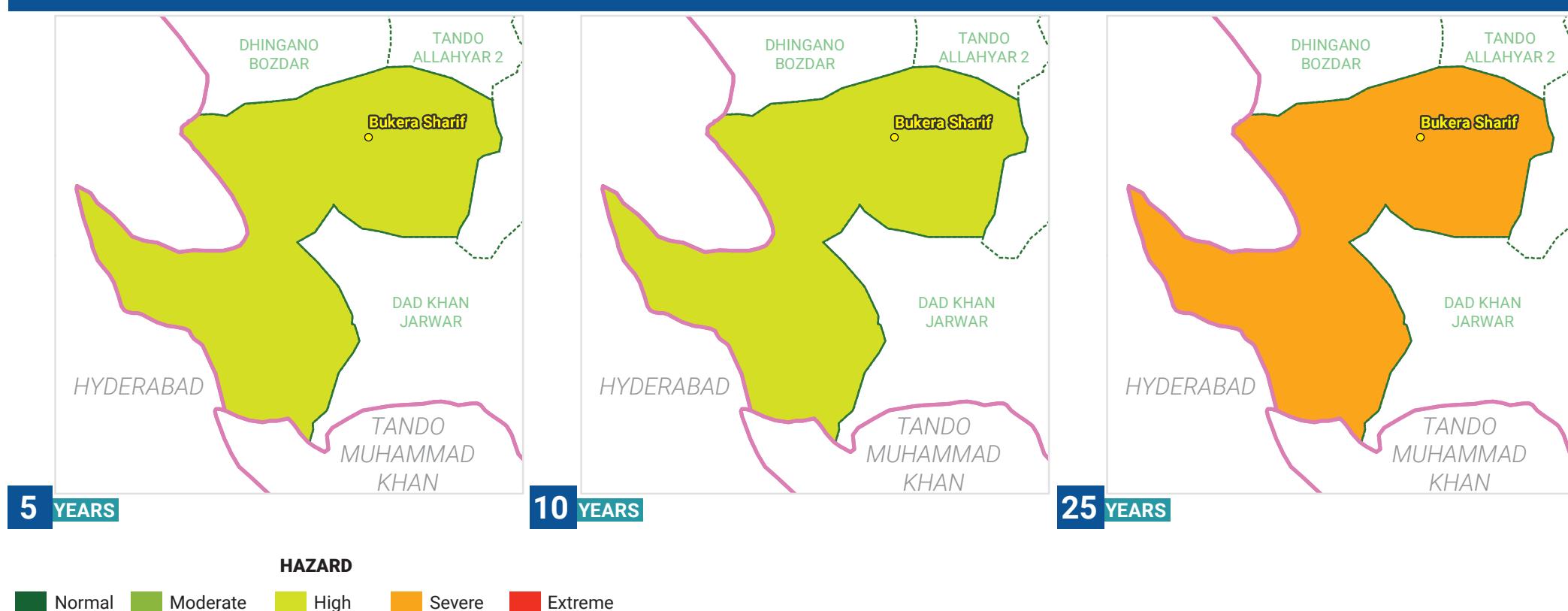
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

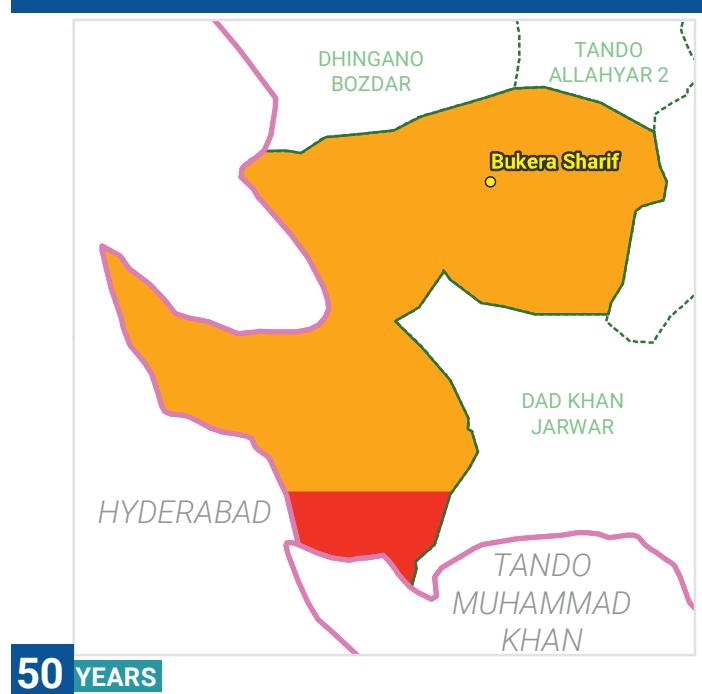
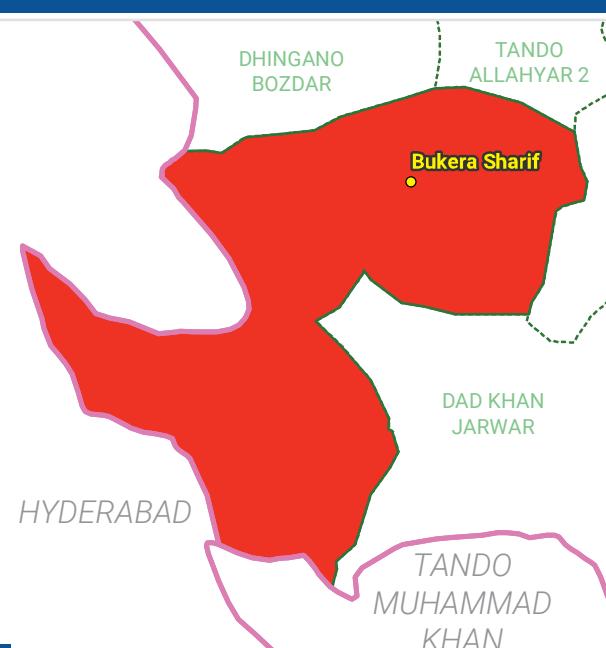
NO ELEMENTS AT RISK FOR AGRICULTURAL DROUGHT

# HEATWAVE

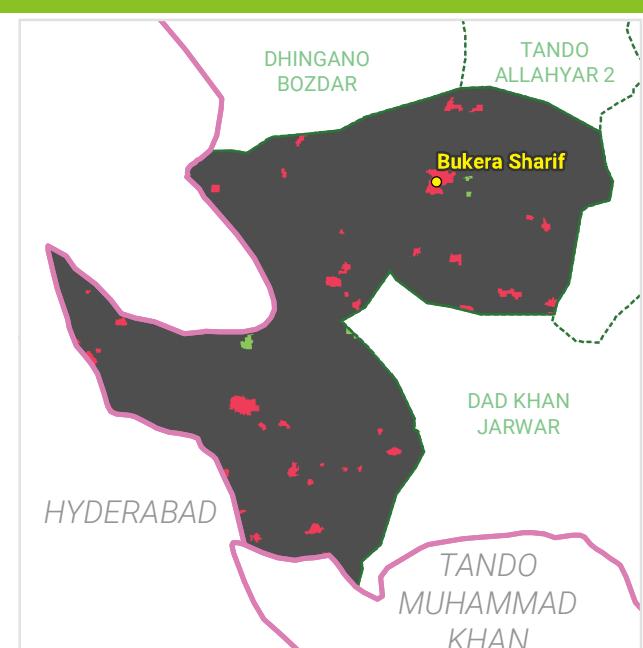
## HAZARD AT DIFFERENT RETURN PERIODS



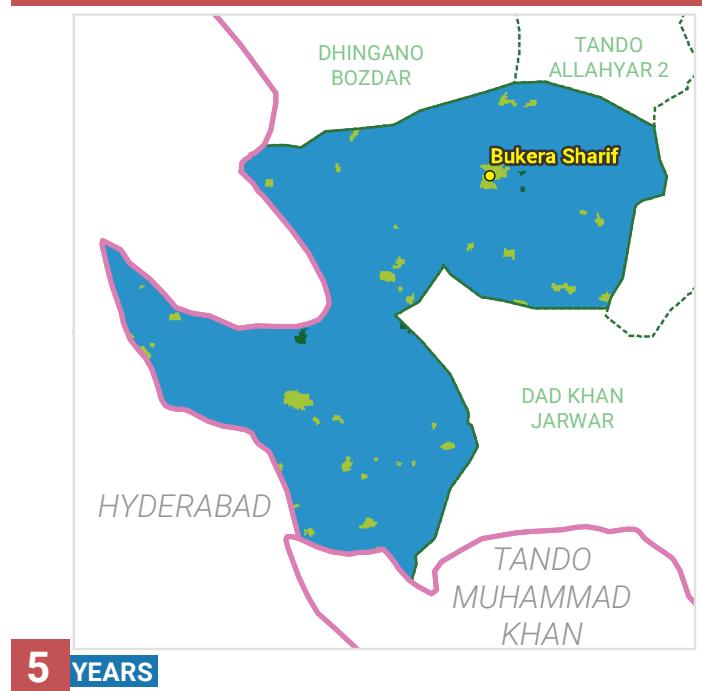
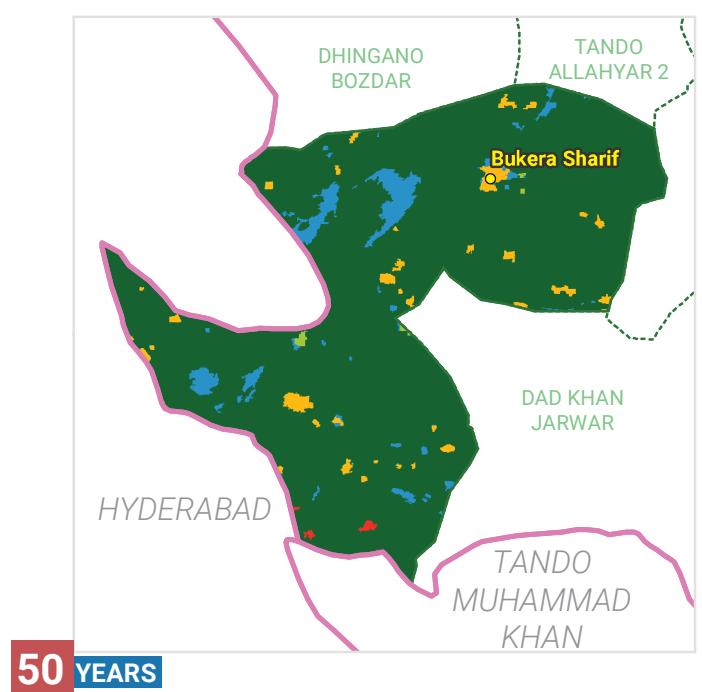
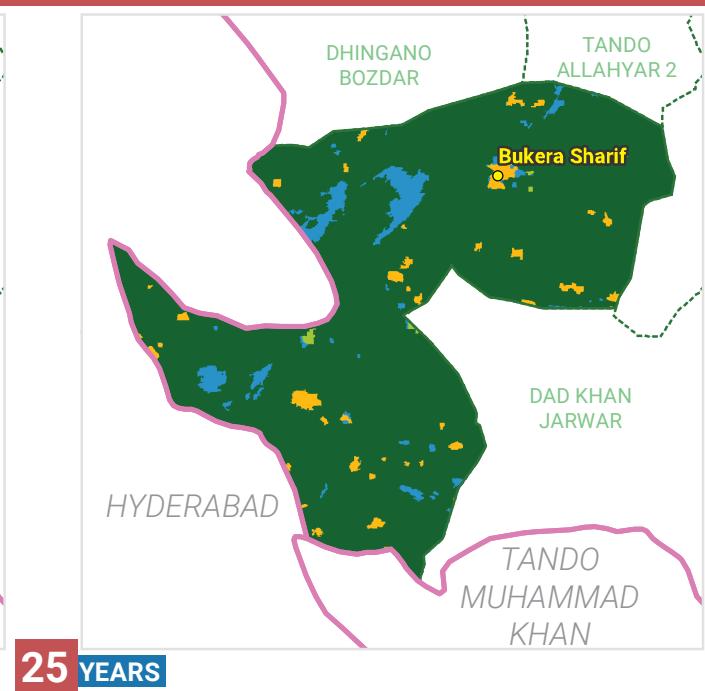
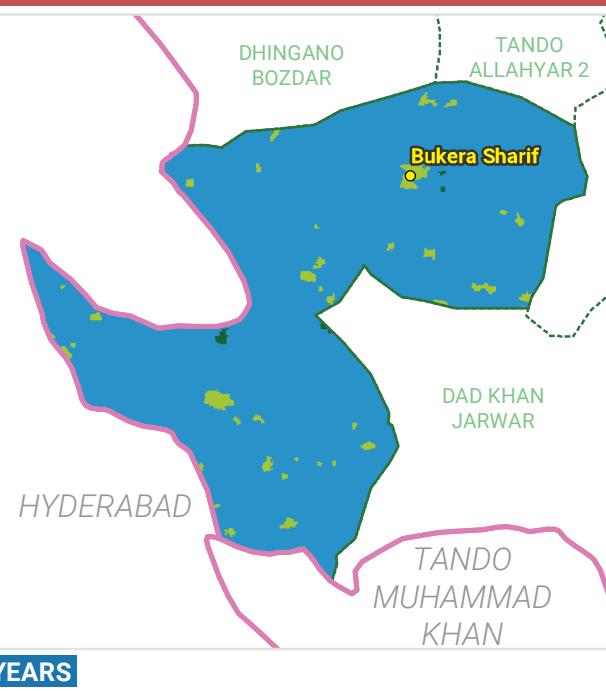
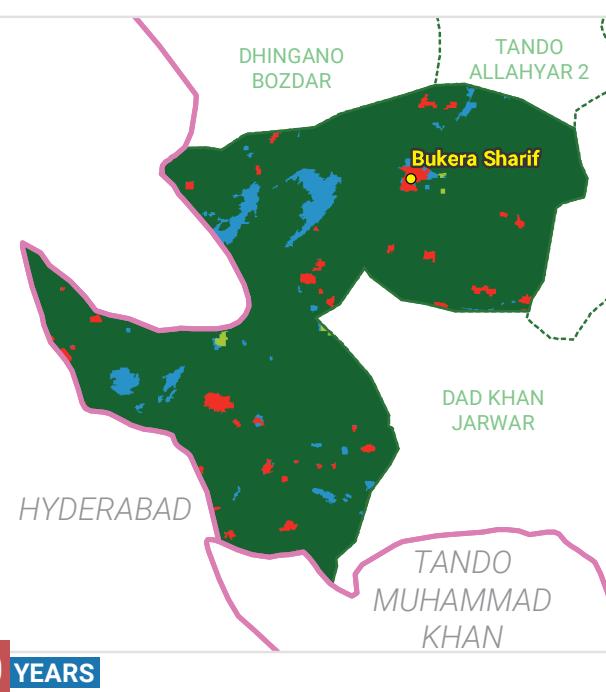
## HAZARD AT DIFFERENT RETURN PERIODS

**100 YEARS**

## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS

**10 YEARS****100 YEARS**

## HAZARD

Normal
Severe

Moderate
Extreme

High

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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Very Low  
0 - 49

Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

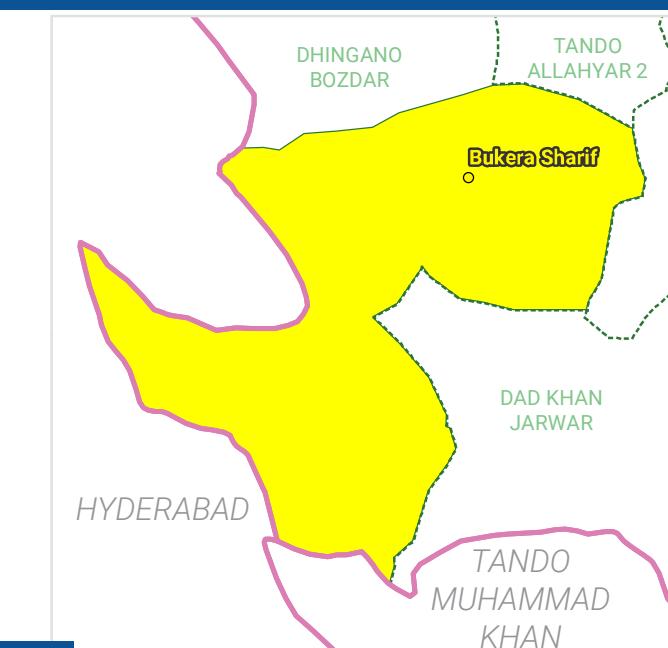
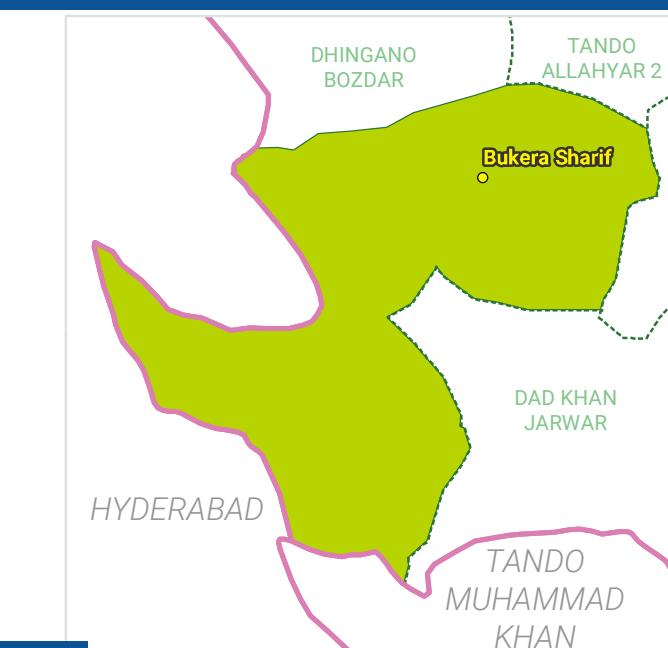
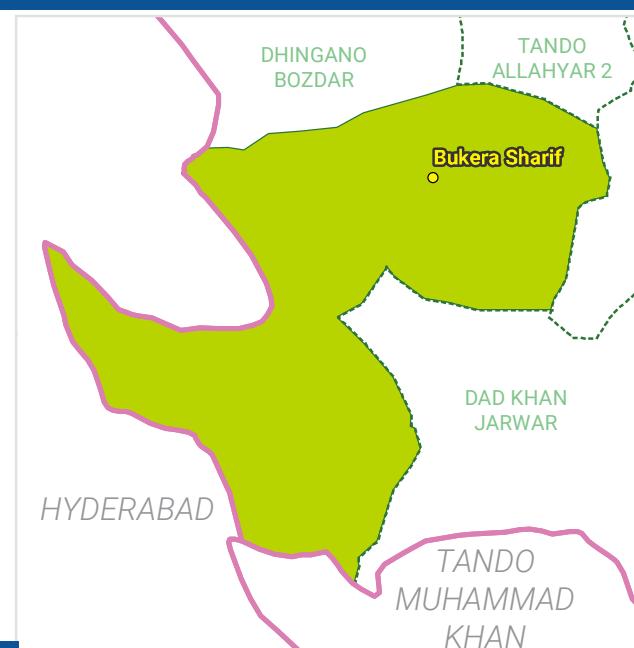
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

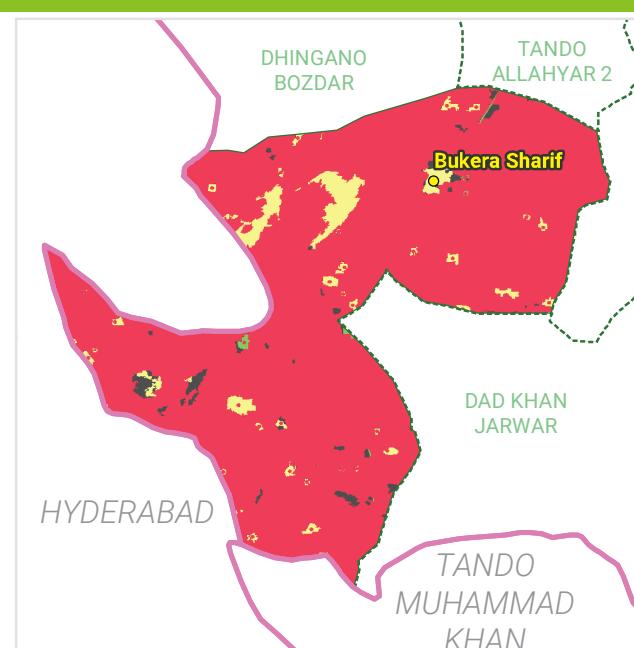
55	6849	35276	82.21	0	0.14	2.06
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

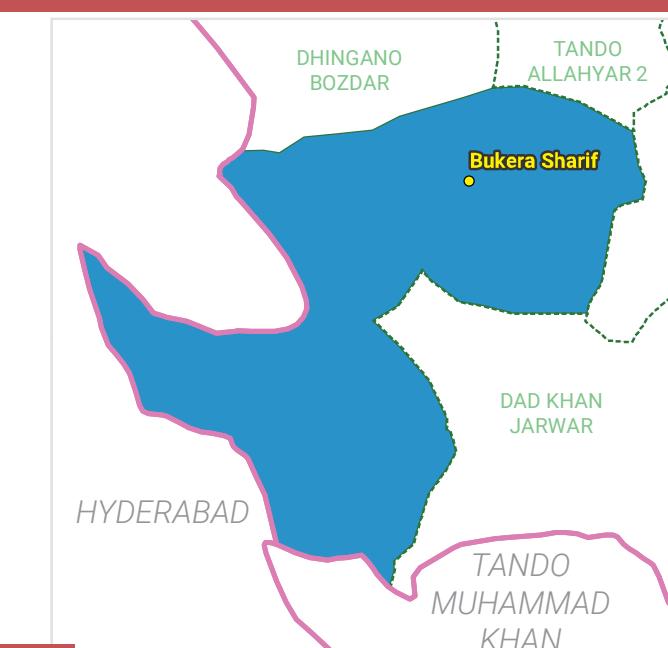
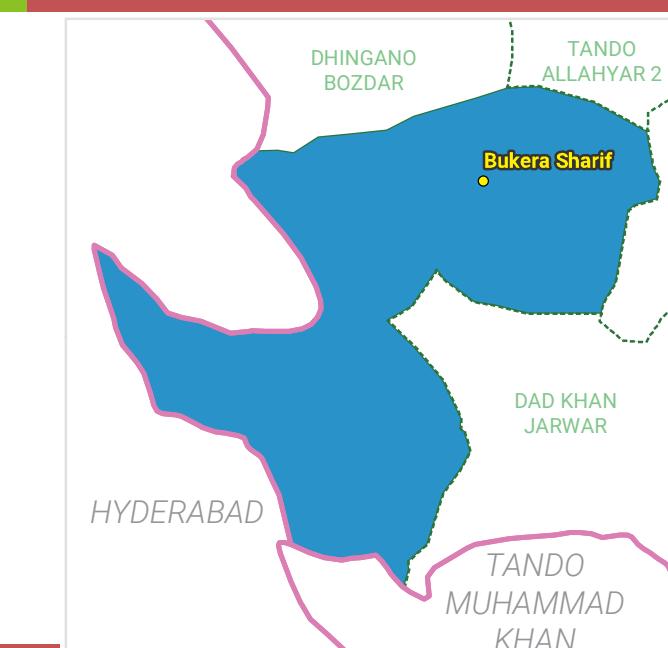
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

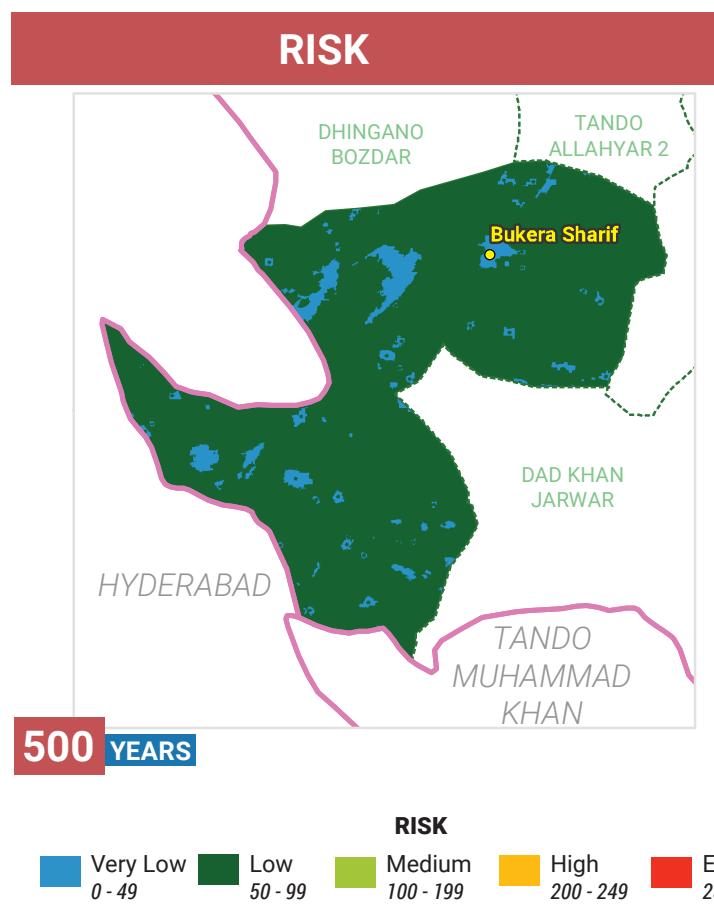
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

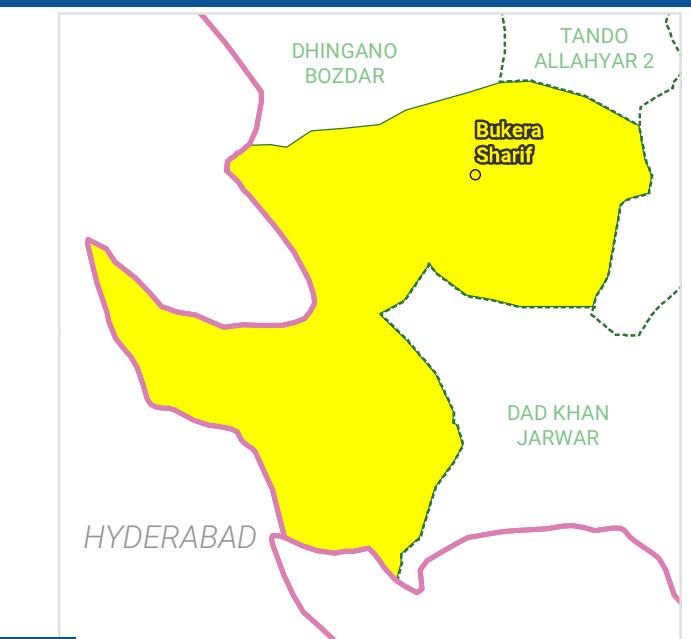
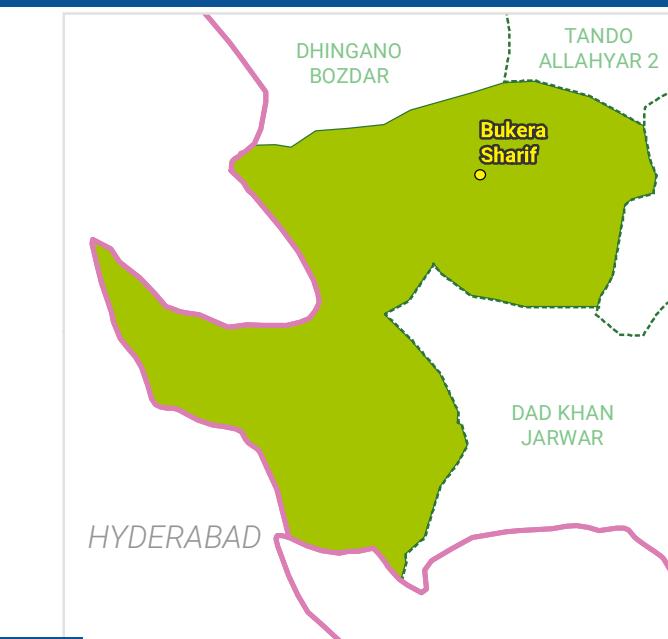
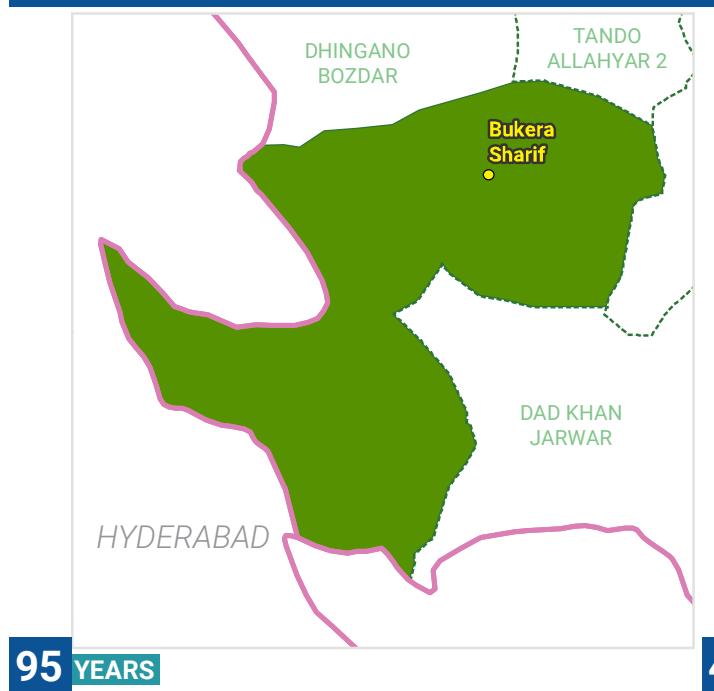
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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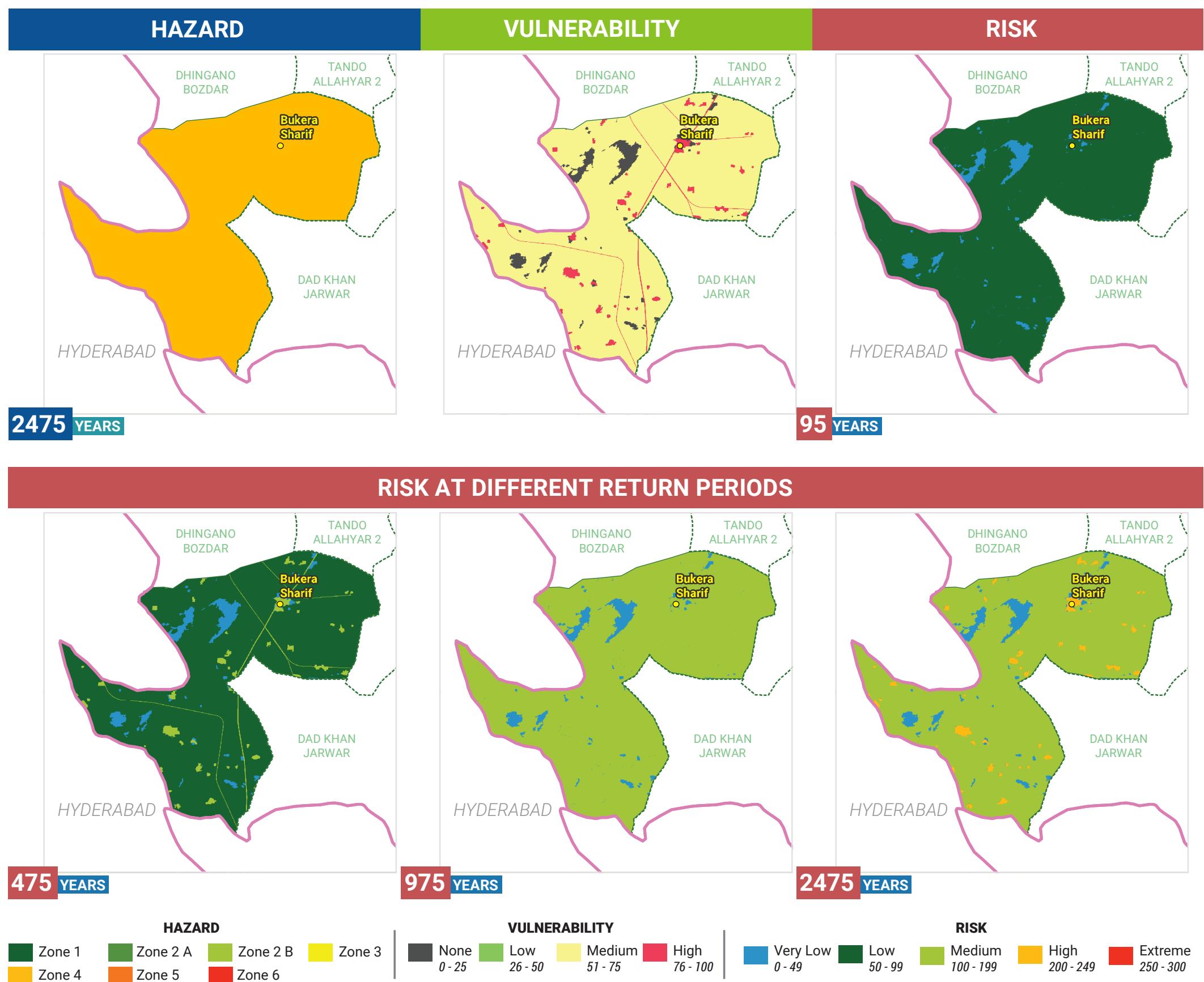
**ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

- Zone 1
- Zone 2 A
- Zone 2 B
- Zone 3
- Zone 4
- Zone 5
- Zone 6

# EARTHQUAKE



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

55	6827	35181	82.27	0	0	0	0.14
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
2.05	0.05	141.04	0	27.02	0	1	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
31	0	0	0	0	0	2	1
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
1	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX

		RETURN PERIODS						
		5 YEARS	10 YEARS	25 YEARS	50 YEARS	100 YEARS	250 YEARS	500 YEARS
HAZARD	FLOOD	None	●	None	None	None	None	●
	METEOROLOGICAL DROUGHT	Low Medium	Medium Extreme	Medium Extreme	Medium Extreme	●	●	●
	AGRICULTURAL DROUGHT	None	None	None	None	●	●	●
	HEATWAVE	Low Medium	Low Medium	Low Medium High	Low Medium High Extreme	Low Medium Extreme	●	●
	CYCLONE	●	●	None	●	None	●	Low
	STORM SURGE	●	●	None	●	None	●	None
	EARTHQUAKE	Low	Low Medium	Medium	Medium High			
TSUNAMI	RETURN PERIODS							
	EARTHQUAKE MAGNITUDES							
	95 YEARS	475 YEARS	975 YEARS	2475 YEARS				
	8.0 MAG.	8.5 MAG.	9.0 MAG.					
	None	None	None					

Legend:

- Low 50-99
- Medium 100-199
- High 200-249
- Extreme 250-300



## UC - CHAMBER-1

Union Council area in sq. km

59

Surrounding UCs / Features

CHAMBER-2 in East

BEGAN JARWAR in North East

DAD KHAN JARWAR in North West

BADIN DISTRICT in South

Population

2017 approx.

47,590

No. of household

2017 approx.

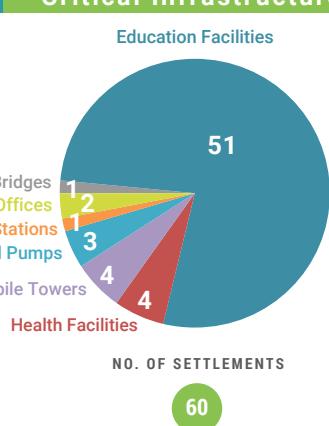
9,592

## Land Use Land Cover

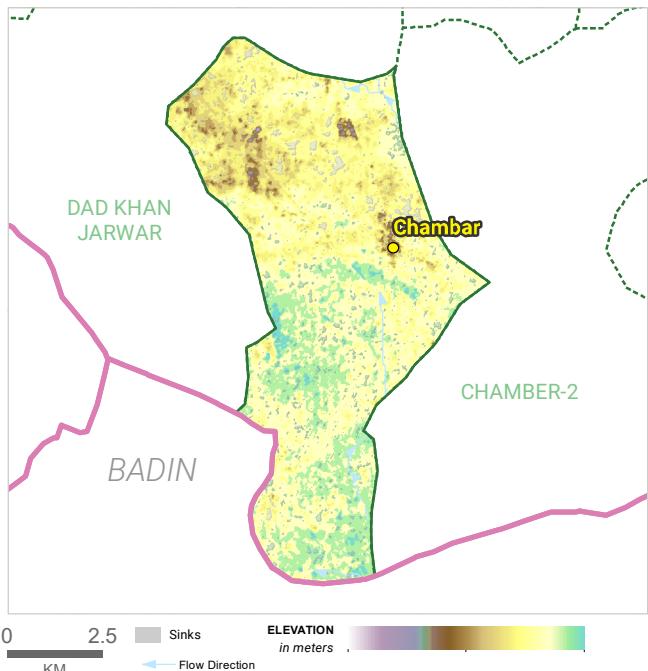
coverage area in sq.km

Built-up (Other)	0.6
Crop Irrigated	42.4
Crop Marginal and Irrigated Saline	6.2
Forest	0.2
Orchards	3.7
Pakka -Planned	0.2
Pakka -Unplanned	2.6
RangeLands	2.0
Wet Area	0.9

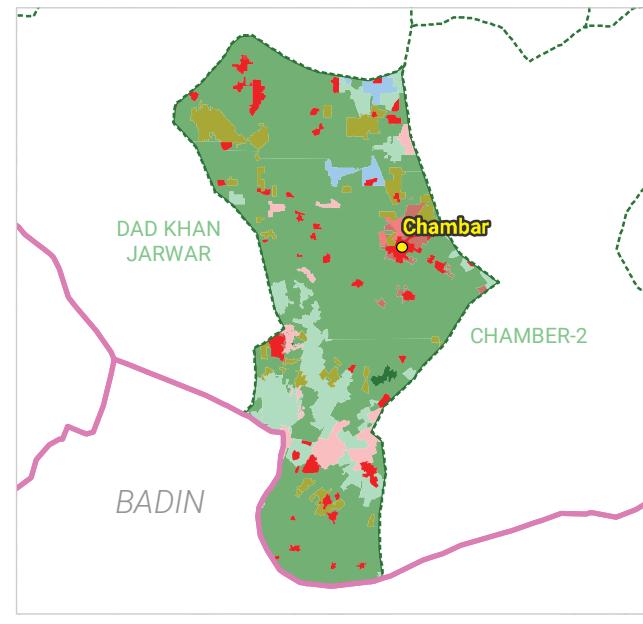
## Critical Infrastructure



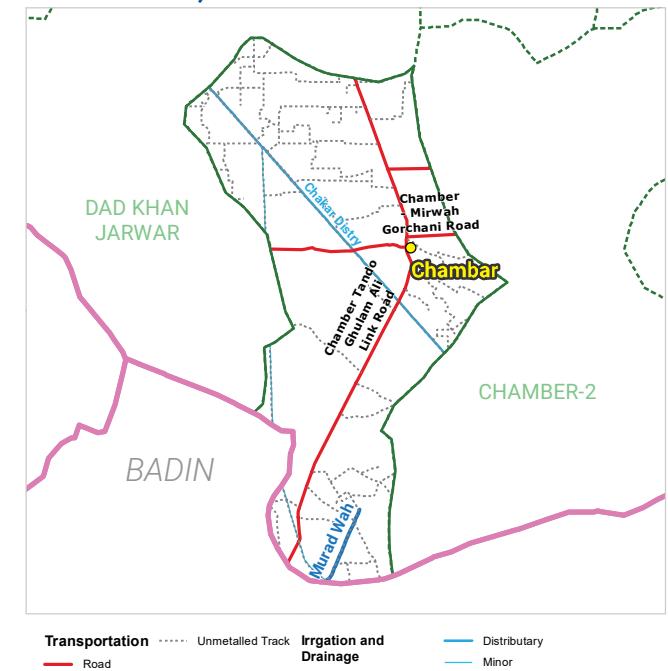
## DEM AND FLOW DIRECTION



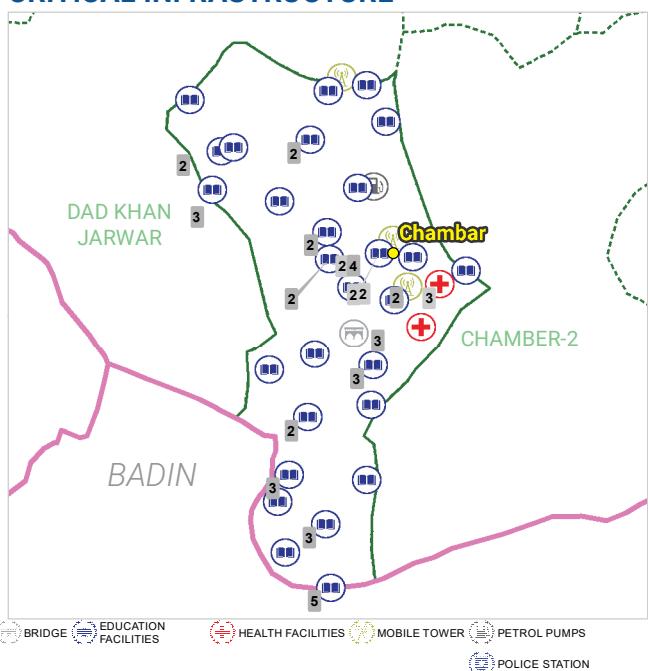
## LAND USE / LAND COVER



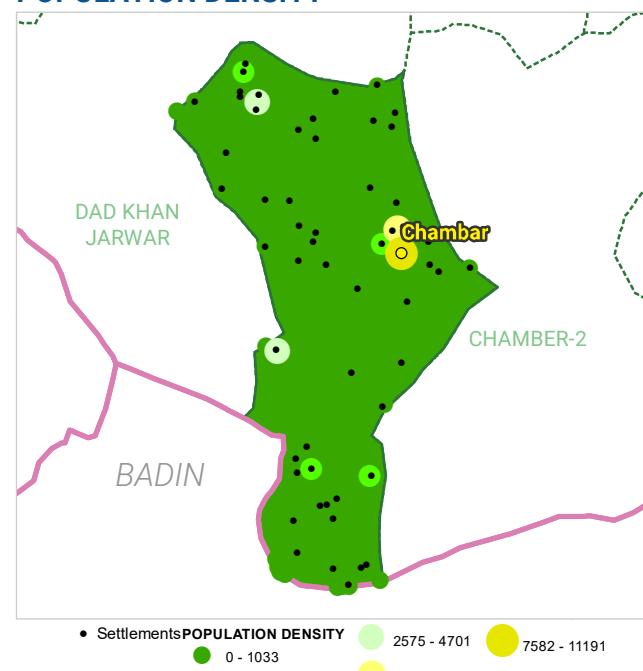
## TRANSPORT, IRRIGATION AND DRAINAGE



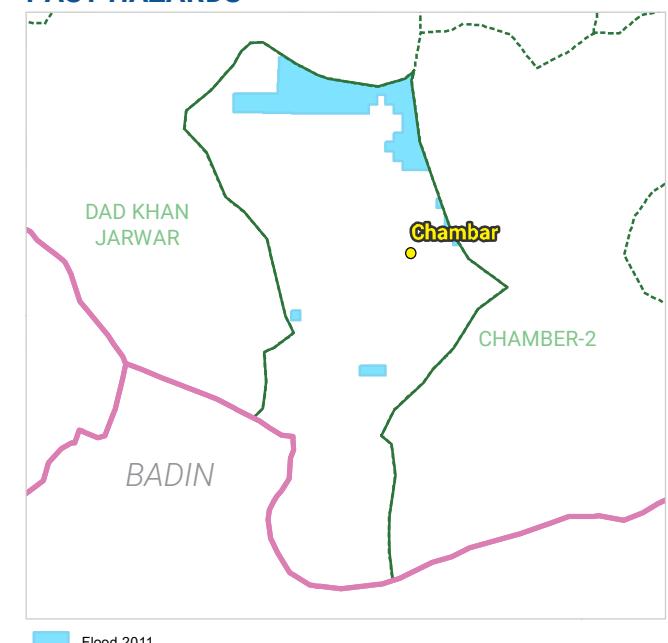
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY

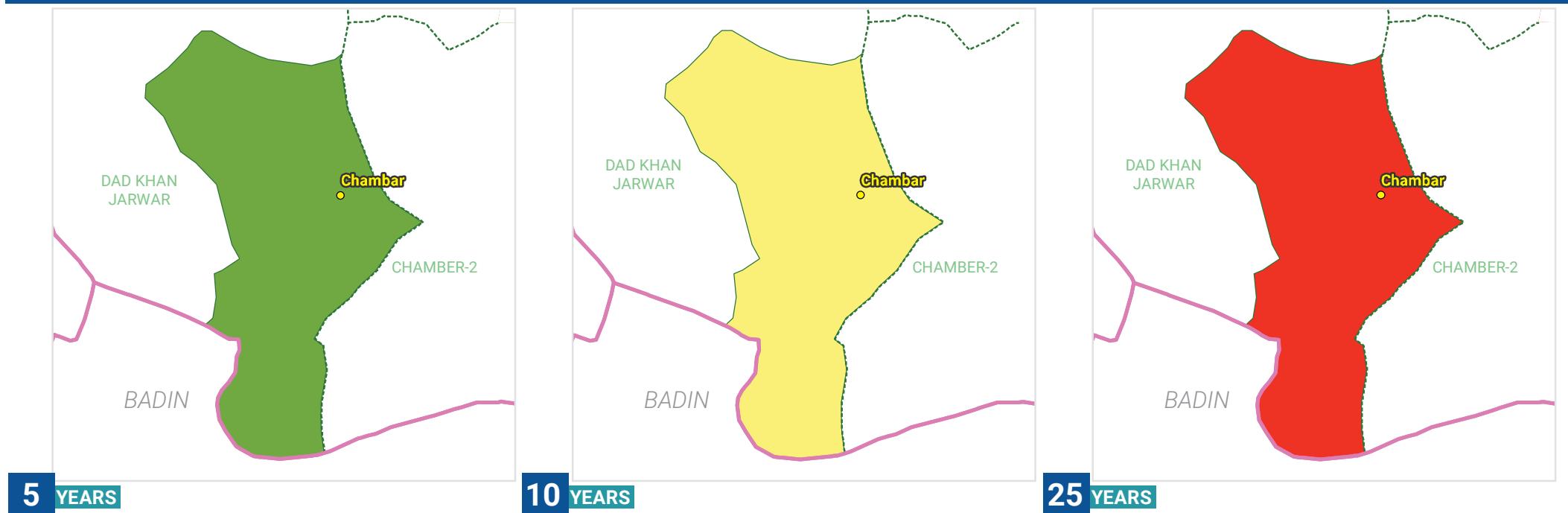
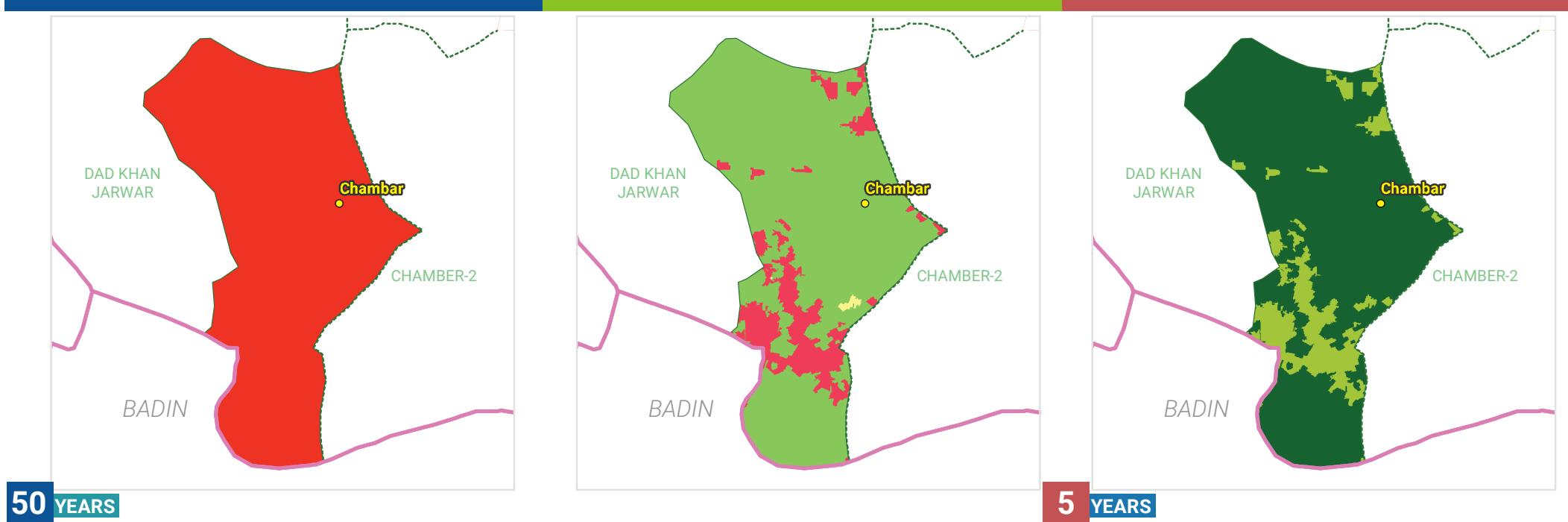
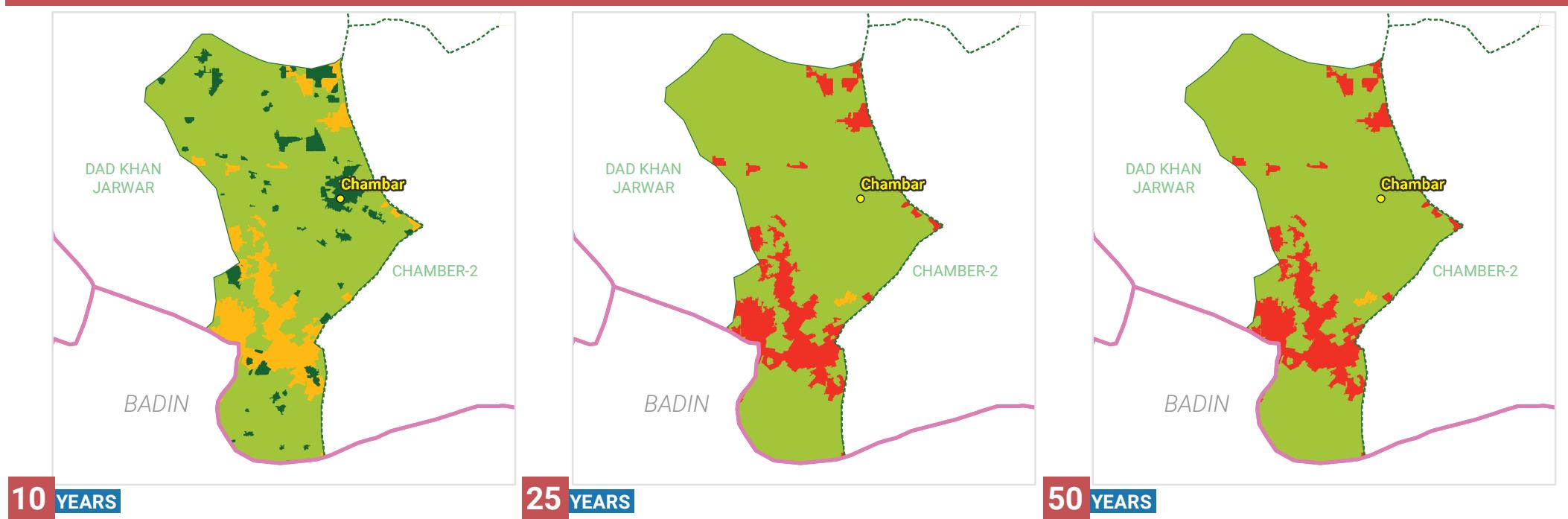


## PAST HAZARDS



**FLOOD**

THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

**METEOROLOGICAL DROUGHT****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD****VULNERABILITY****RISK****RISK AT DIFFERENT RETURN PERIODS**

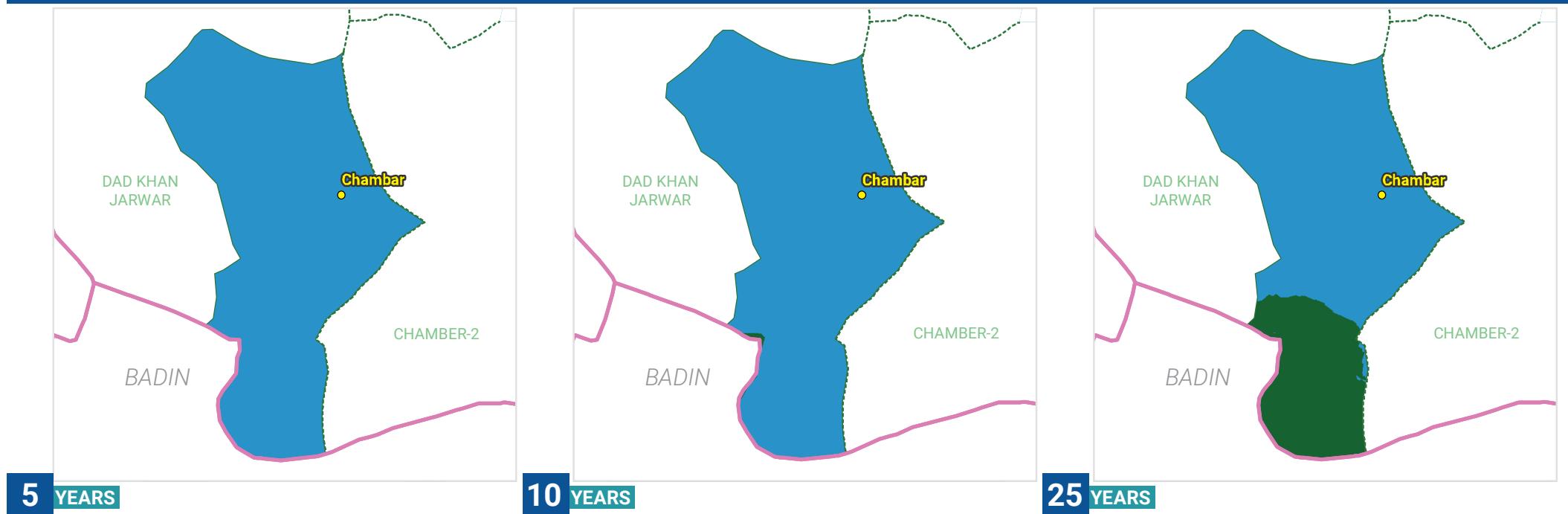
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

60	9592	47590	52.20	0	0.17	0	1.99
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0.87						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

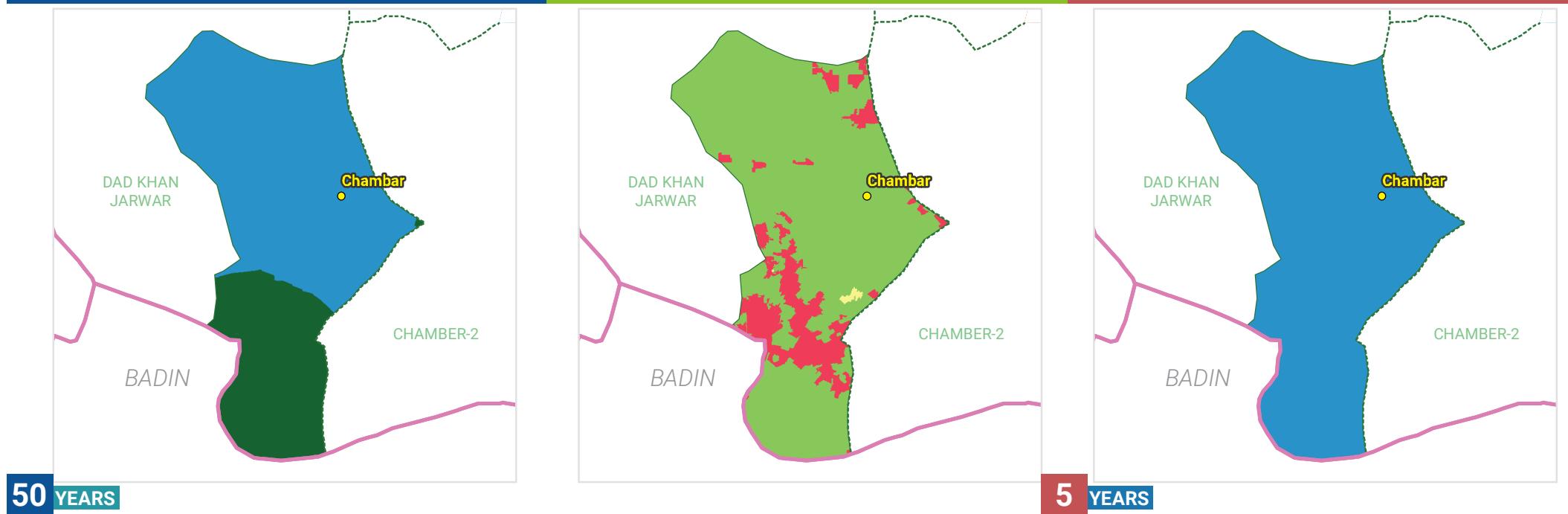
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

No Hazard	Mild
Severe	Extreme

Moderate

None 0 - 25
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Low 26 - 50
----------------

## VULNERABILITY

Medium 51 - 75
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High 76 - 100
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## RISK

Very Low 0 - 49
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Low 50 - 99
----------------

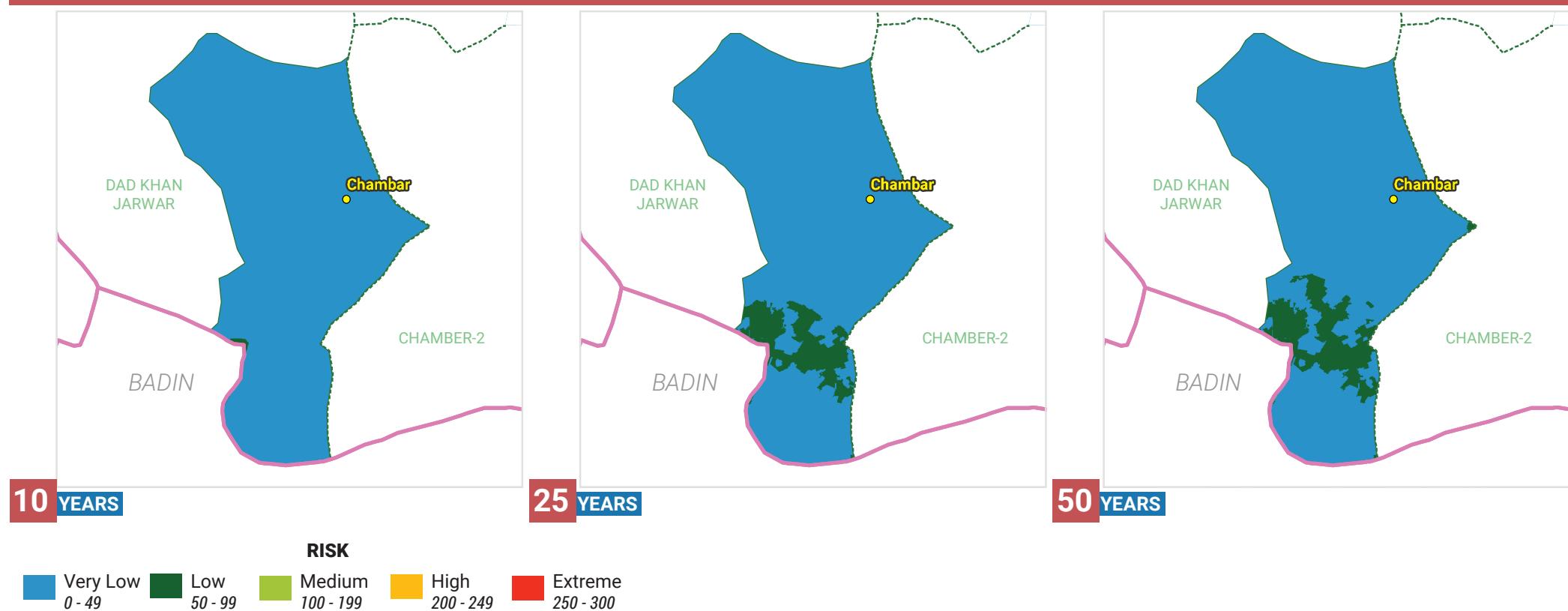
Medium 100 - 199
---------------------

High 200 - 249
-------------------

Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



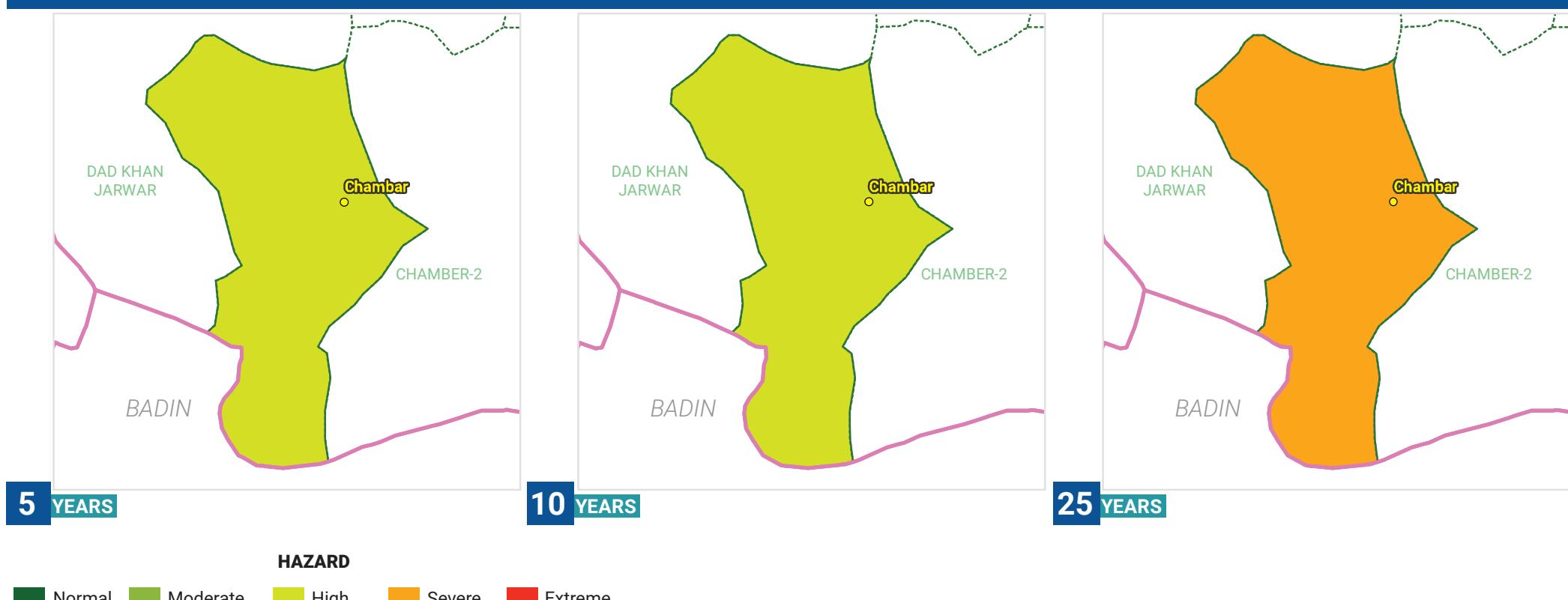
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

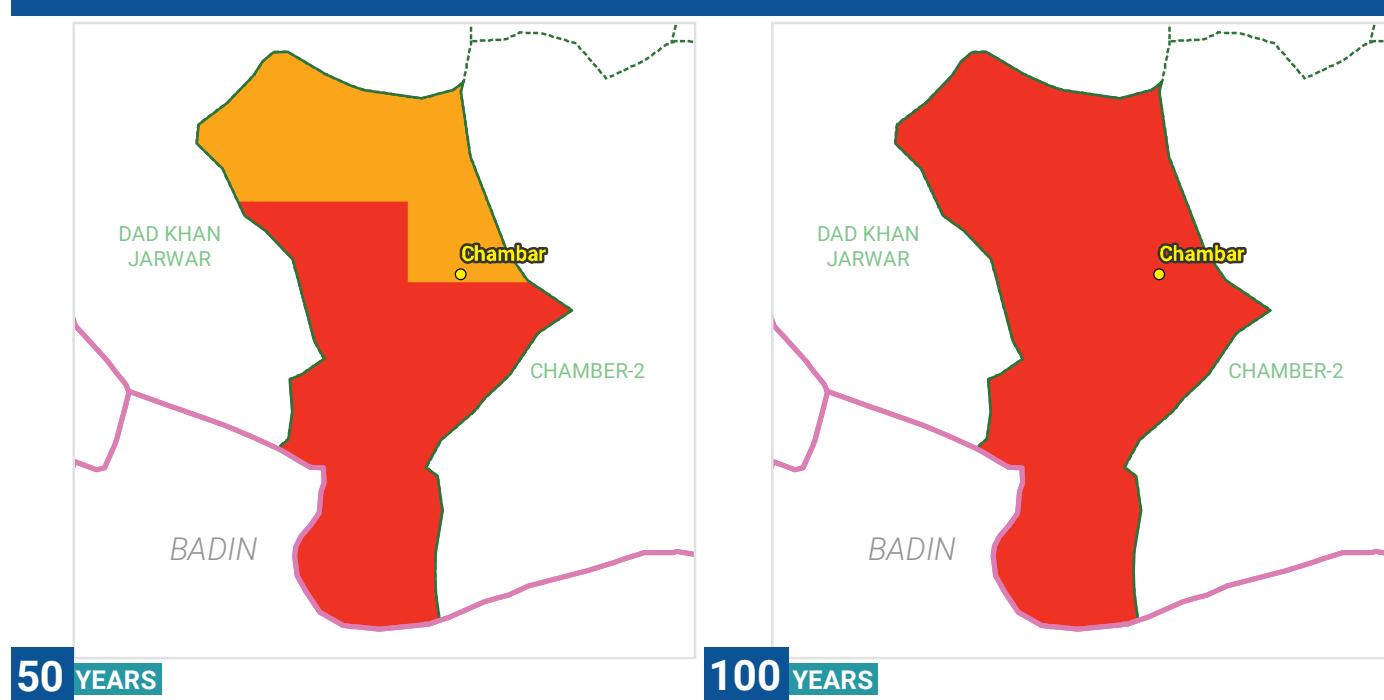
0	15	75	5.05	0	0.03	0	1.73
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

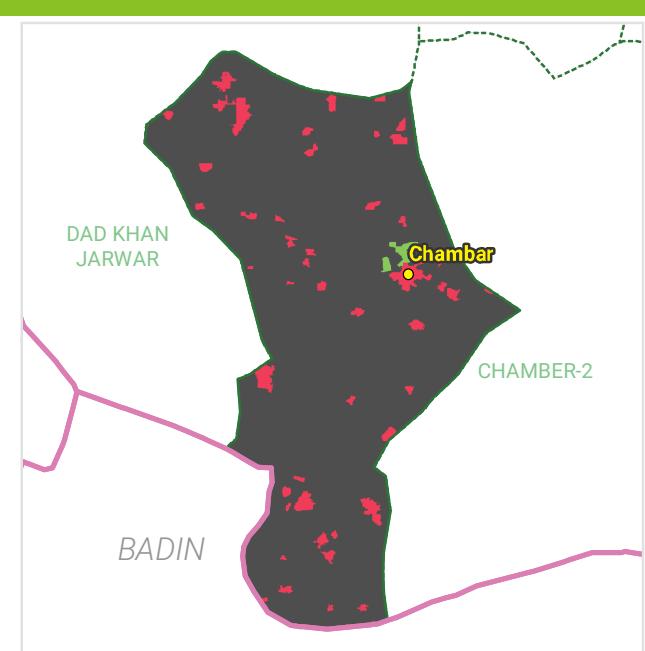
## HAZARD AT DIFFERENT RETURN PERIODS



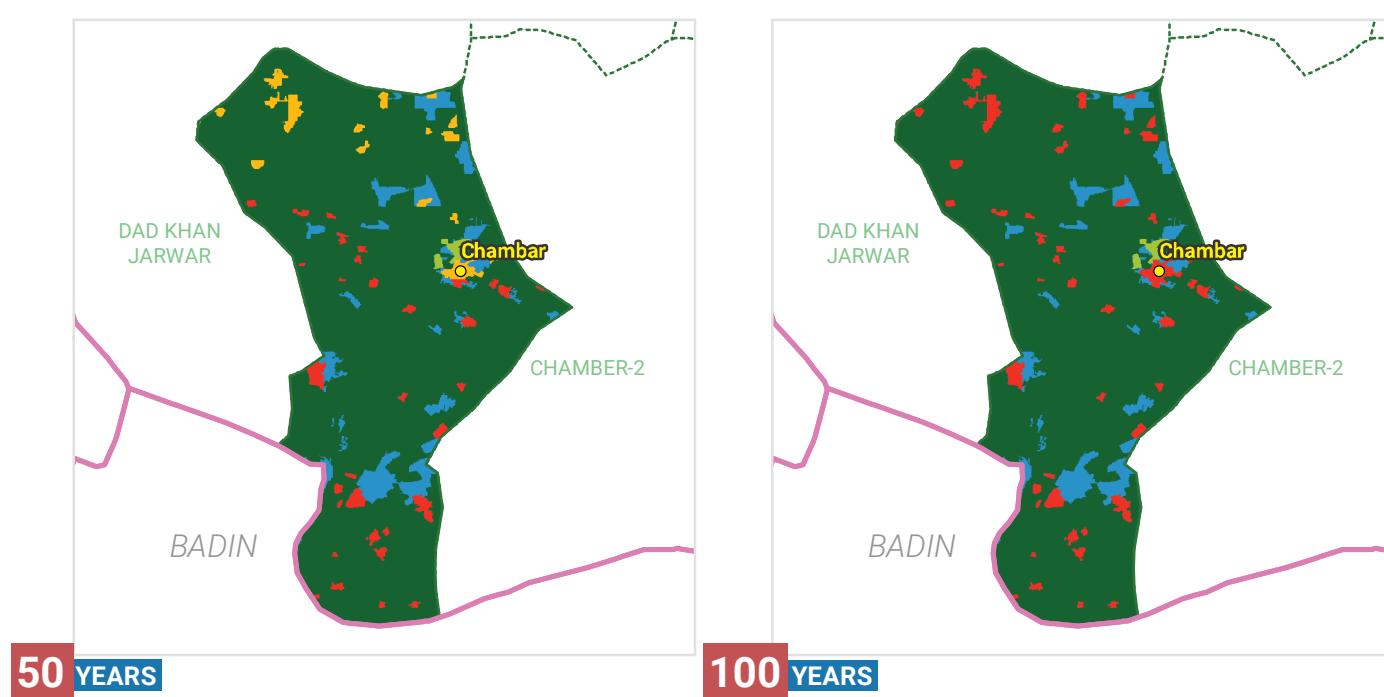
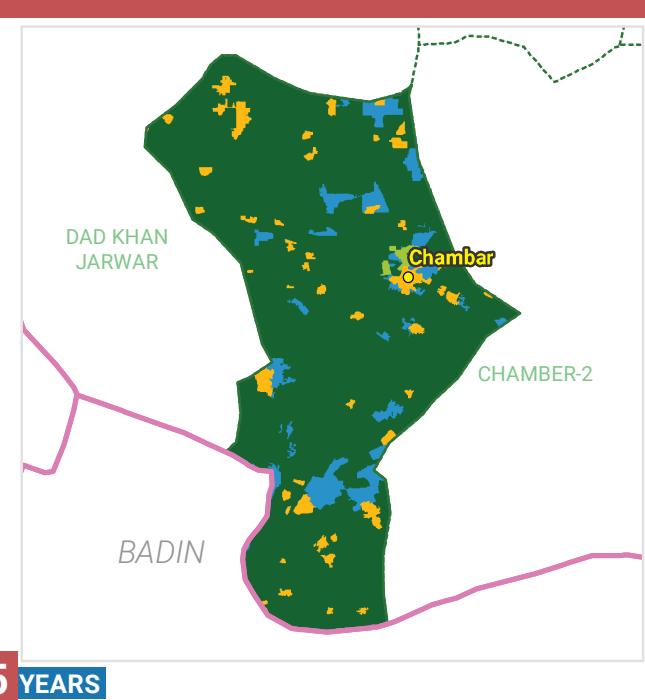
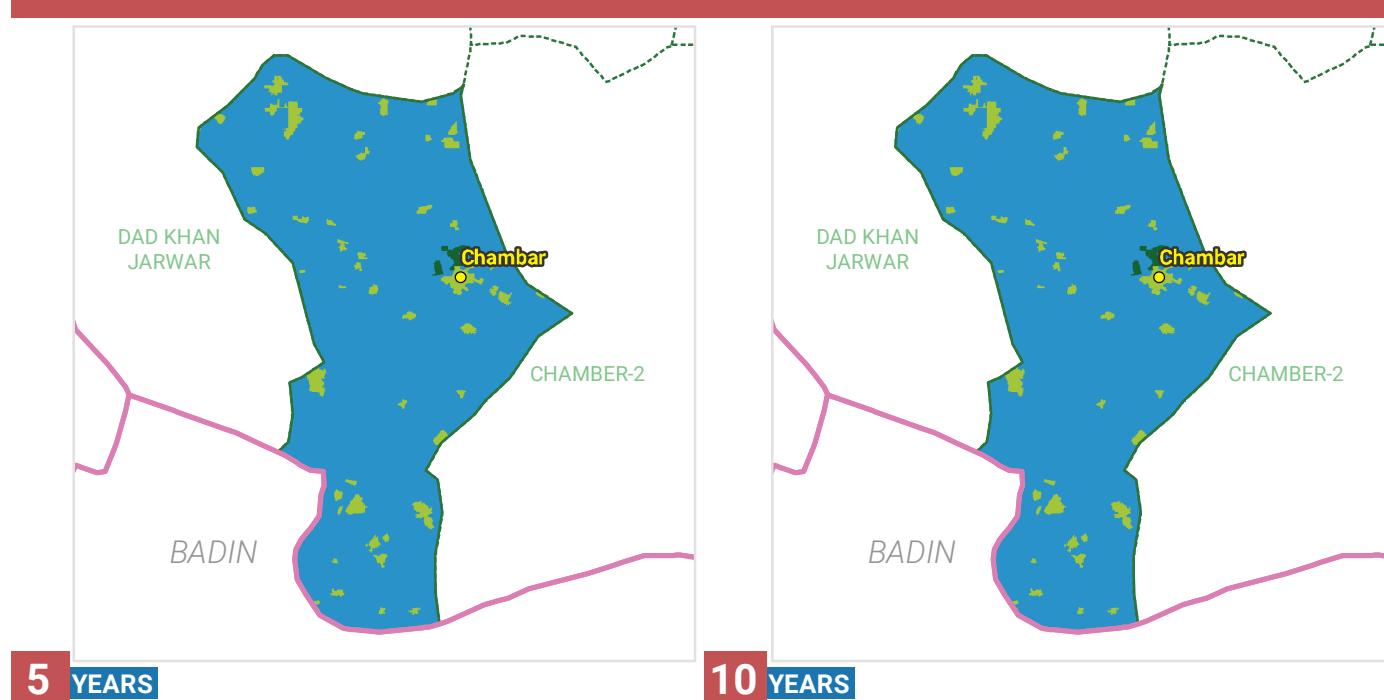
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

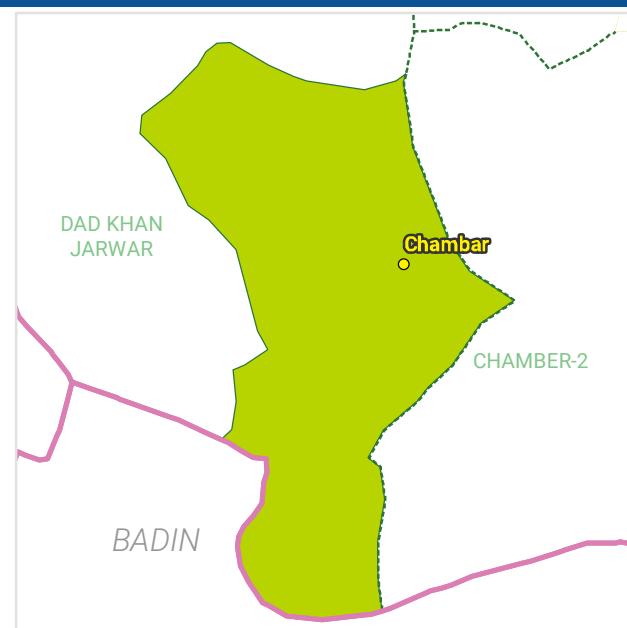
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

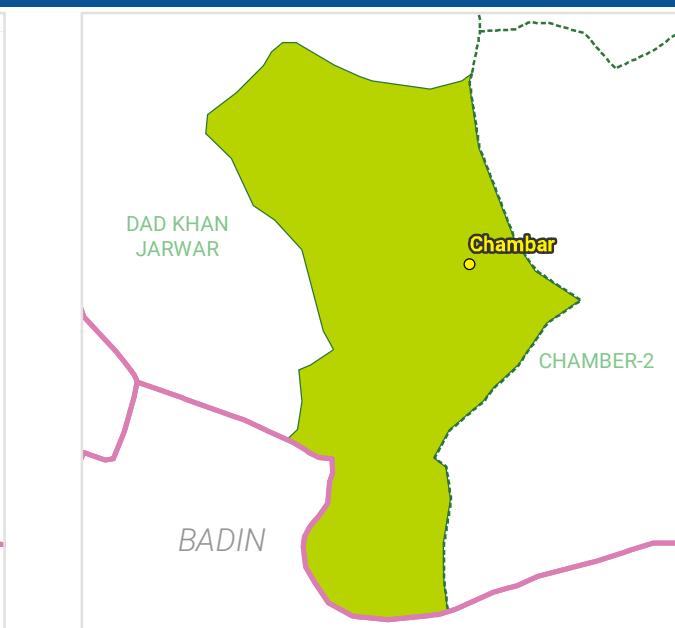
60	9528	47254	52.05	0	0.23	2.55
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

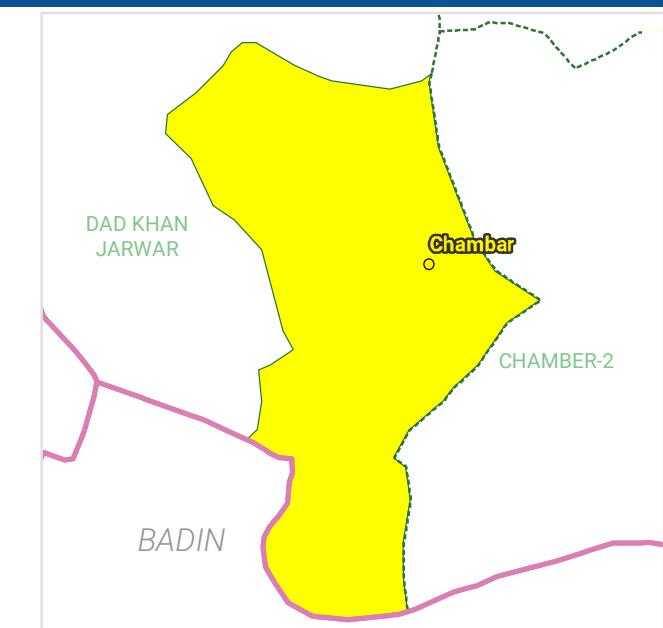
## HAZARD AT DIFFERENT RETURN PERIODS



25 YEARS

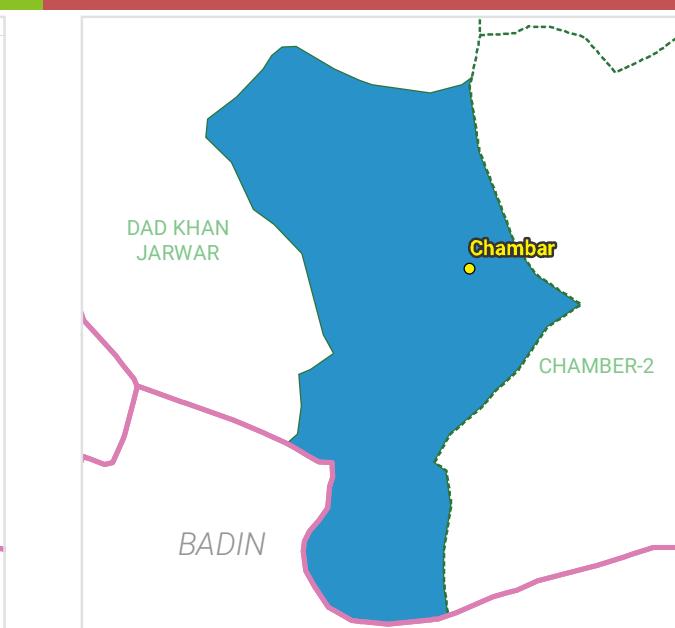
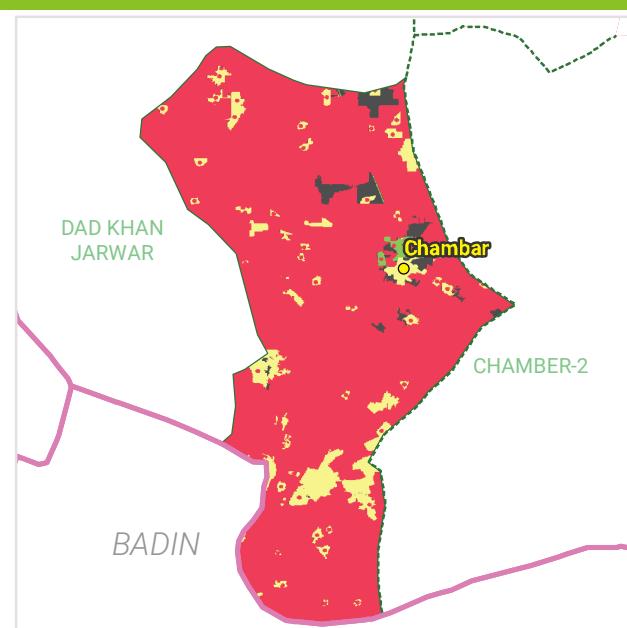


100 YEARS



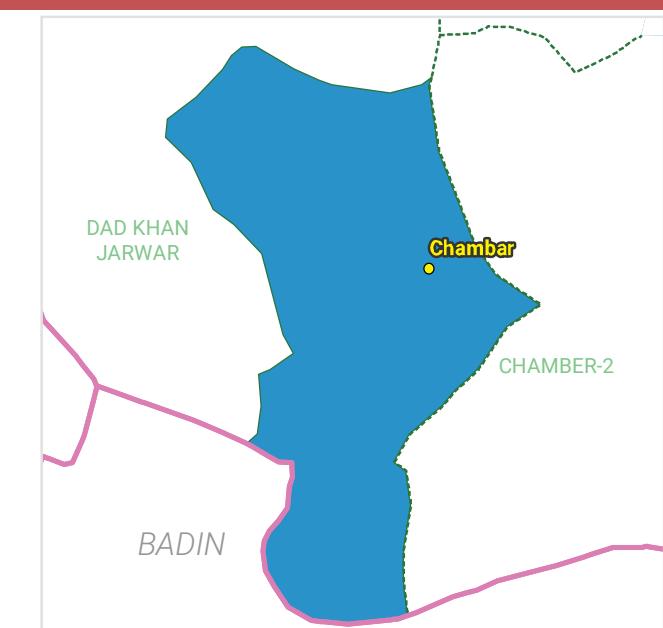
500 YEARS

## VULNERABILITY



25 YEARS

## RISK AT DIFFERENT RETURN PERIODS



100 YEARS

### HAZARD

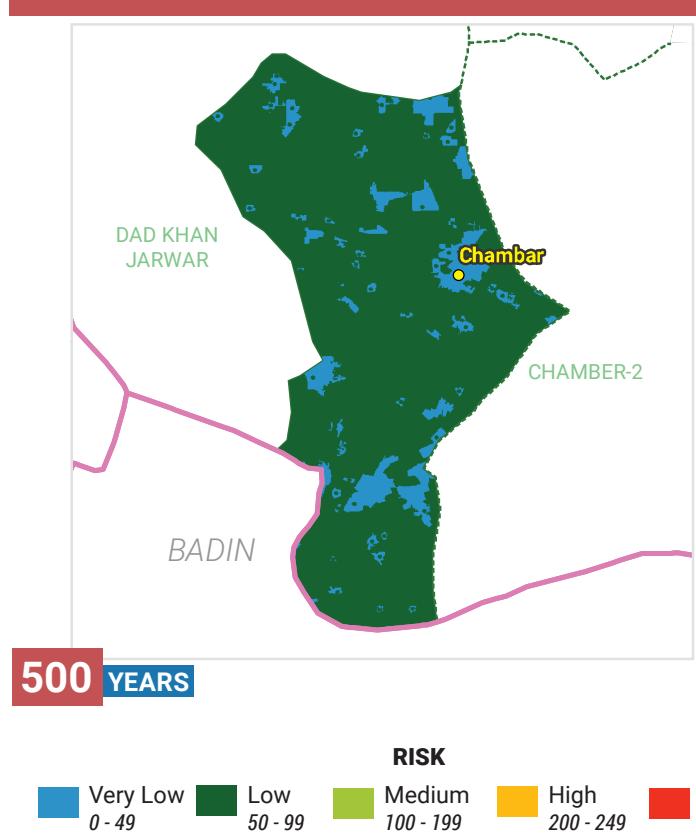
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

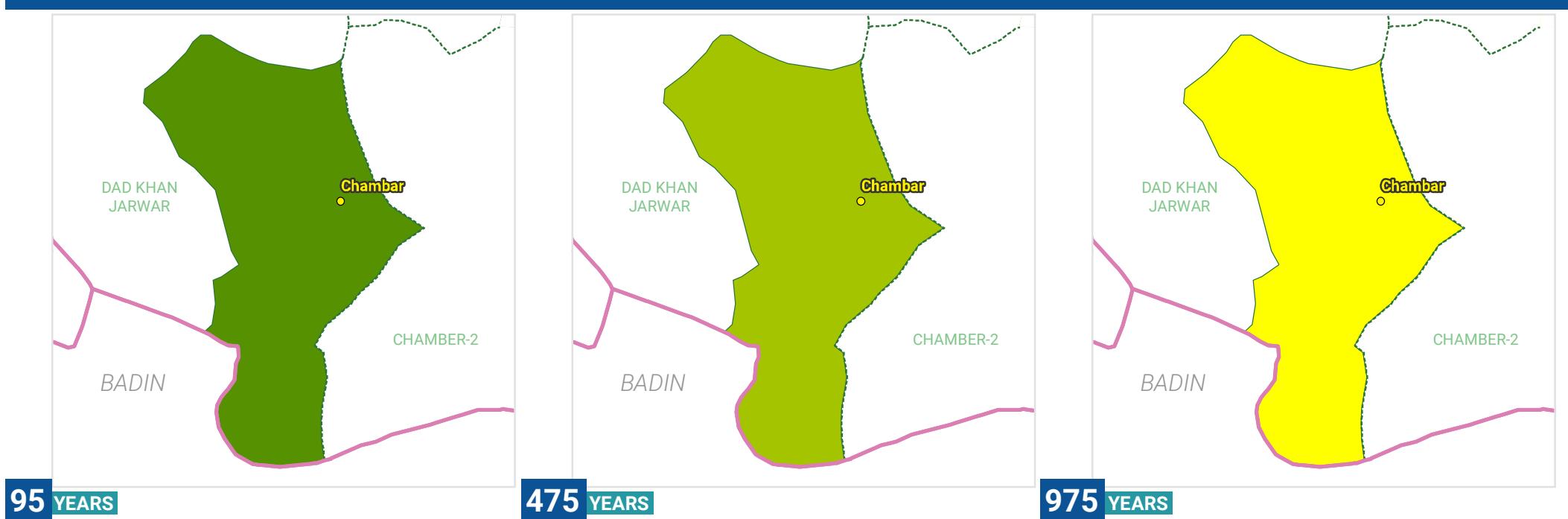
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

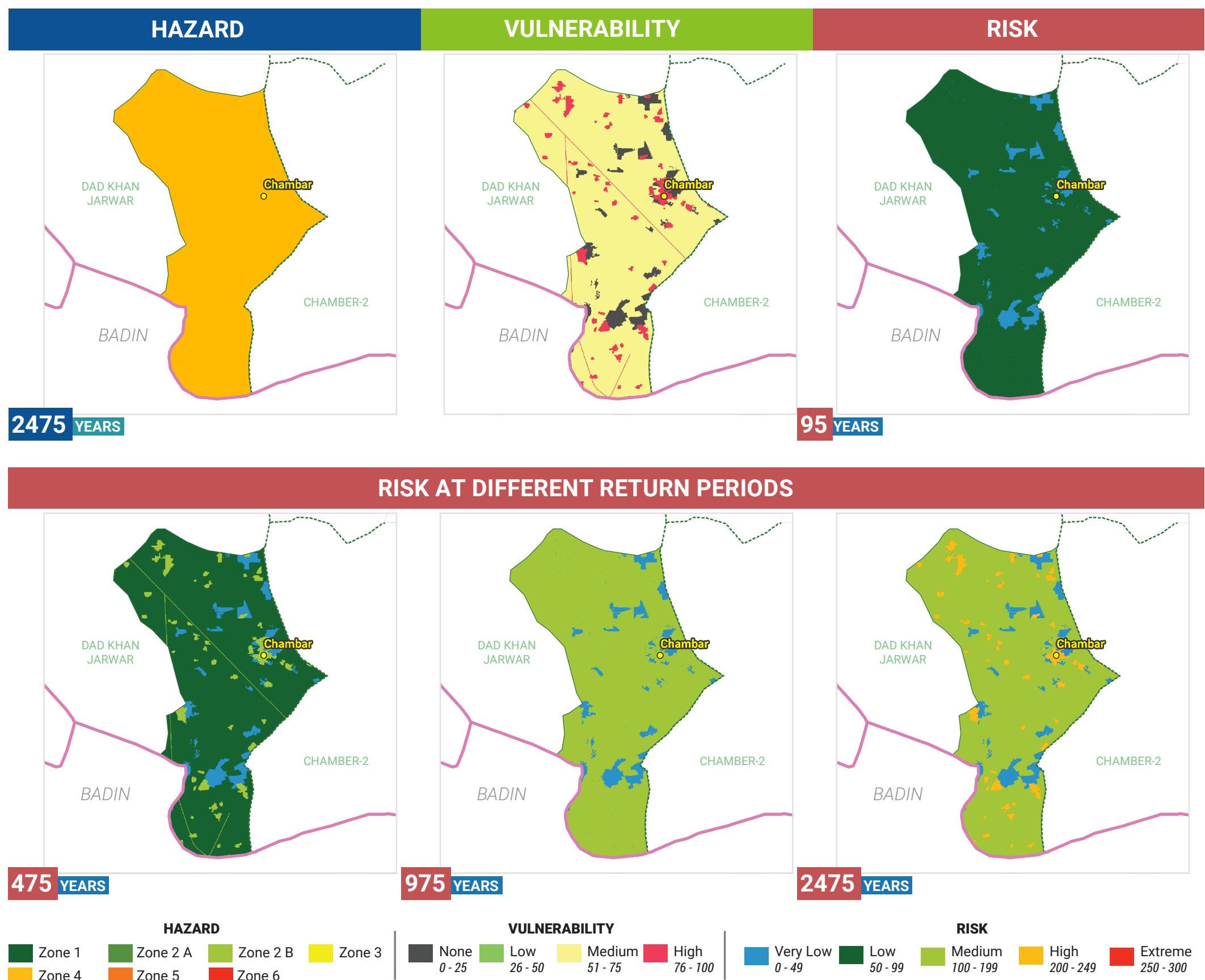
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS**

# EARTHQUAKE



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

60	9503	47144	52.09	0.00	0	0	0.23
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
2.55	0.07	110.63	0	18.59	0	1	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
51	0	0	0	4	0	4	3
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
1	2	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX

		RETURN PERIODS						
		5 YEARS	10 YEARS	25 YEARS	50 YEARS	100 YEARS	250 YEARS	500 YEARS
HAZARD	FLOOD	None	●	None	None	None	None	●
	METEOROLOGICAL DROUGHT	Low Medium	Low Medium High	Medium High Extremely High	Medium High Extremely High	●	●	●
	AGRICULTURAL DROUGHT	None	Low	Low	Low	●	●	●
	HEATWAVE	Low Medium	Low Medium	Low Medium High	Low Medium High Extremely High	Low Medium Extremely High	●	●
	CYCLONE	●	●	None	●	None	●	Low
	STORM SURGE	●	●	None	●	None	●	None
	EARTHQUAKE	Low	Low Medium	Medium	Medium High			
TSUNAMI	EARTHQUAKE MAGNITUDES							
	8.0 MAG.	8.5 MAG.	9.0 MAG.					
	None	None	None					

Legend:

- Low 50-99
- Medium 100-199
- High 200-249
- Extreme 250-300



## UC - CHAMBER-2

Union Council area in sq. km

89

Surrounding UCs / Features

**BEGAN JARWAR** in North  
**SANJAR CHANG** in East  
**BADIN DISTRICT** in South  
**CHAMBER-1** in West

Population

2017 approx. **32,237**

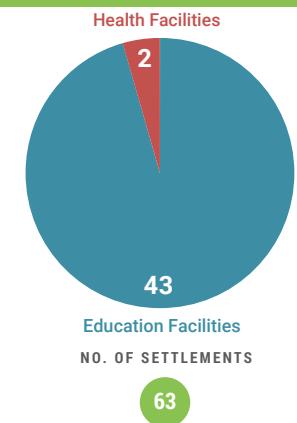
No. of household

2017 approx. **6,418**

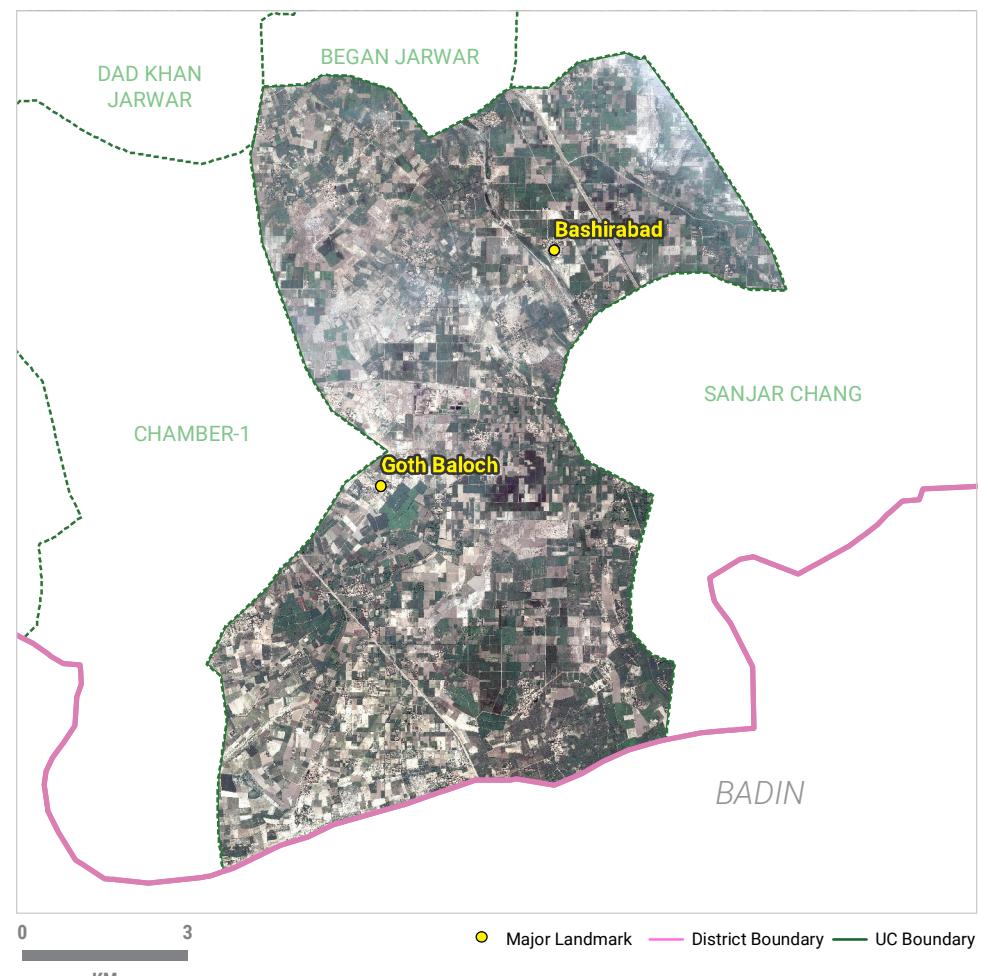
**Land Use Land Cover**  
coverage area in sq.km

Built-up (Other)	0.3
Crop Irrigated	67.5
Crop Marginal and Irrigated Saline	12.4
Forest	0.1
Kachha	0.0
Natural Vegetation in Wet Areas	0.3
Orchards	2.1
Pakka - Planned	0.3
Pakka - Unplanned	2.4
Range Lands	3.2
Water Body	0.3
Wet Area	0.5

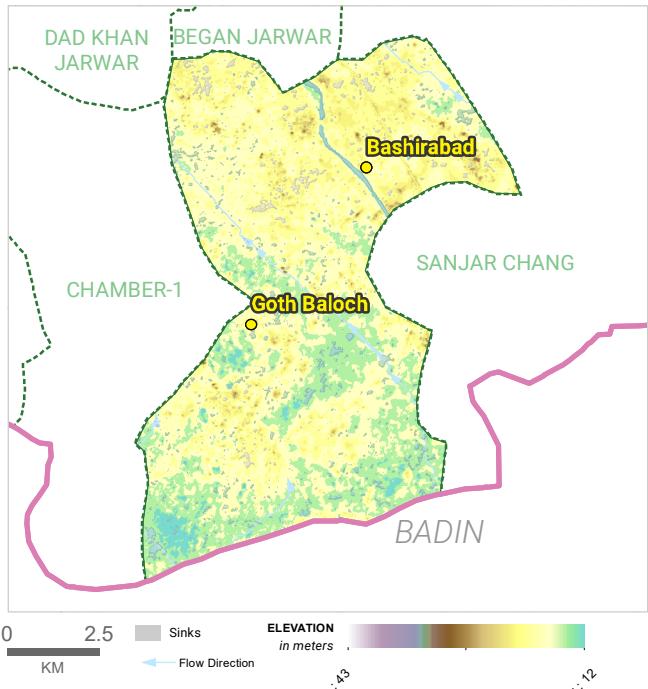
**Critical Infrastructure**



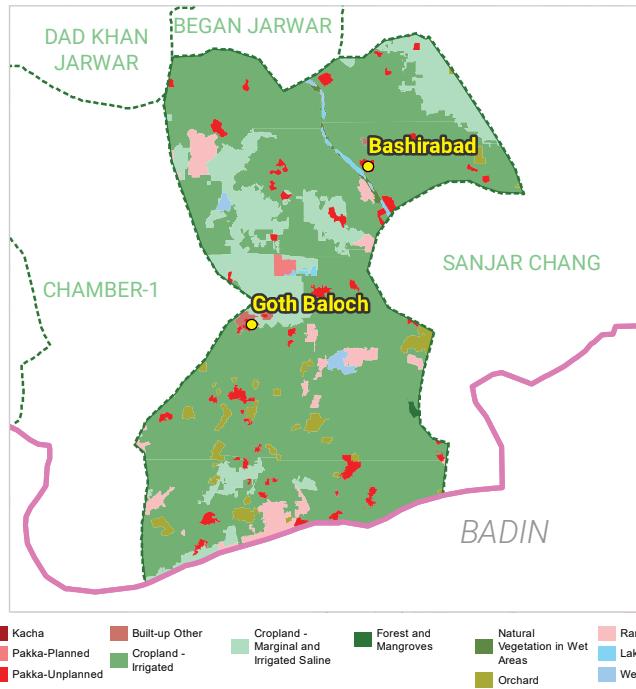
## SATELLITE IMAGERY



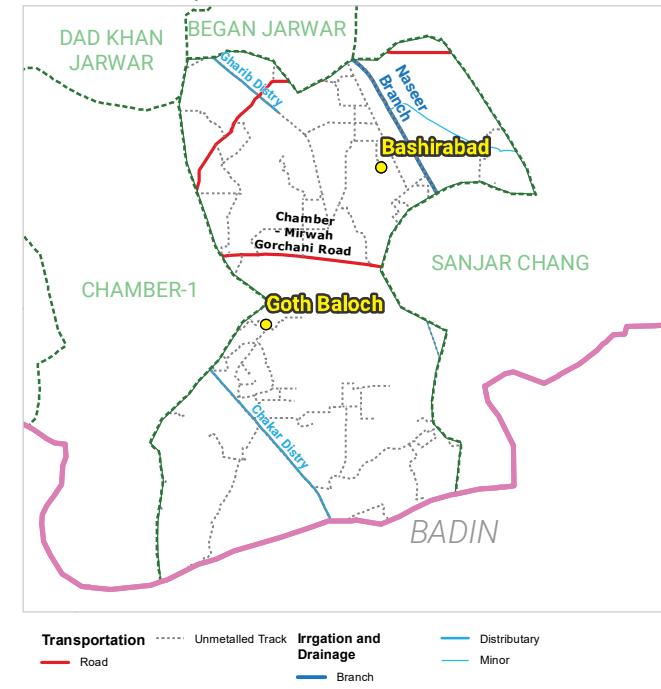
## DEM AND FLOW DIRECTION



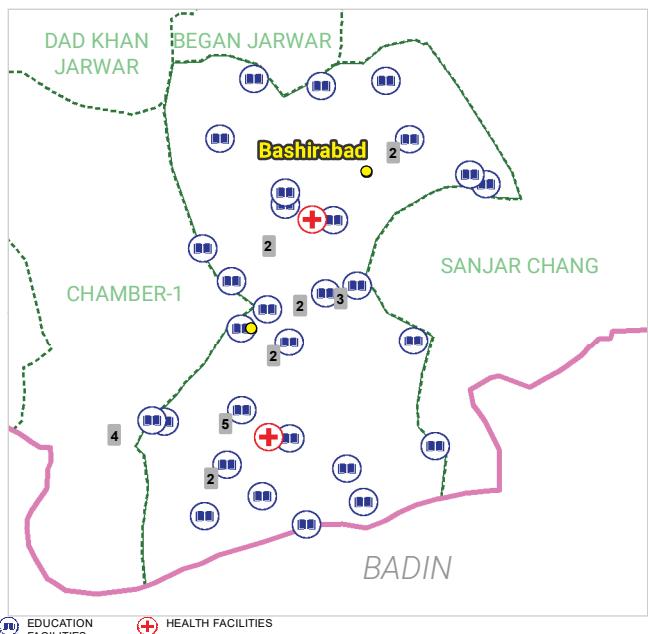
## LAND USE / LAND COVER



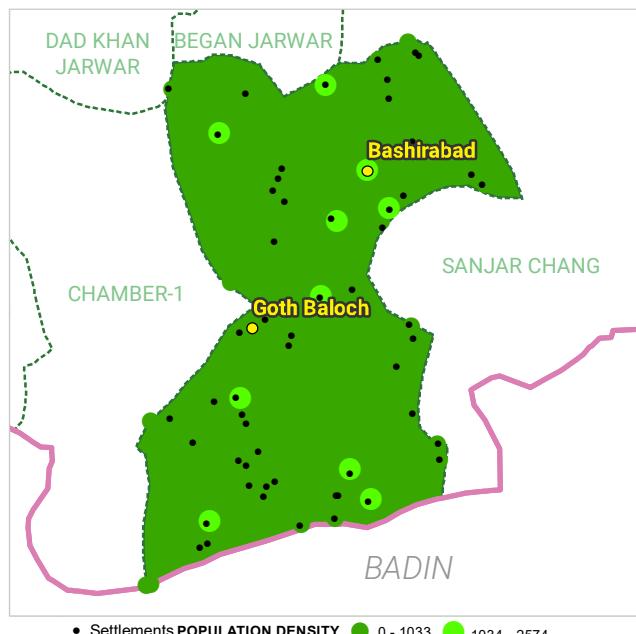
## TRANSPORT, IRRIGATION AND DRAINAGE



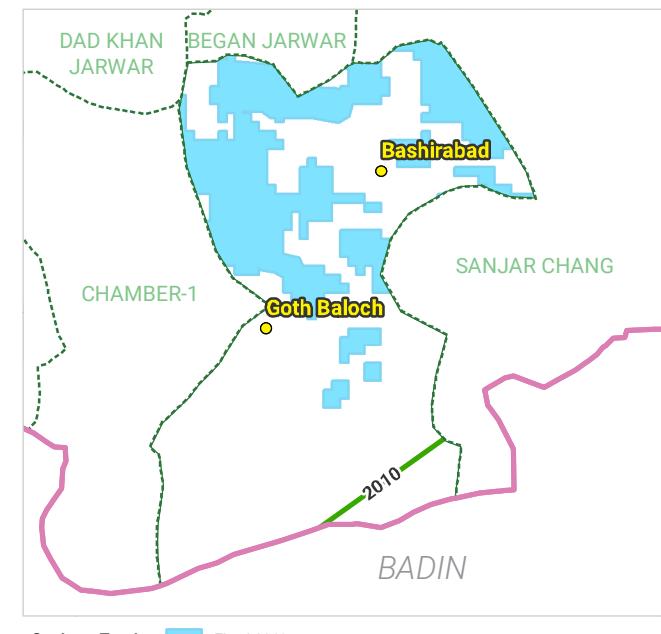
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

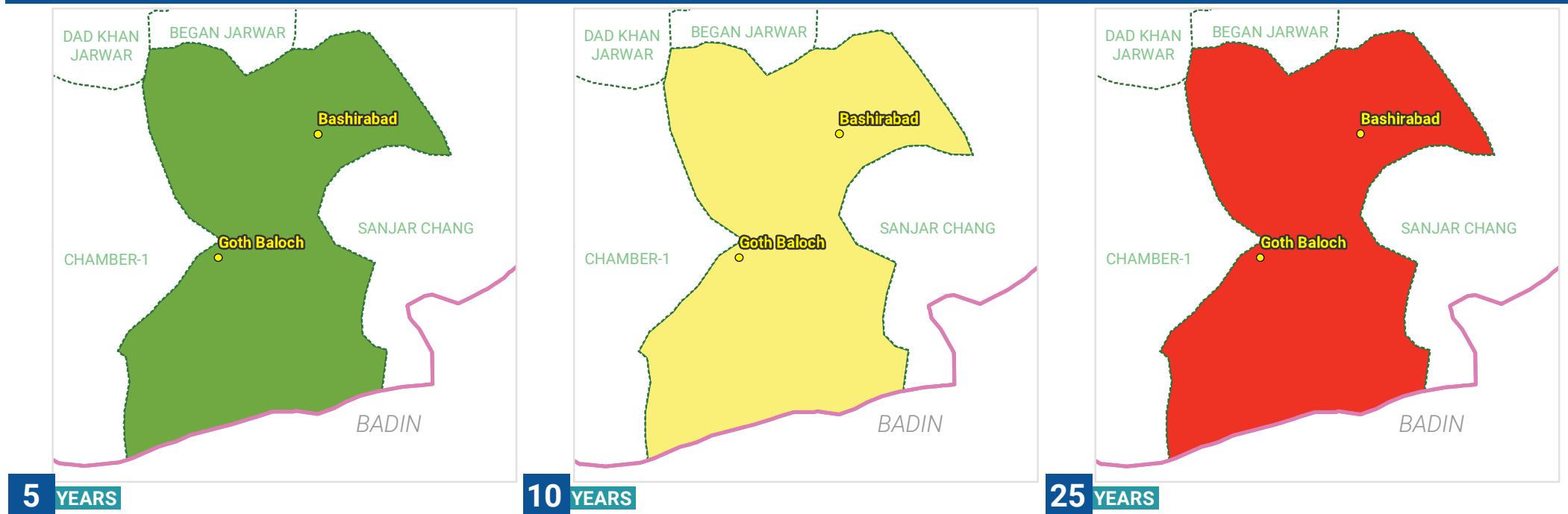


## FLOOD

THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

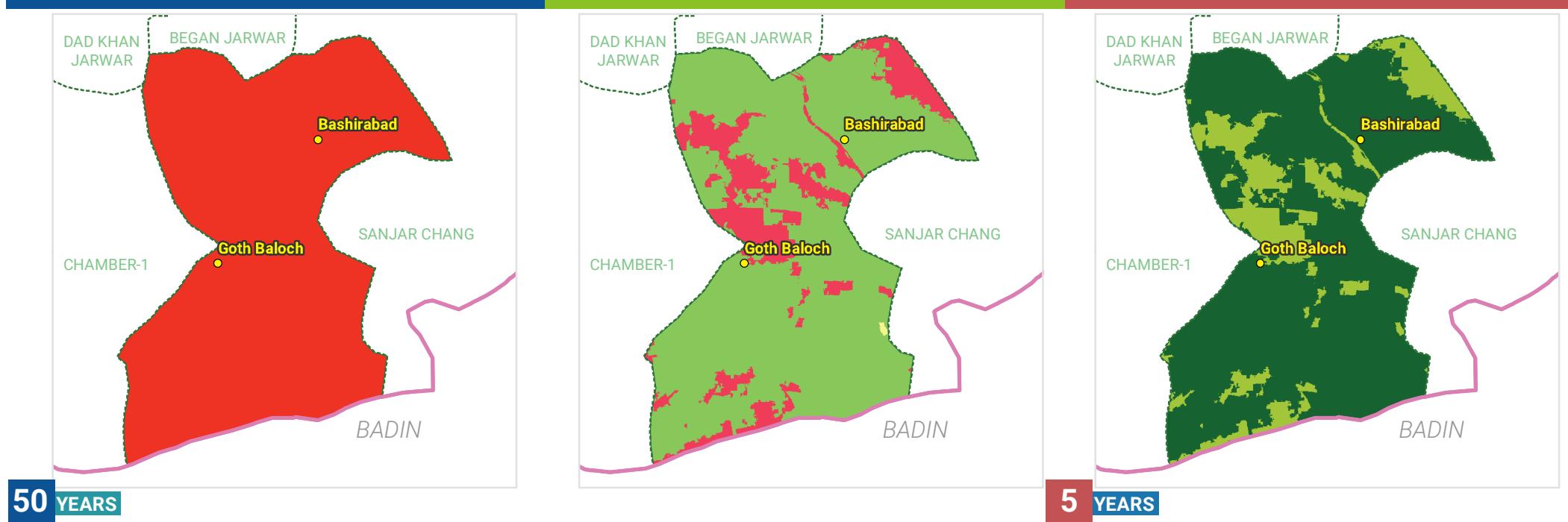
## HAZARD AT DIFFERENT RETURN PERIODS



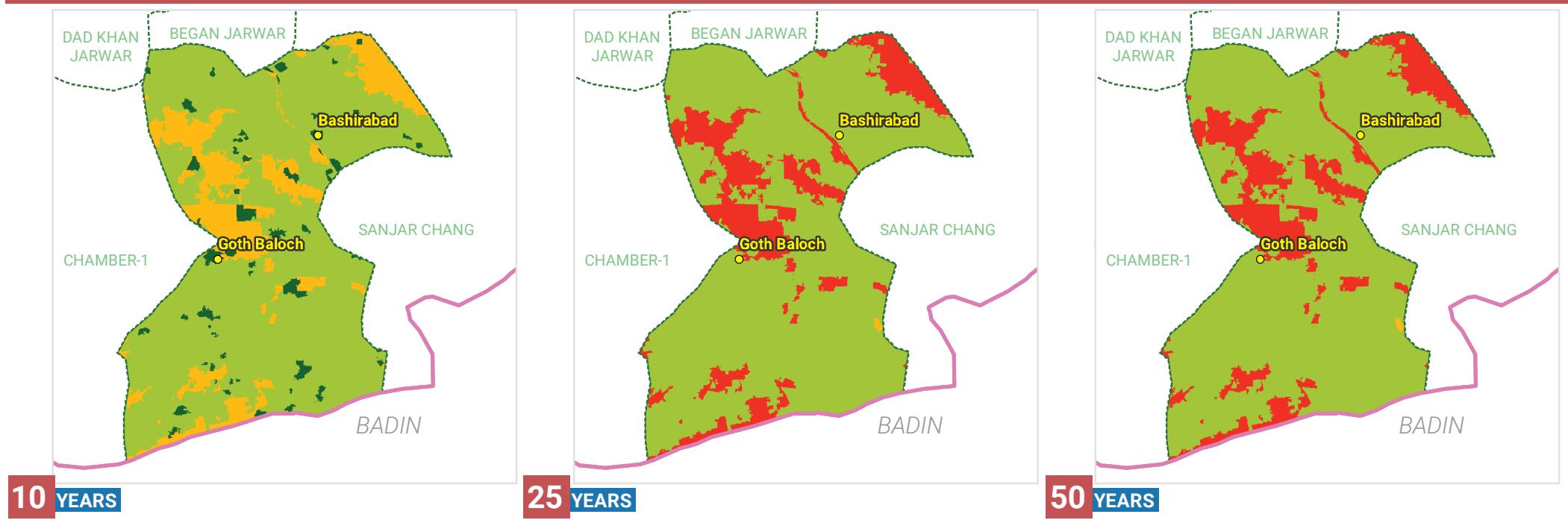
## HAZARD

## VULNERABILITY

## RISK



## RISK AT DIFFERENT RETURN PERIODS



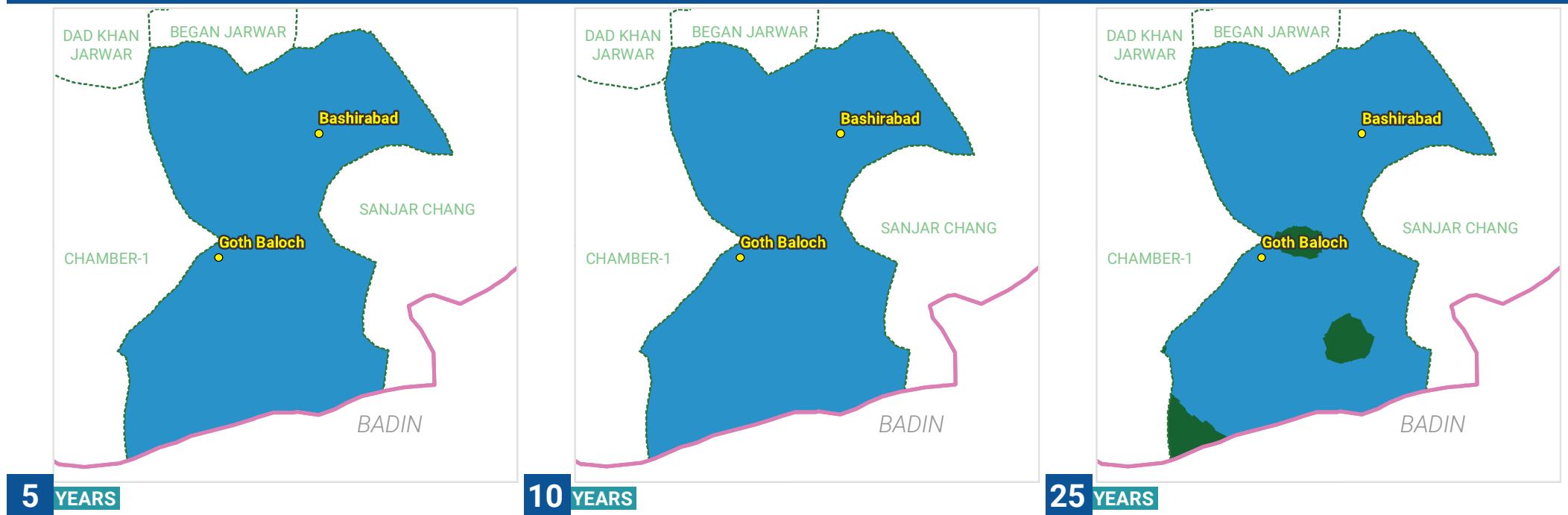
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

63	6418	32237	81.97	0	0.09	0.25	3.22
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.31	0.45						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

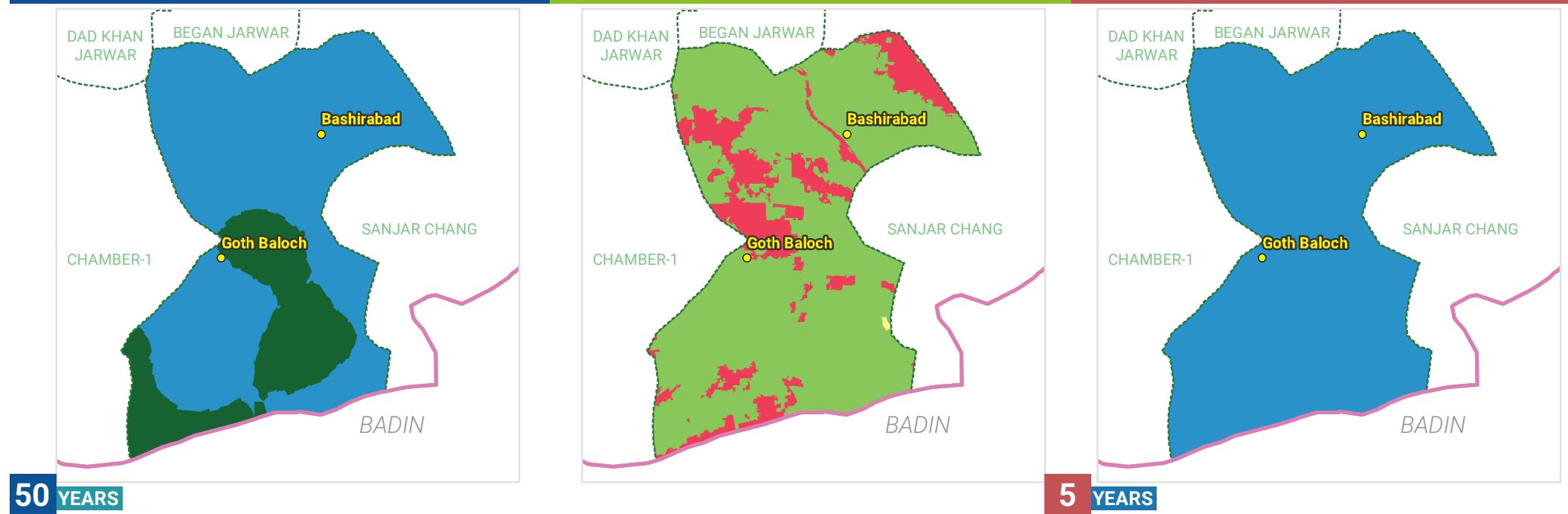
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

No Hazard	Mild	Moderate
Severe	Extreme	

## VULNERABILITY

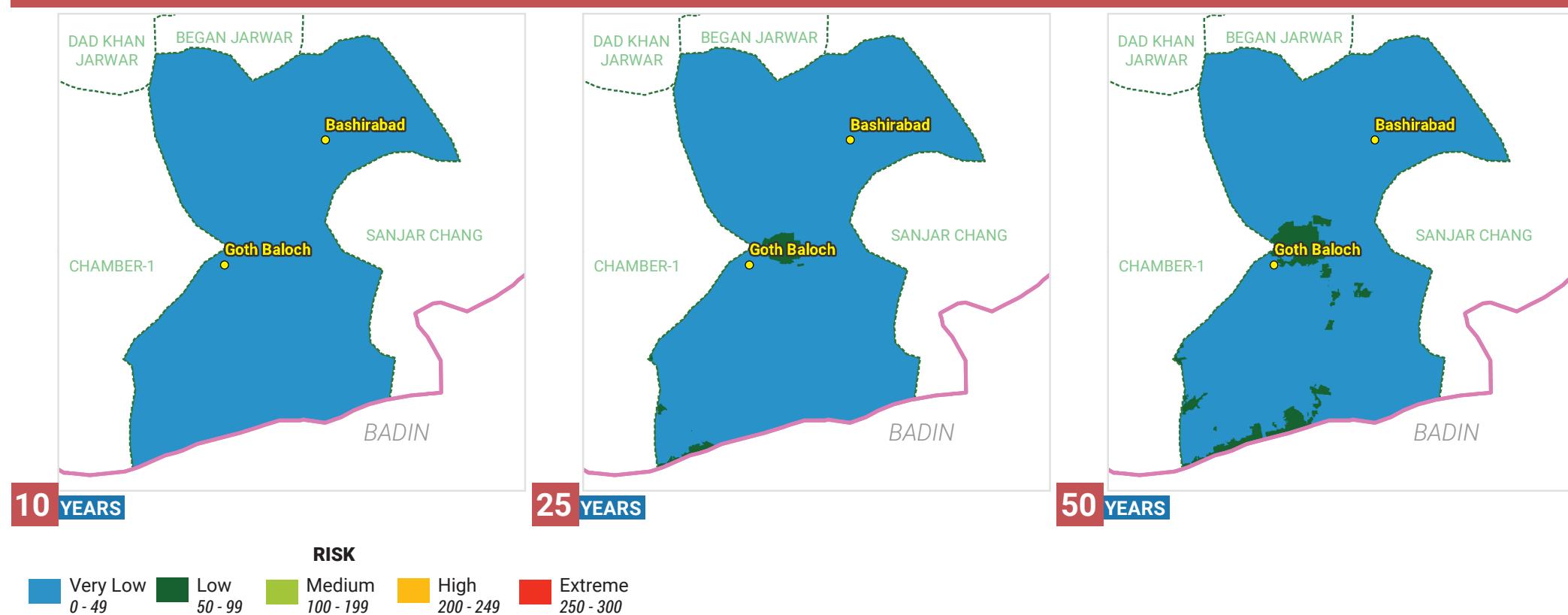
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



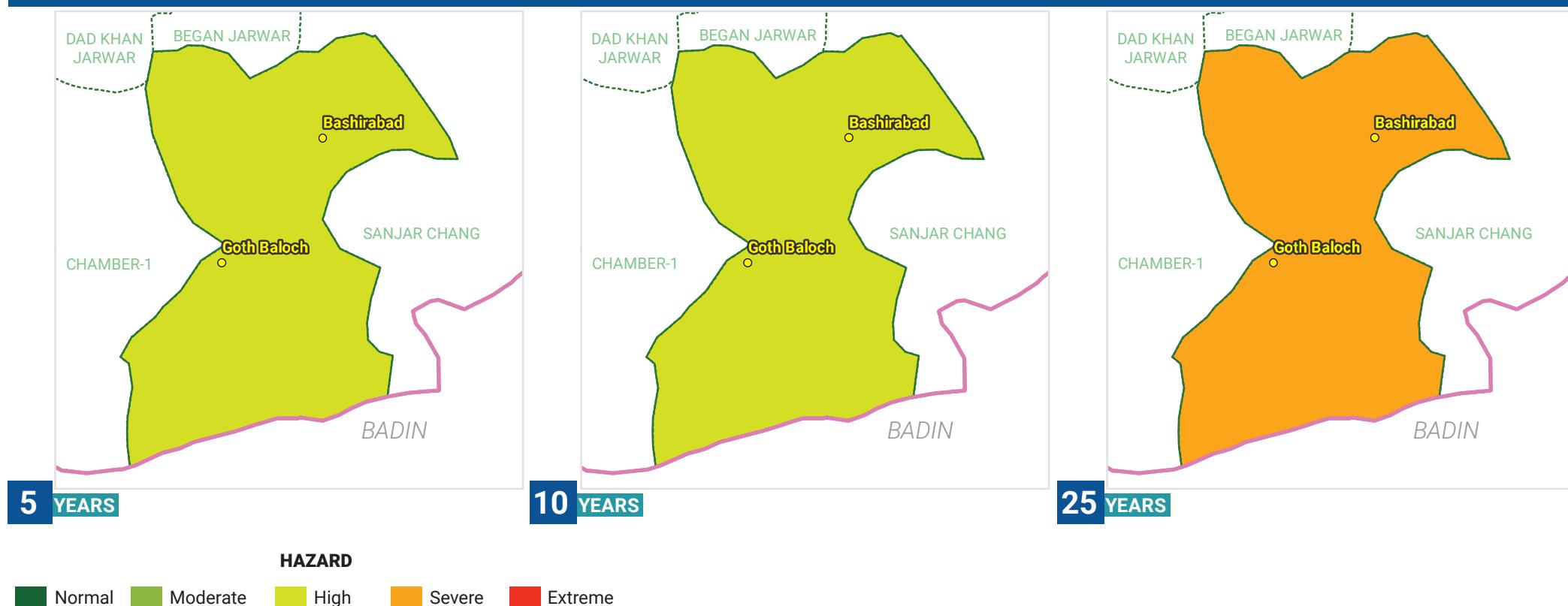
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

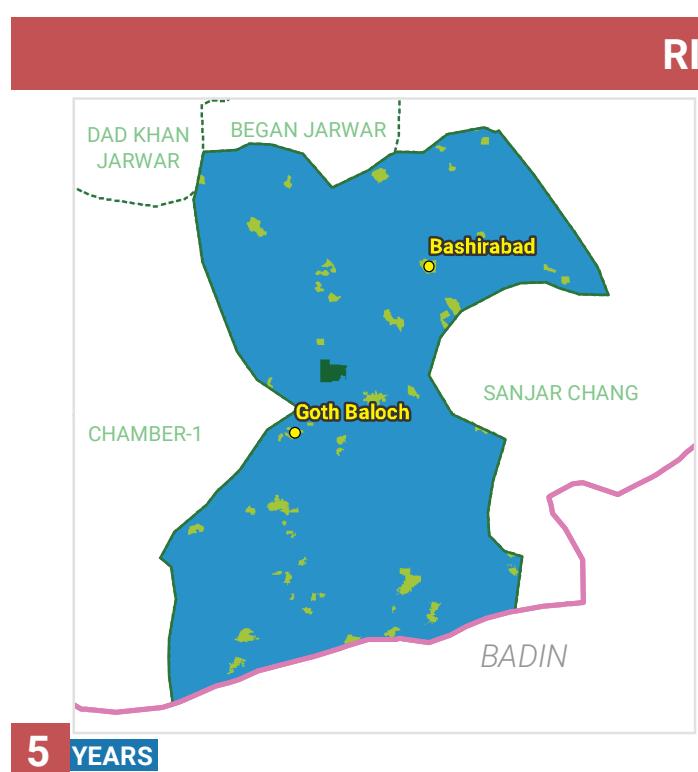
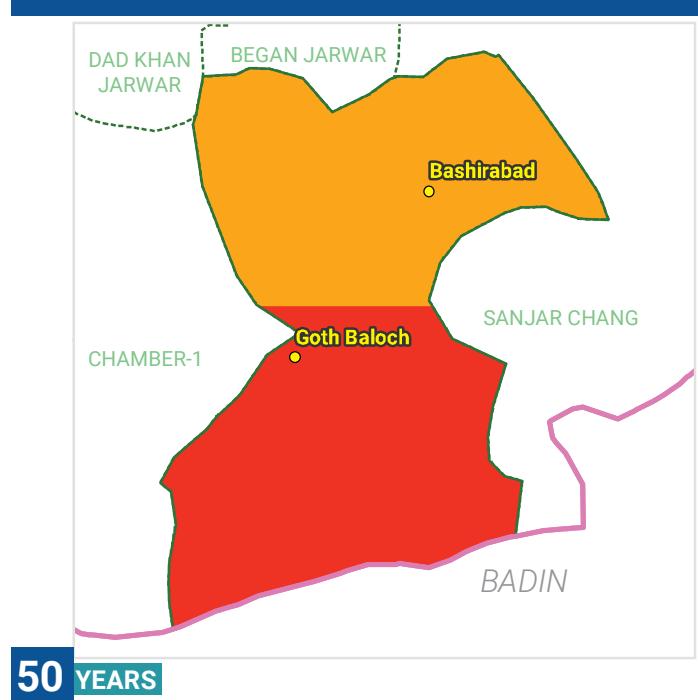
0	16	80	3.31	0	0	0	1.88
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.11	0.00						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

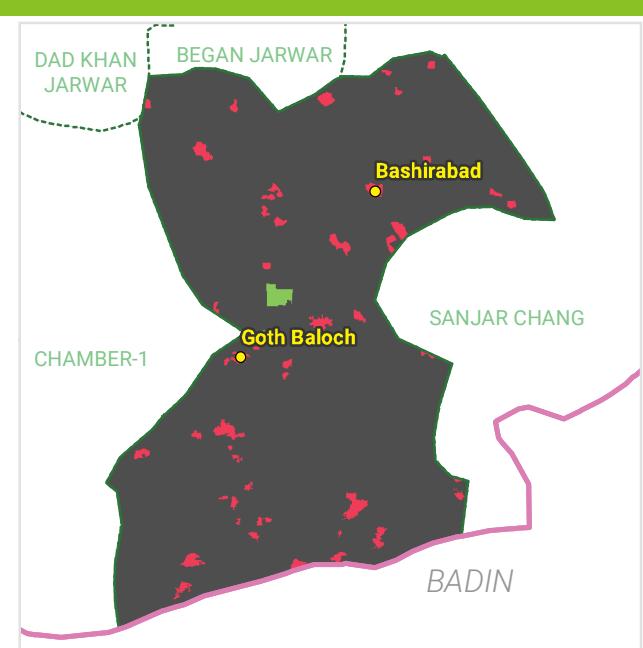
## HAZARD AT DIFFERENT RETURN PERIODS



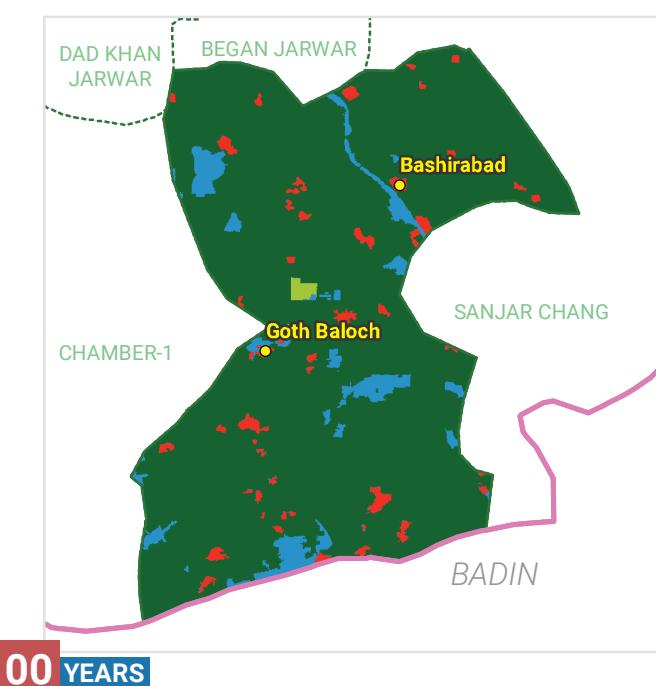
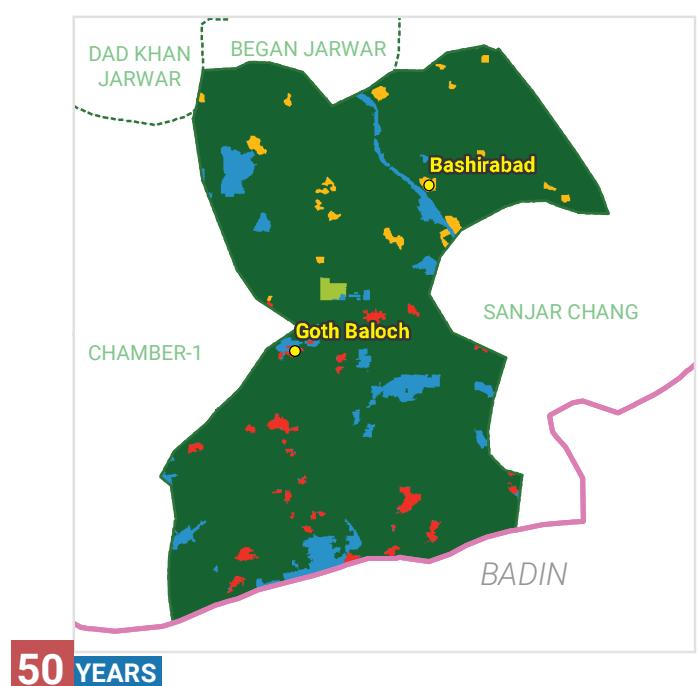
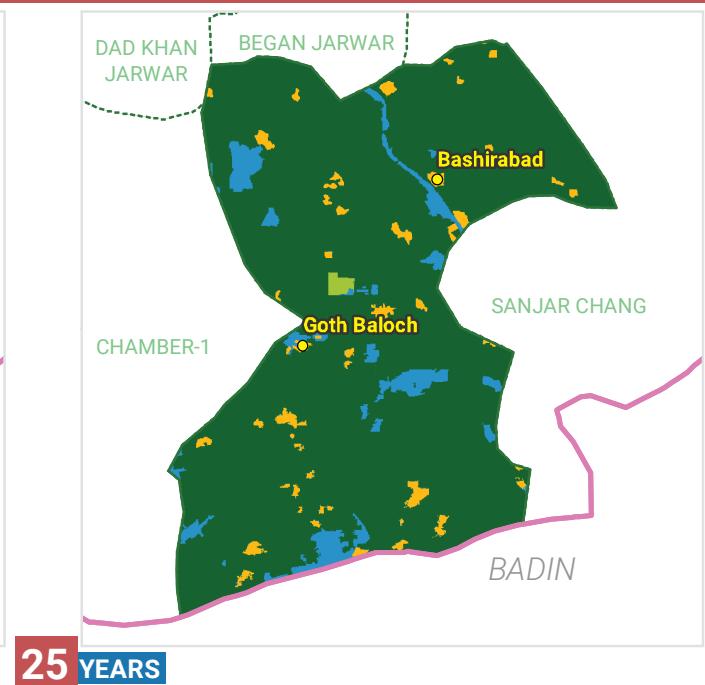
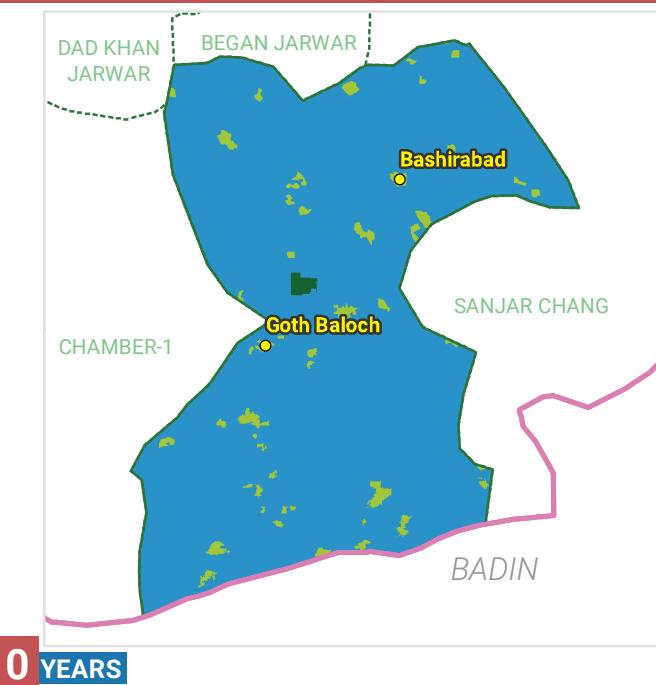
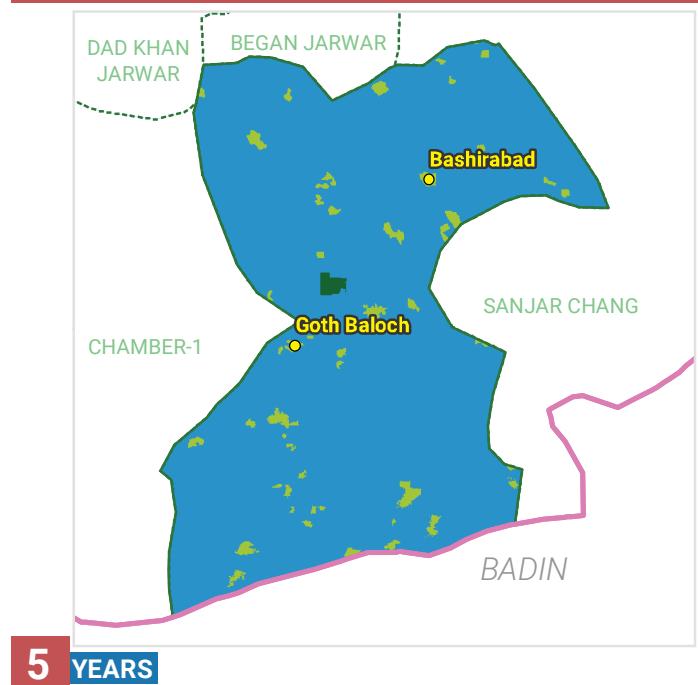
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal  
Severe

Moderate  
Extreme

High

## VULNERABILITY

None  
0 - 25  
Low  
26 - 50  
Medium  
51 - 75  
High  
76 - 100

Very Low  
0 - 49  
Low  
50 - 99

Medium  
100 - 199  
High  
200 - 249  
Extreme  
250 - 300

# HEATWAVE

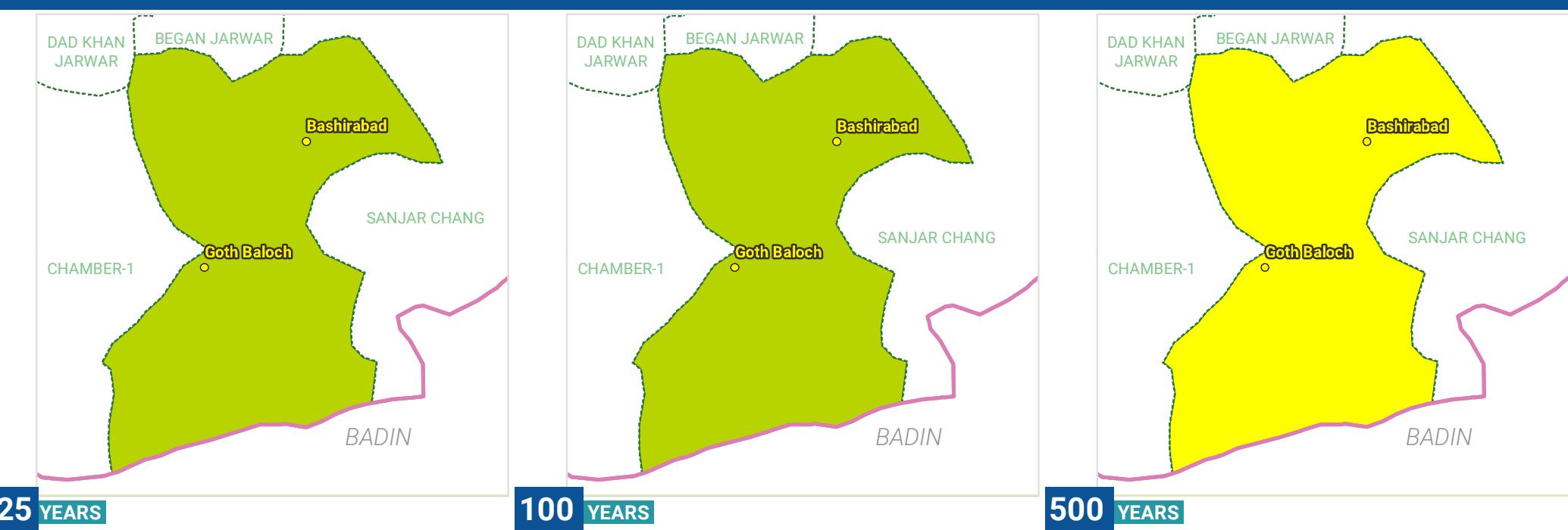
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

62	6365	31970	81.79	0.02	0.26	2.41
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

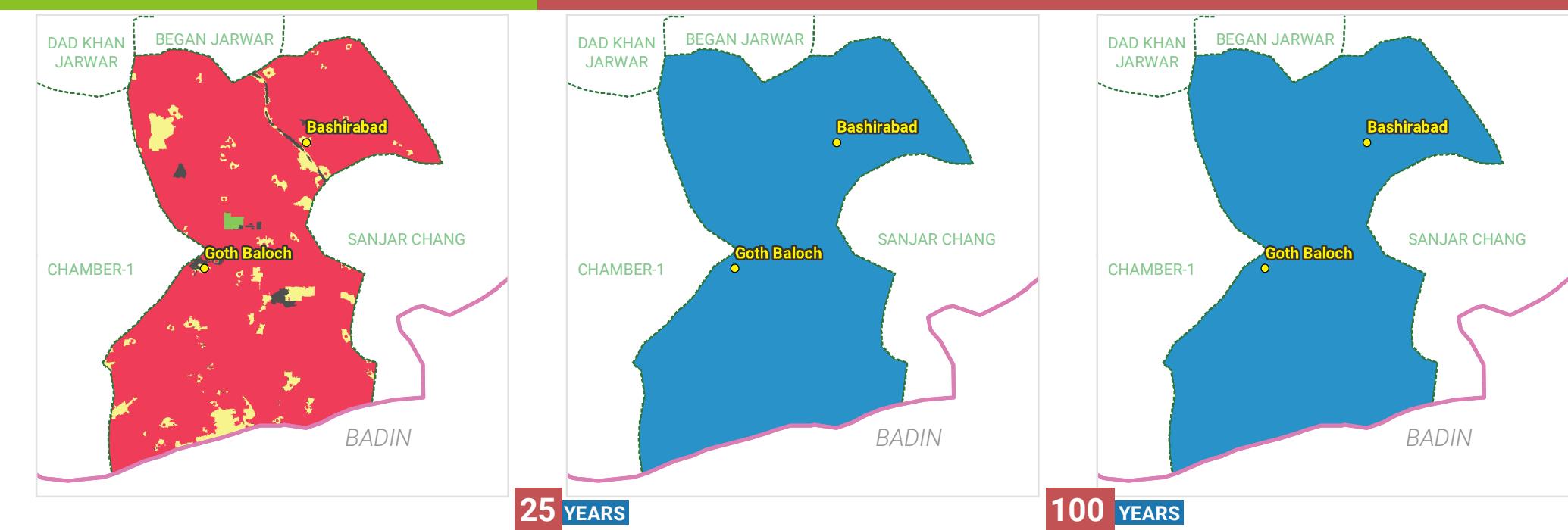
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

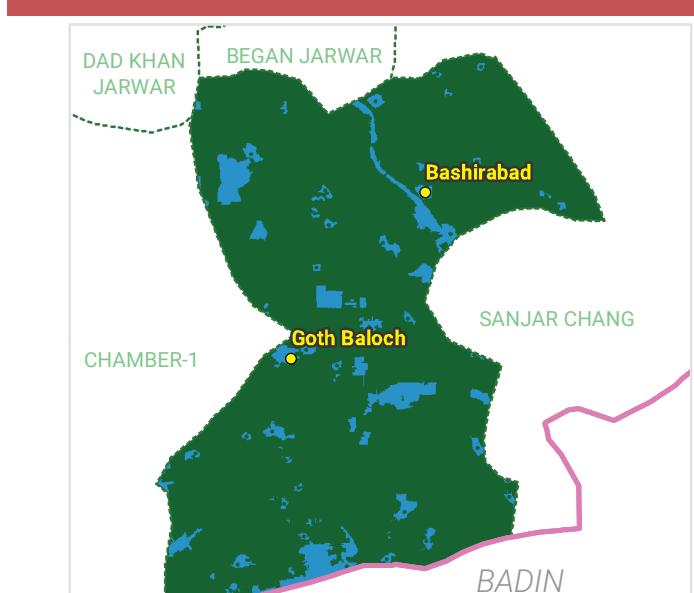
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

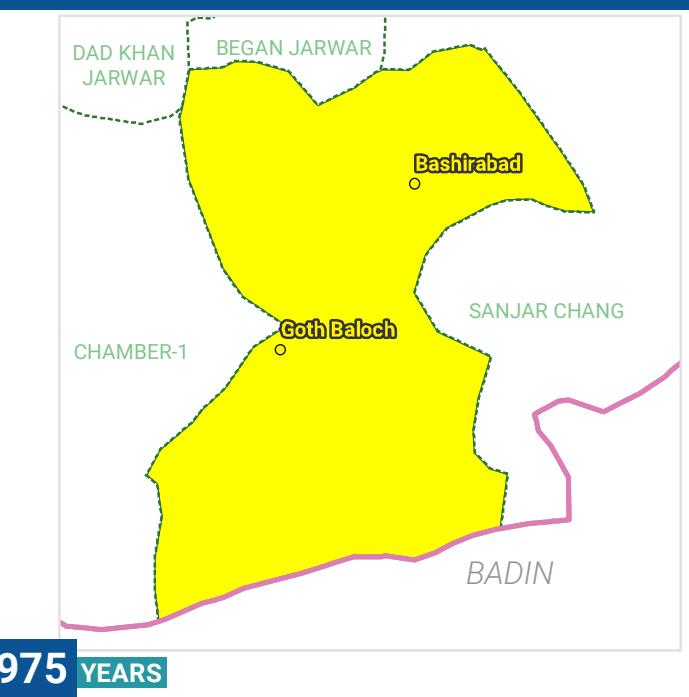
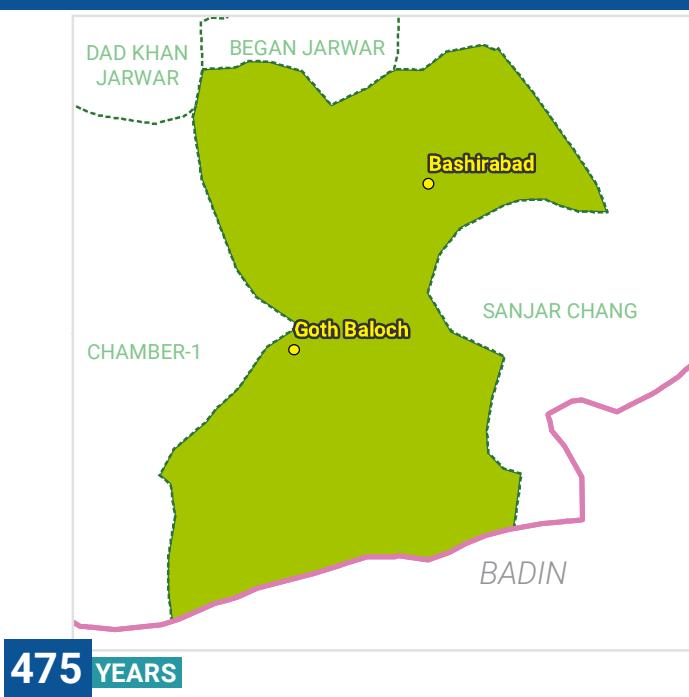
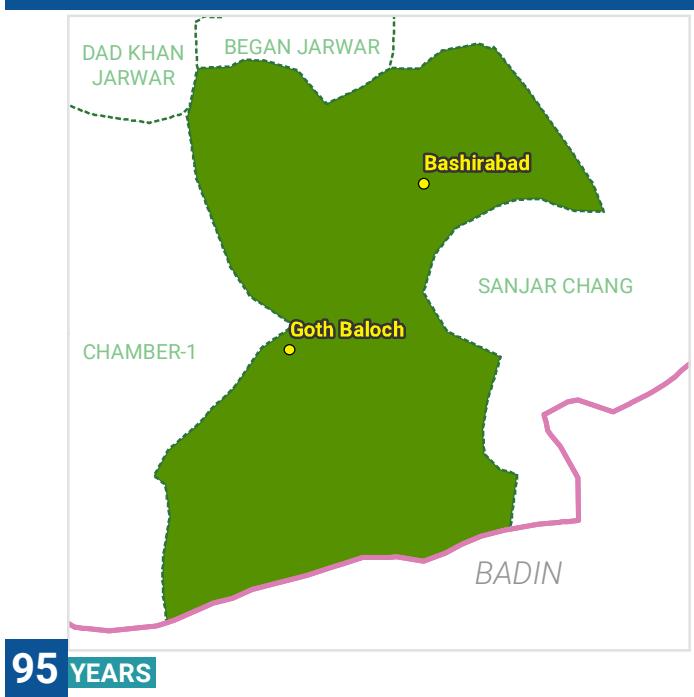
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

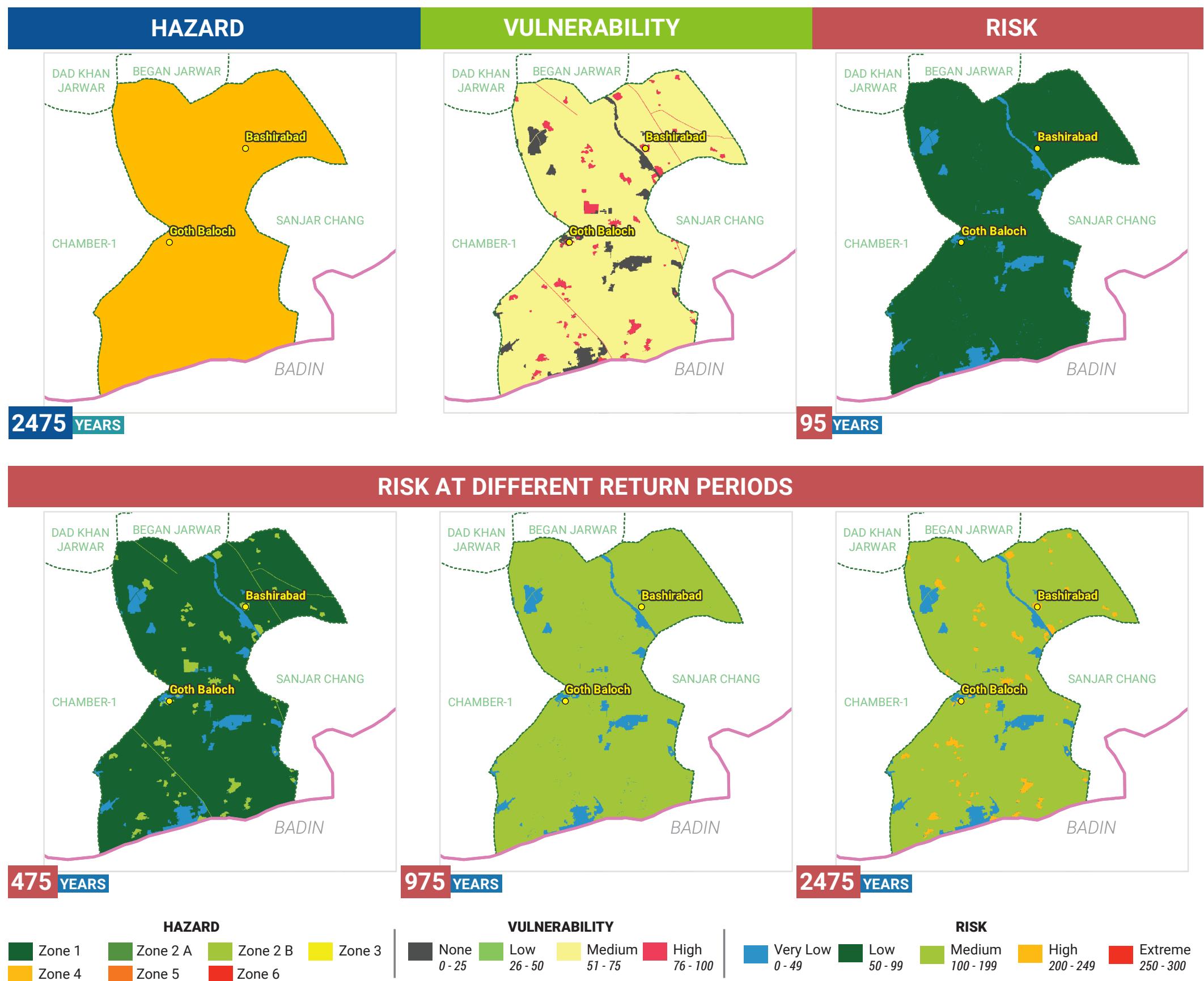
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

# EARTHQUAKE



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

63	6340	31852	81.83	0.01	0.02	0.01	0.26
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
2.40	0.10	108.78	0	16.98	0	0	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
43	0	0	0	2	0	0	0
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX

		RETURN PERIODS						
		5 YEARS	10 YEARS	25 YEARS	50 YEARS	100 YEARS	250 YEARS	500 YEARS
HAZARD	FLOOD	None	●	None	None	None	None	●
	METEOROLOGICAL DROUGHT	Low Medium	Low Medium High	Medium High Extremely High	Medium High Extremely High	●	●	●
	AGRICULTURAL DROUGHT	None	None	Low	Low	●	●	●
	HEATWAVE	Low Medium	Low Medium	Low Medium High	Low Medium High Extremely High	Low Medium Extremely High	●	●
	CYCLONE	●	●	None	●	None	●	Low
	STORM SURGE	●	●	None	●	None	●	None
	EARTHQUAKE	Low	Low Medium	Medium	Medium High			
TSUNAMI	RETURN PERIODS							
	EARTHQUAKE MAGNITUDES			95 YEARS	475 YEARS	975 YEARS	2475 YEARS	
	8.0 MAG.	8.5 MAG.	9.0 MAG.	Low	Low Medium	Medium	Medium High	
	None	None	None					

Legend:

- Low 50-99
- Medium 100-199
- High 200-249
- Extreme 250-300



## UC - DAD KHAN JARWAR

Union Council area in sq. km

103

Surrounding UCs / Features

**PAK-SANGHAR** in North  
**BUKERANI SHARIF** in West  
**CHAMBER-1** in East  
**TANDO MUHAMMAD KHAN DISTRICT** in South West  
**BADIN DISTRICT** in South

Population

2017 approx. **38,959**

No. of household

2017 approx. **7,732**

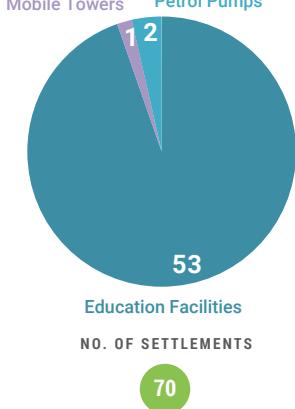
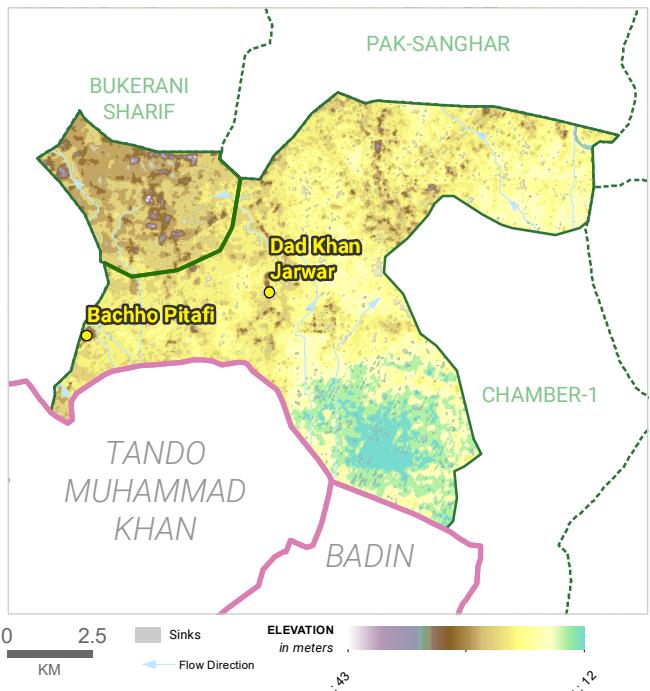
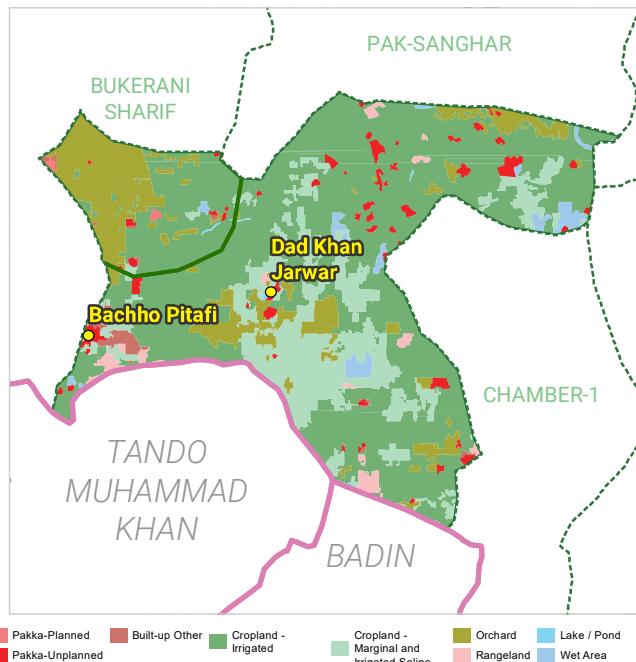
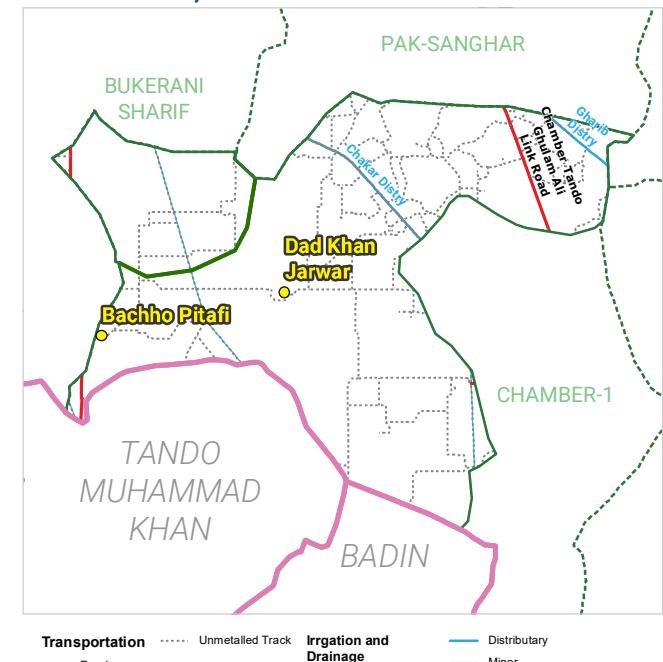
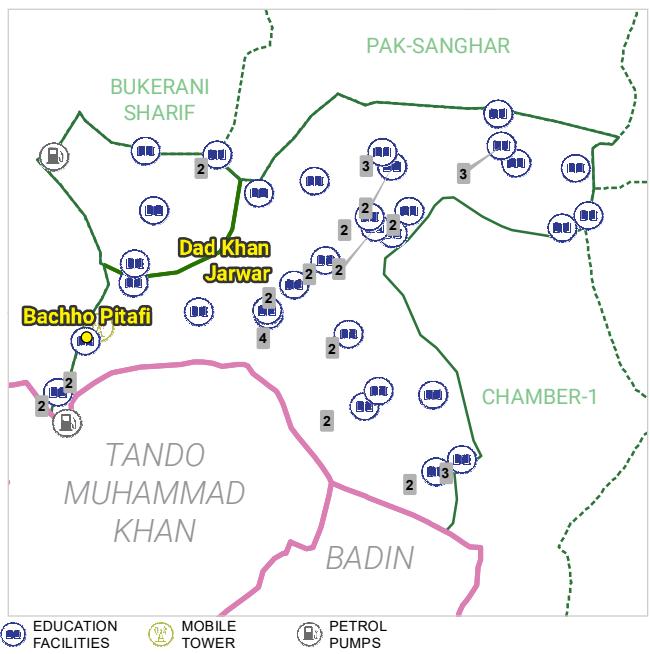
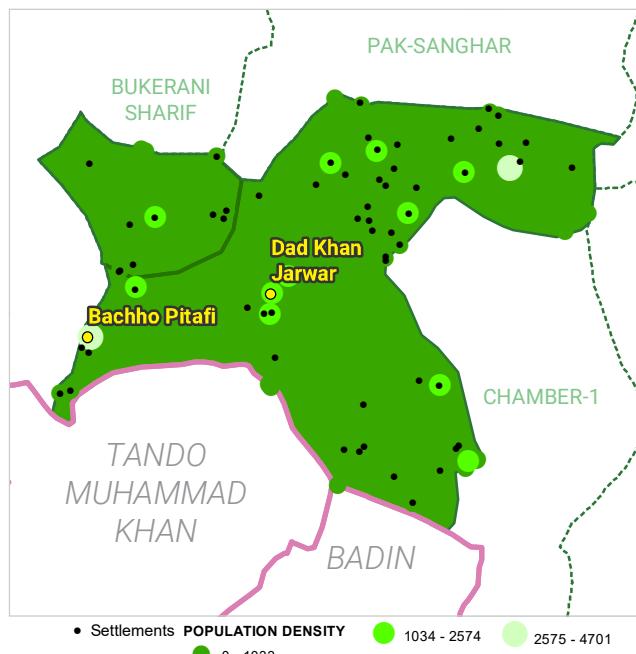
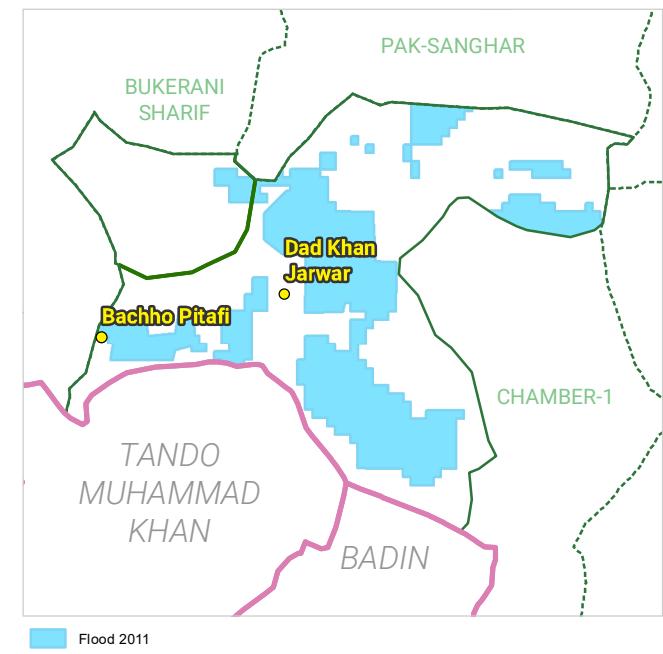
**Land Use Land Cover**

coverage area in sq.km

Built-up (Other)	1.0
Crop Irrigated	63.8
Crop Marginal and Irrigated Saline	17.3
Orchards	14.0
Pakka -Planned	0.2
Pakka -Unplanned	2.8
RangeLands	1.6
Water Body	0.1
Wet Area	2.1

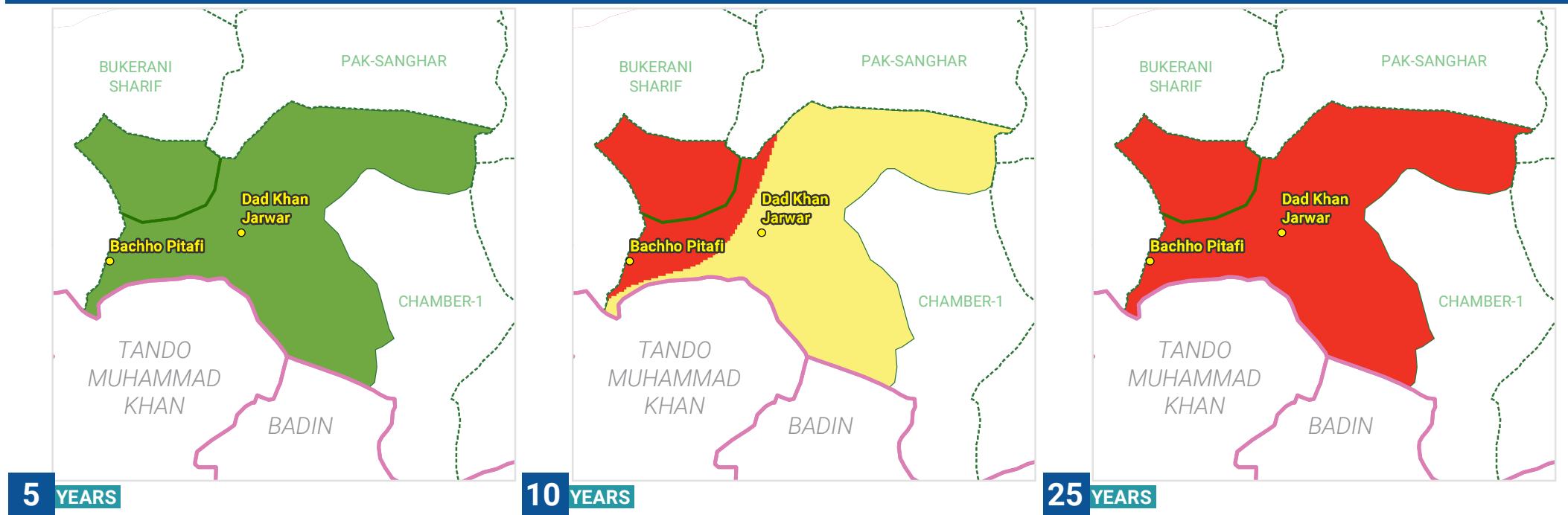
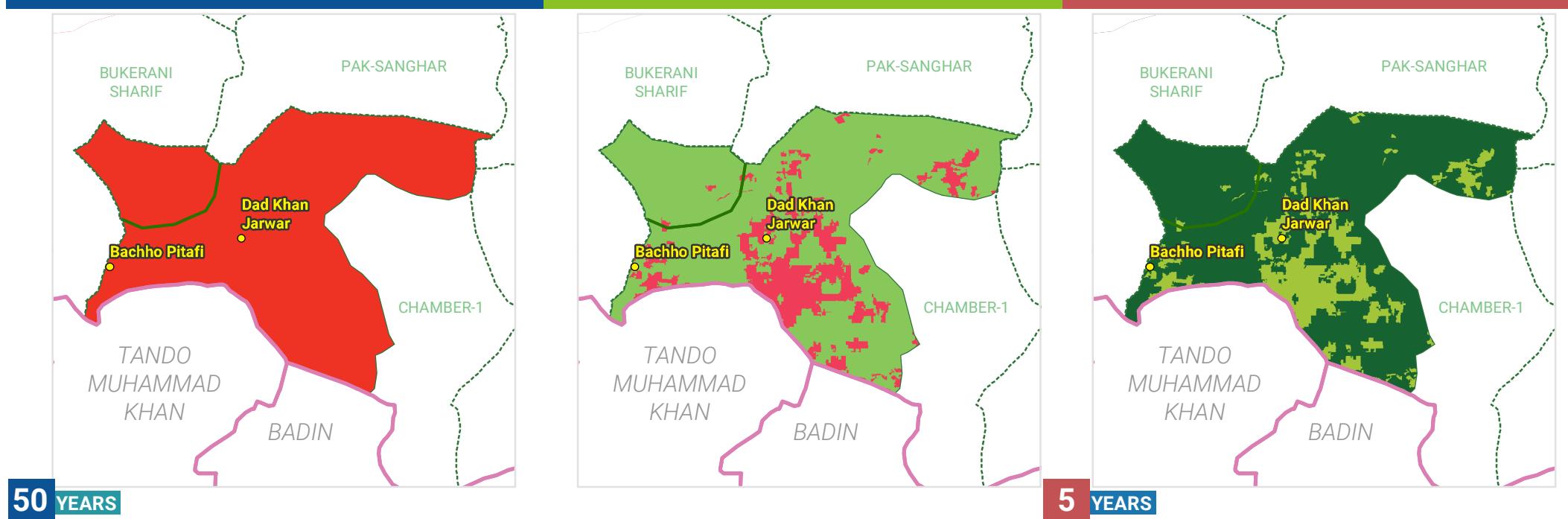
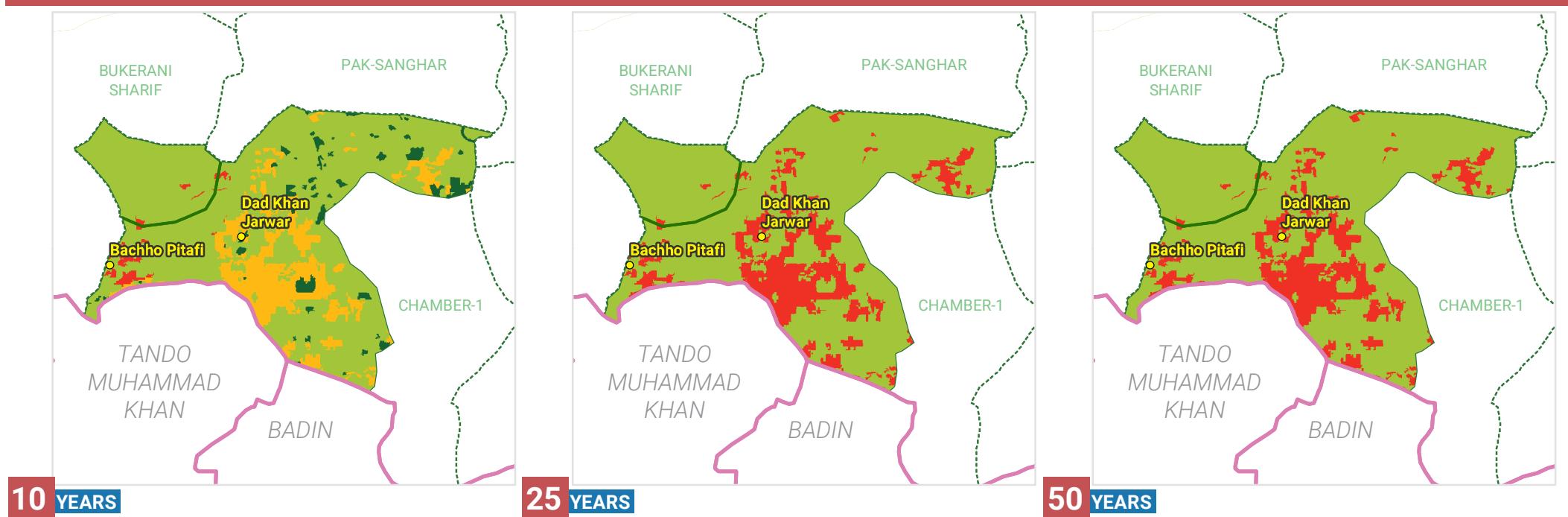
**Critical Infrastructure**

Mobile Towers Petrol Pumps

**DEM AND FLOW DIRECTION****LAND USE / LAND COVER****TRANSPORT, IRRIGATION AND DRAINAGE****CRITICAL INFRASTRUCTURE****POPULATION DENSITY****PAST HAZARDS**

**FLOOD**

**THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES**

**METEOROLOGICAL DROUGHT****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD****VULNERABILITY****RISK****RISK AT DIFFERENT RETURN PERIODS**

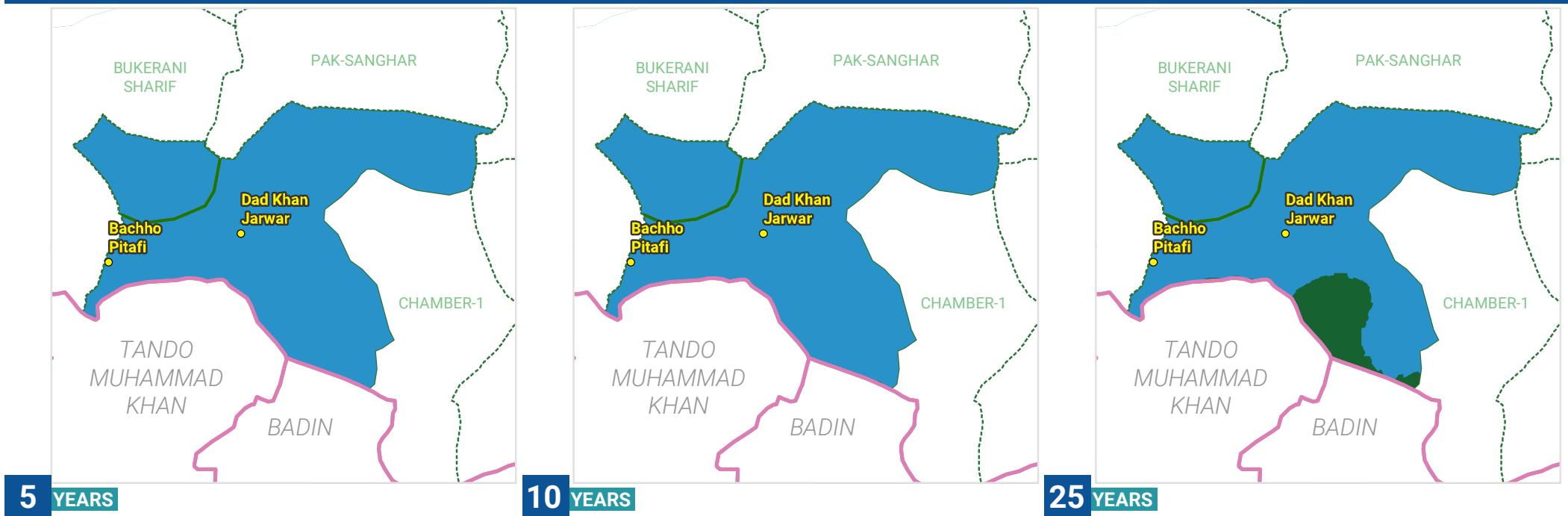
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

70	7732	38959	95.17	0	0	0	1.58
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.10	2.11						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

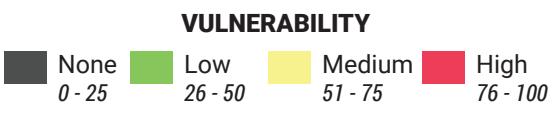
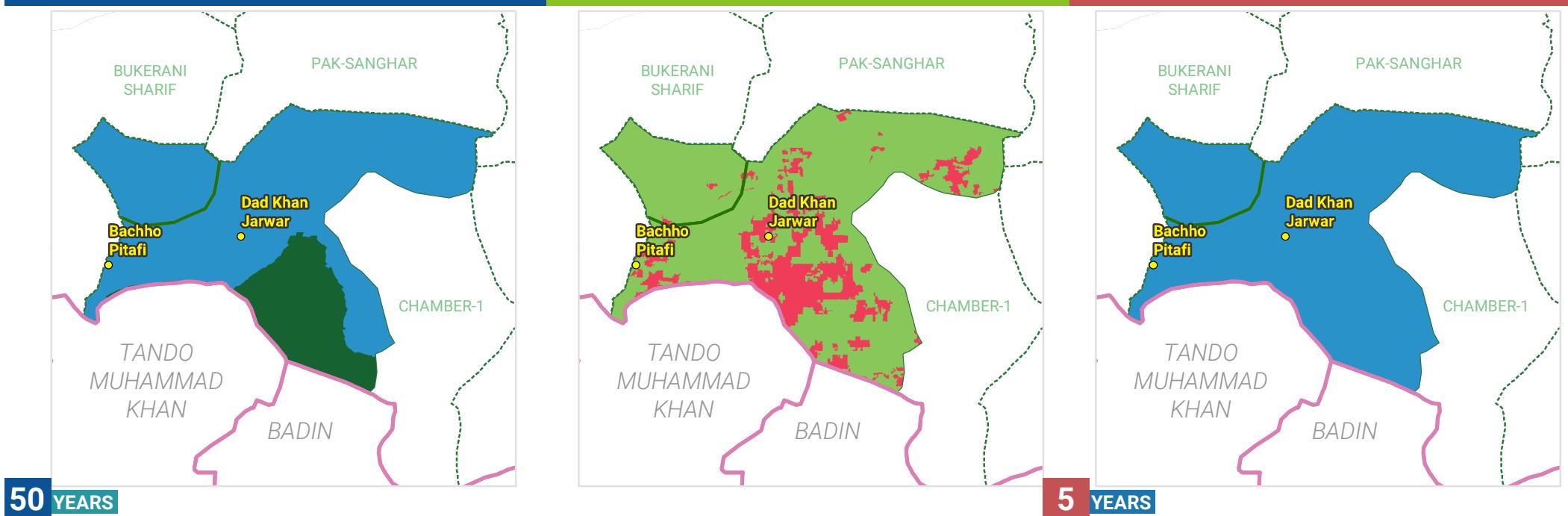
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

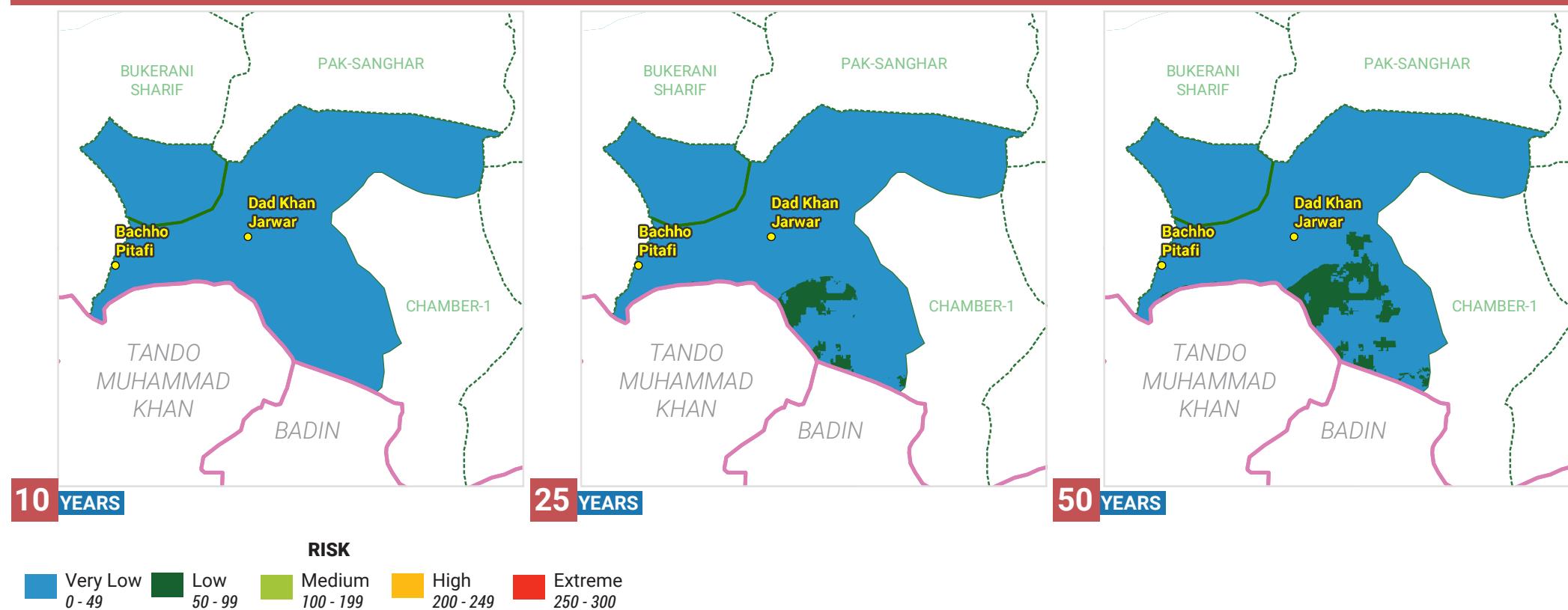
## VULNERABILITY

## RISK



# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



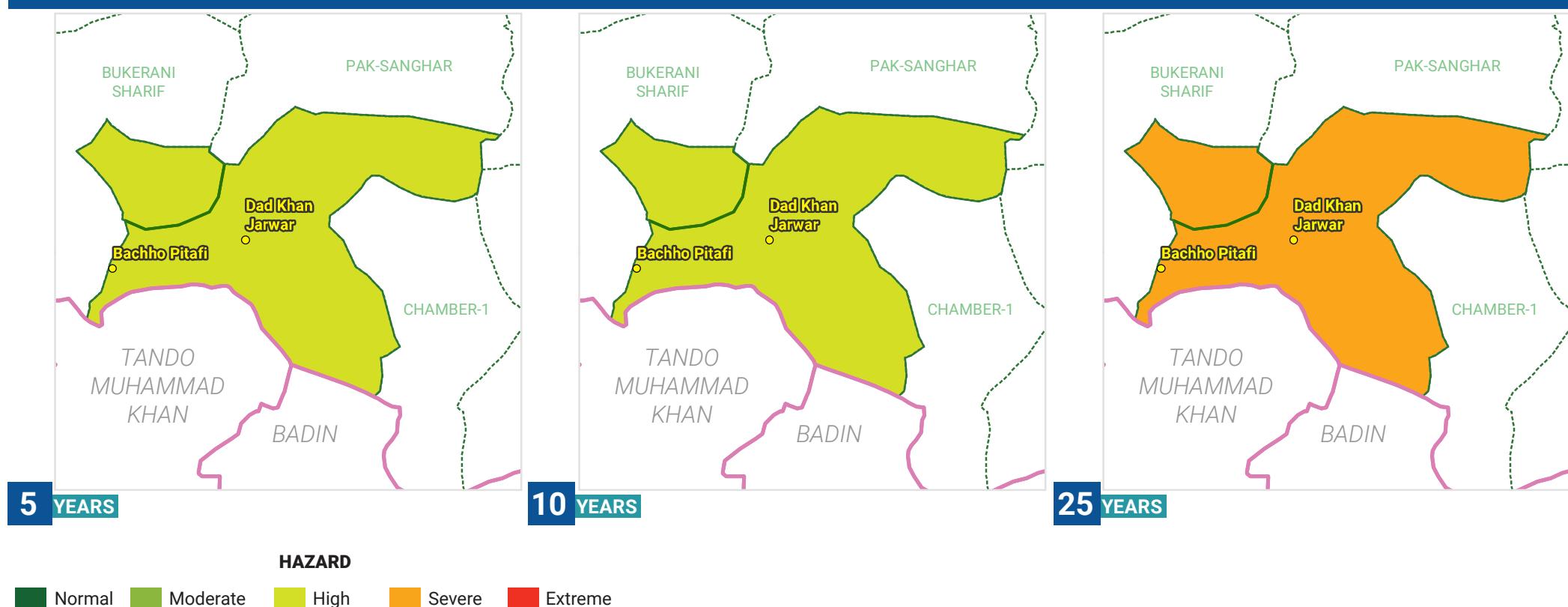
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

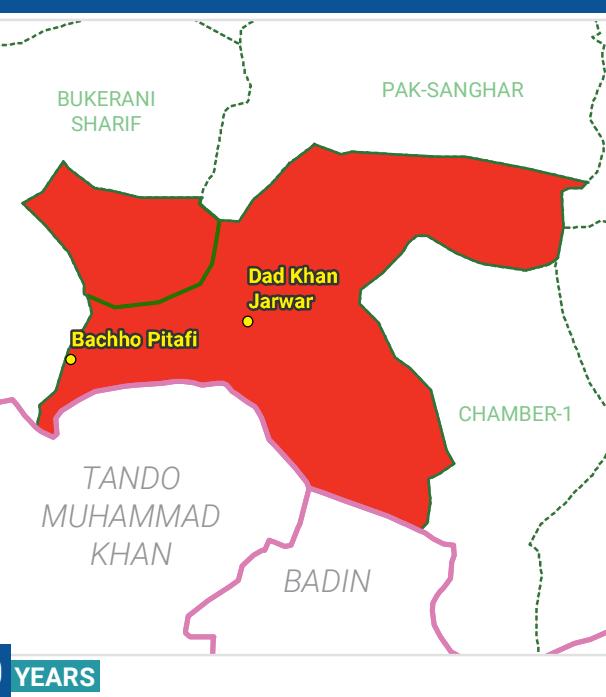
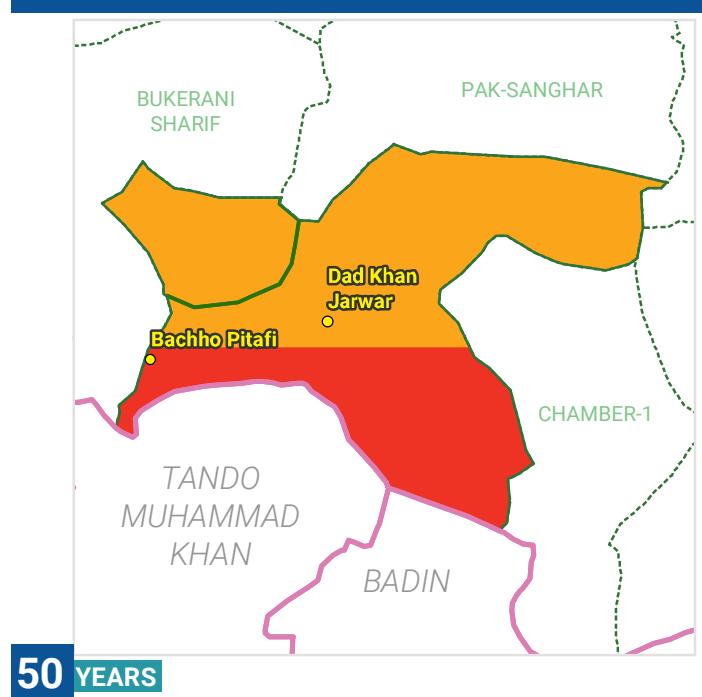
0	1	9	9.68	0	0	0	0.84
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0.01						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

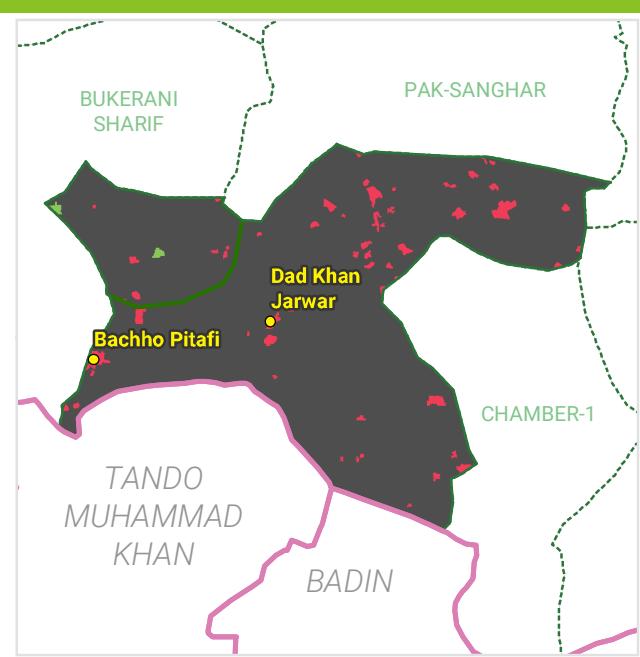
## HAZARD AT DIFFERENT RETURN PERIODS



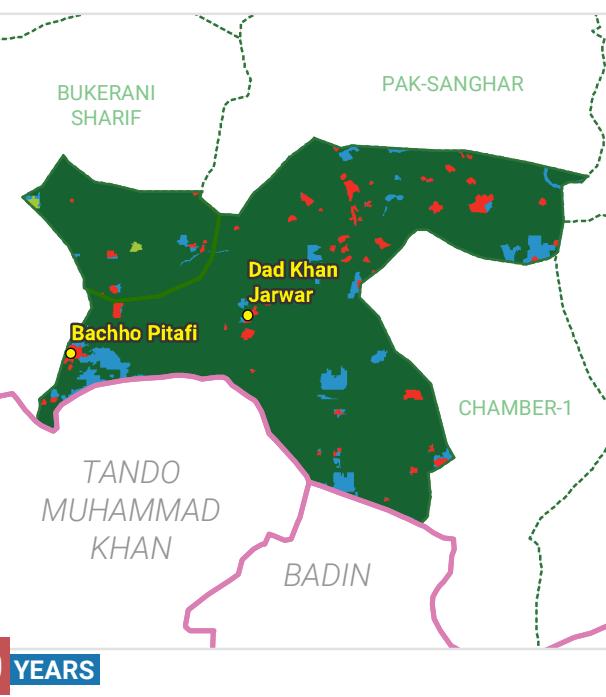
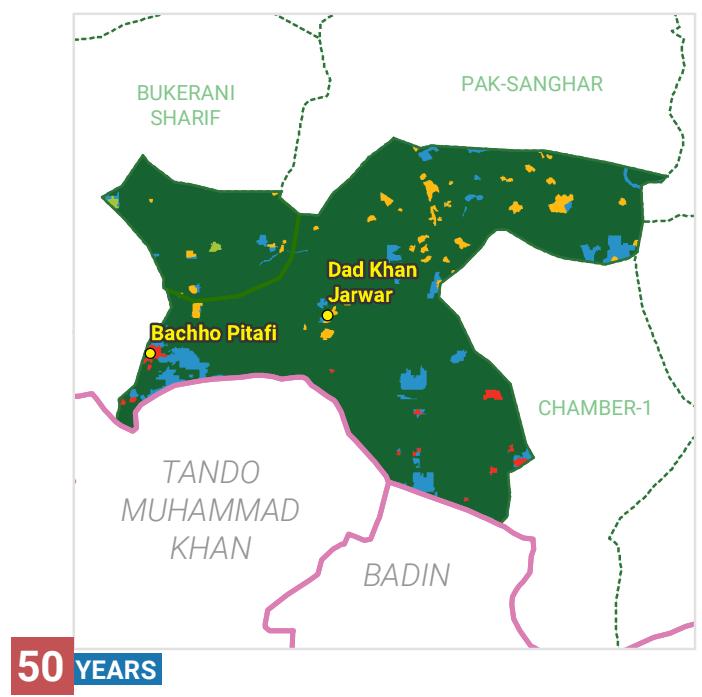
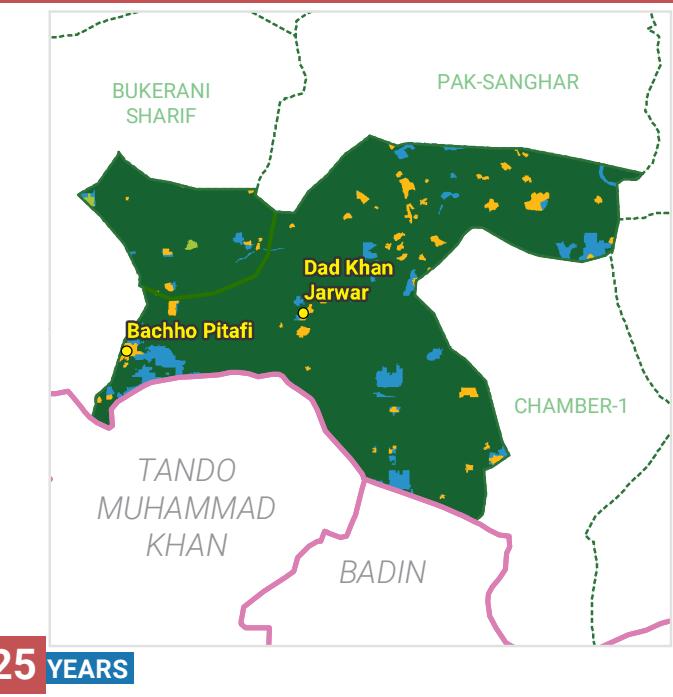
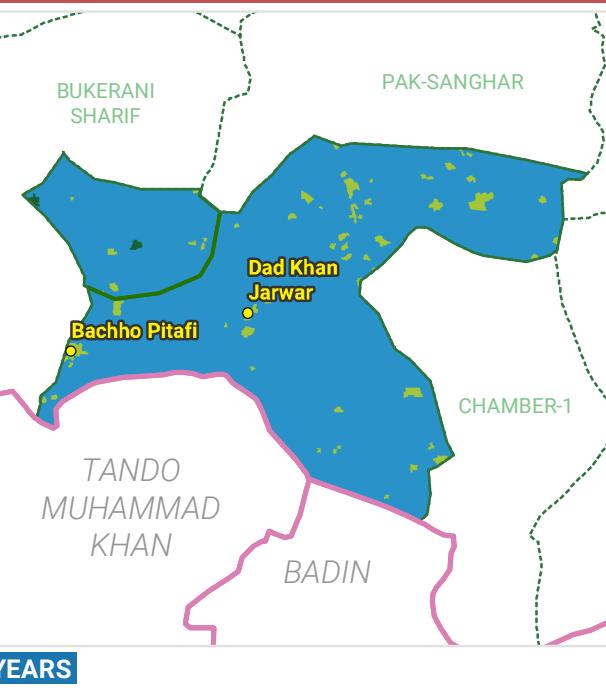
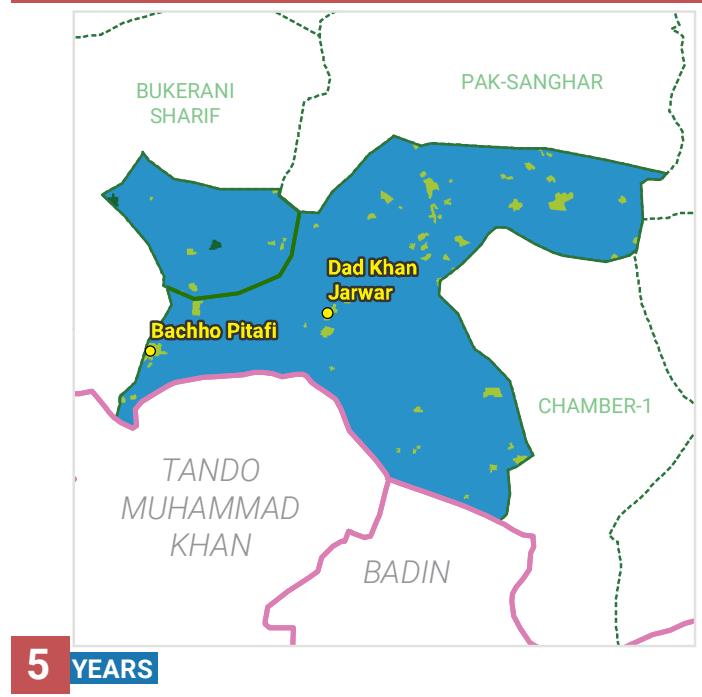
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal  
Severe

Moderate  
Extreme

High

## VULNERABILITY

None  
0 - 25  
Low  
26 - 50  
Medium  
51 - 75  
High  
76 - 100

## RISK

Very Low  
0 - 49  
Low  
50 - 99  
Medium  
100 - 199  
High  
200 - 249  
Extreme  
250 - 300

# HEATWAVE

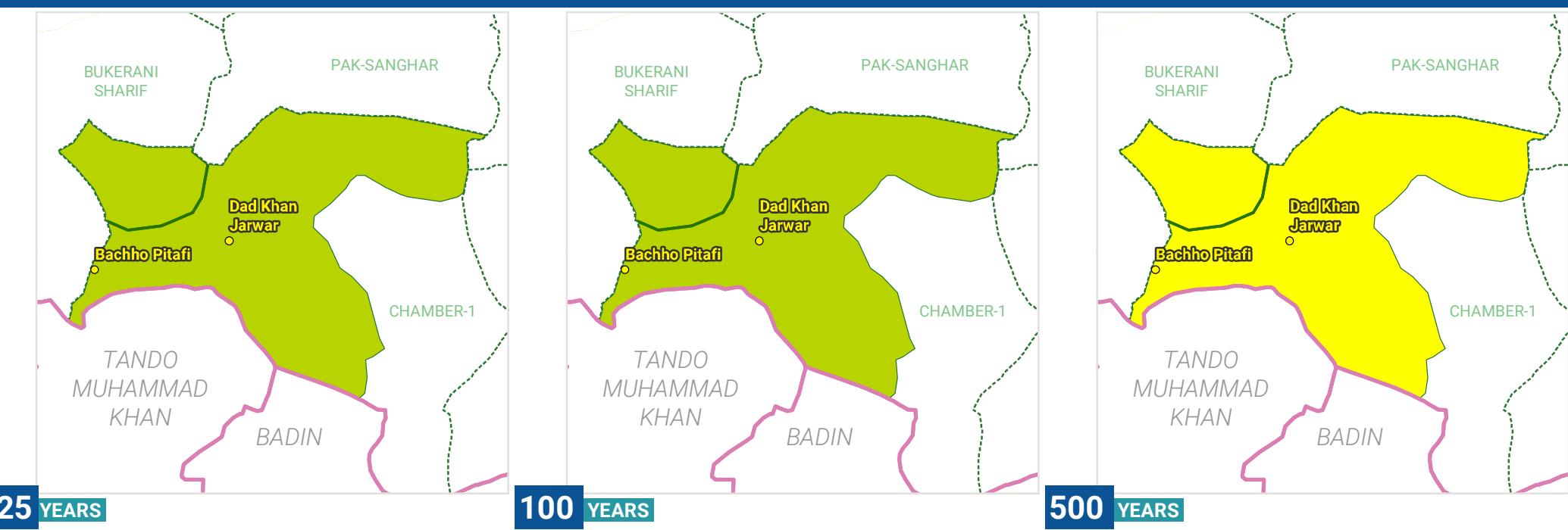
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

69	7678	38678	94.98	0	0.17	2.79
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

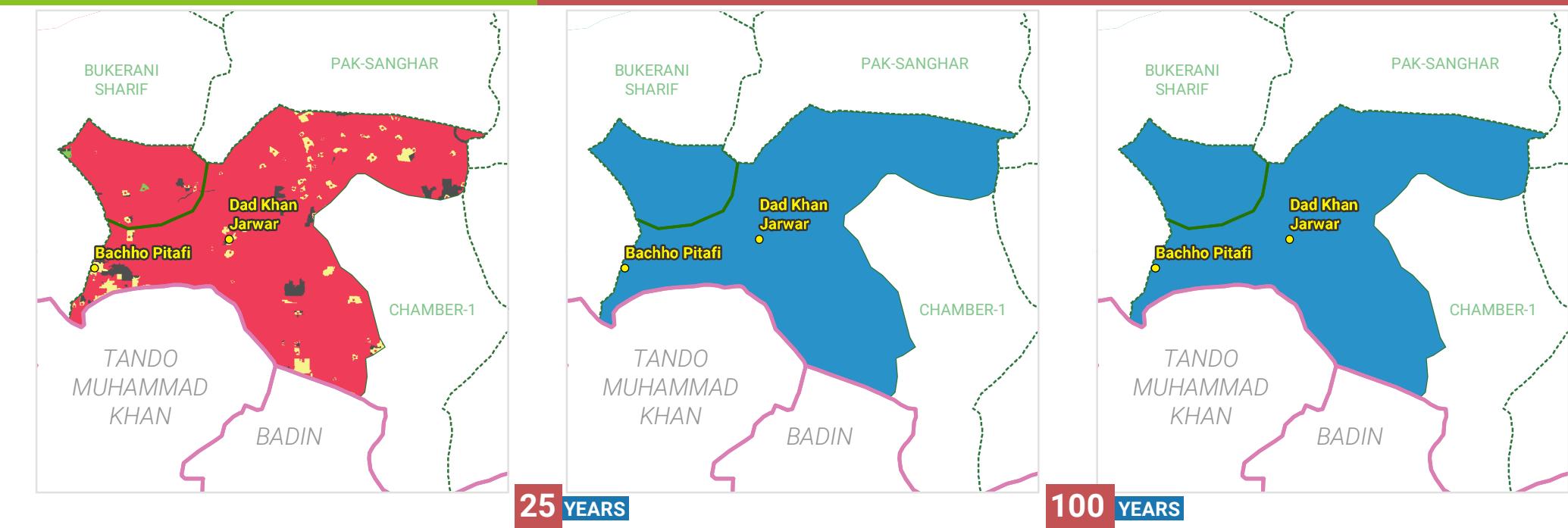
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

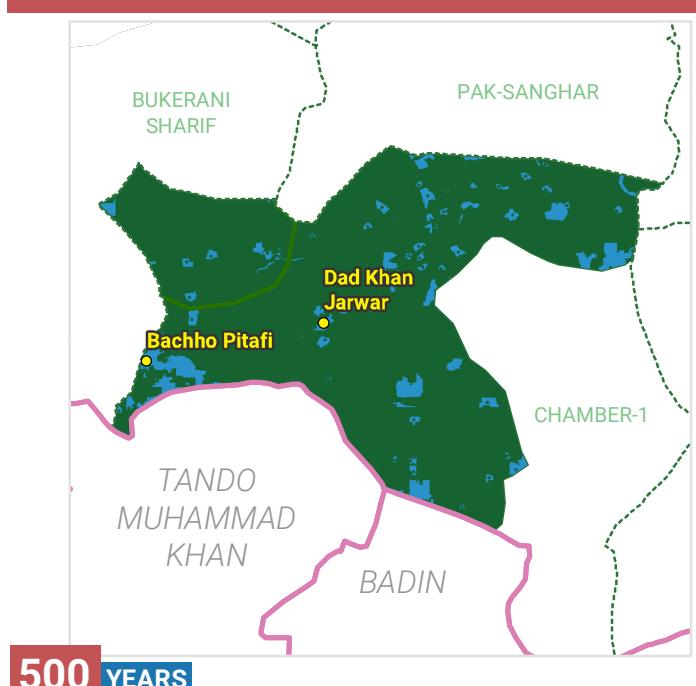
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

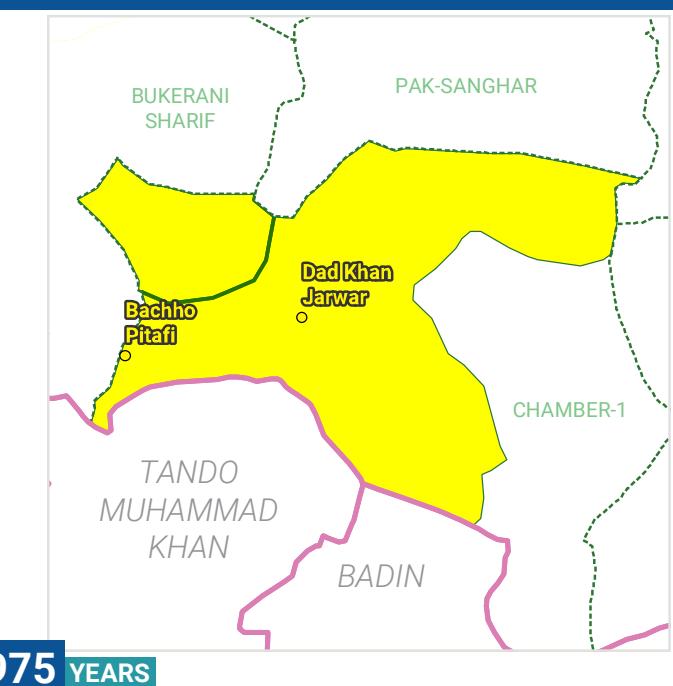
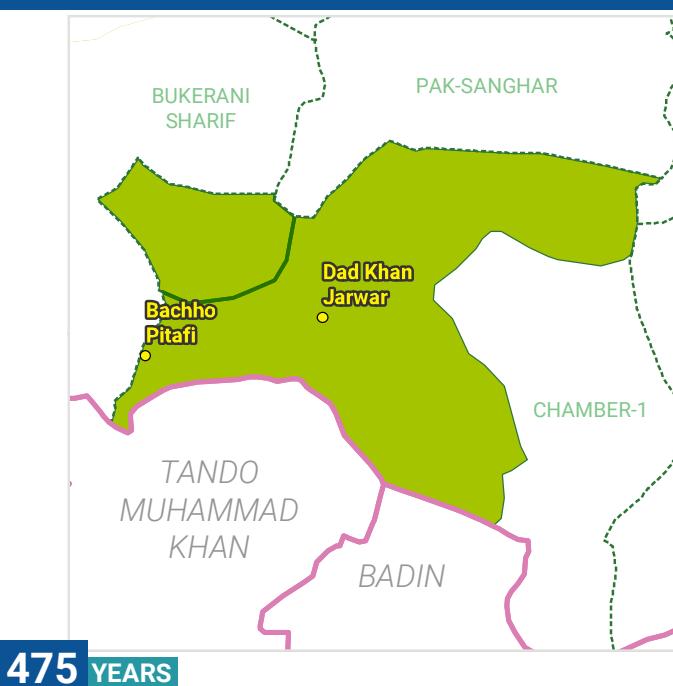
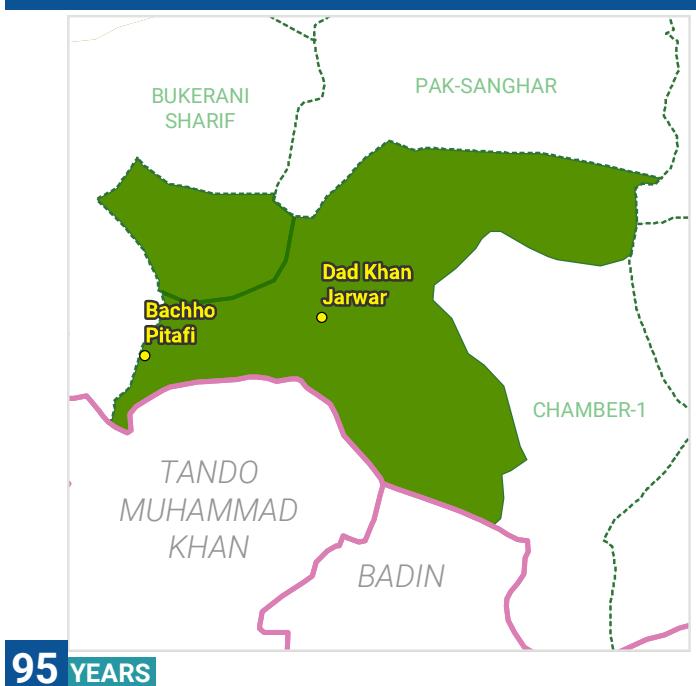
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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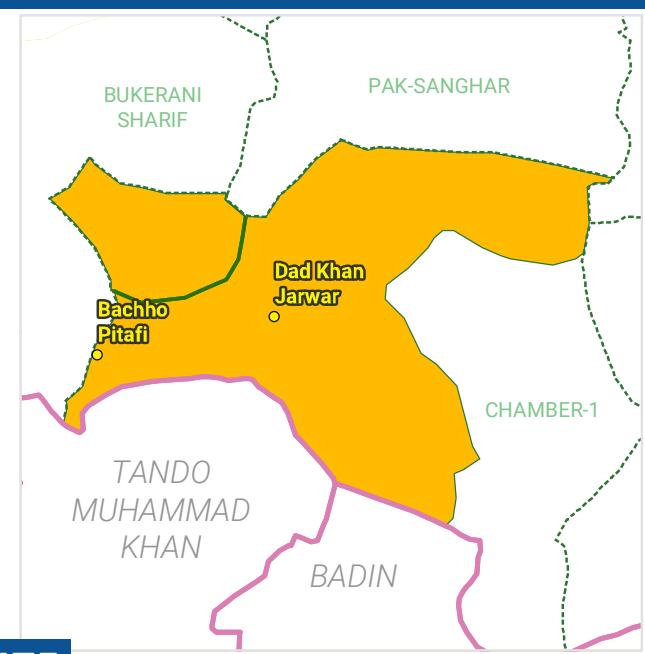
**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

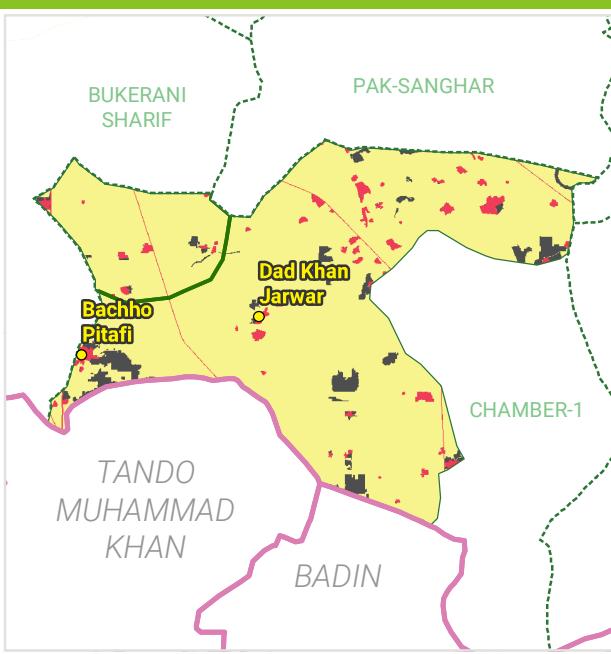
# EARTHQUAKE

## HAZARD



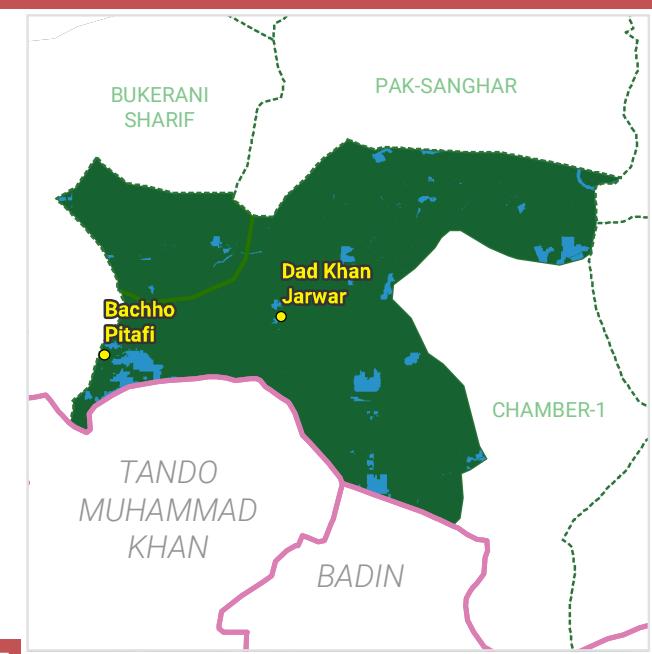
2475 YEARS

## VULNERABILITY

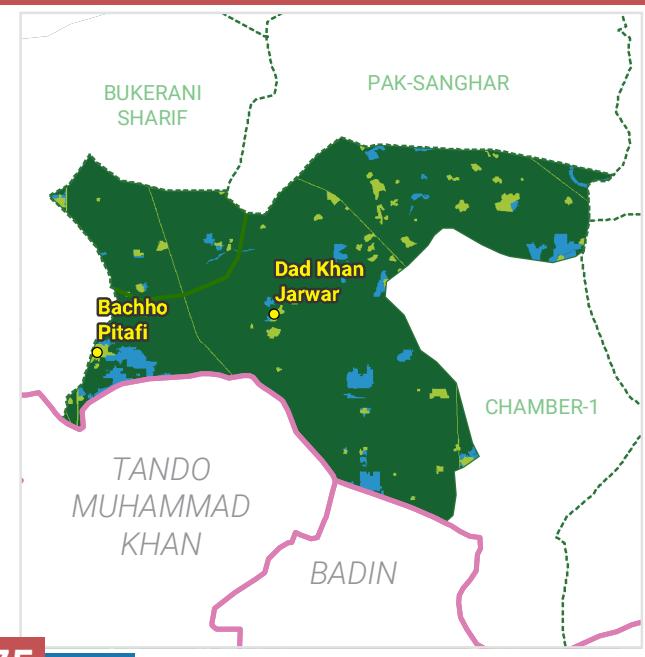


95 YEARS

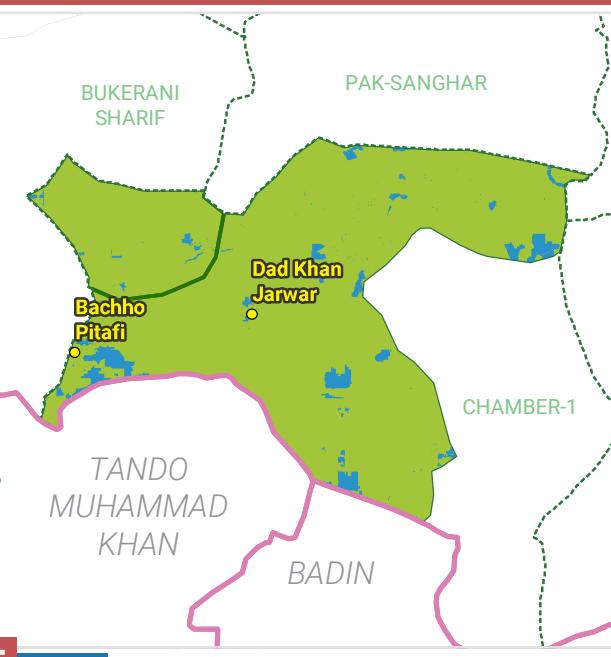
## RISK



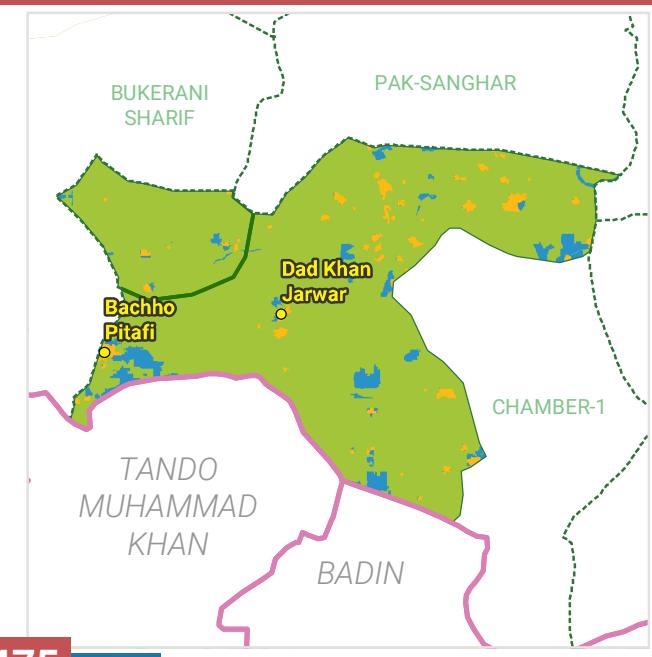
## RISK AT DIFFERENT RETURN PERIODS



475 YEARS



975 YEARS



2475 YEARS

### HAZARD



### VULNERABILITY



### RISK



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

70	7665	38611	95.03	0	0	0	0.17
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
2.78	0.05	139.98	0	17.35	0	0	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
53	0	0	0	0	0	1	2
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - DASORI

Union Council area in sq. km

88

Surrounding UCs / Features

**MIRABAD** in East  
**TANDO SOOMRO** in South  
**JHANDO MARI** in North  
**PIYARO LUND** in South East  
**MATIARI DISTRICT** in West

Population

2017 approx. **43,400**

No. of household

2017 approx. **8,755**

**Land Use Land Cover**  
coverage area in sq.km

Bare Areas	0.0
Built-up (Other)	0.3
Crop Irrigated	69.7
Crop Marginal and Irrigated Saline	2.2
Forest	0.2
Orchards	5.9

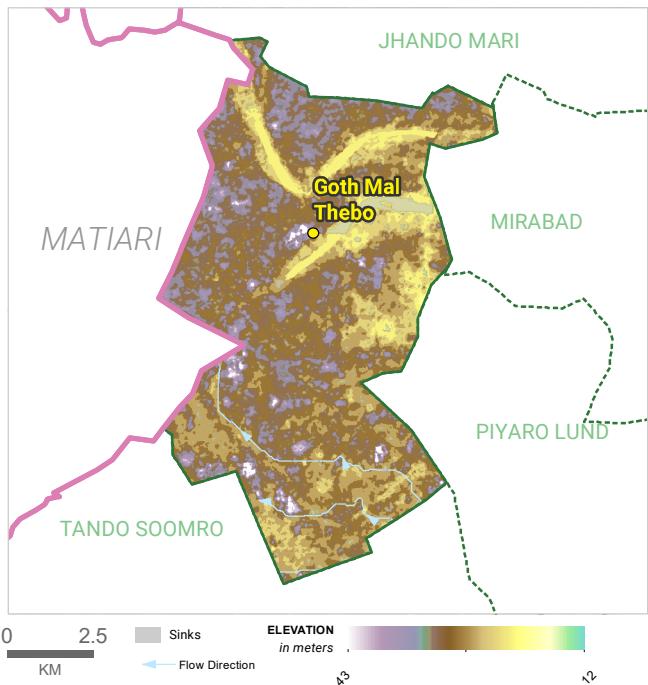
**Critical Infrastructure**

Police Stations  
Mobile Towers  
Health Facilities

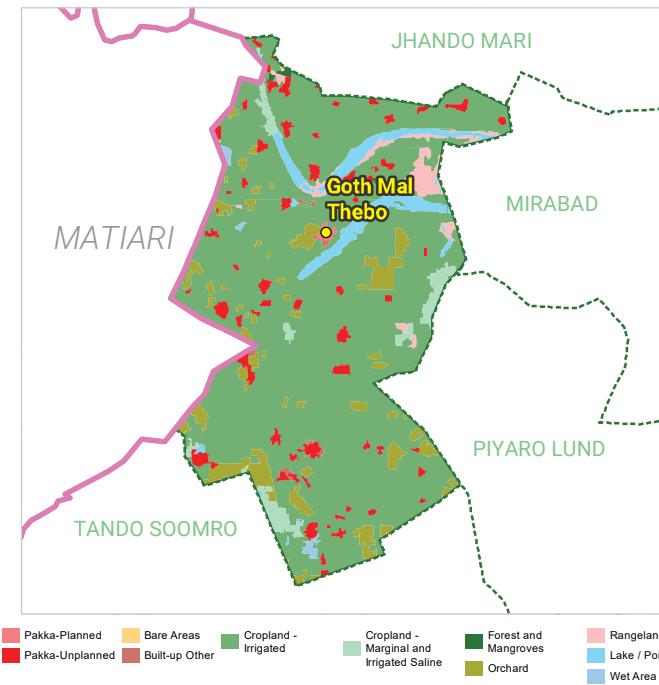
77  
Education Facilities

NO. OF SETTLEMENTS  
77

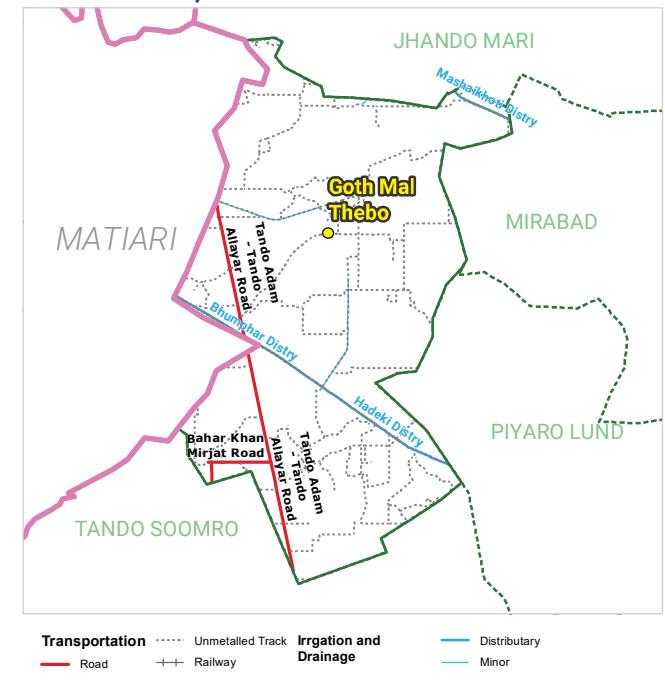
## DEM AND FLOW DIRECTION



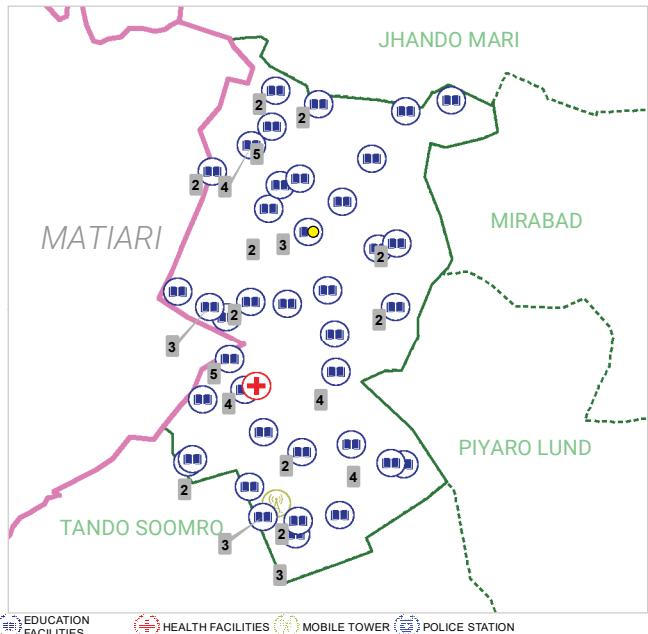
## LAND USE / LAND COVER



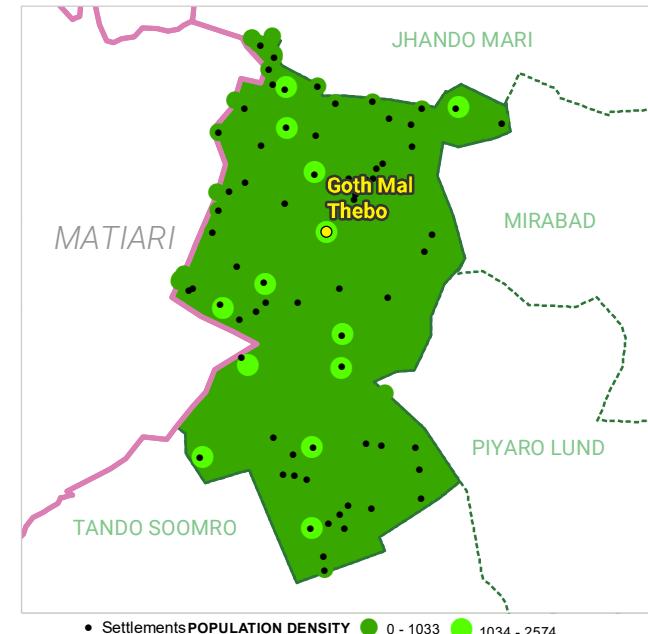
## TRANSPORT, IRRIGATION AND DRAINAGE



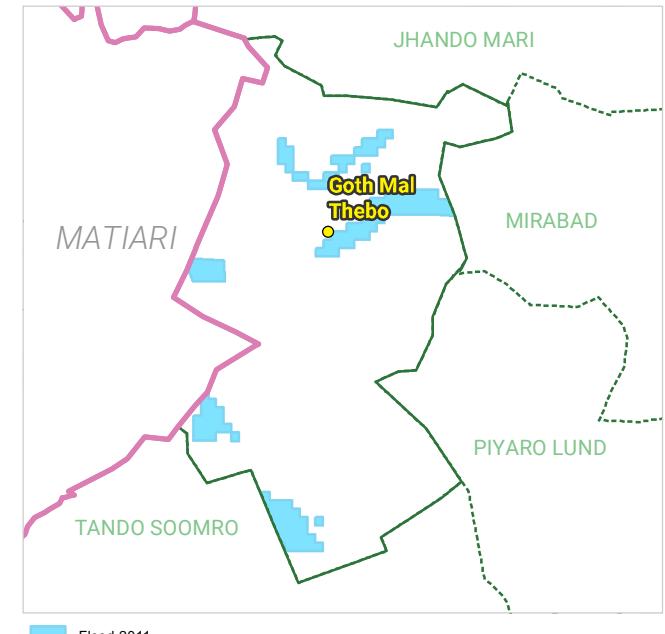
## CRITICAL INFRASTRUCTURE



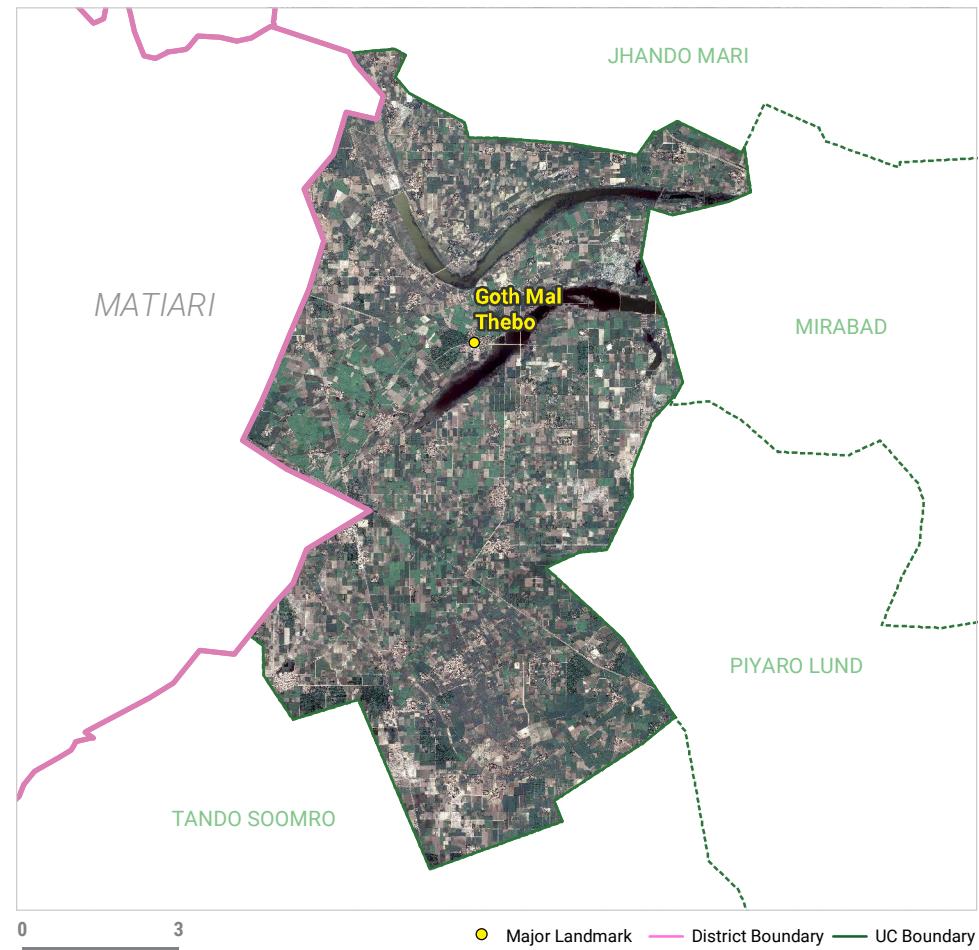
## POPULATION DENSITY



## PAST HAZARDS



## SATELLITE IMAGERY

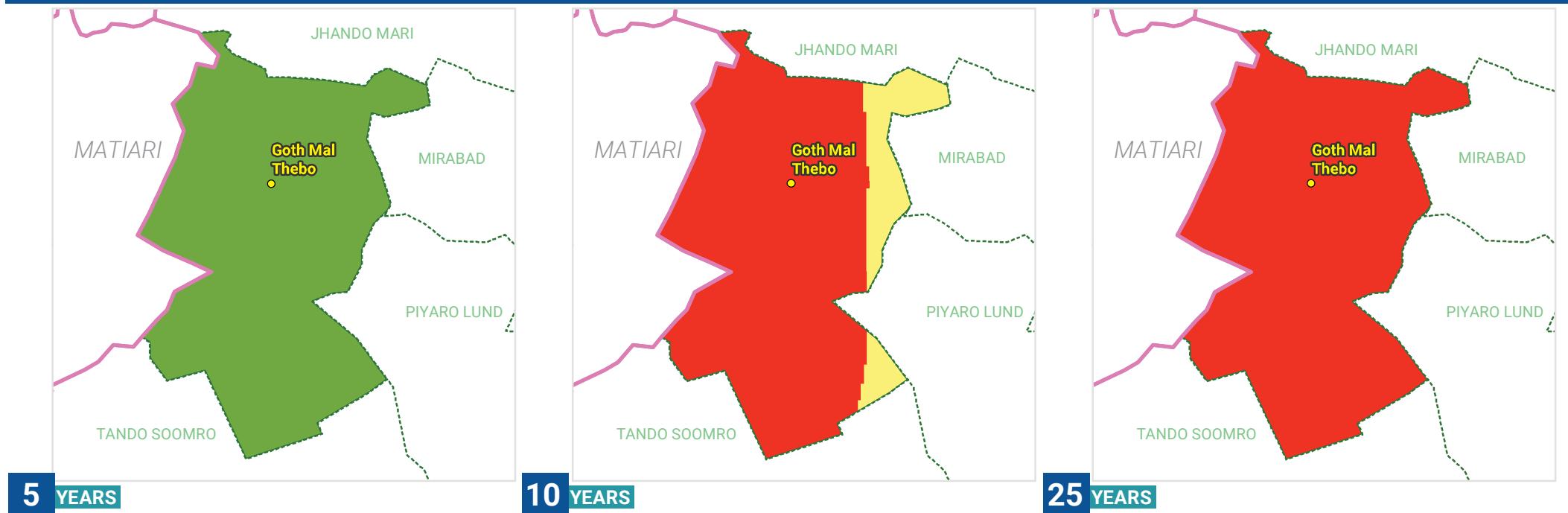


## FLOOD

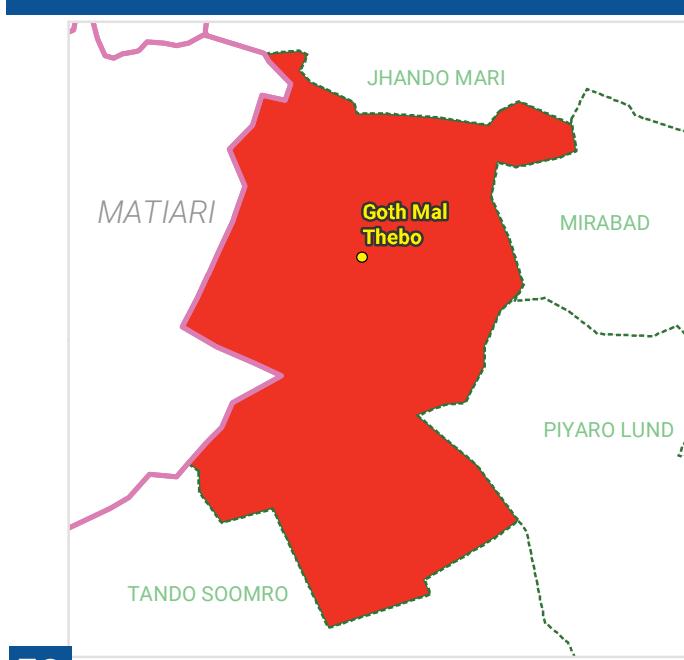
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

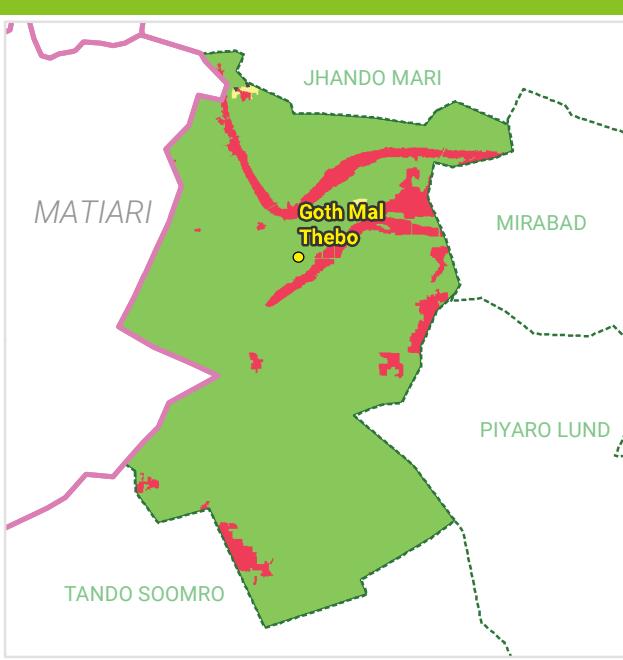
## HAZARD AT DIFFERENT RETURN PERIODS



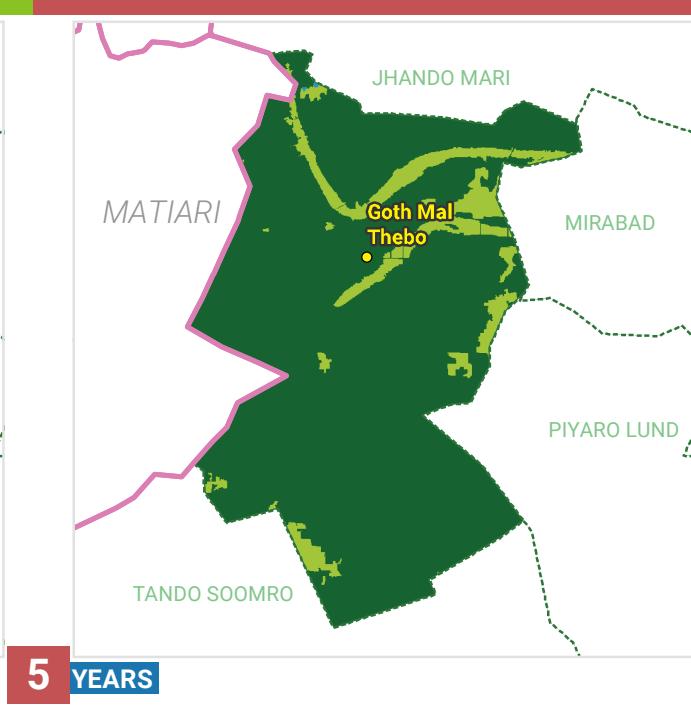
## HAZARD



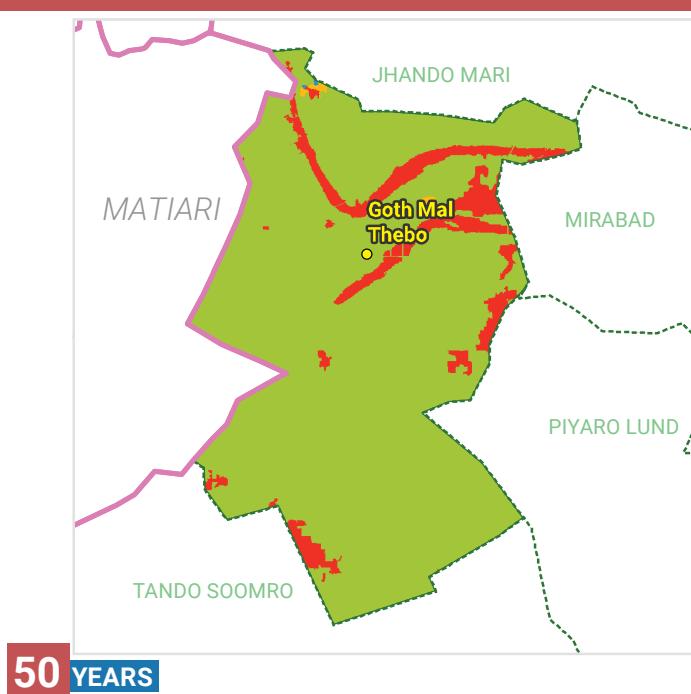
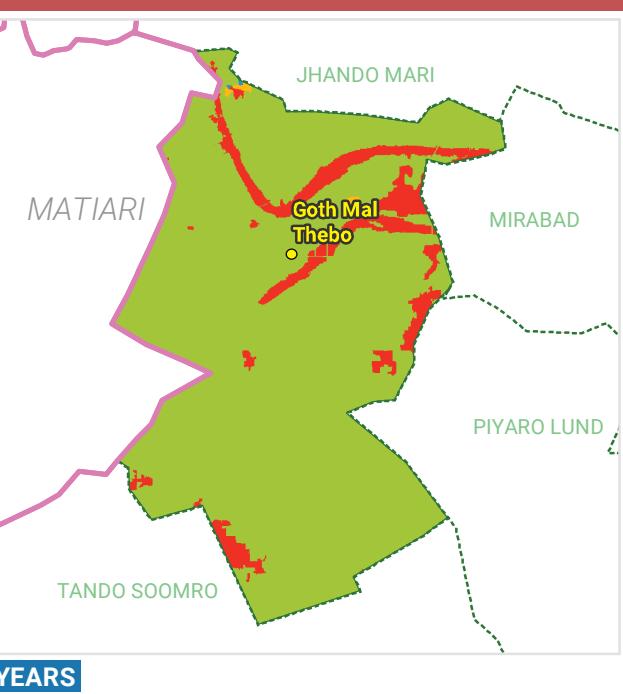
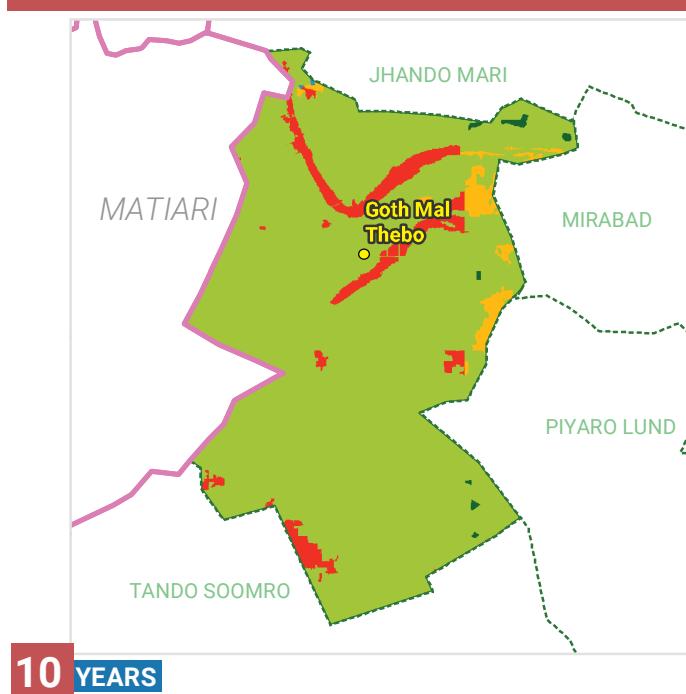
## VULNERABILITY



## RISK



## RISK AT DIFFERENT RETURN PERIODS



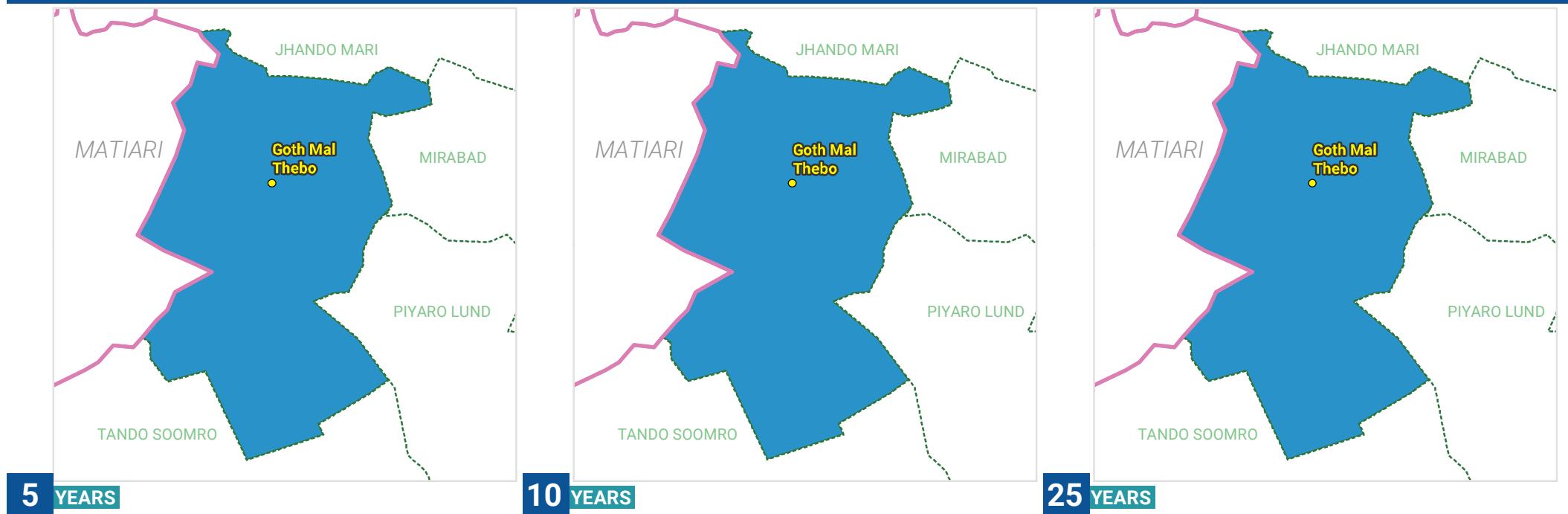
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

77	8755	43400	77.79	0	0.16	0	1.86
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
3.43	0.37						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

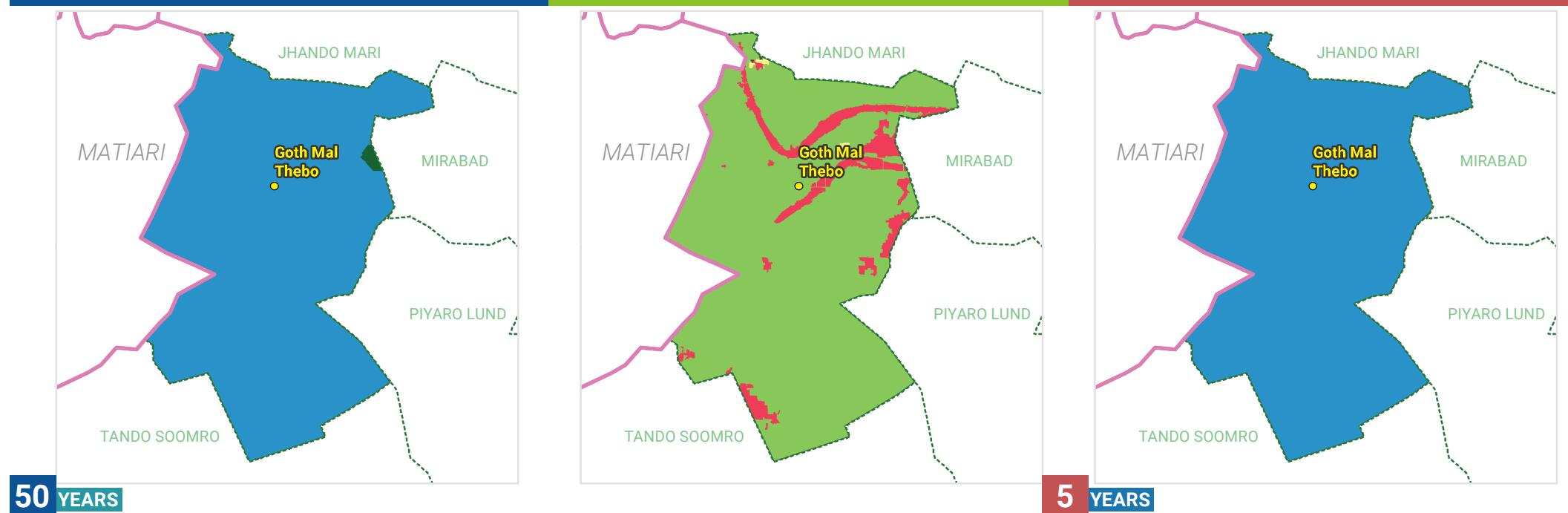
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

No Hazard	Mild	Moderate
Severe	Extremely	

## VULNERABILITY

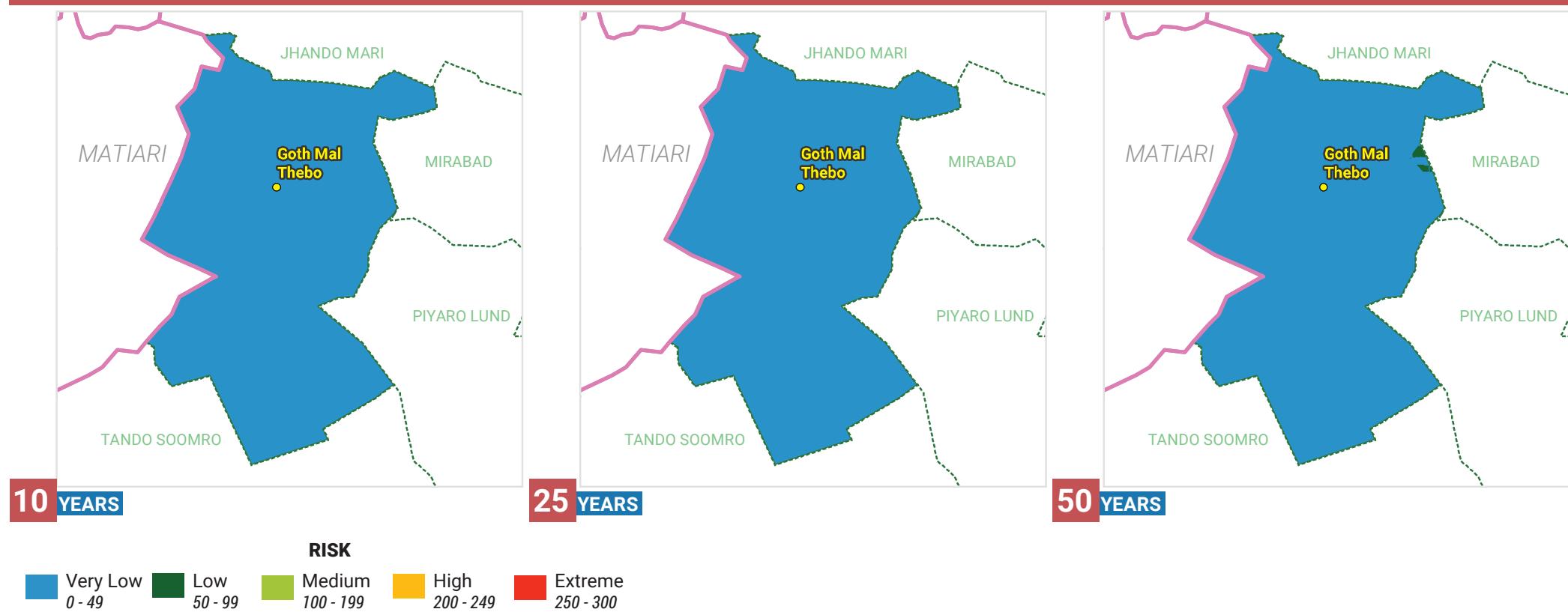
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



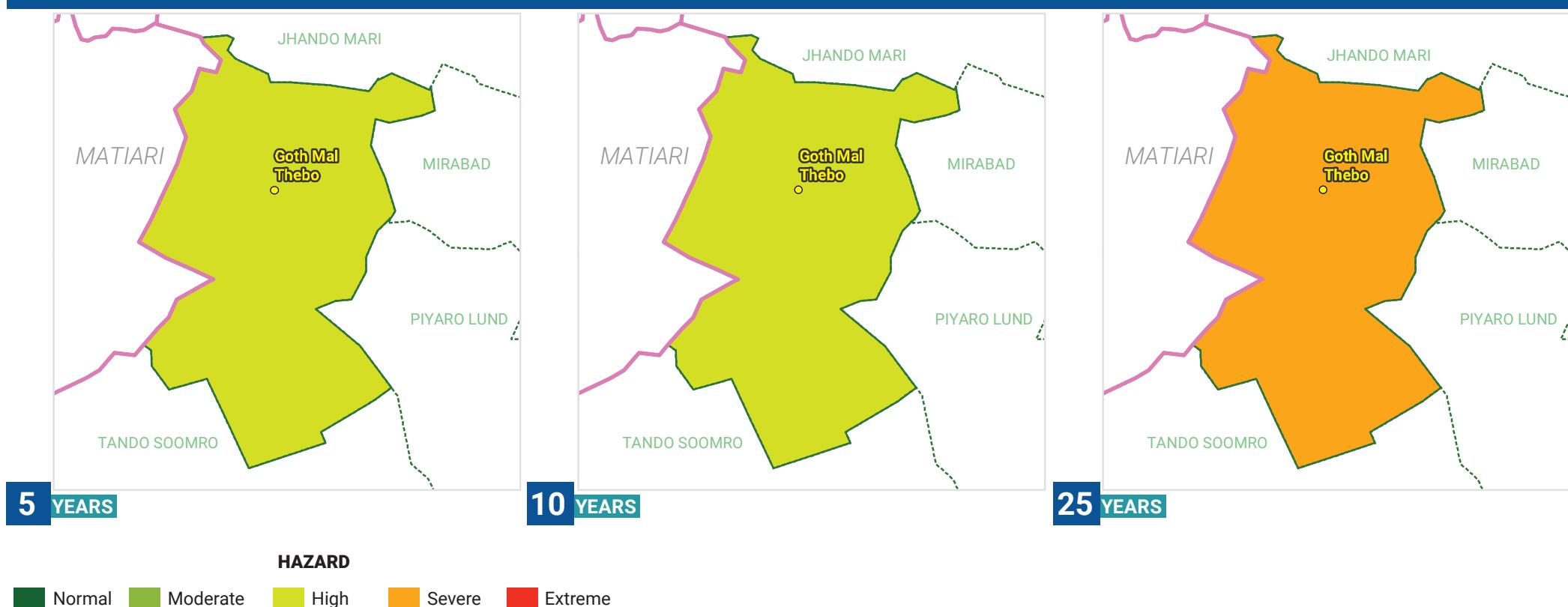
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

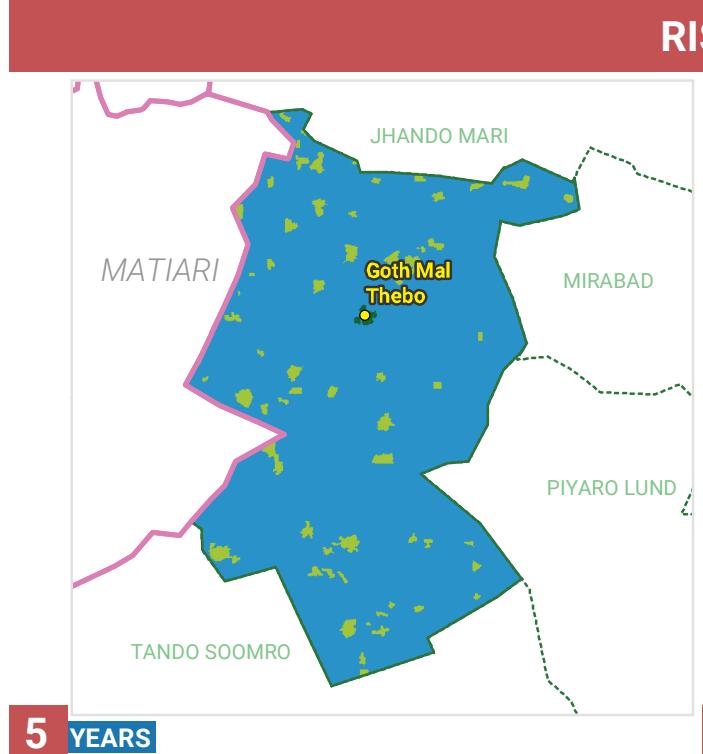
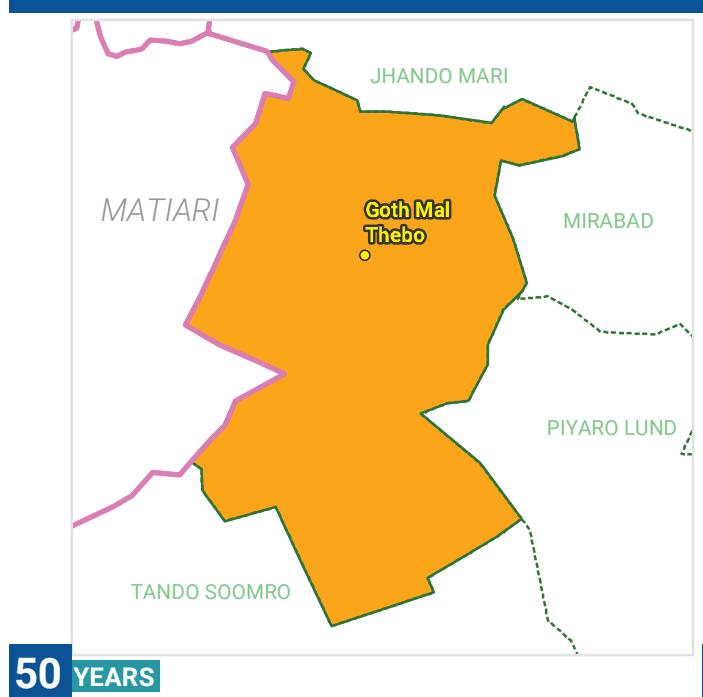
0	0	0	0.00	0	0	0	0.15
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.14	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

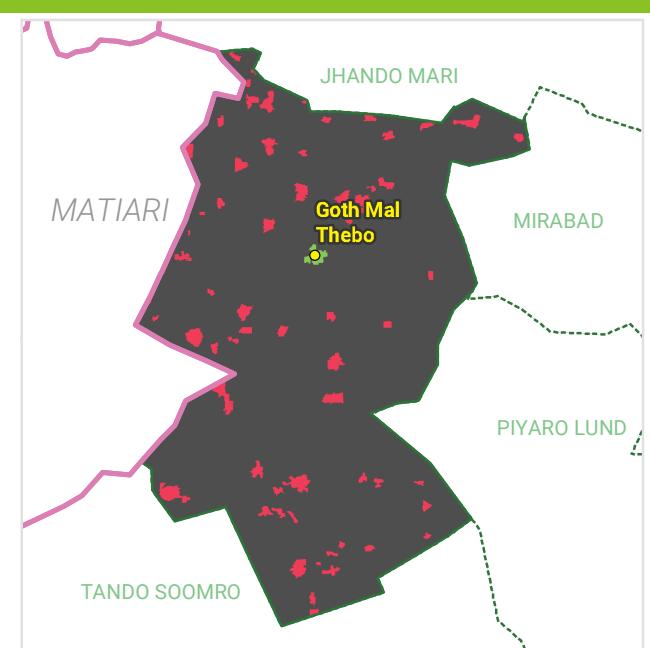
## HAZARD AT DIFFERENT RETURN PERIODS



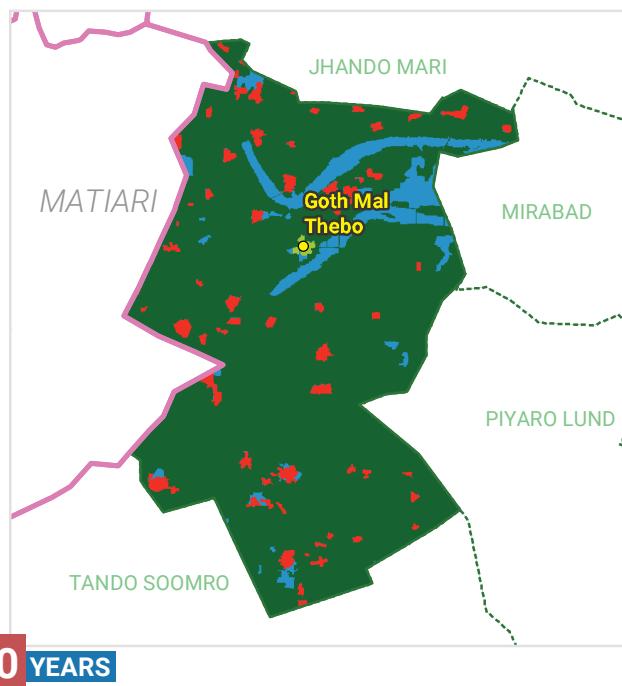
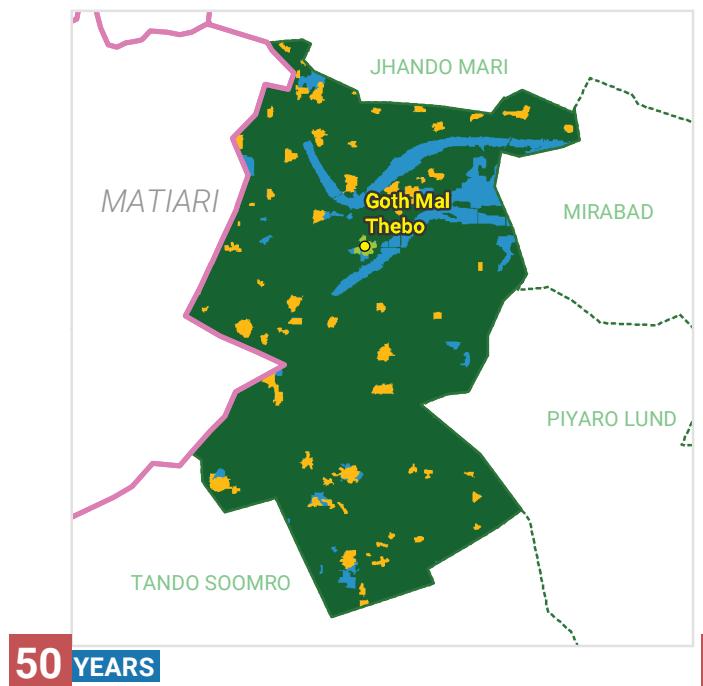
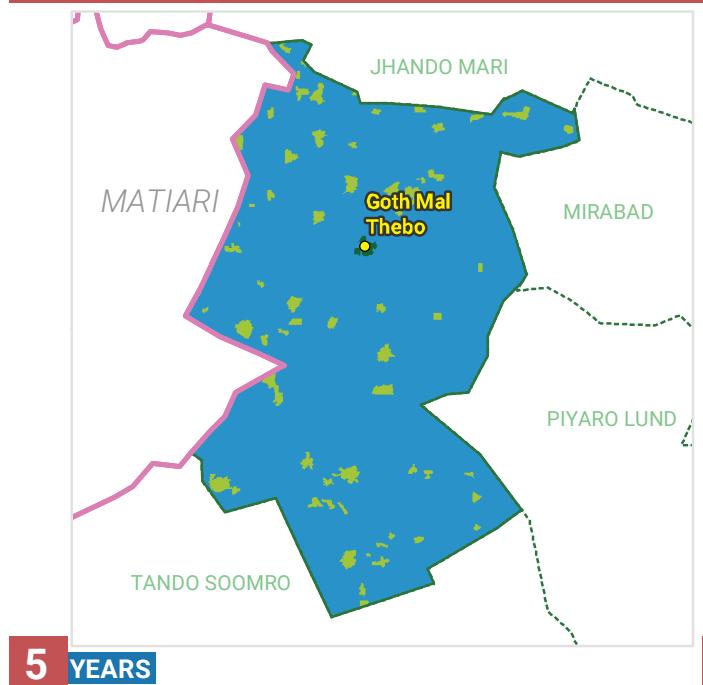
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

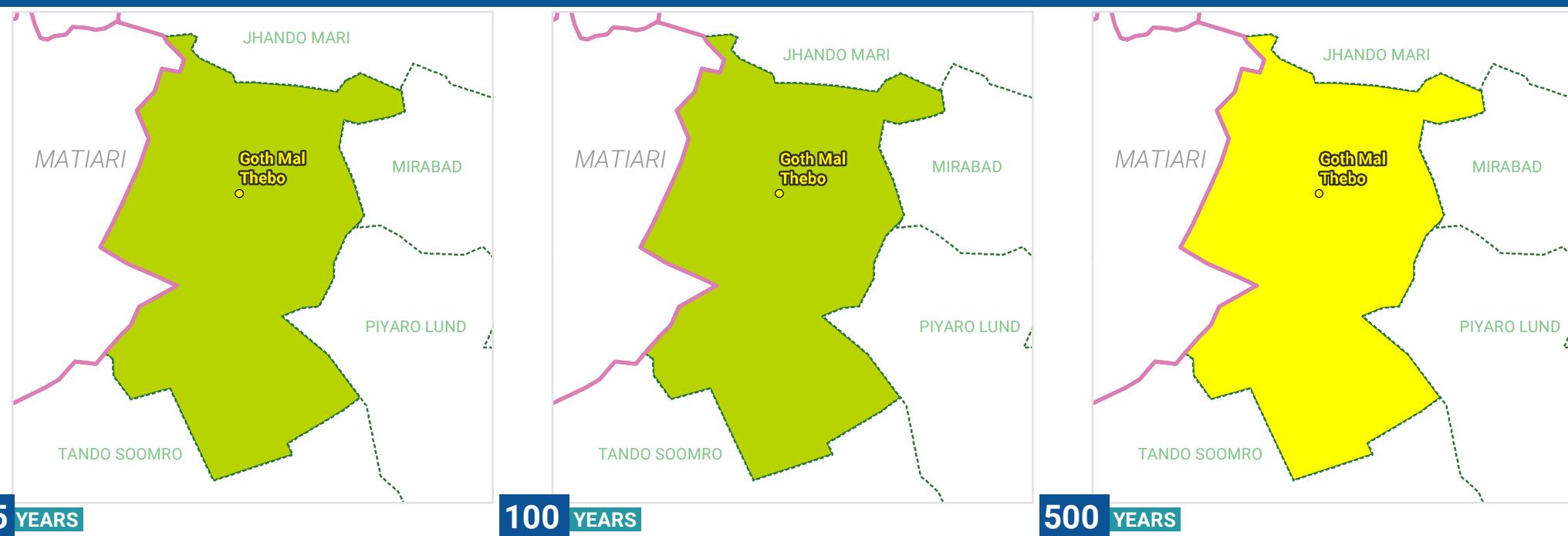
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

76	8688	43052	77.58	0	0.17	3.56
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

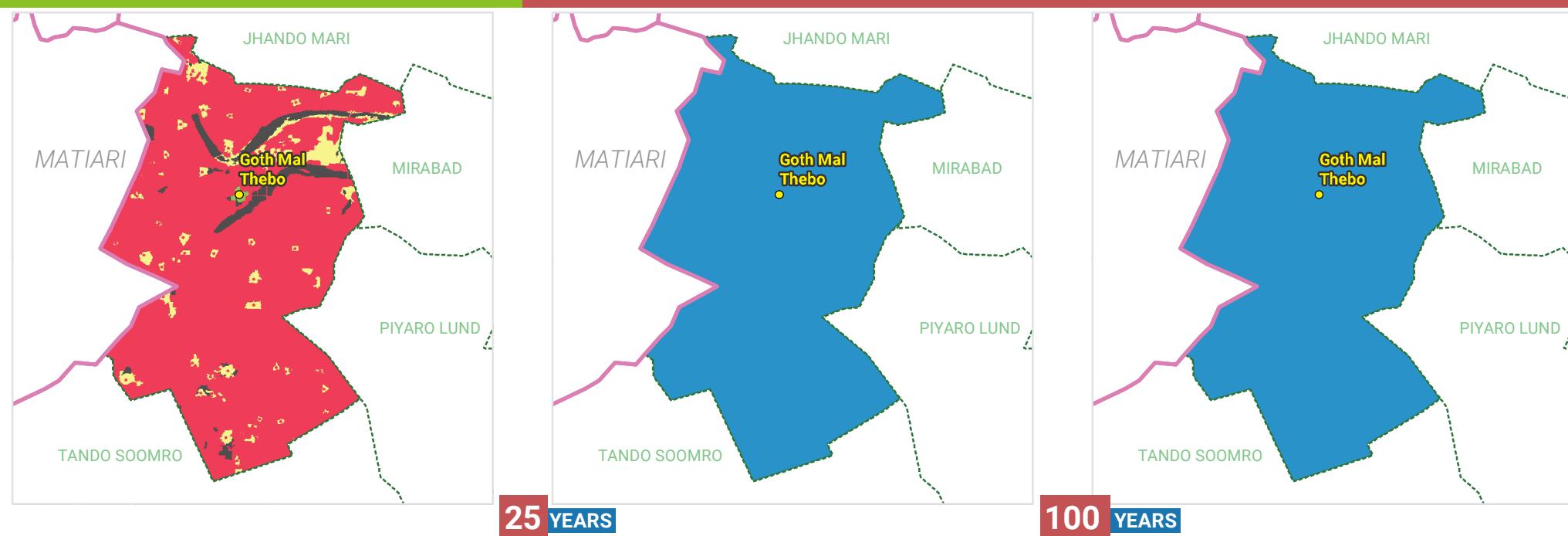
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

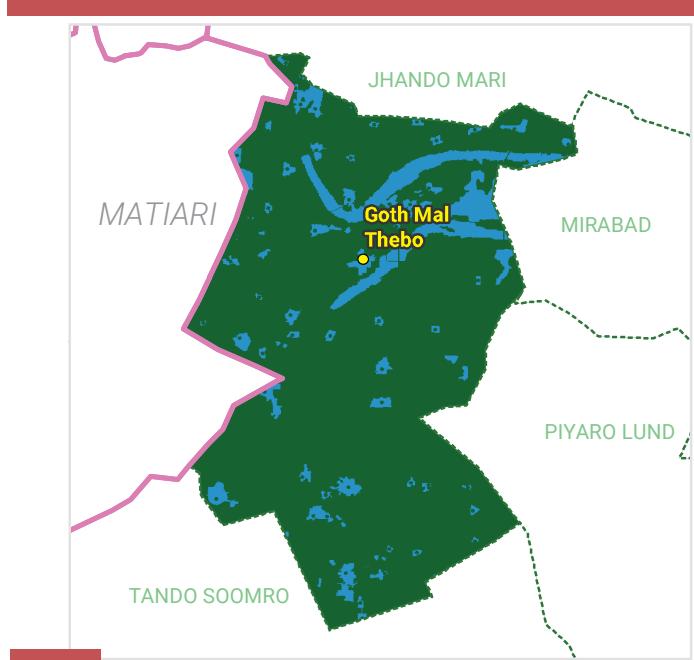
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

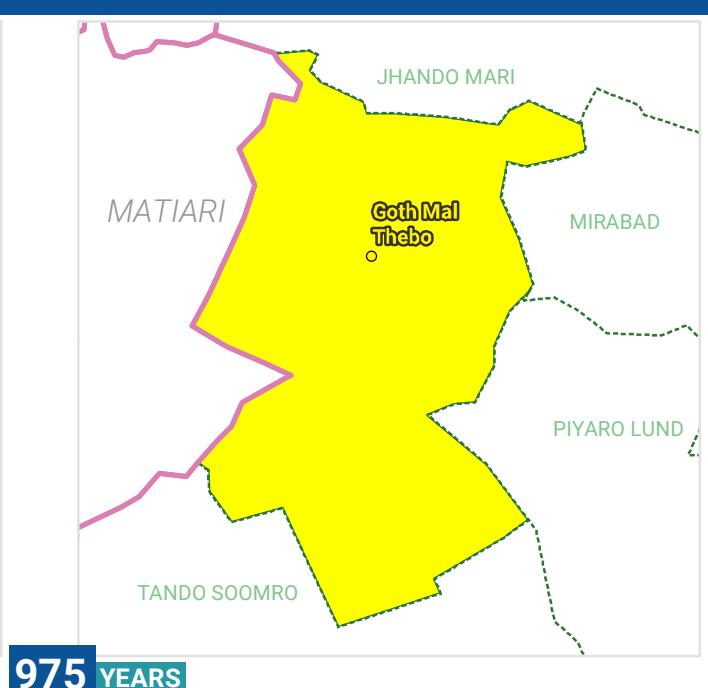
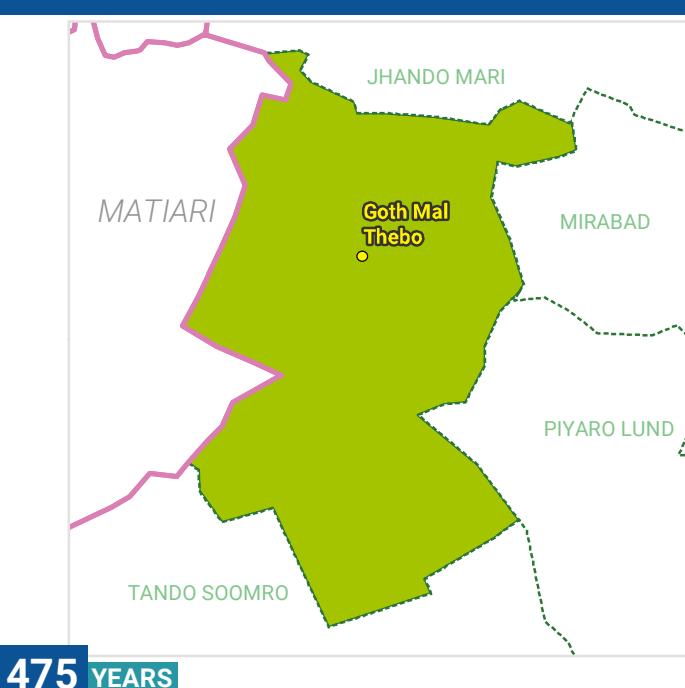
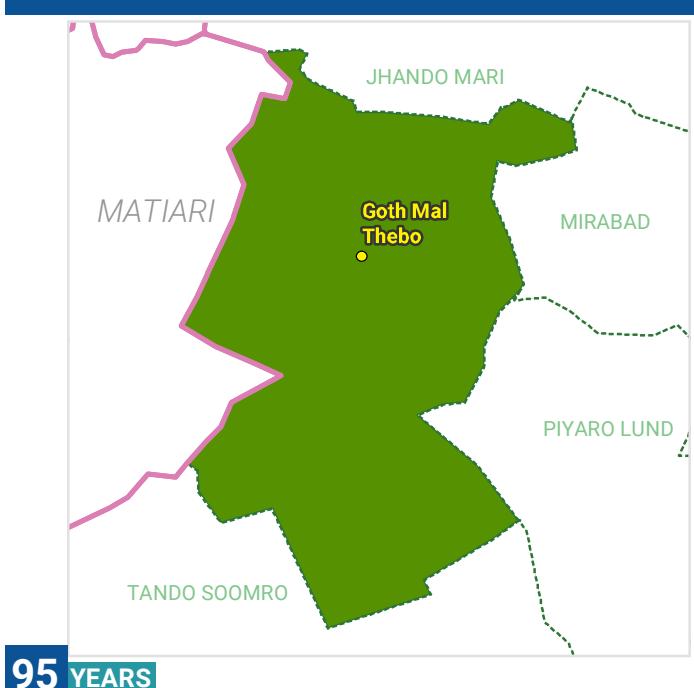
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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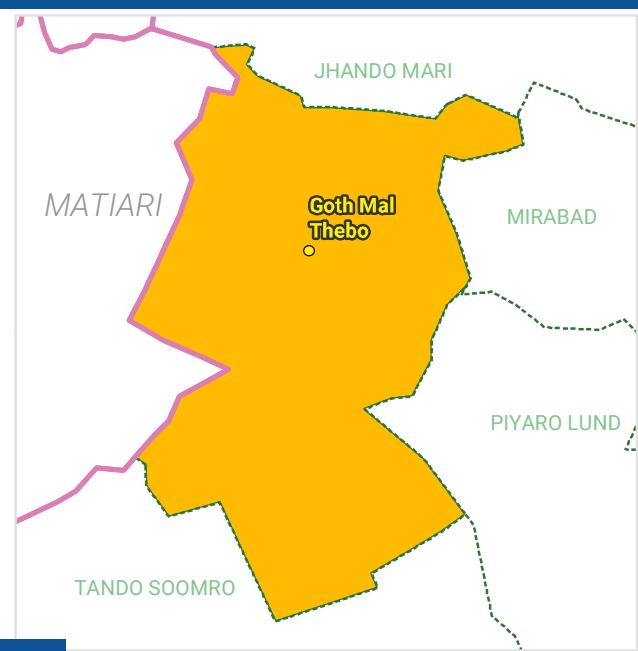
**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

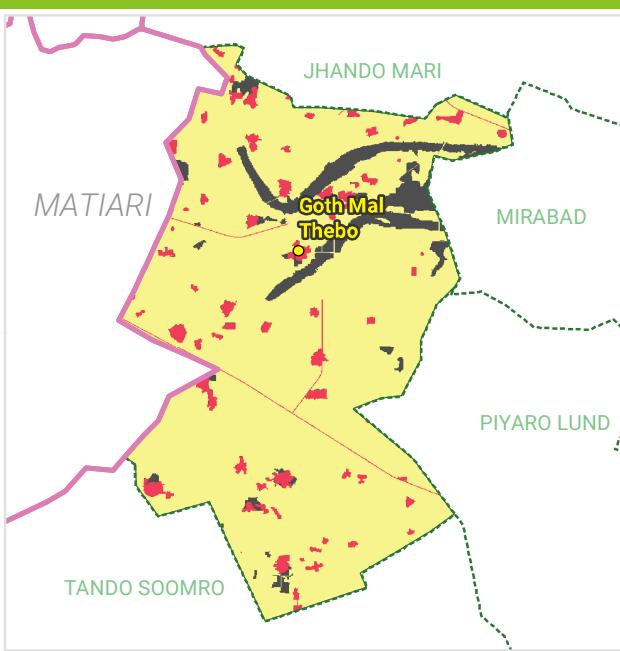
# EARTHQUAKE

## HAZARD



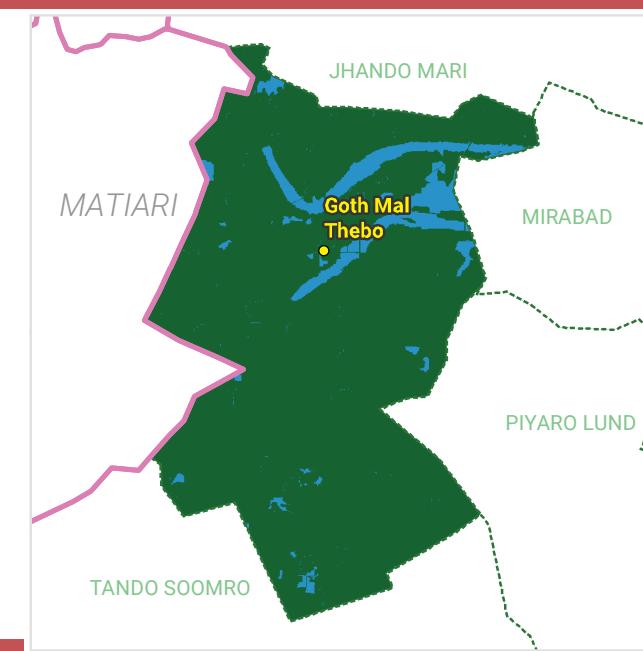
2475 YEARS

## VULNERABILITY

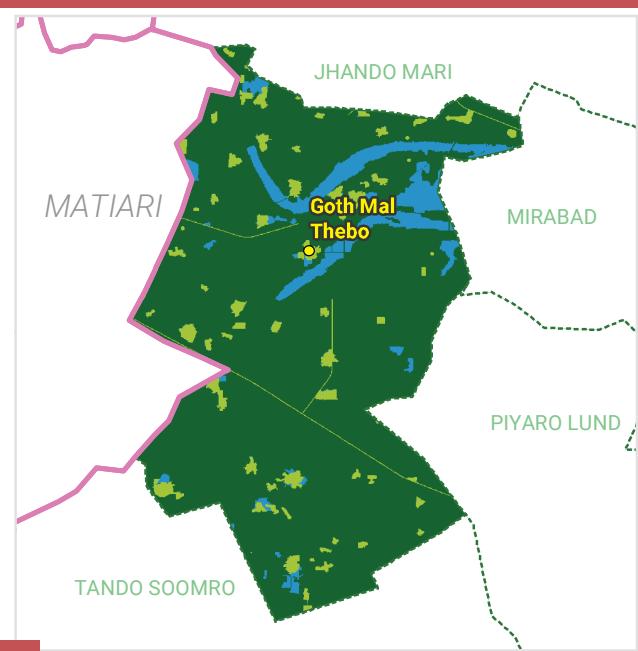


95 YEARS

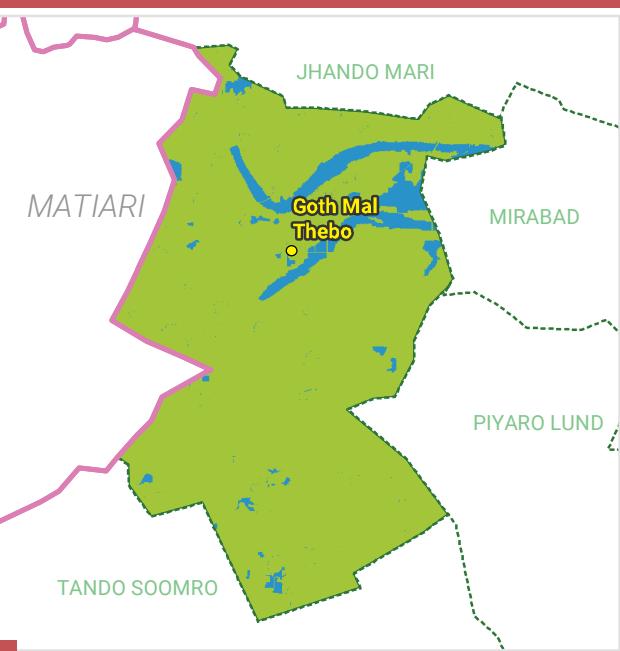
## RISK



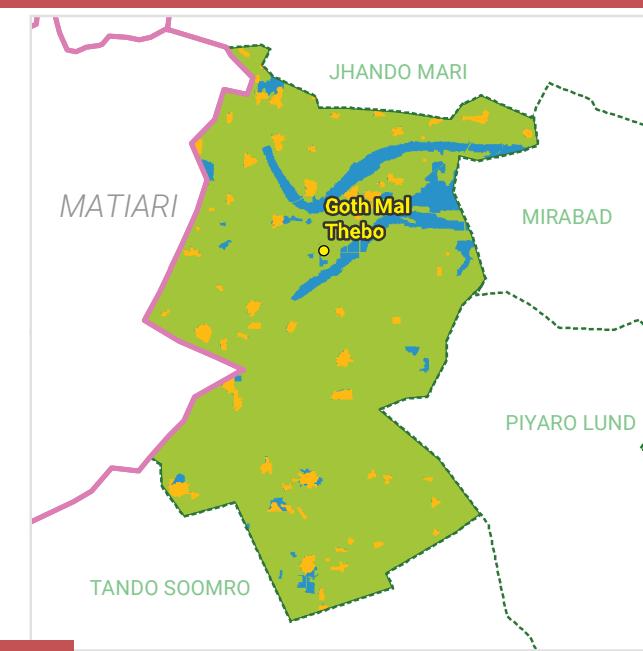
## RISK AT DIFFERENT RETURN PERIODS



475 YEARS



975 YEARS



2475 YEARS

### HAZARD

Zone 1	Zone 2 A	Zone 2 B	Zone 3
Zone 4	Zone 5	Zone 6	

### VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

77	8651	42871	77.64	0.01	0	0	0.16
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
3.55	0.04	142.24	0	17.87	0	0	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
77	0	0	0	1	0	1	0
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
1	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - DHINGANO BOZDAR

Union Council area in sq. km

65

Surrounding UCs / Features **TANDO SOOMRO** in North  
**MATIARI DISTRICT** in North West  
**TANDO ALLAHYAR 2** in East  
**BUKERANI SHARIF** in South  
**HYDERABAD DISTRICT** in West

Population

2017 approx. 20,558

No. of household

2017 approx. 3,981

## Land Use Land Cover

coverage area in sq.km

Built-up (Other)	0.7
Crop Irrigated	41.6
Crop Marginal and Irrigated Saline	0.0
Forest	0.0
Orchards	16.8
Pakka -Planned	0.7
Pakka -Unplanned	1.4
RangeLands	2.7
Wet Area	0.9

## Critical Infrastructure

Education Facilities

NO. OF SETTLEMENTS

58

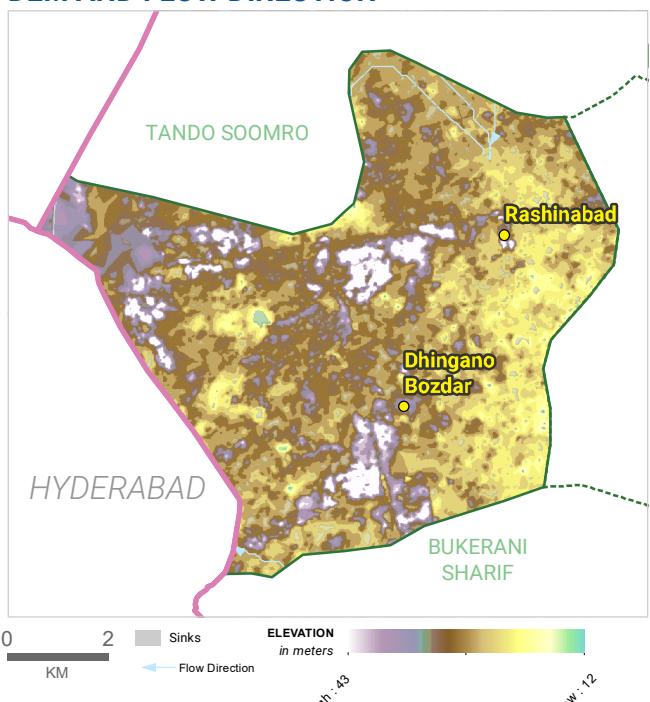
Bus Stops  
Railway Stations  
Tourist Places

Petrol Pumps

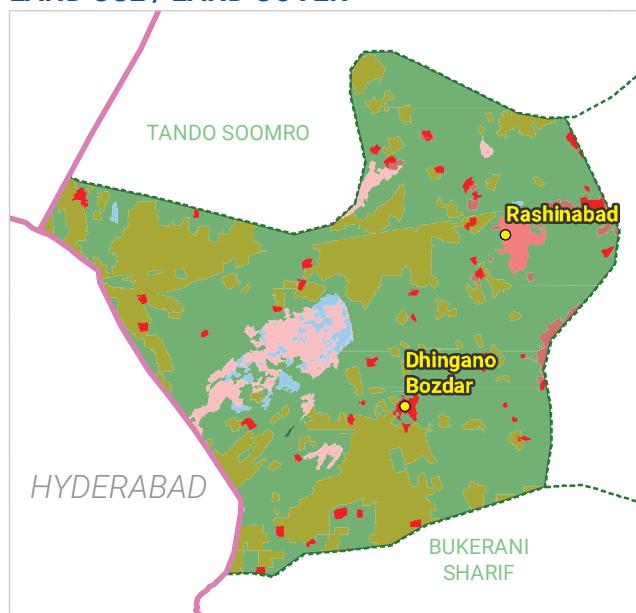
Mobile Towers

58

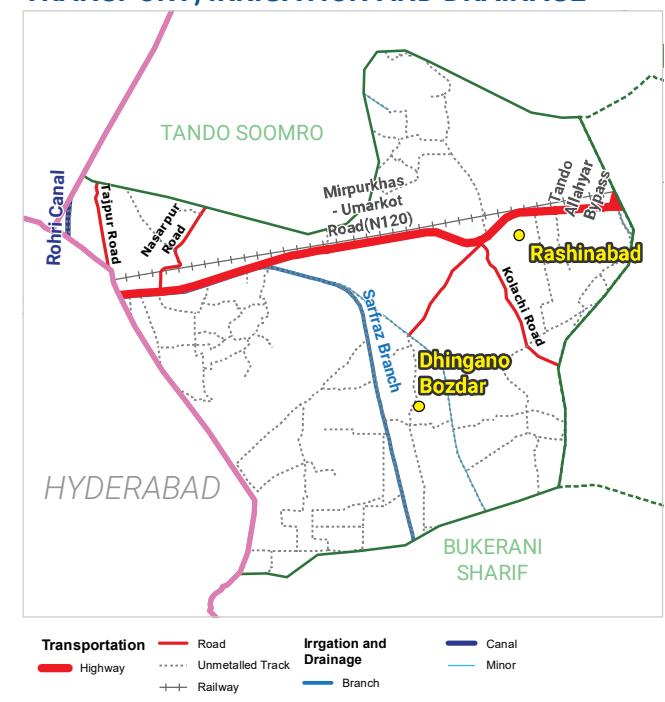
## DEM AND FLOW DIRECTION



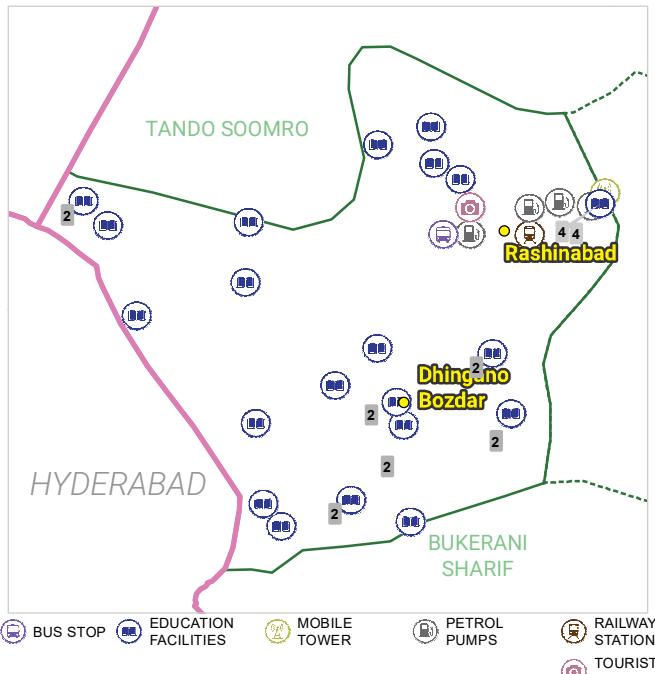
## LAND USE / LAND COVER



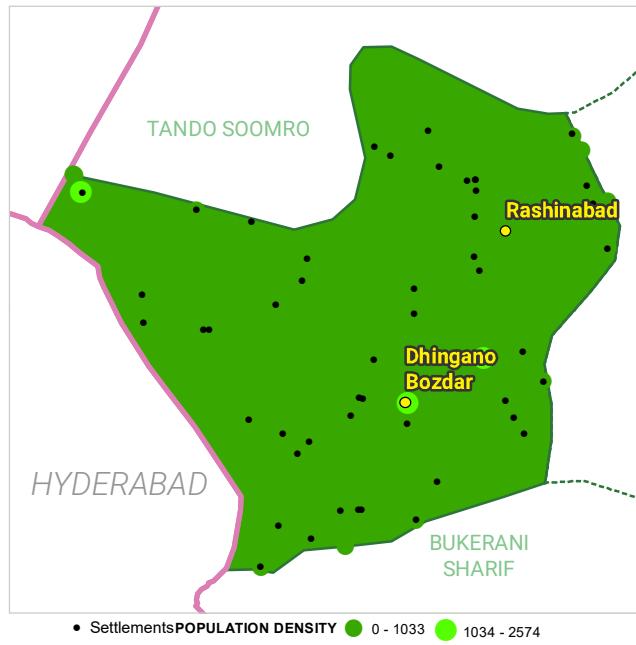
## TRANSPORT, IRRIGATION AND DRAINAGE



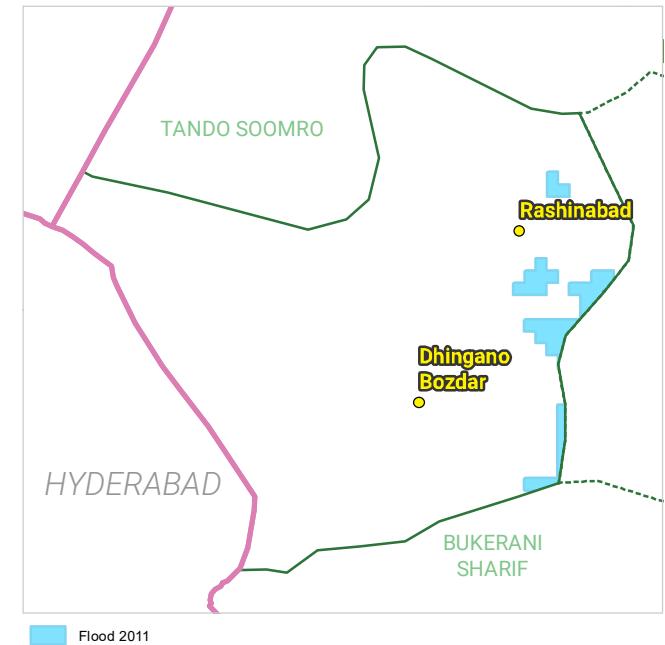
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

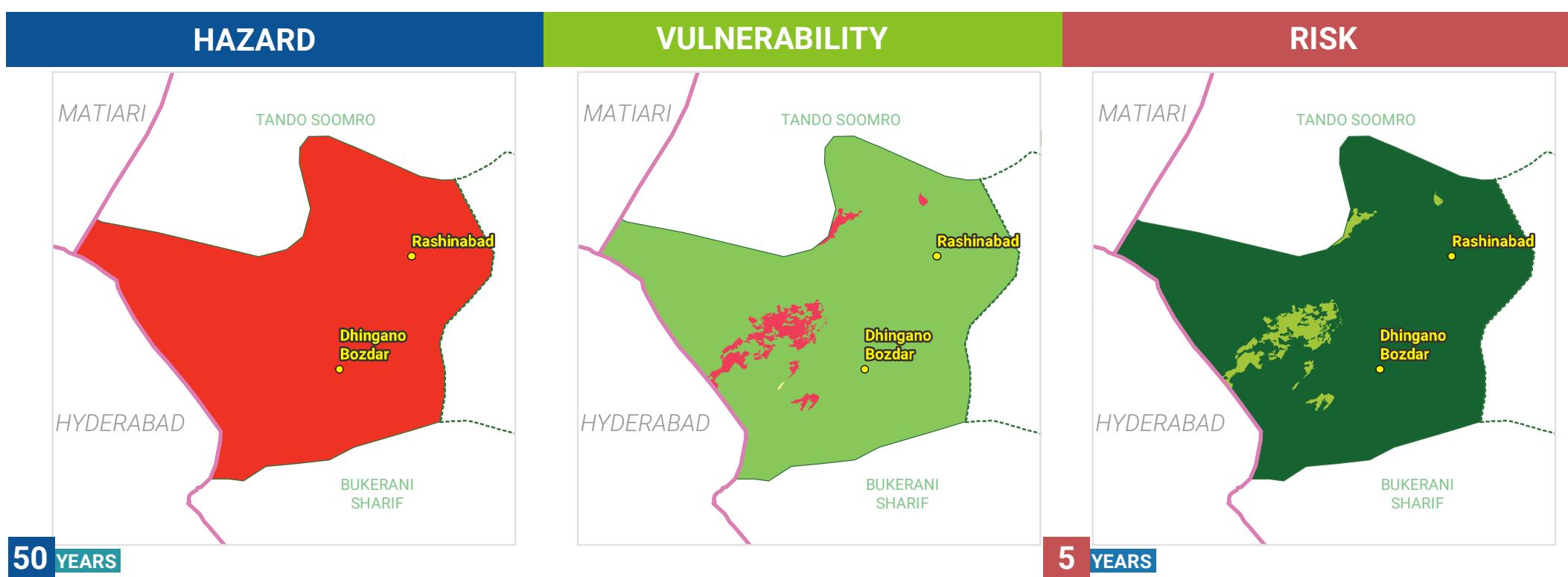
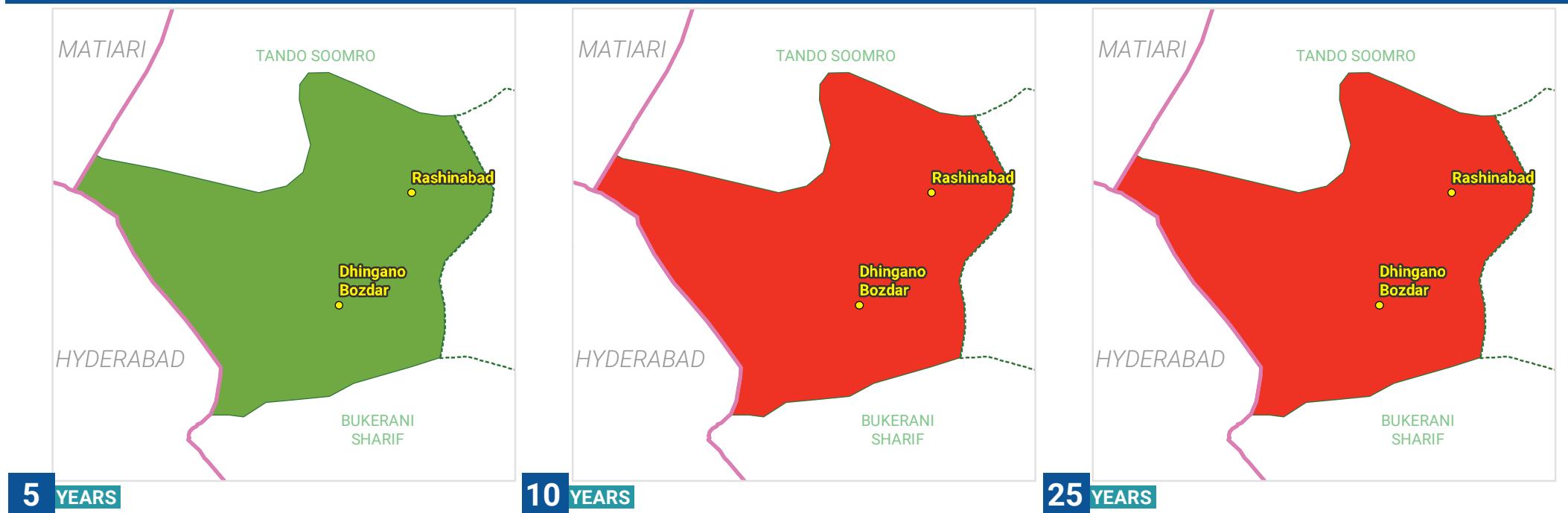


# FLOOD

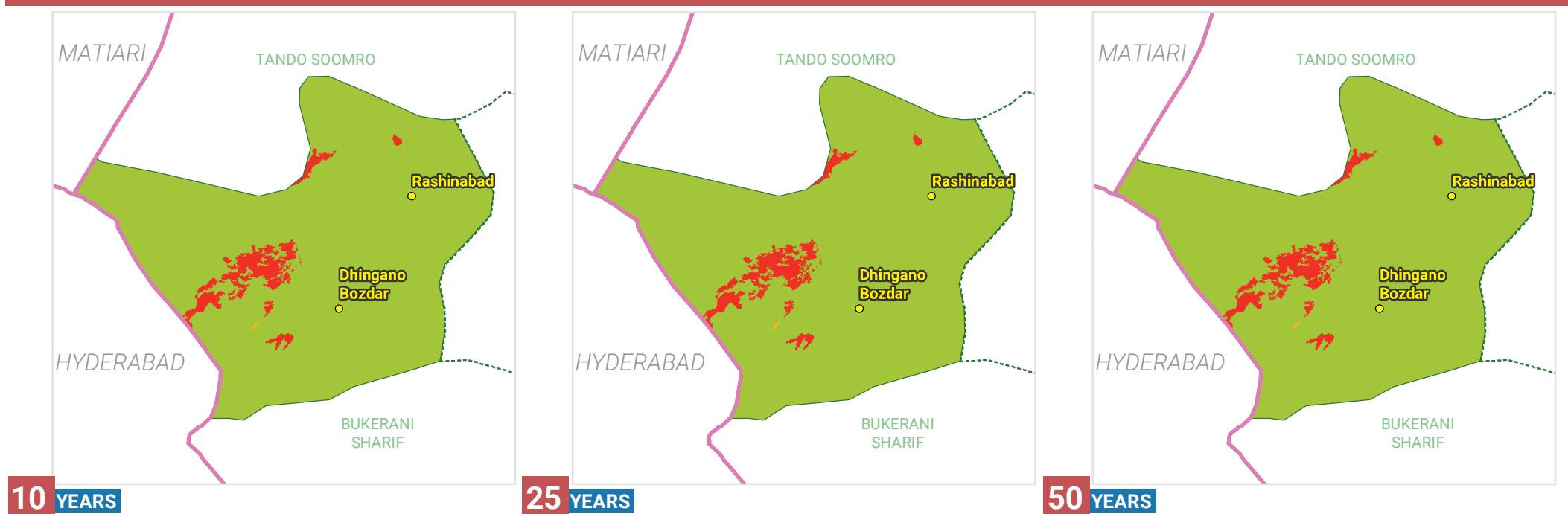
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

### HAZARD AT DIFFERENT RETURN PERIODS



### RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

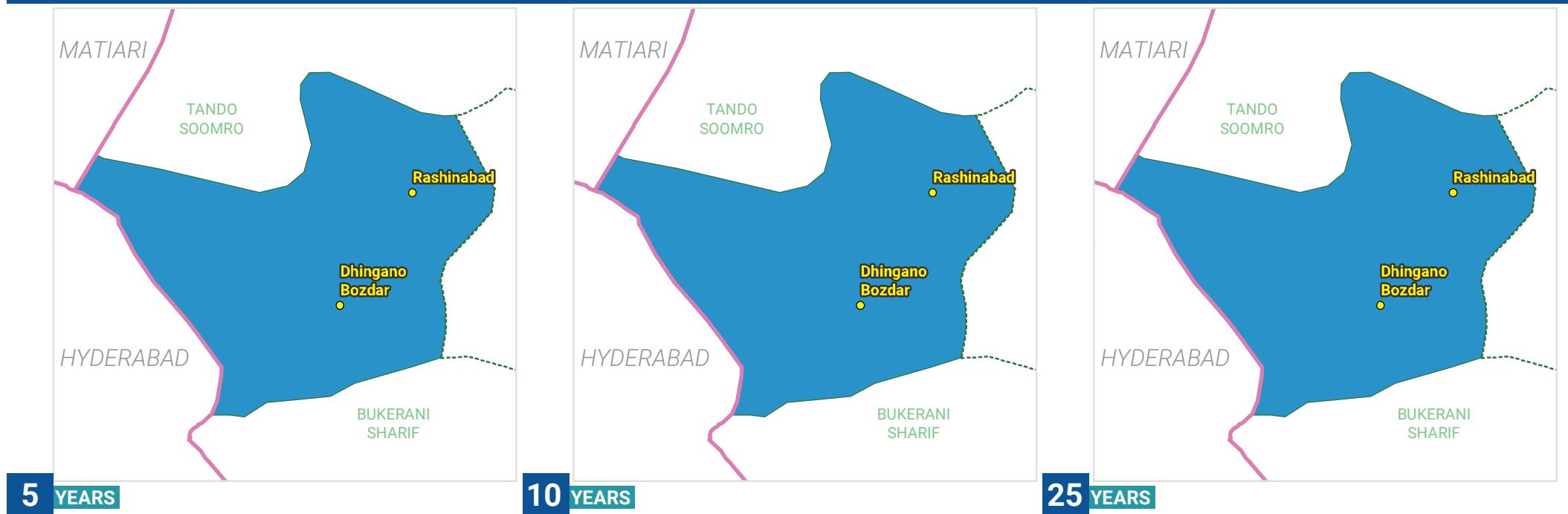
58	3981	20558	58.44	0	0.02	0	2.65
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0.90						

WATER BODY (SQ. KM)	WET AREA (SQ. KM)
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## AGRICULTURAL DROUGHT

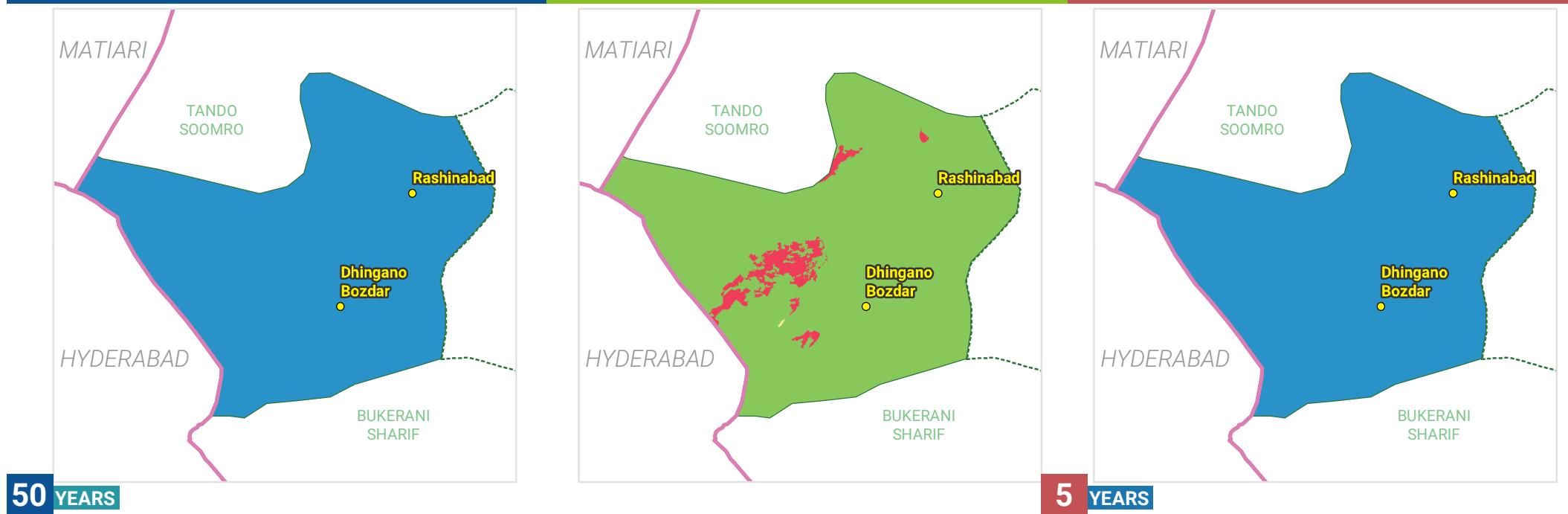
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



No Hazard	Mild
Severe	Extreme

## HAZARD

Moderate

None 0 - 25	Low 26 - 50
	Medium 51 - 75

## VULNERABILITY

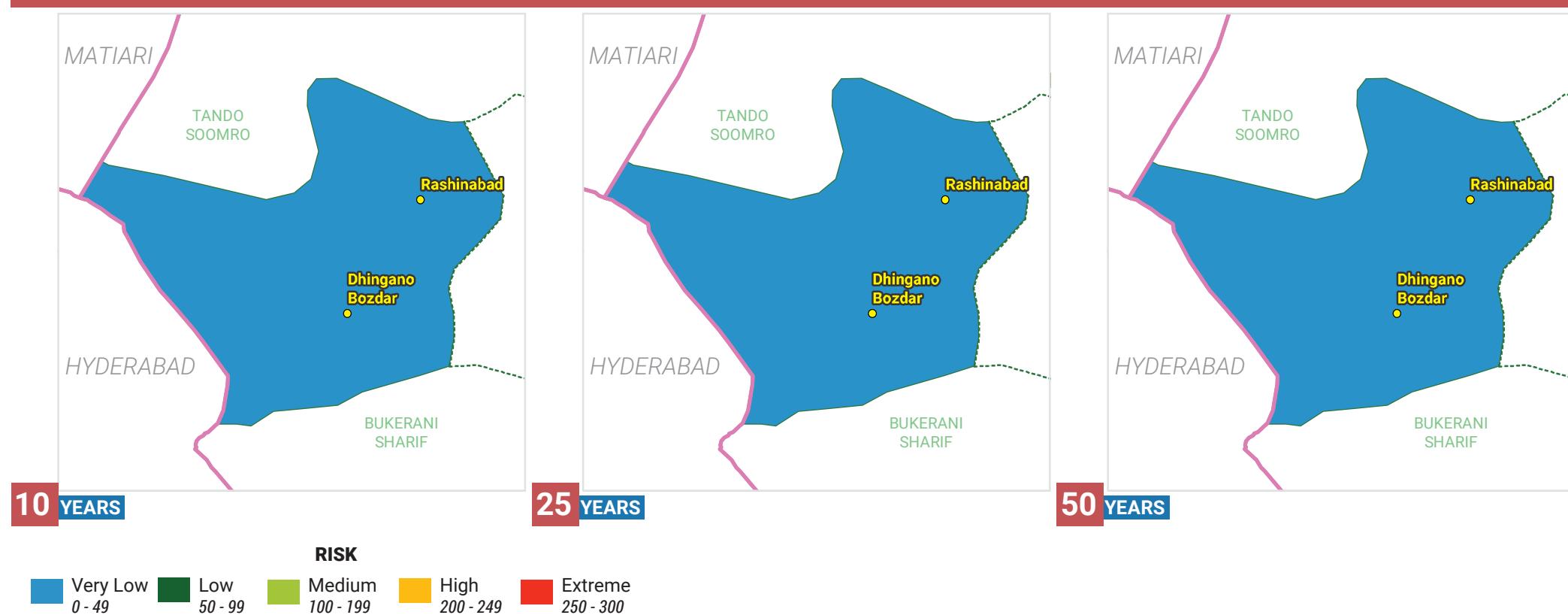
High 76 - 100	Very Low 0 - 49
	Low 50 - 99

## RISK

Medium 100 - 199	High 200 - 249
	Extreme 250 - 300

# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



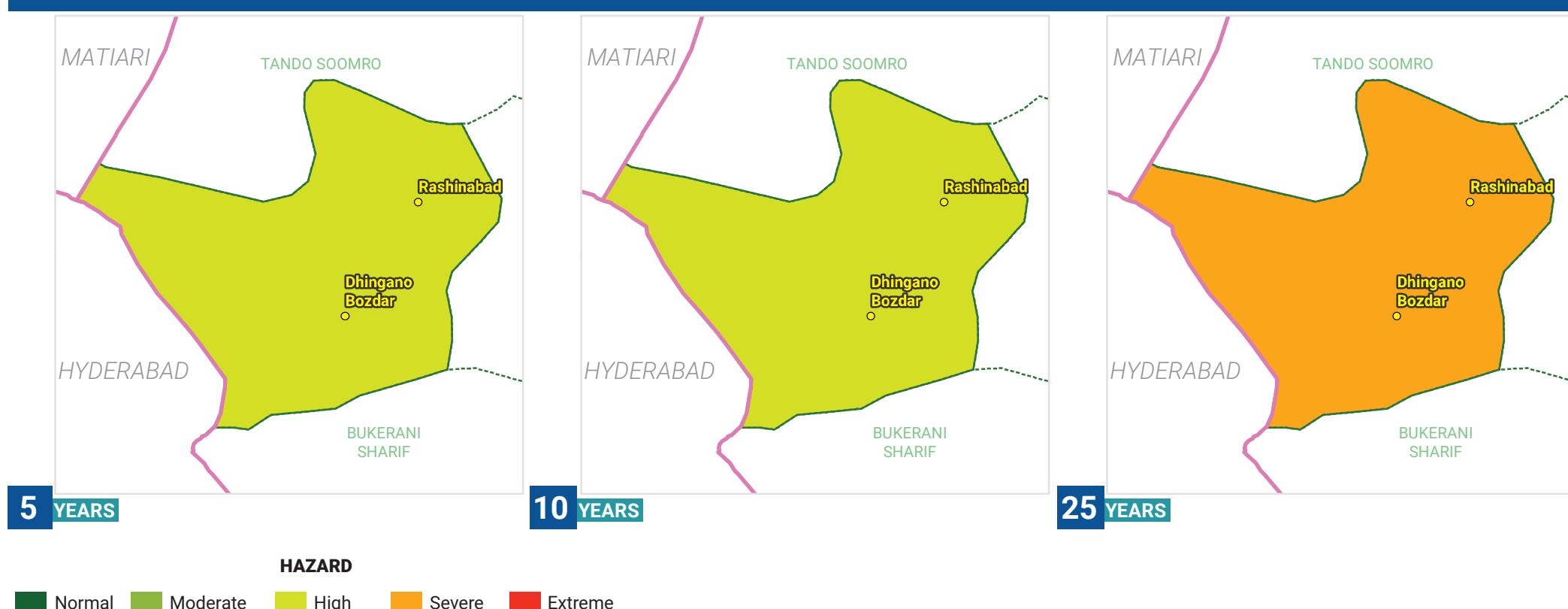
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

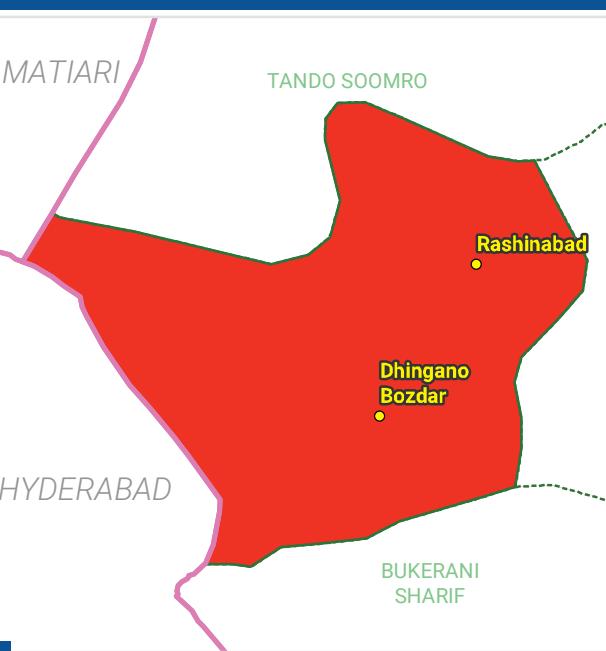
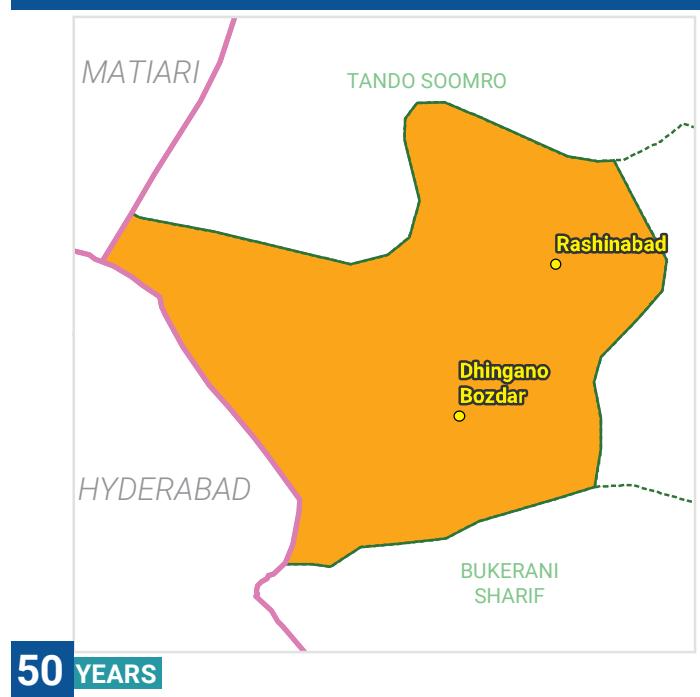
**NO ELEMENTS AT RISK FOR AGRICULTURAL DROUGHT**

# HEATWAVE

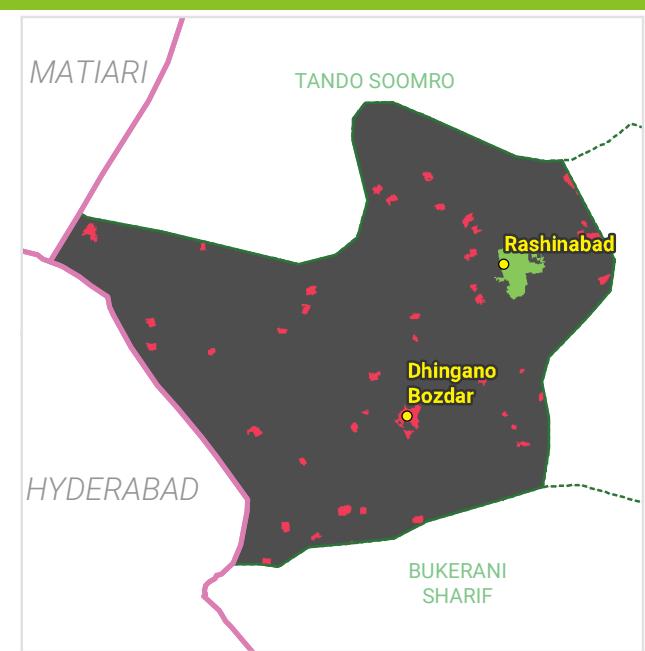
## HAZARD AT DIFFERENT RETURN PERIODS



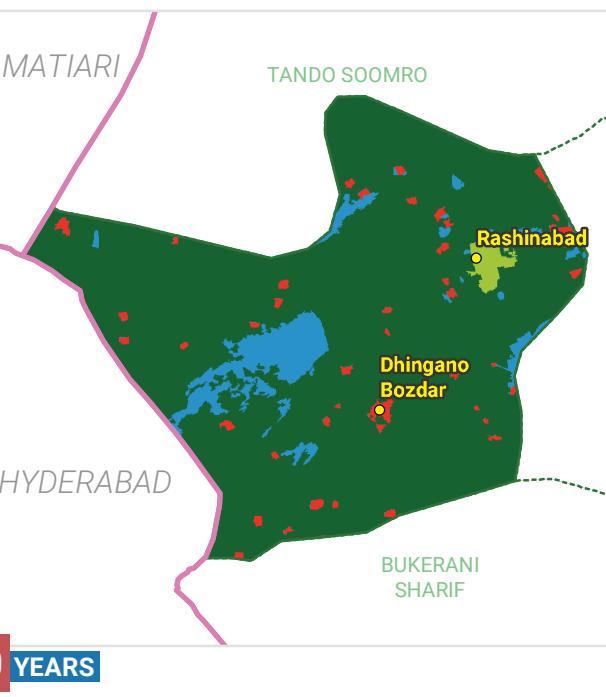
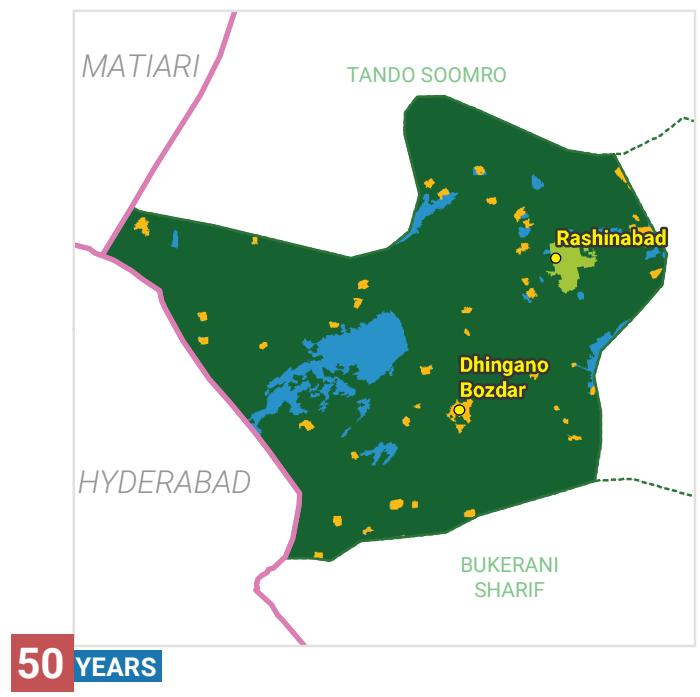
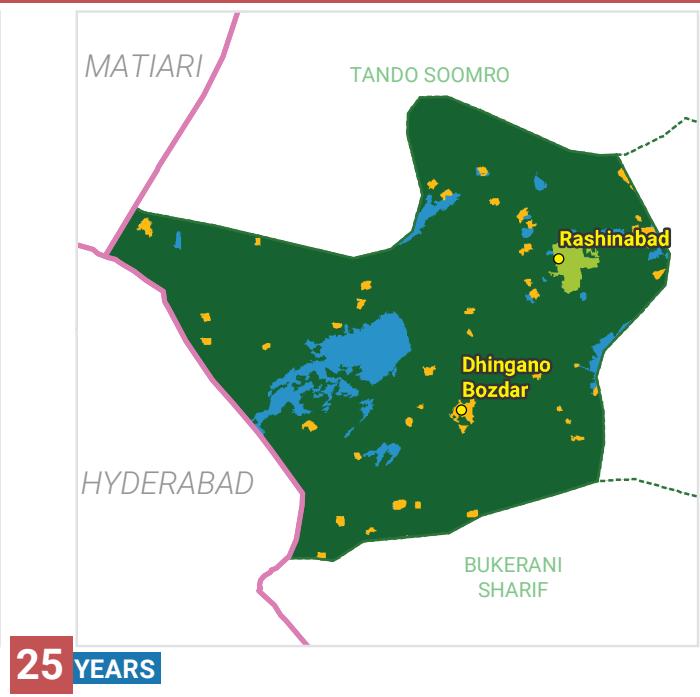
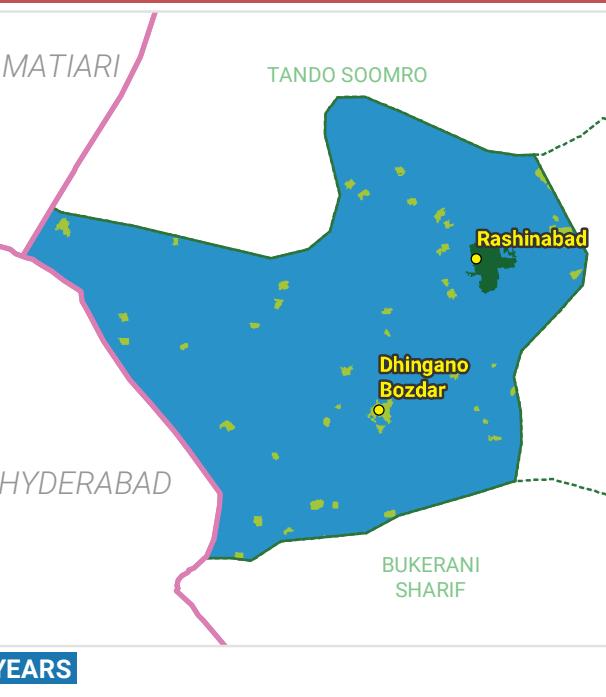
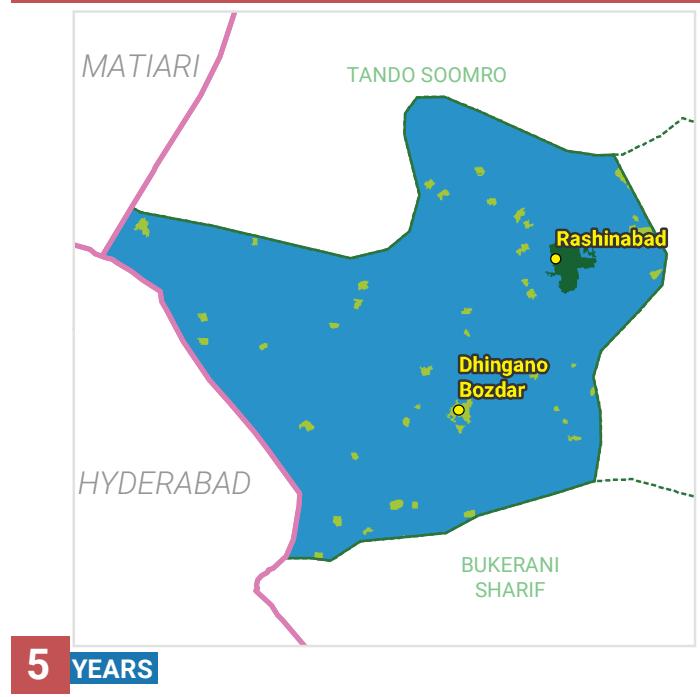
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

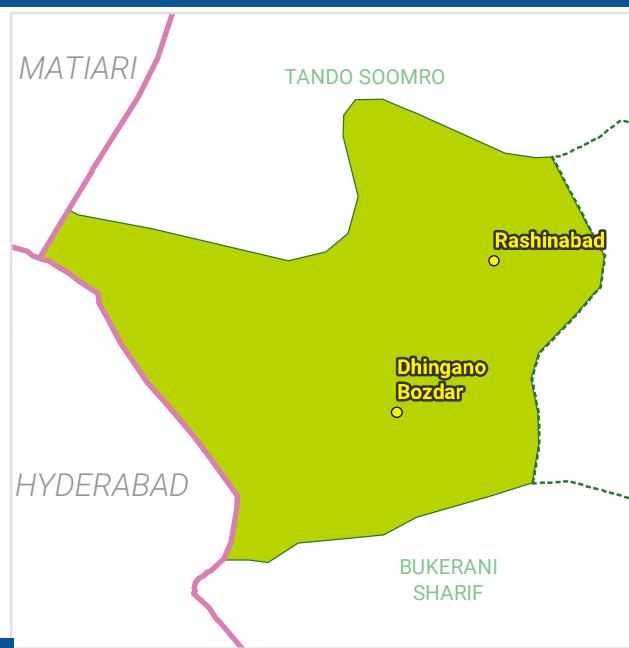
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

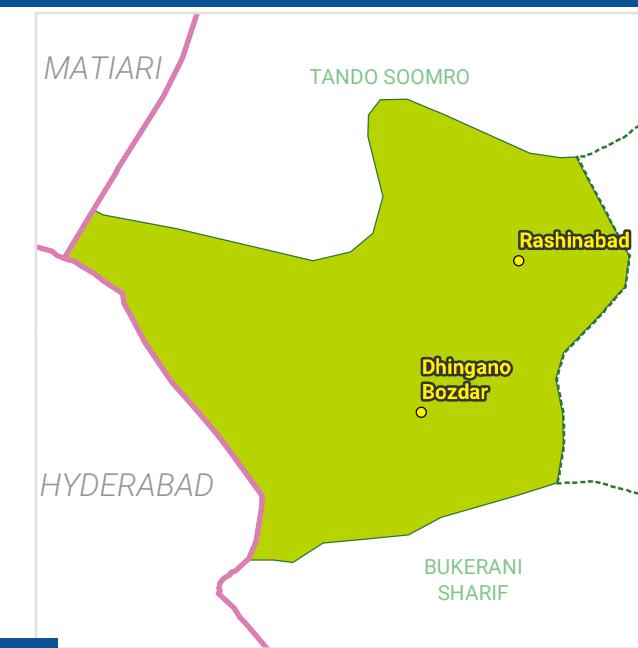
58	3947	20375	58.25	0	0.65	1.39
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

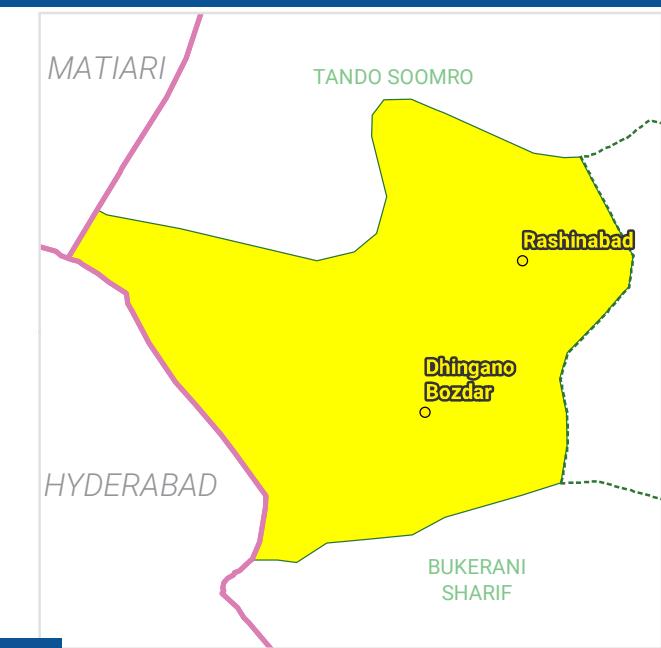
## HAZARD AT DIFFERENT RETURN PERIODS



25 YEARS

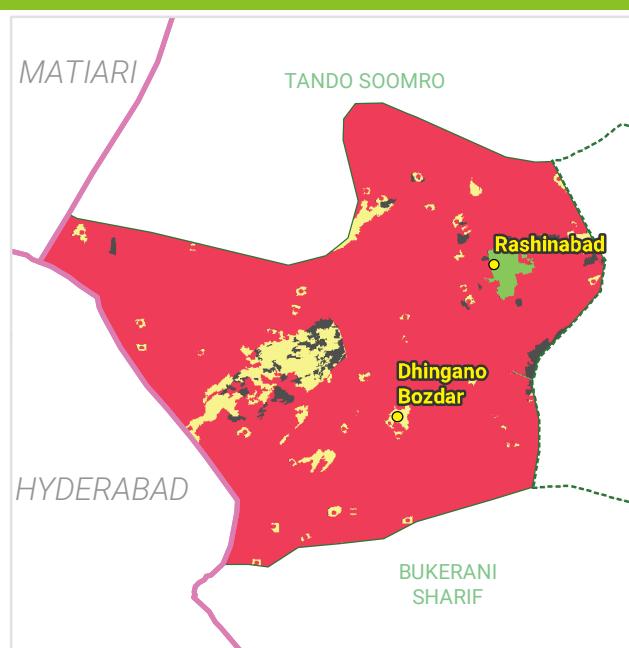


100 YEARS



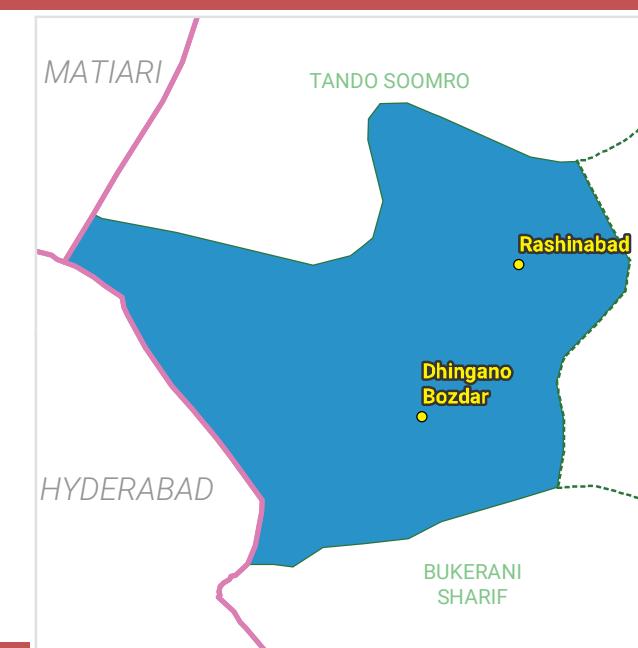
500 YEARS

## VULNERABILITY

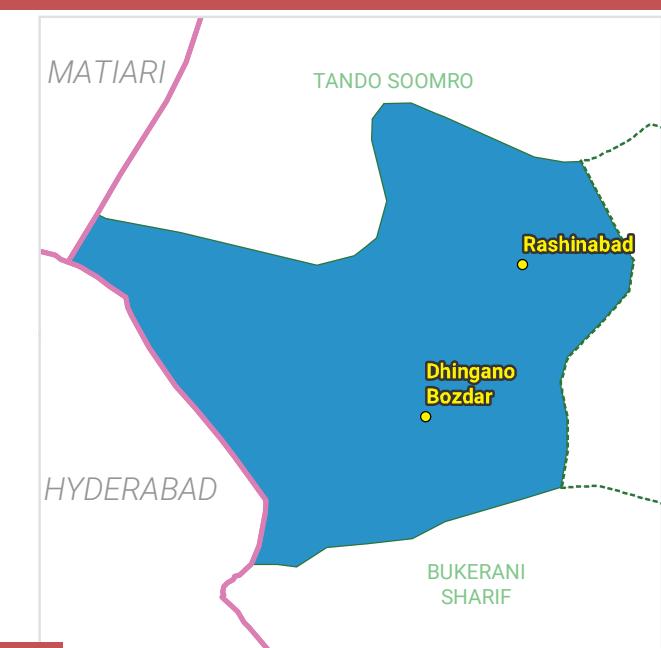


25 YEARS

## RISK AT DIFFERENT RETURN PERIODS



25 YEARS



100 YEARS

### HAZARD

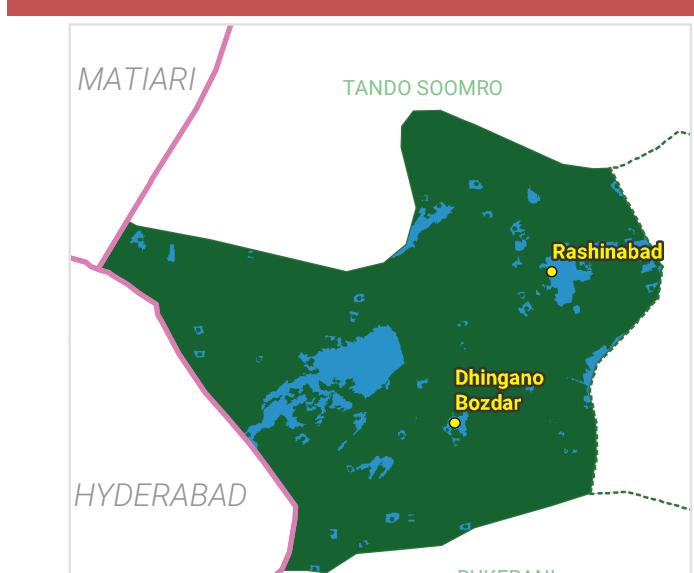
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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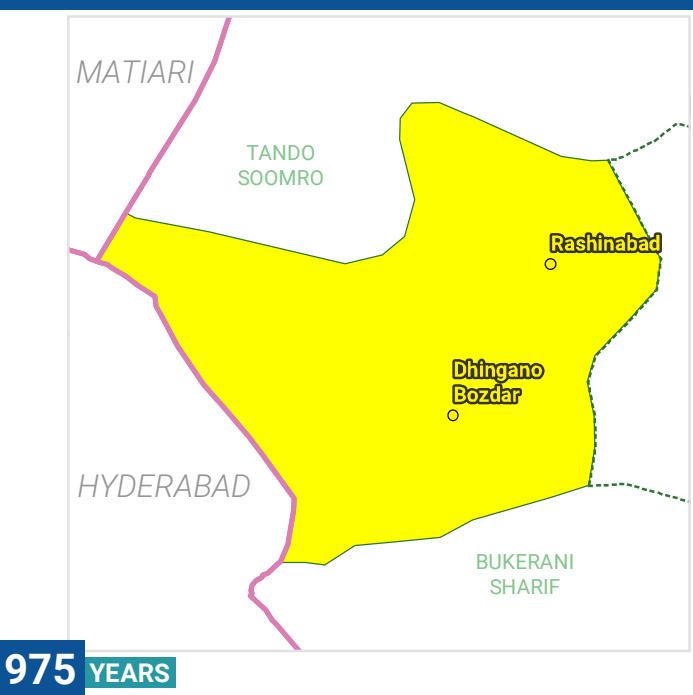
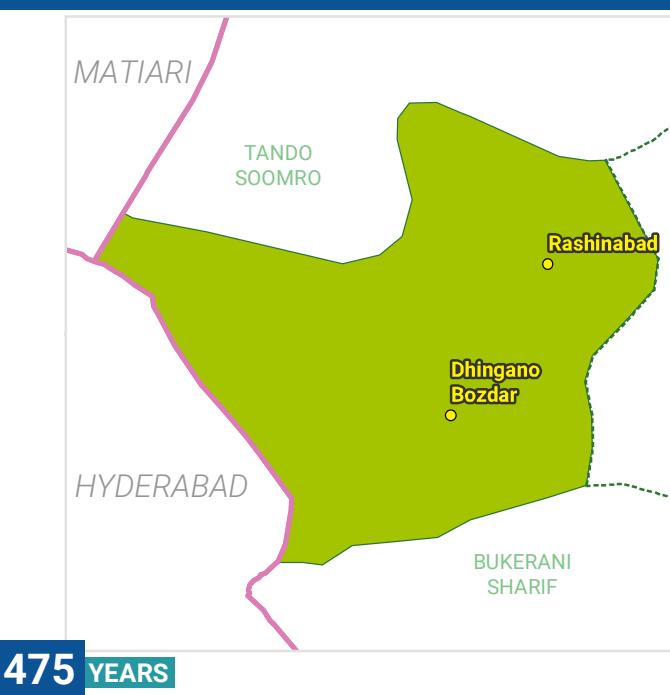
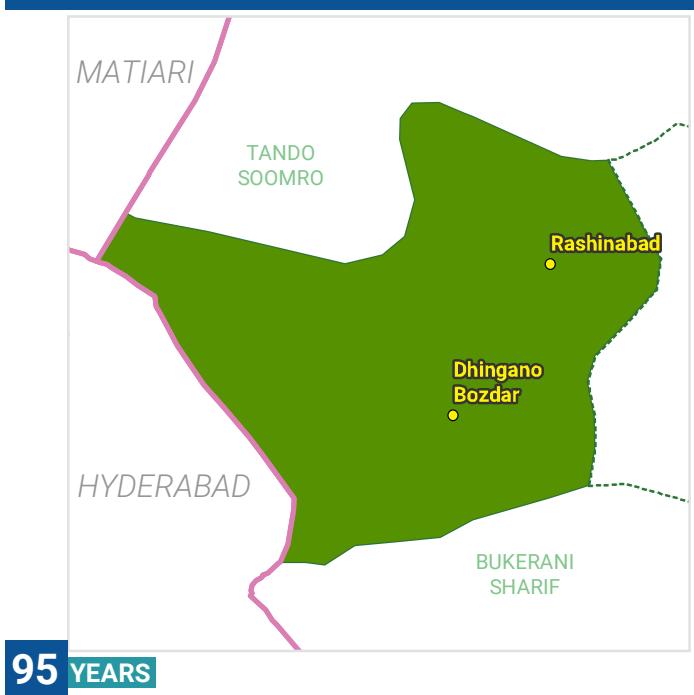
**RISK**

**RISK**

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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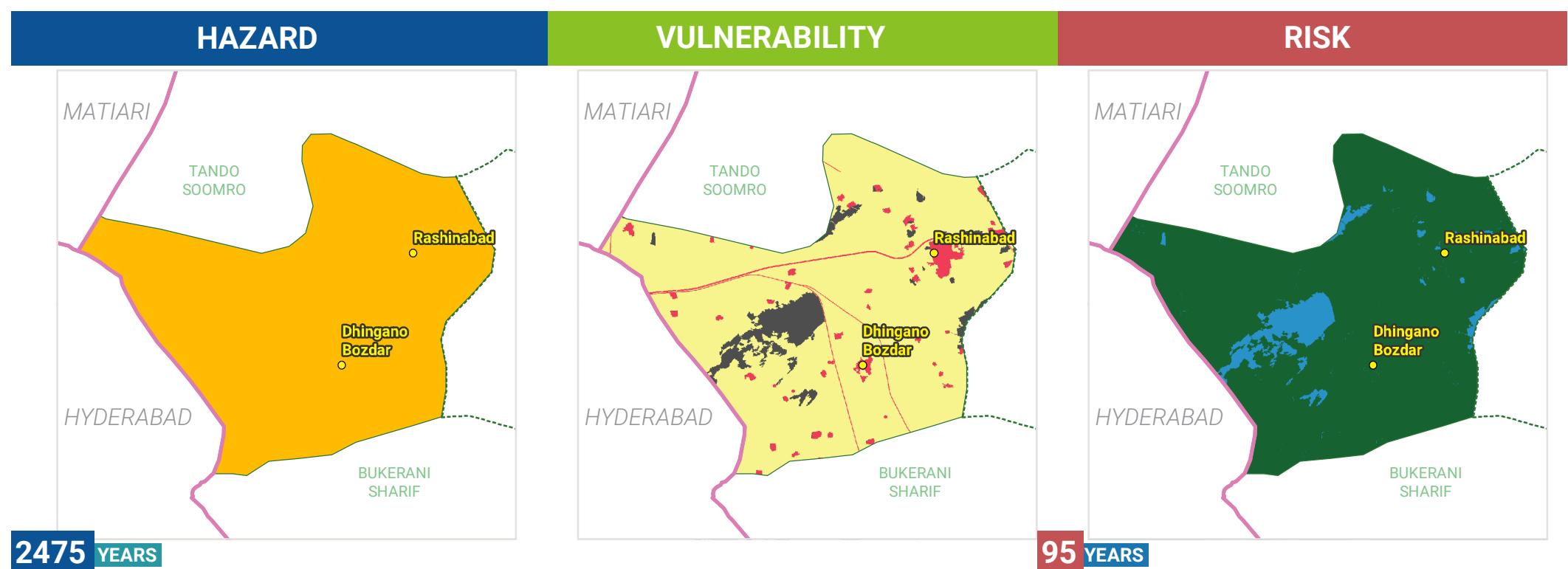
**ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

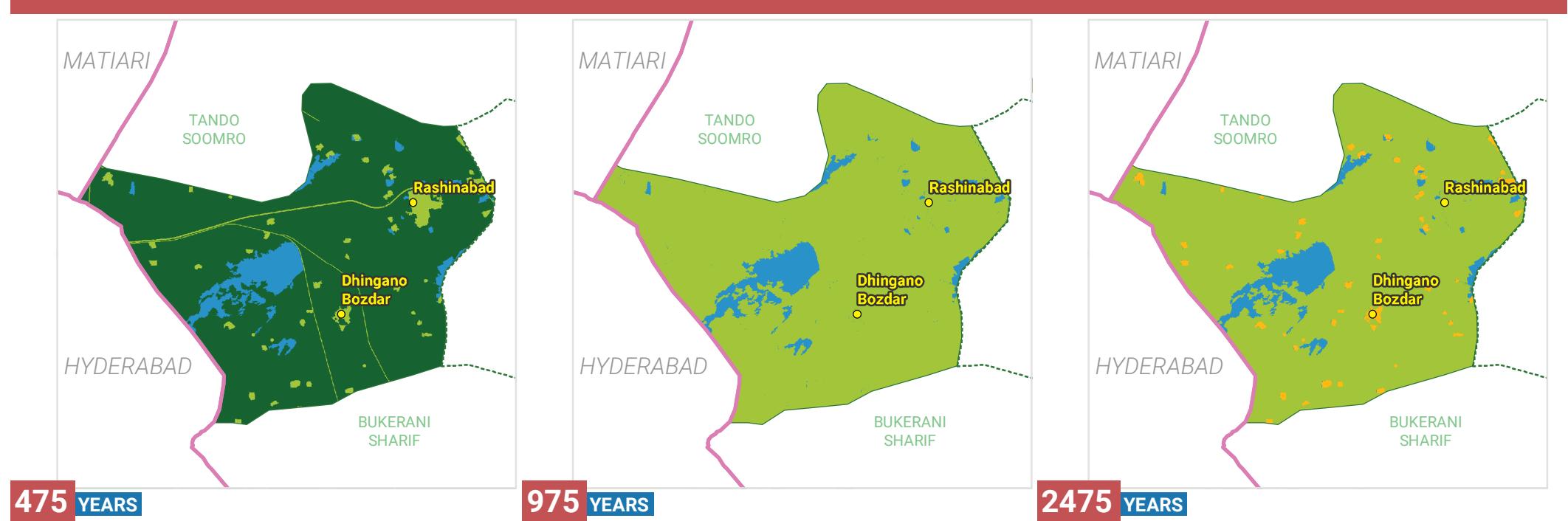
**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

Zone 1	Zone 2 A	Zone 2 B	Zone 3	Zone 4	Zone 5	Zone 6
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# EARTHQUAKE



## RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

58	3928	20289	58.32	0.00	0	0	0.65
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
1.38	0.07	123.56	10.11	17.85	0	0	1
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
27	0	0	0	0	0	1	11
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	1	1	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - JHANDO MARI

Union Council area in sq. km

166

Surrounding UCs / Features

**DASORI** in South**SANGHAR DISTRICT** in North**MIRPURKHAS DISTRICT** in East**MIRABAD** in South East**MATIARI DISTRICT** in South West

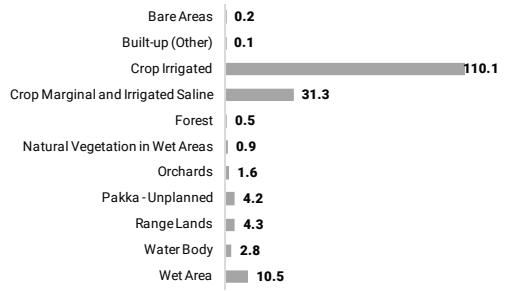
Population

2017  
approx.**48,226**

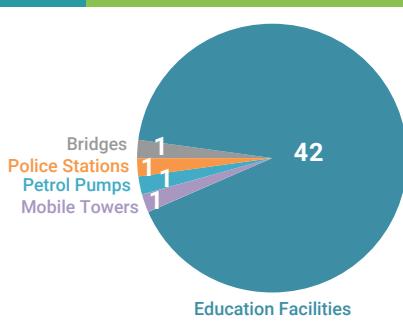
No. of household

2017  
approx.**9,724**

**Land Use Land Cover**  
coverage area in sq.km



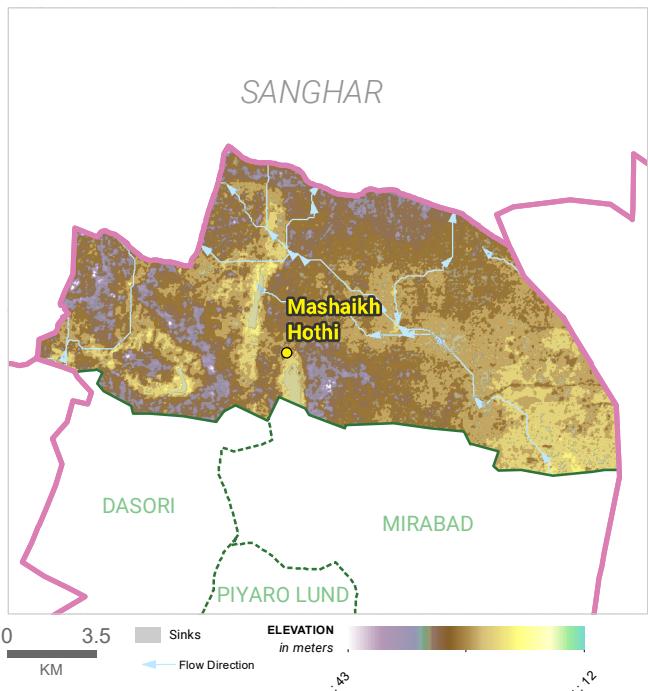
**Critical Infrastructure**



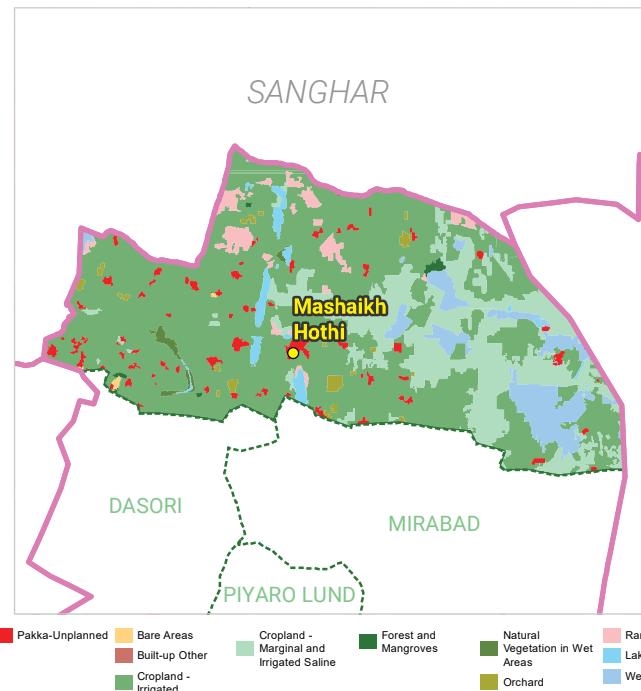
NO. OF SETTLEMENTS

**102**

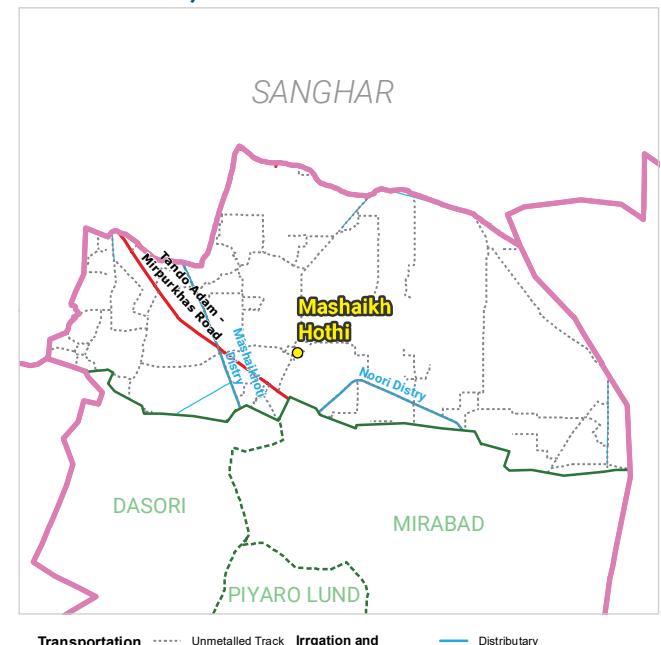
## DEM AND FLOW DIRECTION



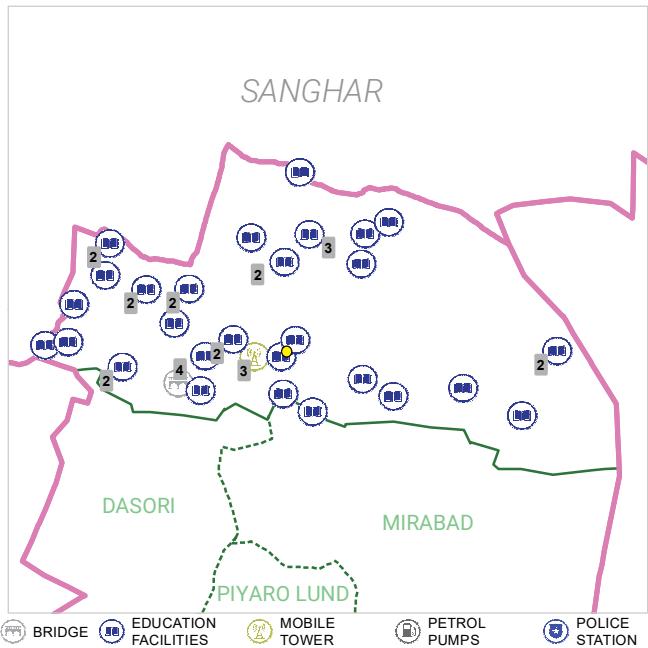
## LAND USE / LAND COVER



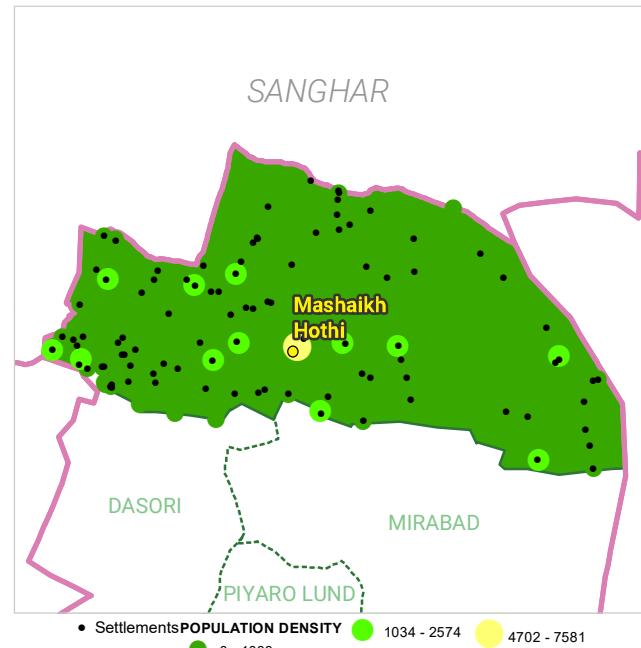
## TRANSPORT, IRRIGATION AND DRAINAGE



## CRITICAL INFRASTRUCTURE



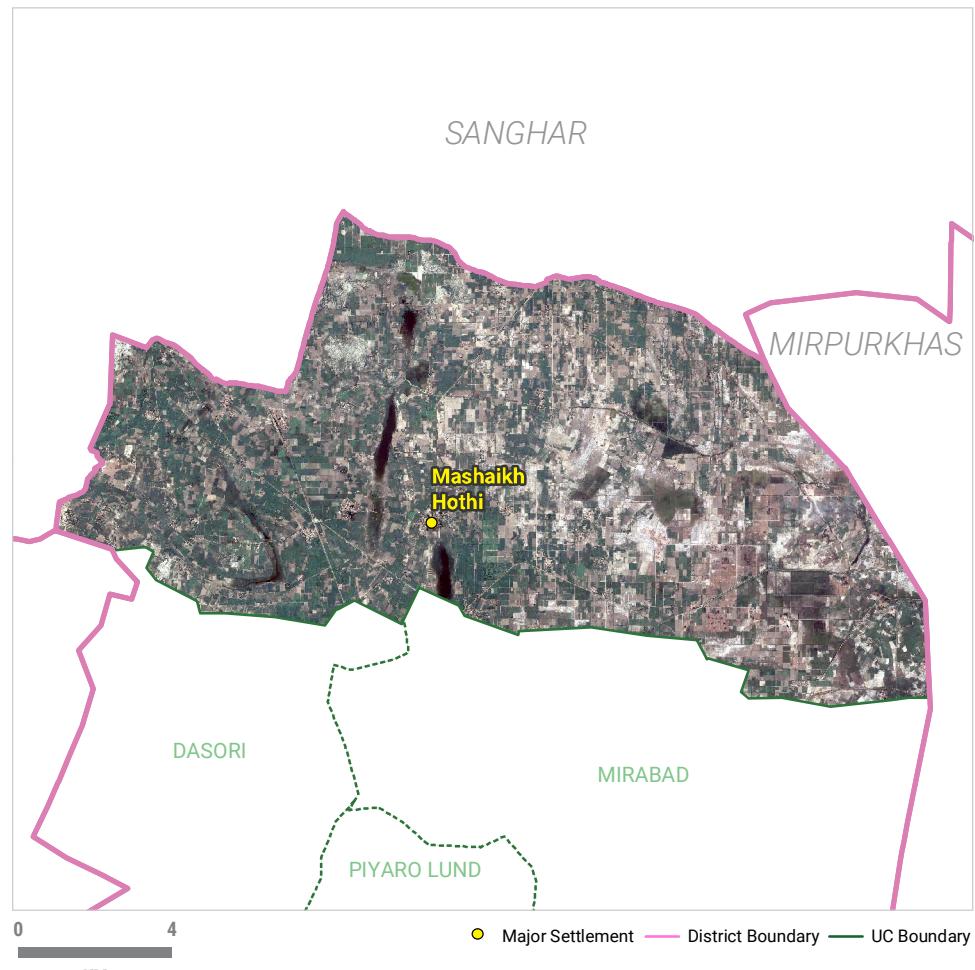
## POPULATION DENSITY



## PAST HAZARDS

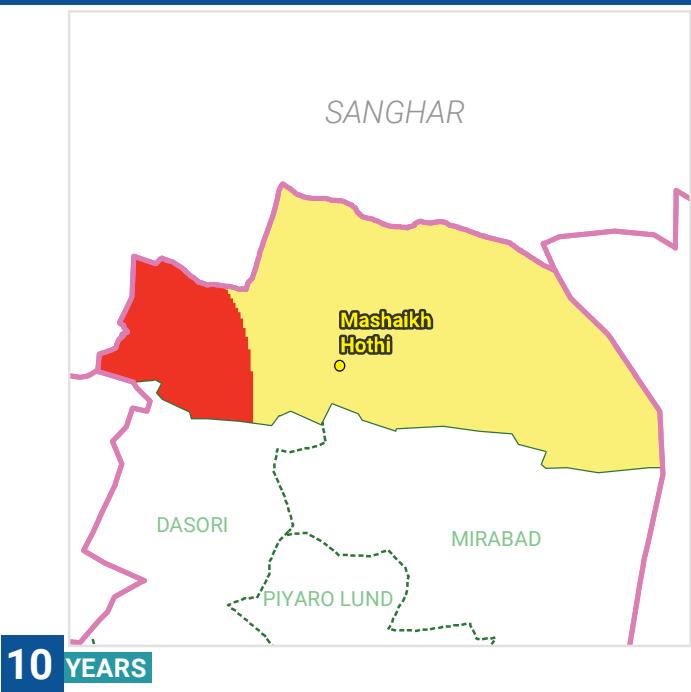
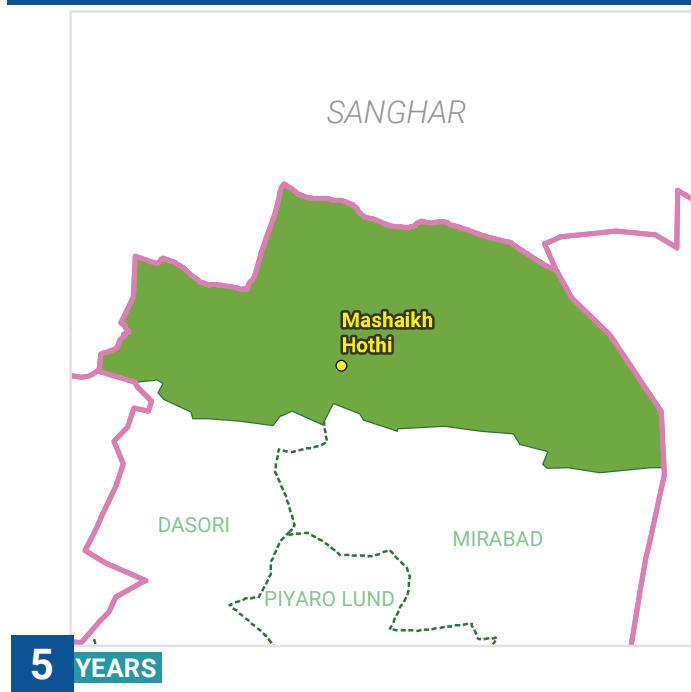
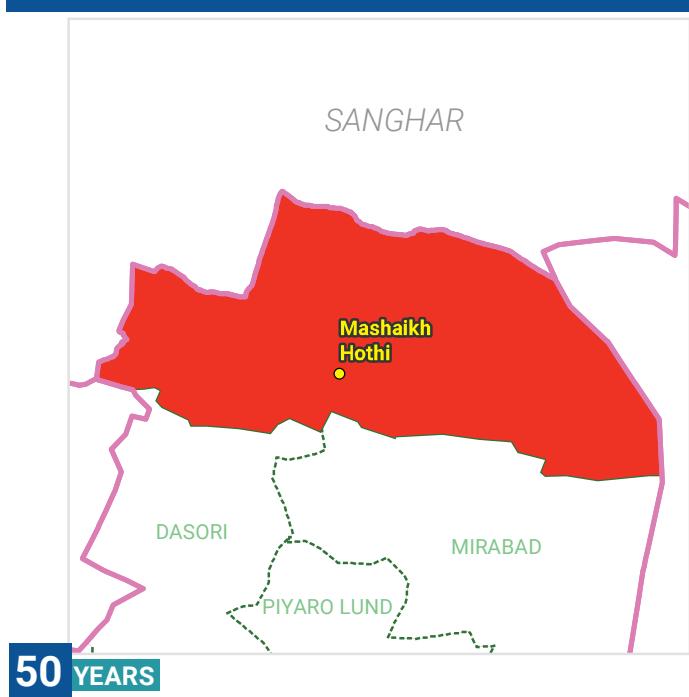
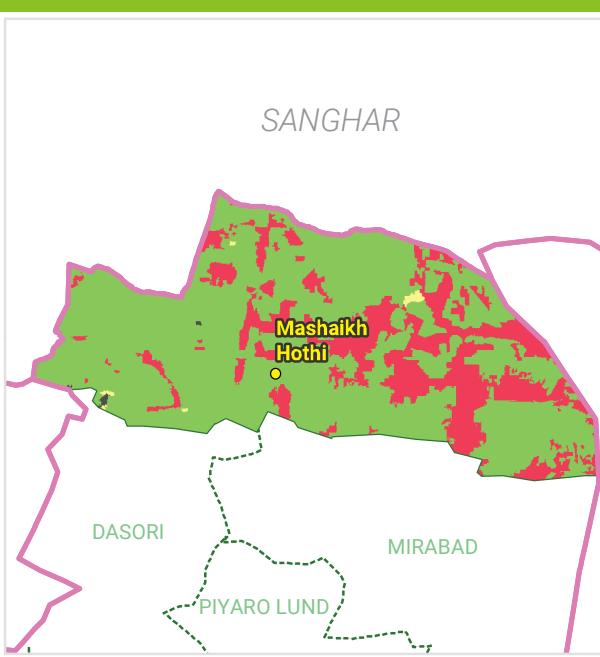
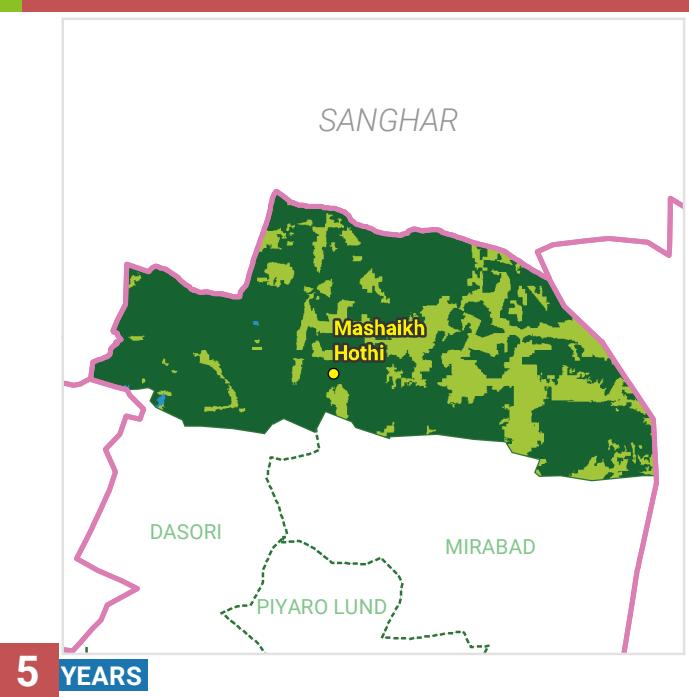
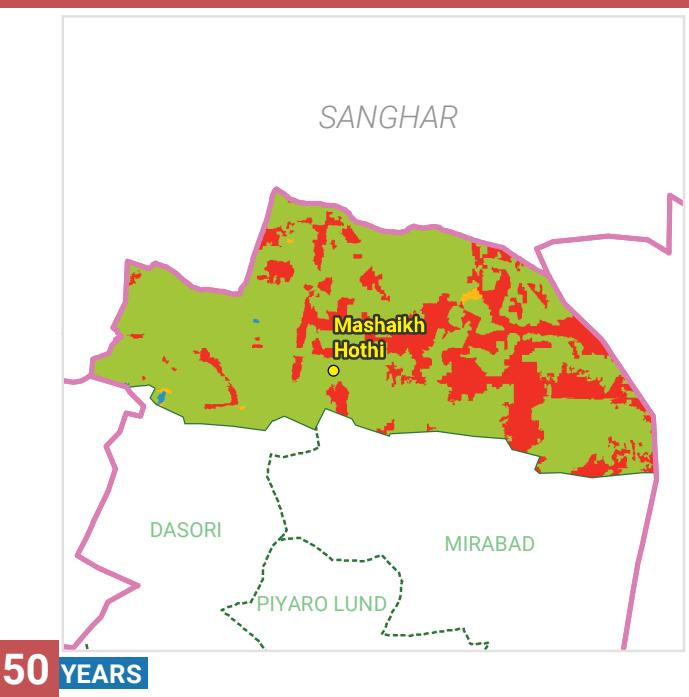
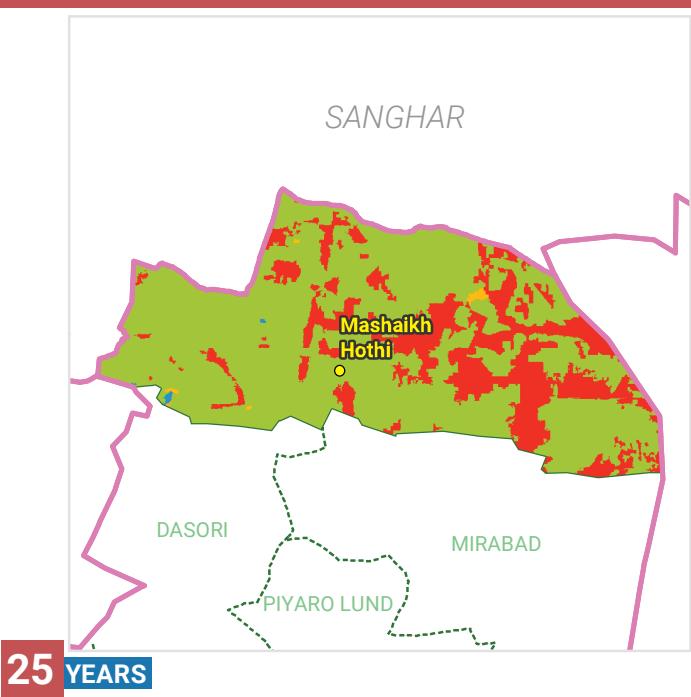
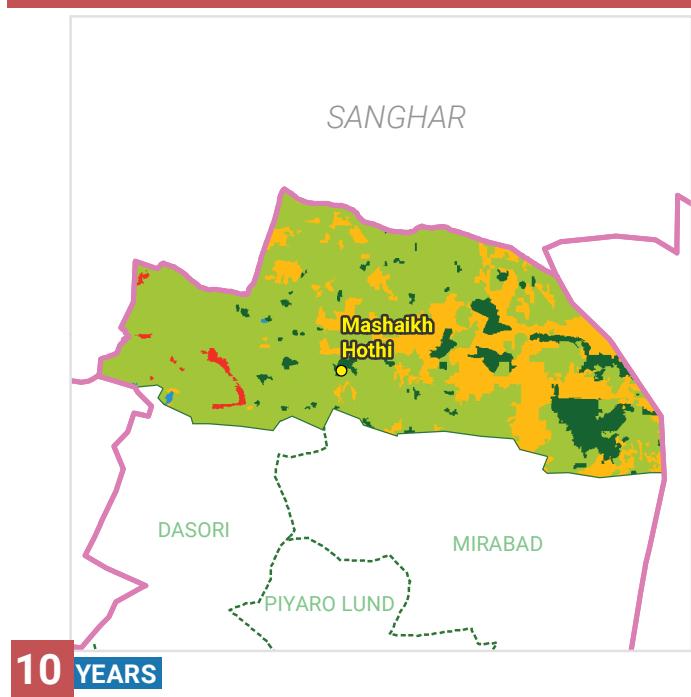


## SATELLITE IMAGERY



**FLOOD**

**THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES**

**METEOROLOGICAL DROUGHT****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD****VULNERABILITY****RISK****RISK AT DIFFERENT RETURN PERIODS**

## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

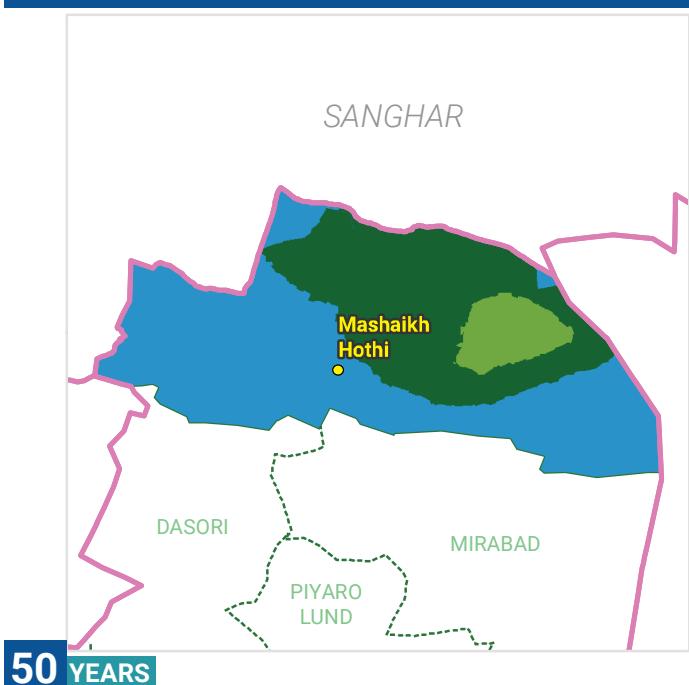
101	9718	48198	142.96	0	0.51	0.90	4.30
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
2.77	10.51						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

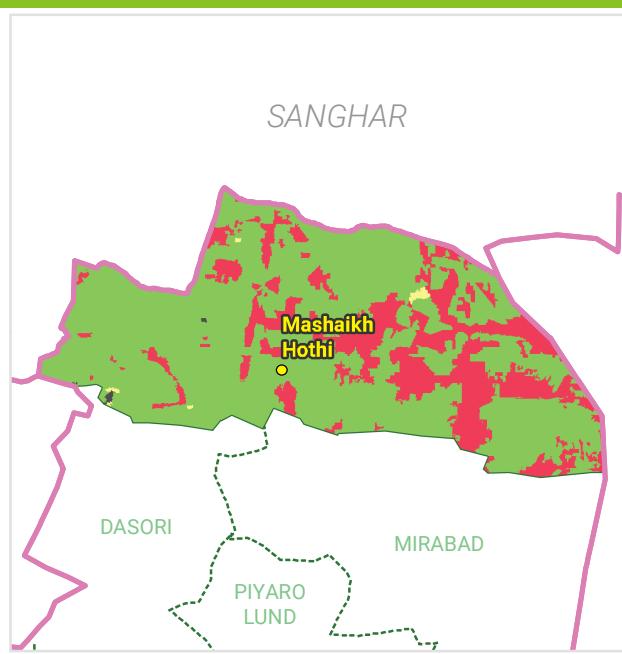
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD



## VULNERABILITY



## RISK



## HAZARD



## VULNERABILITY

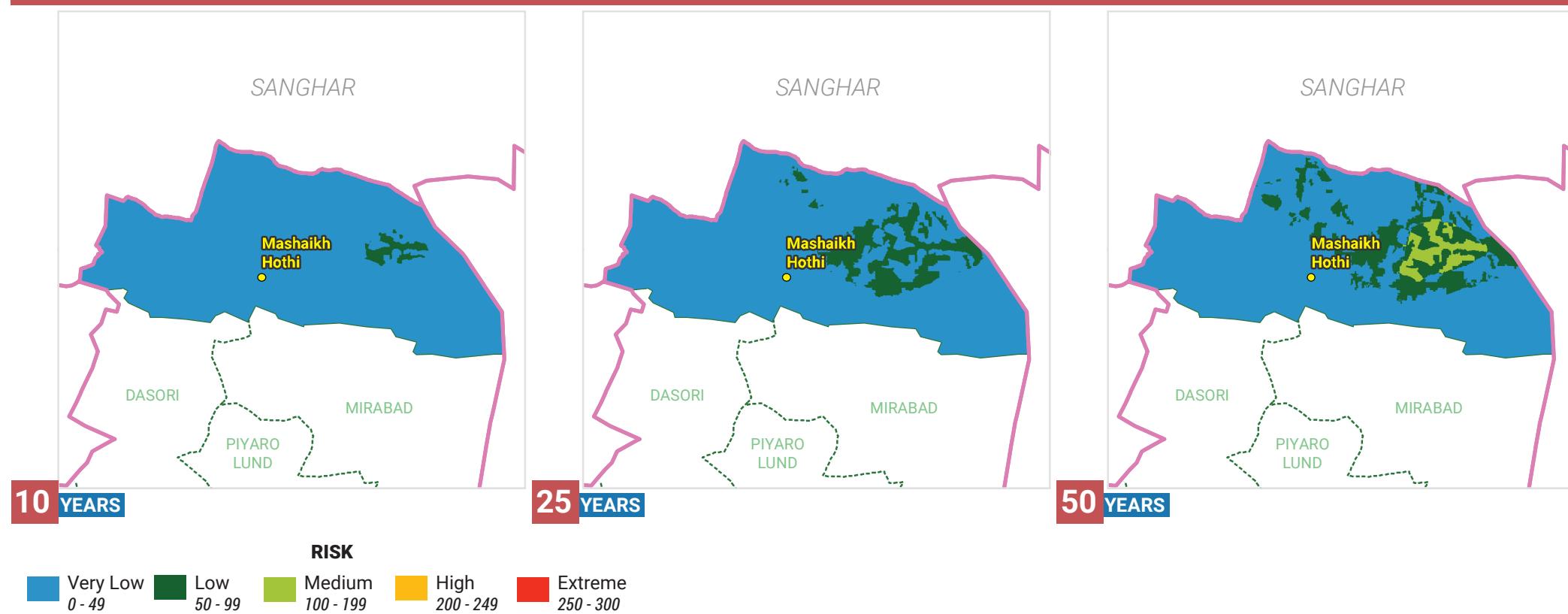


## RISK



# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



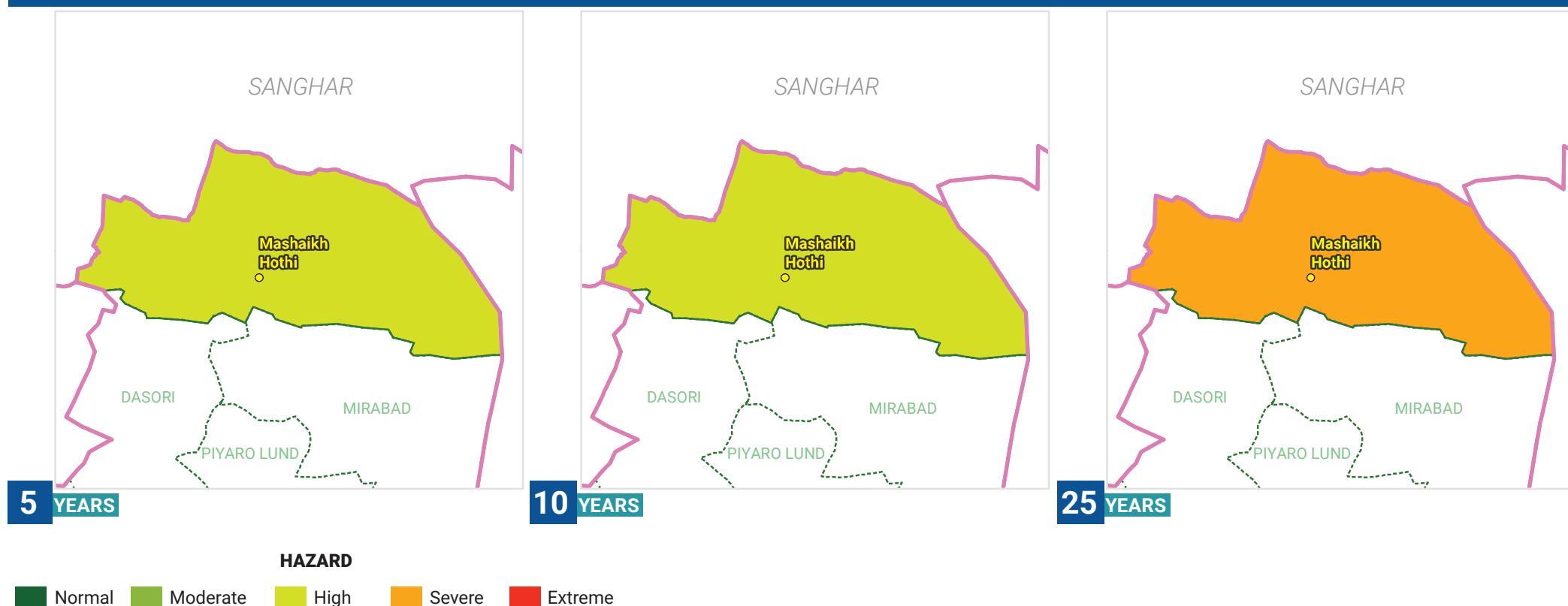
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

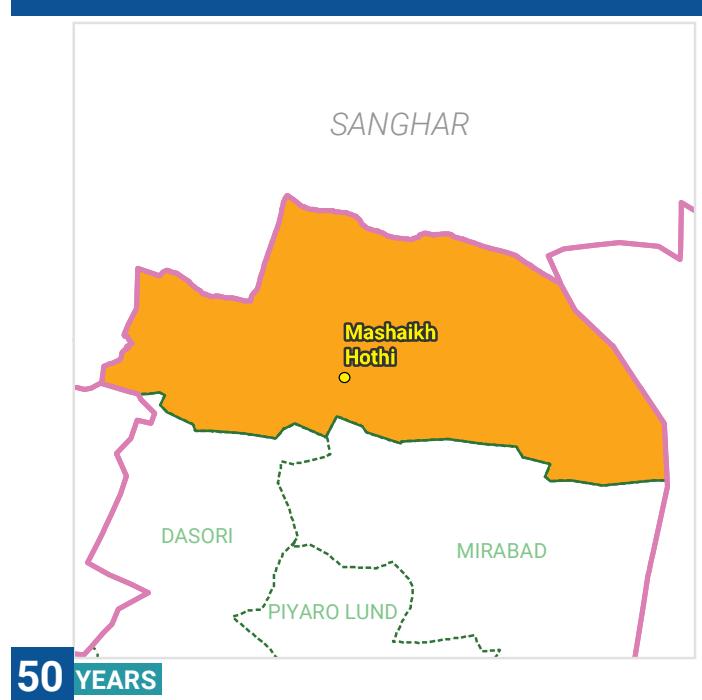
3	4	24	29.16	0	0.42	0.14	3.44
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
1.17	3.10						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

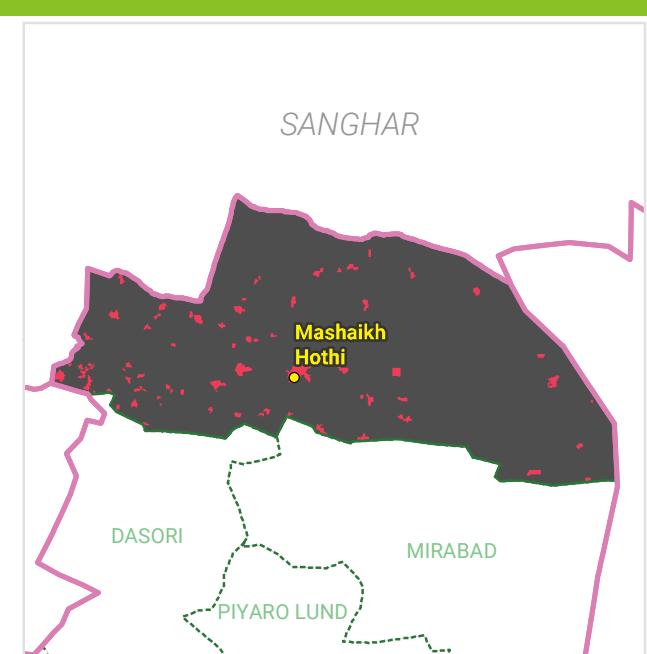
## HAZARD AT DIFFERENT RETURN PERIODS



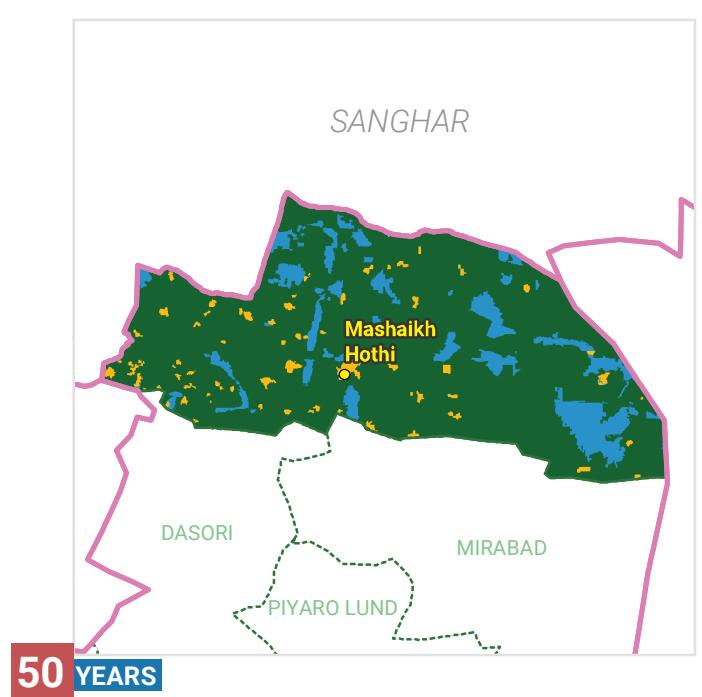
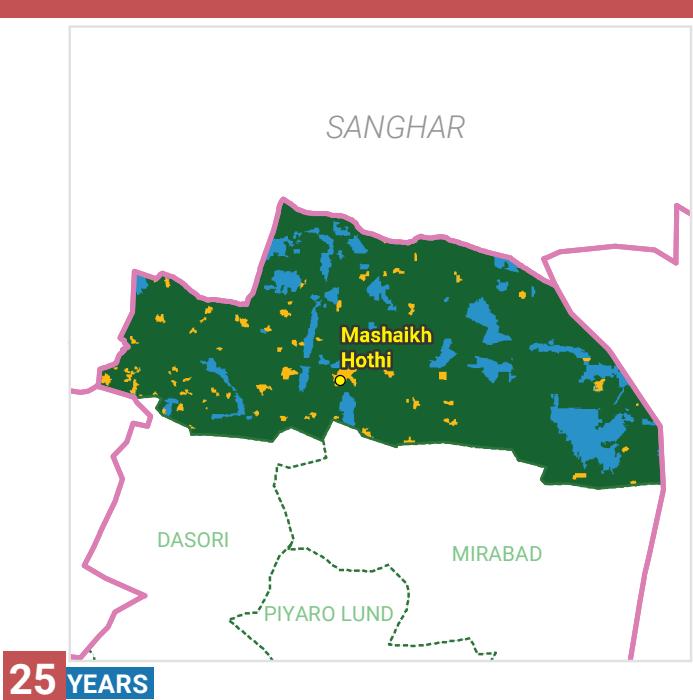
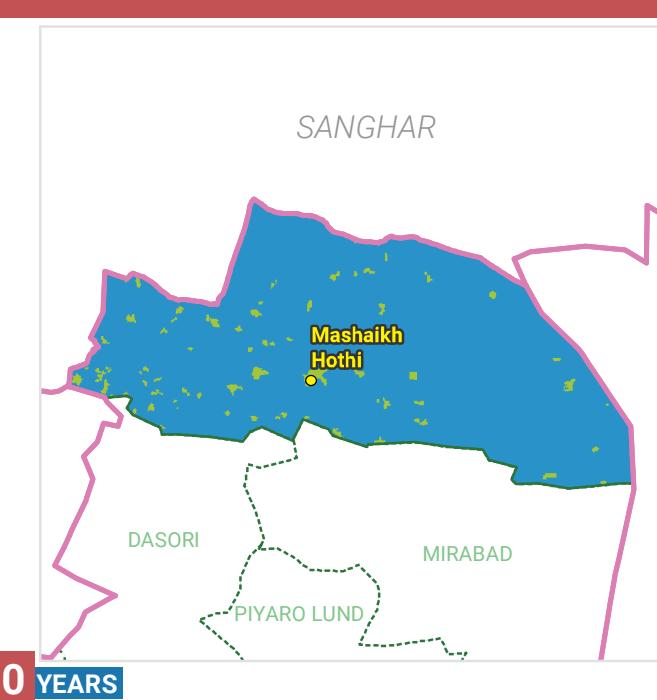
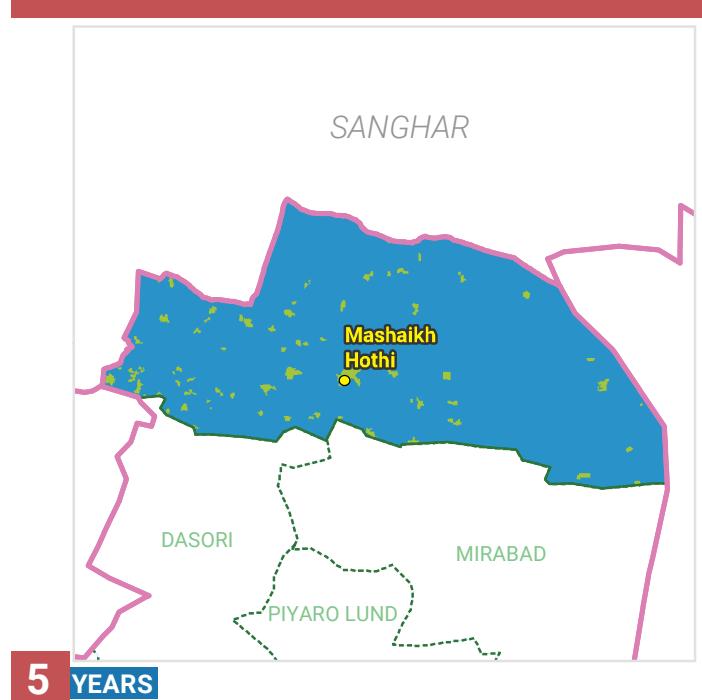
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal  
Severe

Moderate  
Extreme

High

## VULNERABILITY

None  
0 - 25  
Low  
26 - 50  
Medium  
51 - 75  
High  
76 - 100

Very Low  
0 - 49  
Low  
50 - 99  
Medium  
100 - 199  
High  
200 - 249

Extreme  
250 - 300

# HEATWAVE

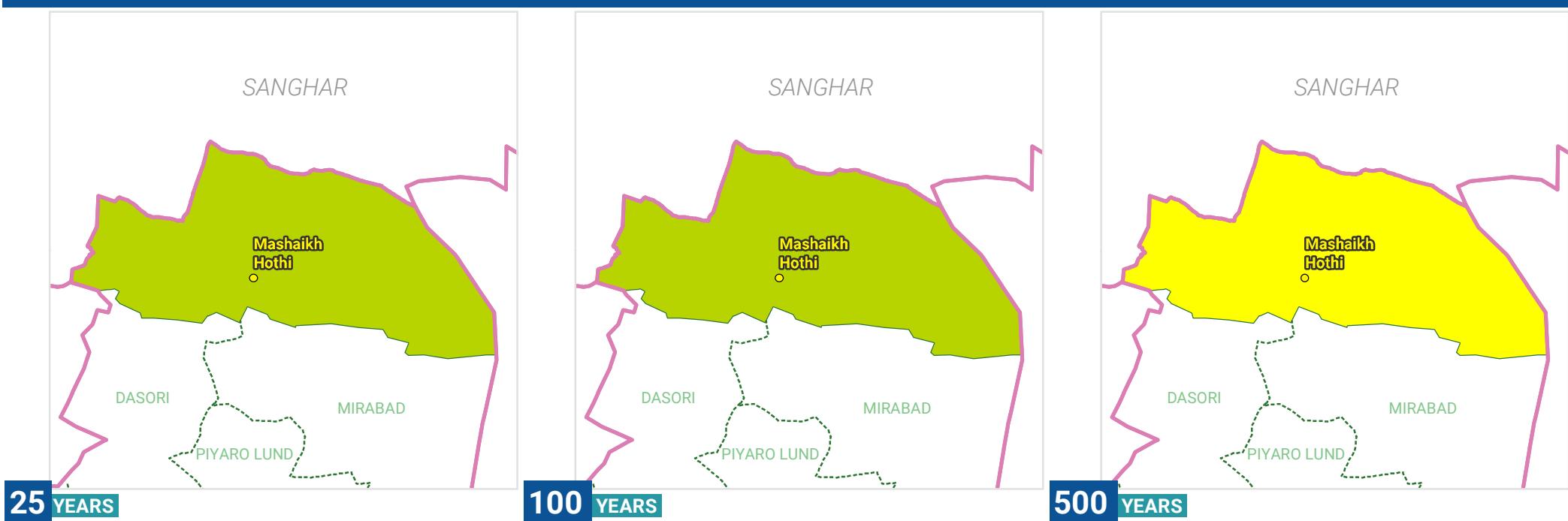
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

100	9665	47898	142.54	0	0	4.15
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

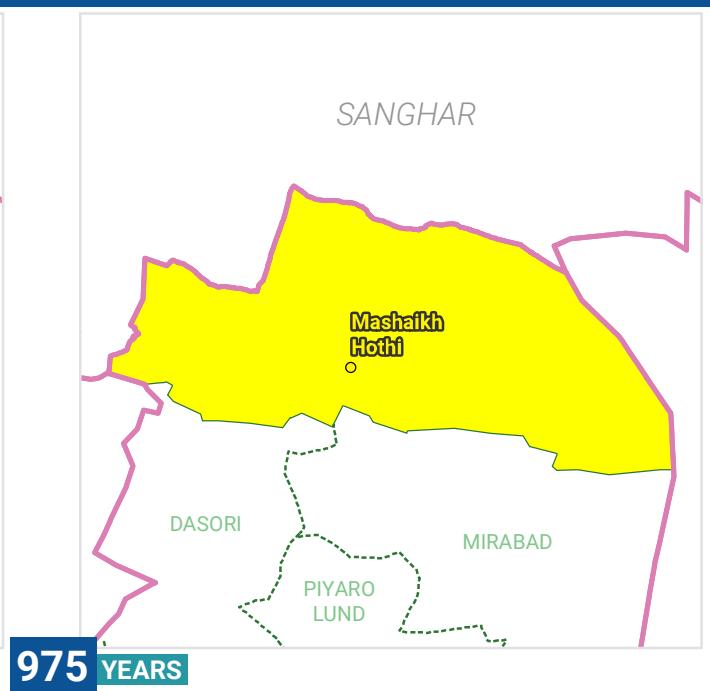
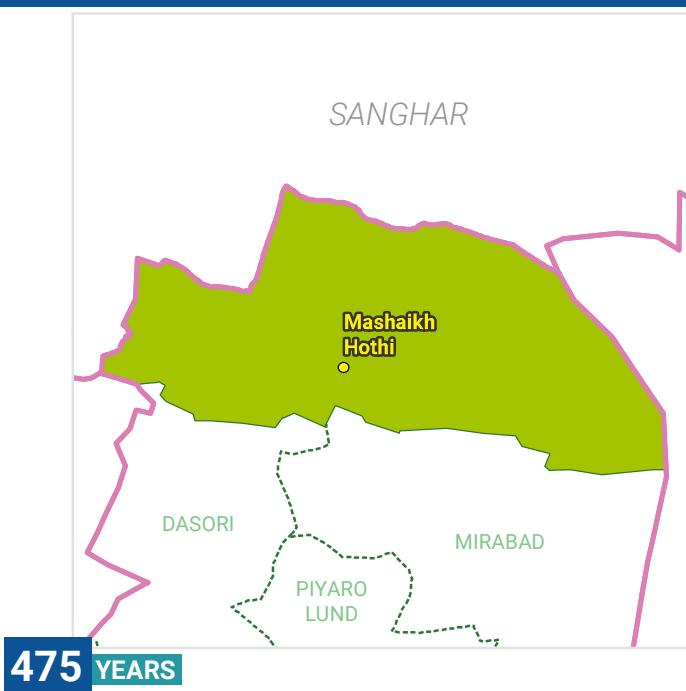
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

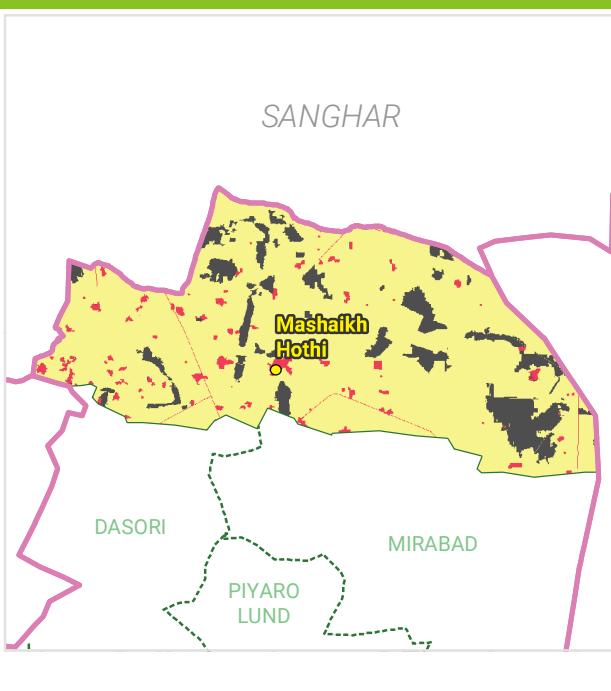
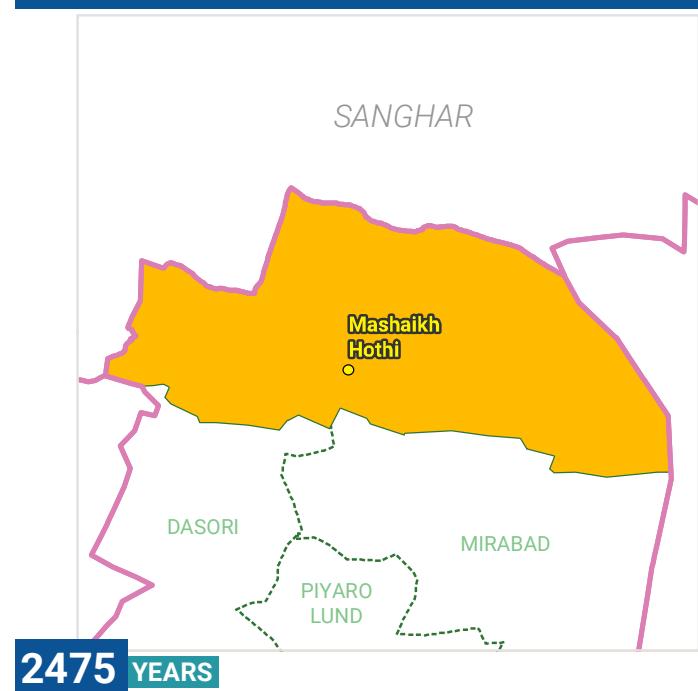
- Zone 1
- Zone 2 A
- Zone 2 B
- Zone 3
- Zone 4
- Zone 5
- Zone 6

## EARTHQUAKE

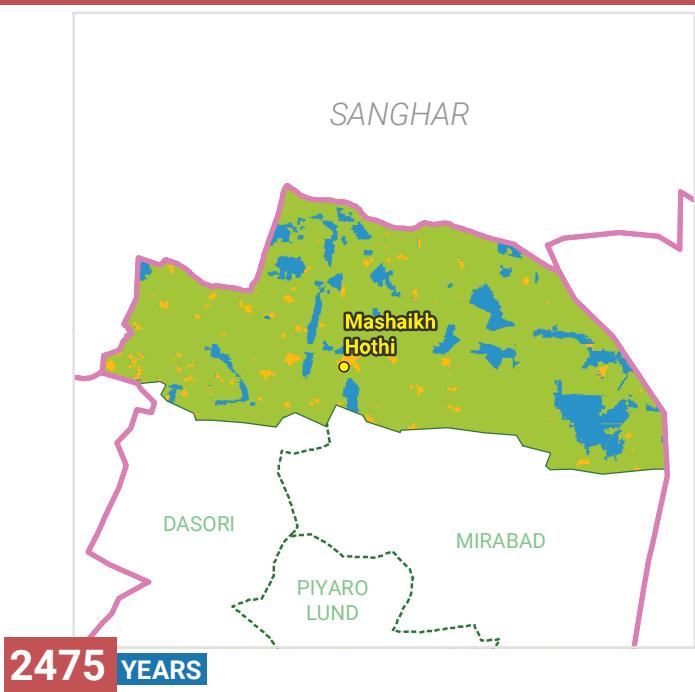
## HAZARD

## VULNERABILITY

## RISK



## RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

102	9620	47706	142.64	0.01	0	0.02	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
4.13	0.12	158.23	0	23.97	0	1	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
42	0	0	0	0	0	1	1
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
1	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - MIRABAD

Union Council area in sq. km

147

Surrounding UCs / Features

**JHANDO MARI** in North  
**MIRPURKHAS DISTRICT** in East  
**PIYARO LUND** in South  
**DASORI** in West

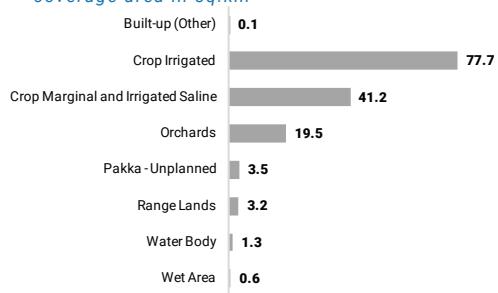
Population

2017 approx. **39,993**

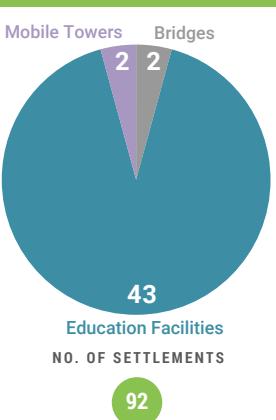
No. of household

2017 approx. **8,067**

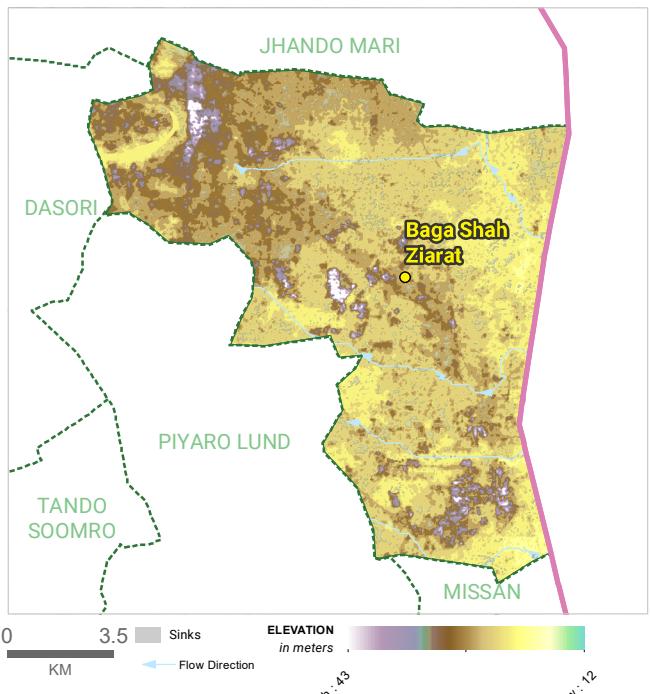
**Land Use Land Cover**  
coverage area in sq.km



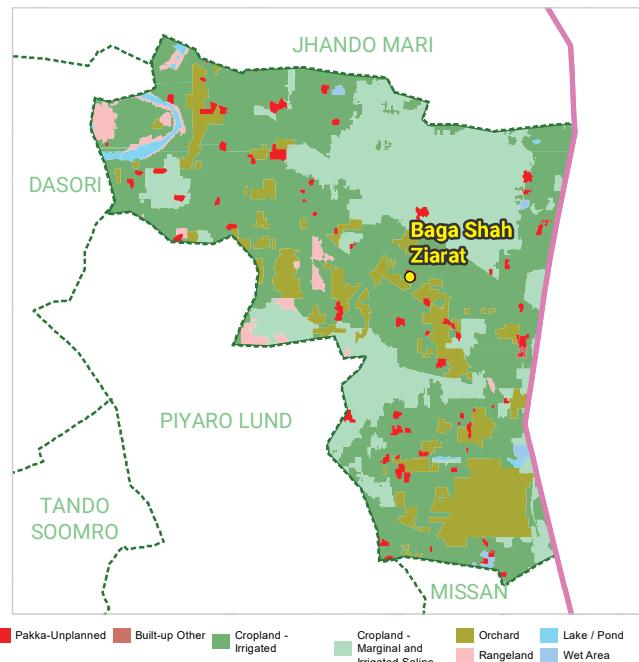
**Critical Infrastructure**



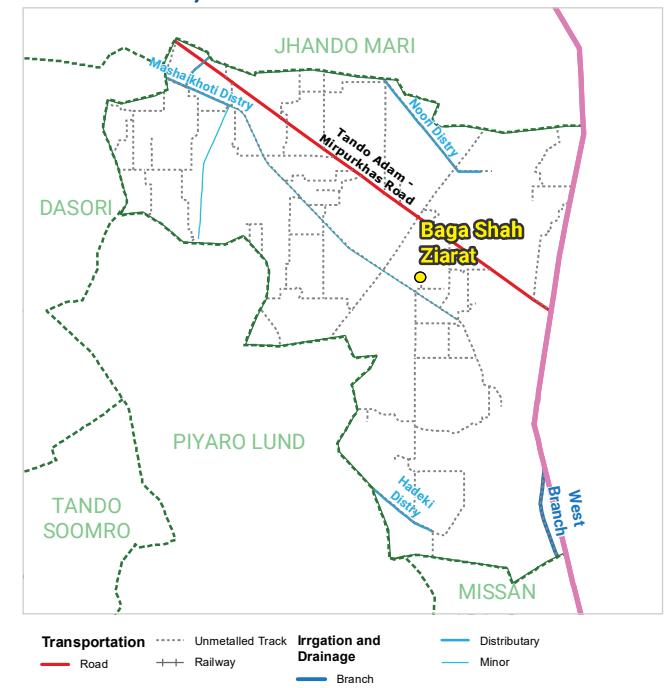
## DEM AND FLOW DIRECTION



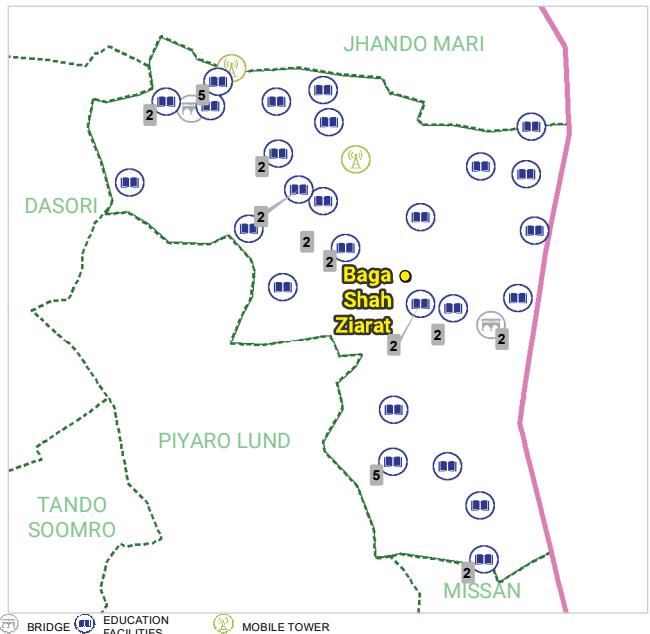
## LAND USE / LAND COVER



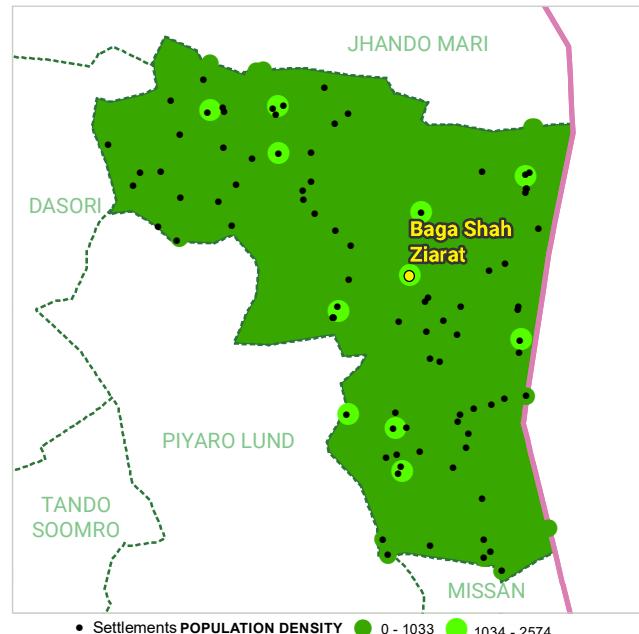
## TRANSPORT, IRRIGATION AND DRAINAGE



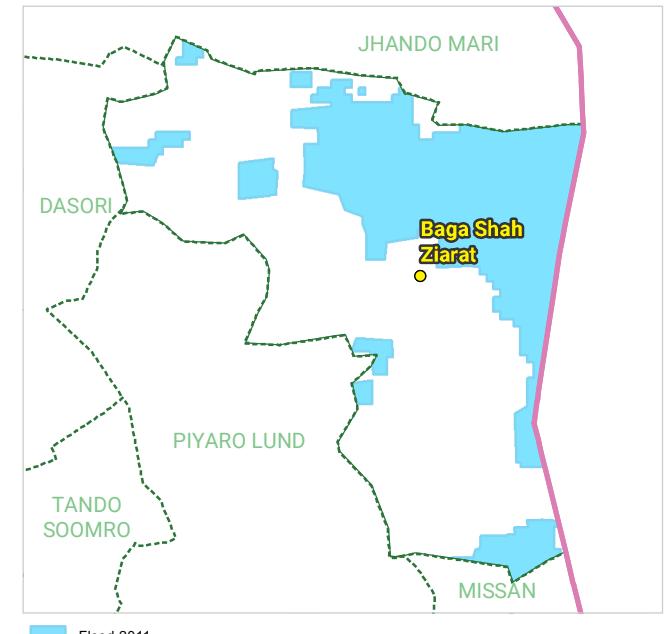
## CRITICAL INFRASTRUCTURE



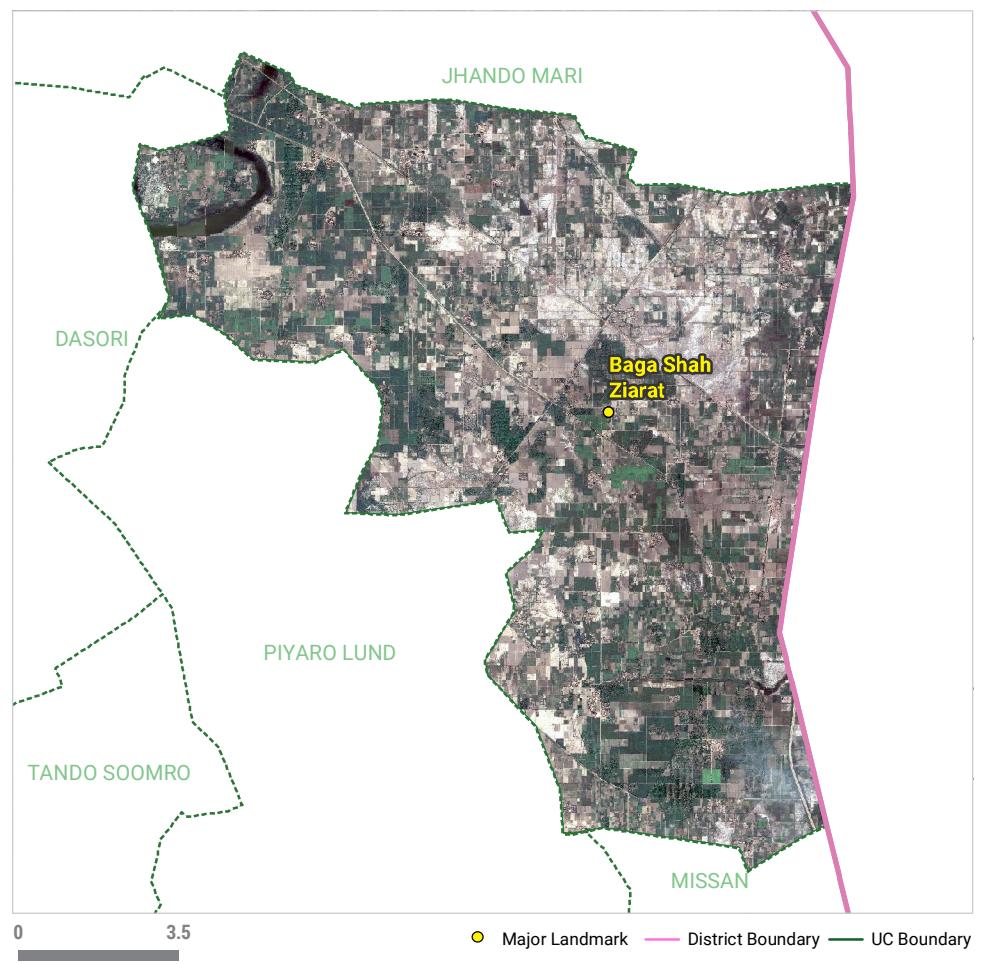
## POPULATION DENSITY



## PAST HAZARDS



## SATELLITE IMAGERY

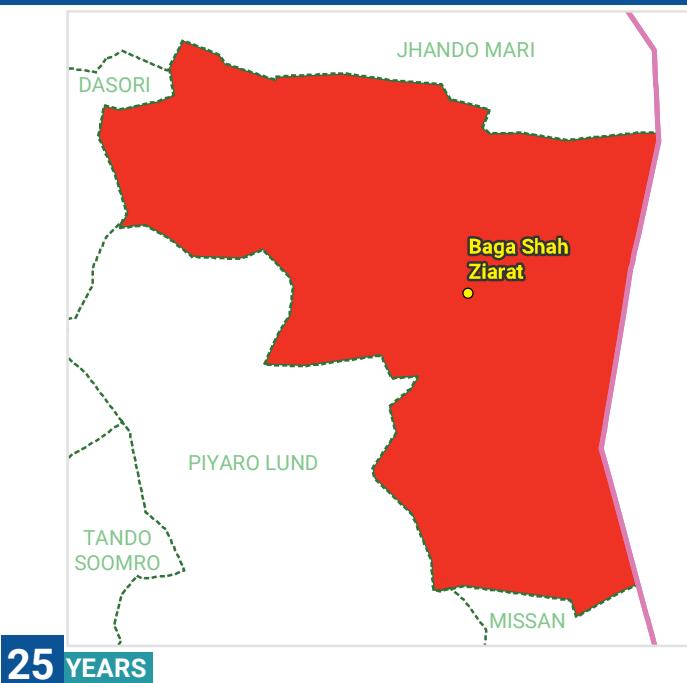
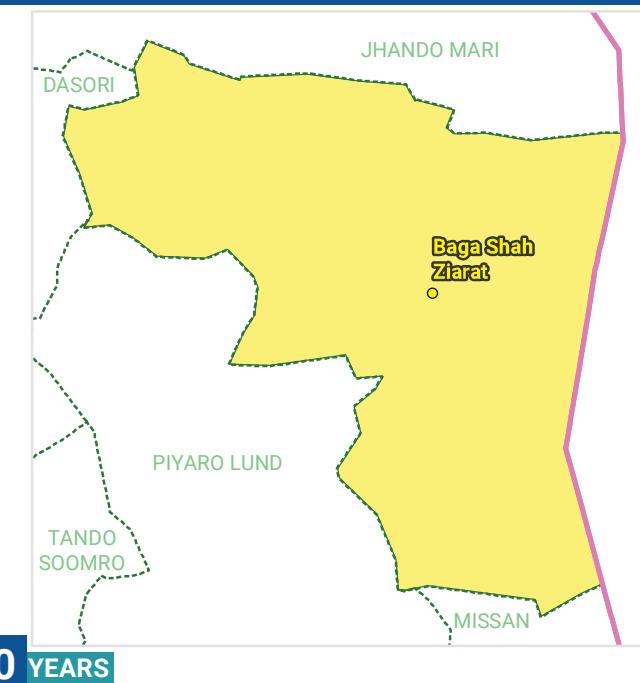
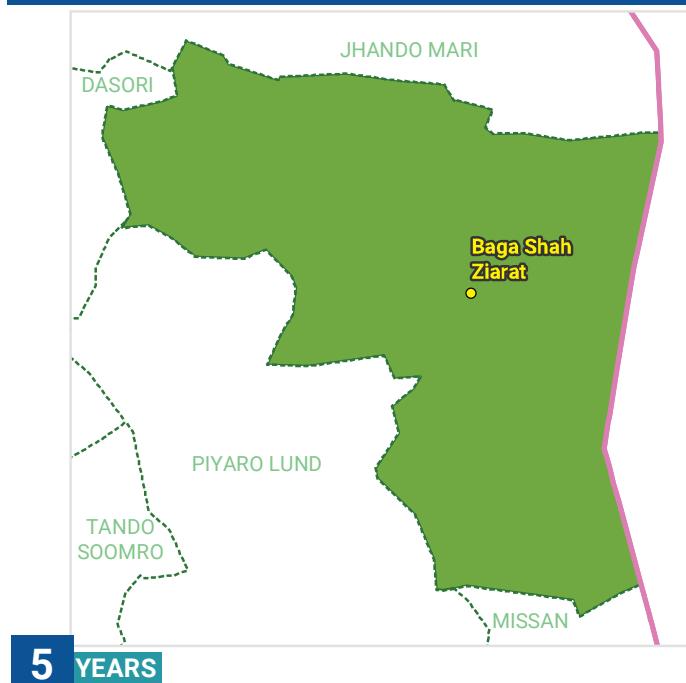


## FLOOD

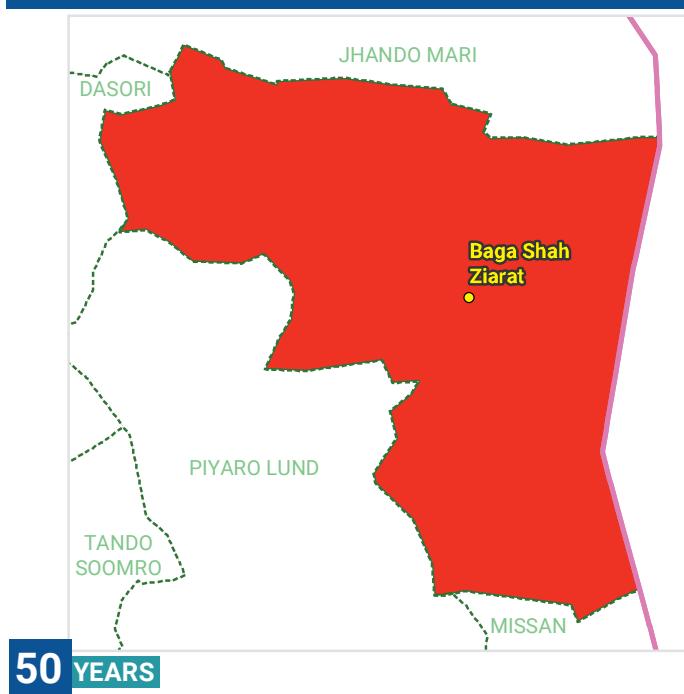
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

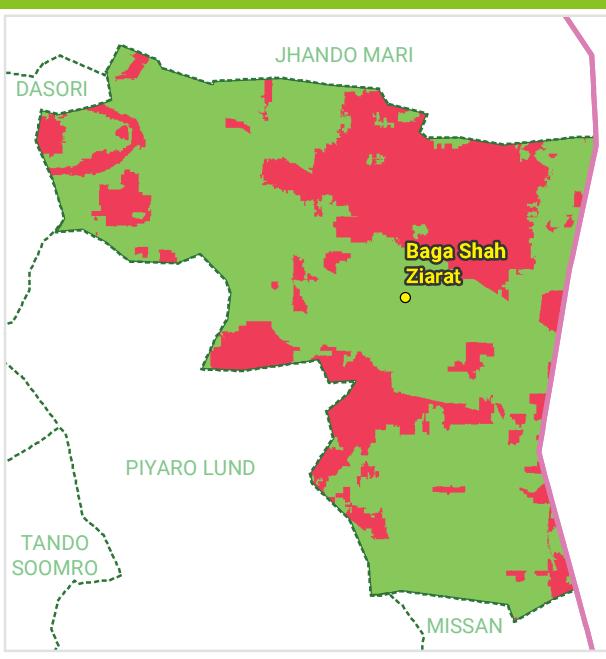
## HAZARD AT DIFFERENT RETURN PERIODS



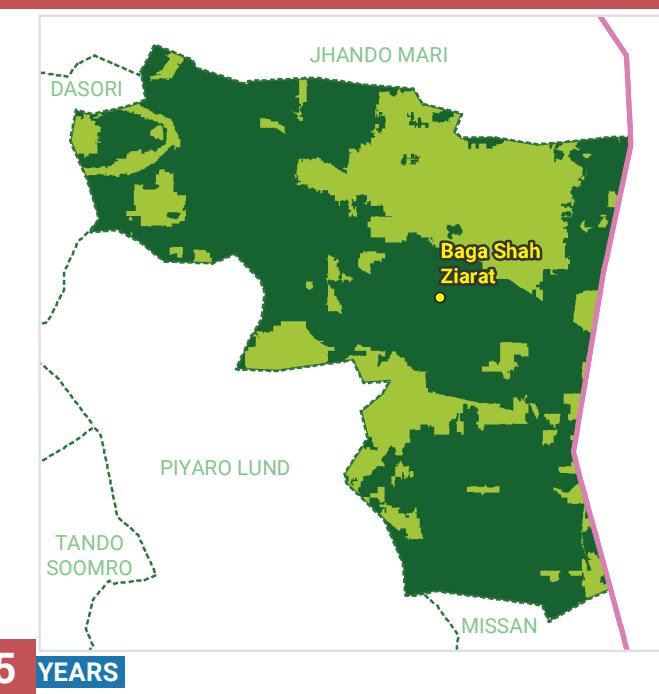
## HAZARD



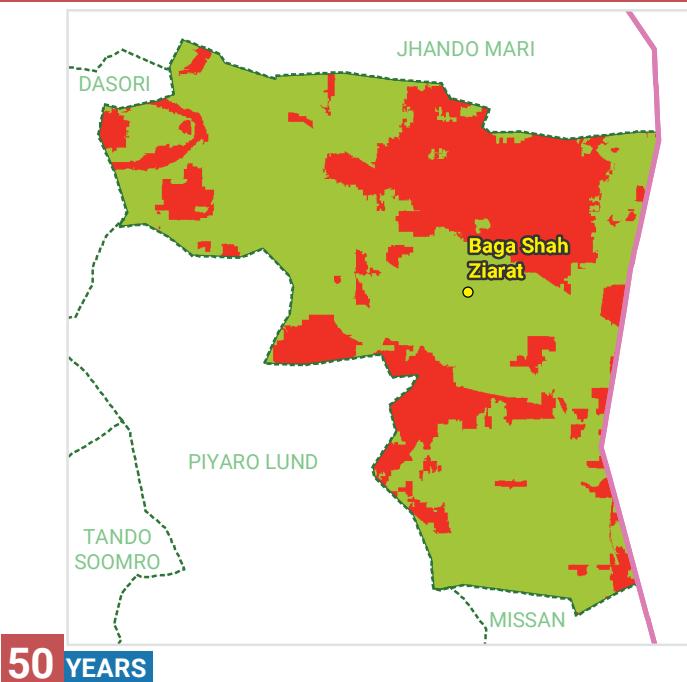
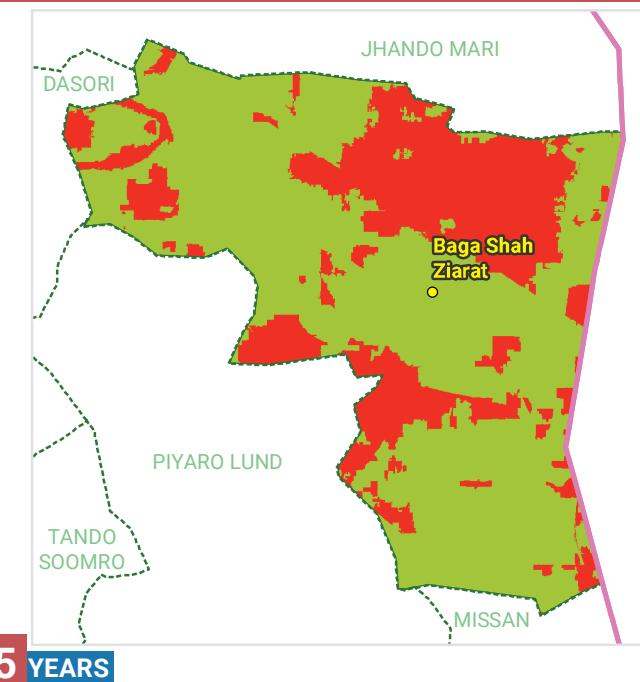
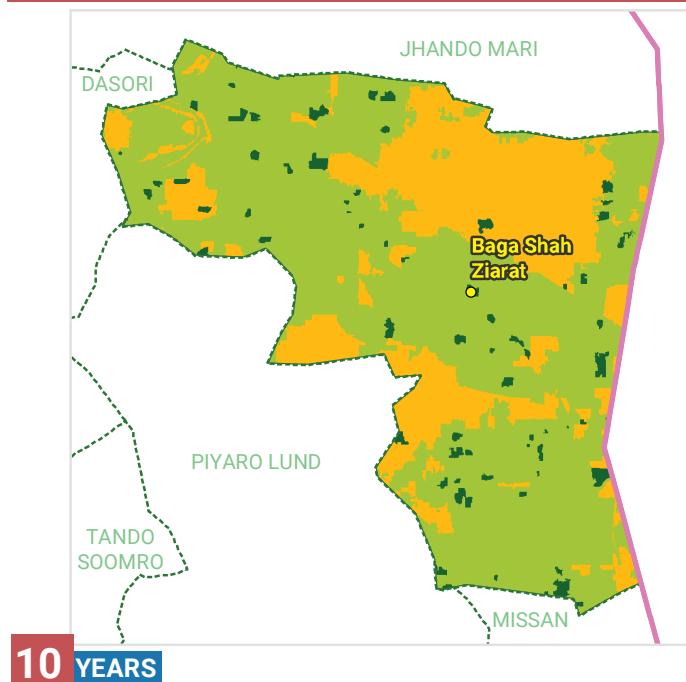
## VULNERABILITY



## RISK



## RISK AT DIFFERENT RETURN PERIODS



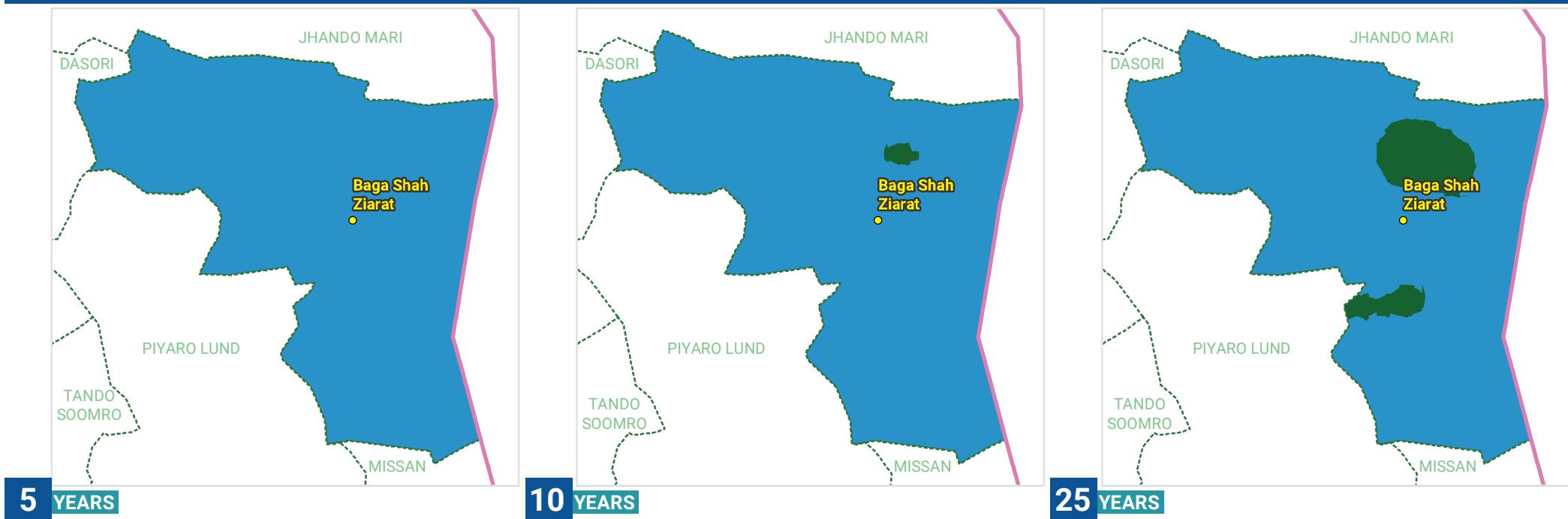
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

92	8067	39993	138.42	0	0	0	3.23
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
1.28	0.58						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

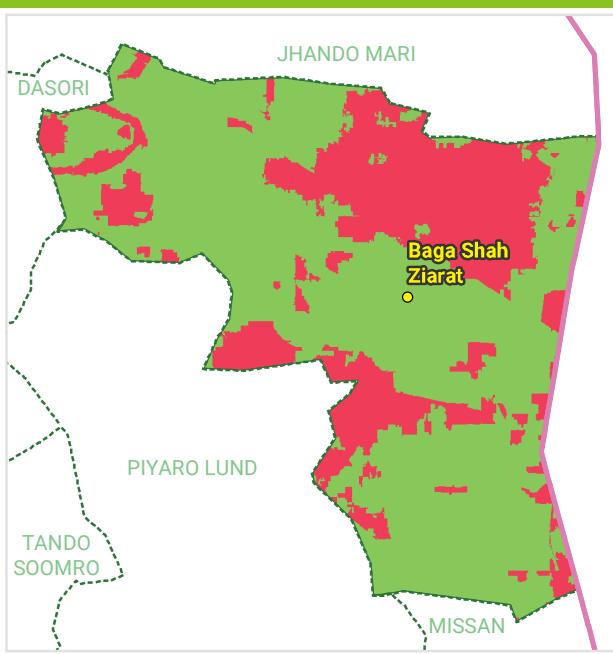
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD



## VULNERABILITY



## RISK



## HAZARD



## VULNERABILITY

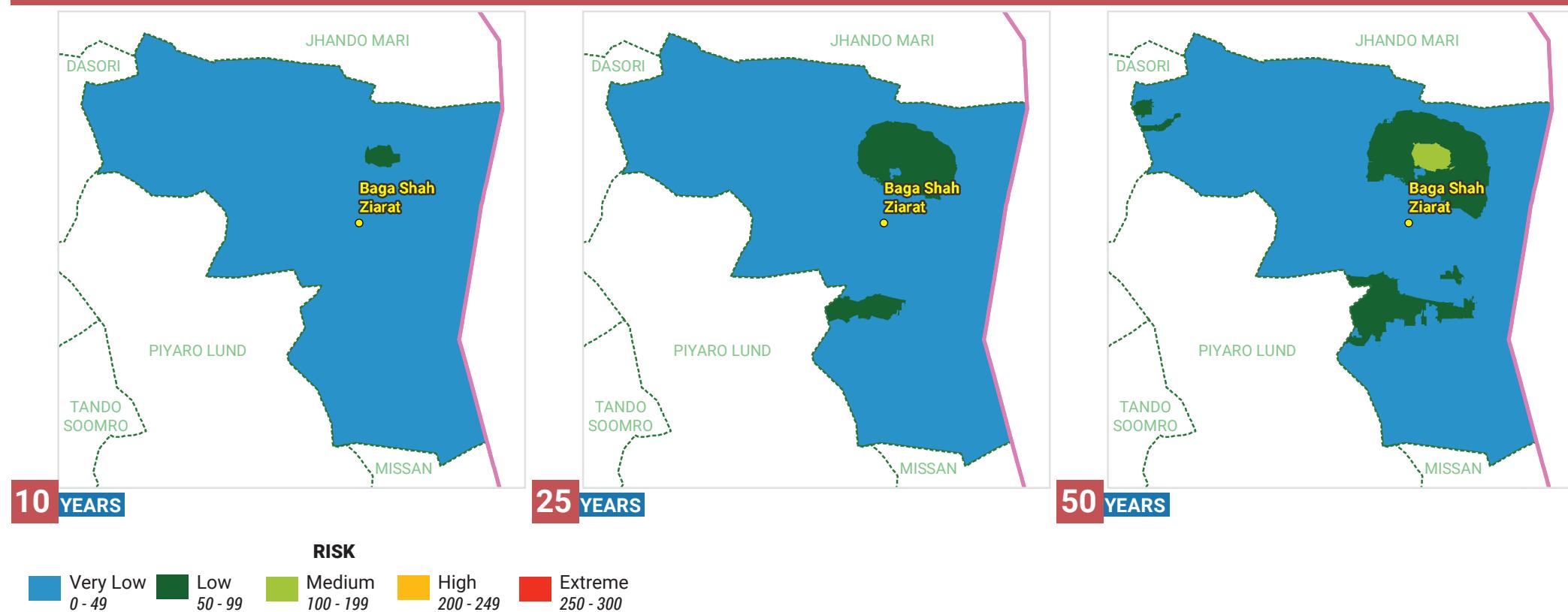


## RISK



# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



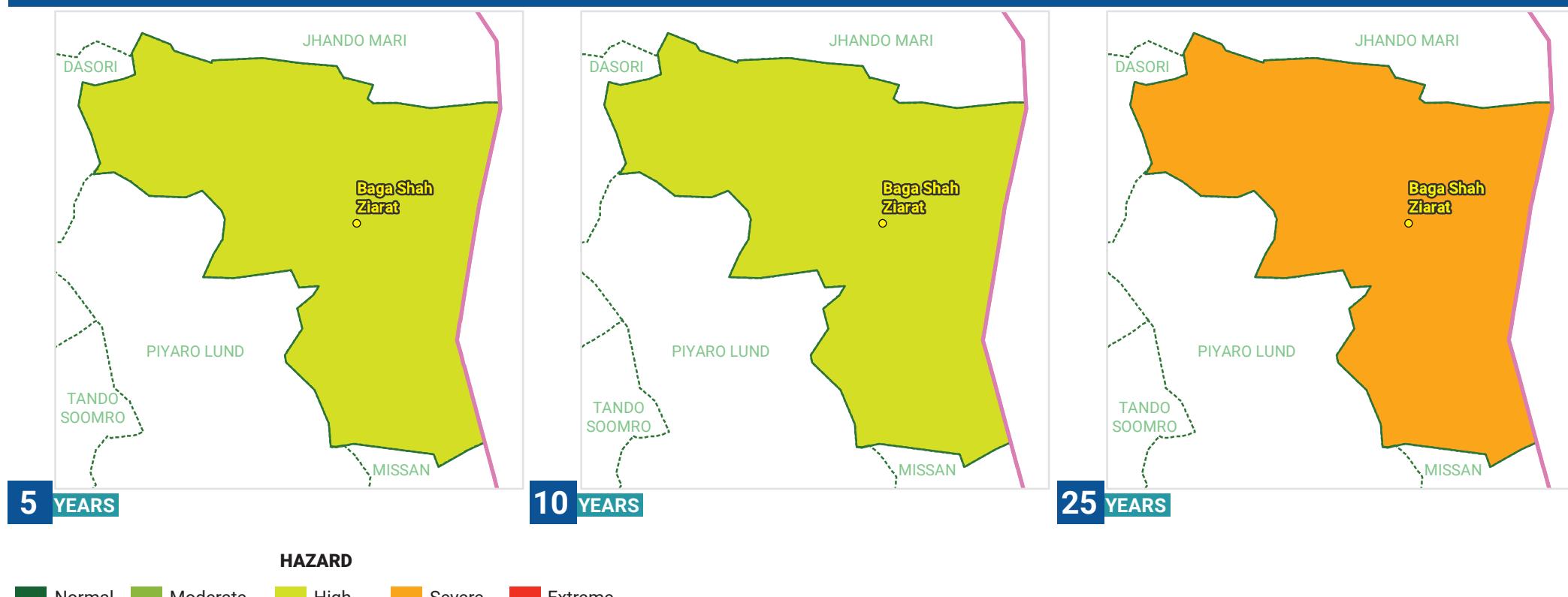
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

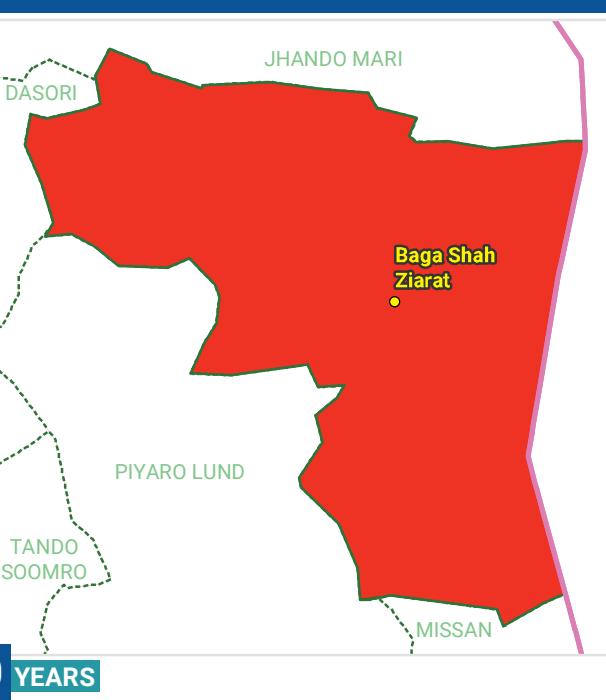
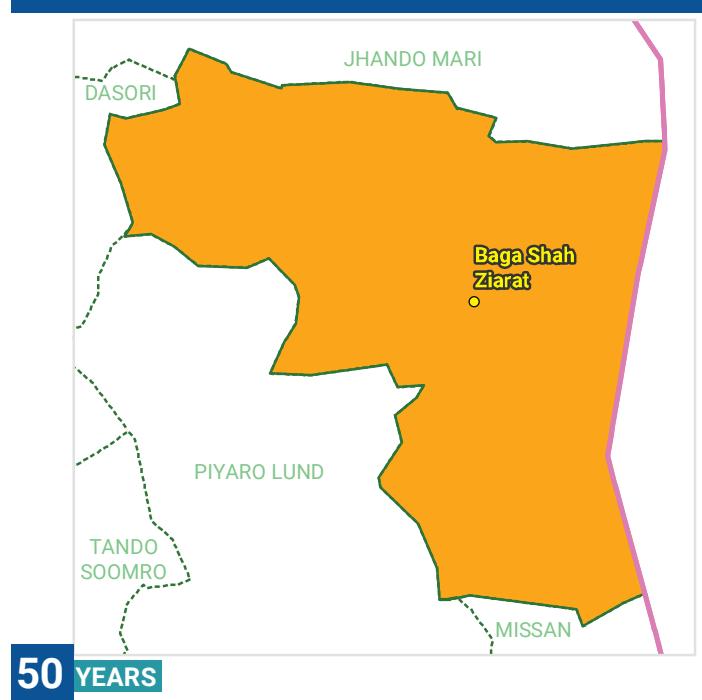
1	16	75	23.72	0	0	0	0.71
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.31	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

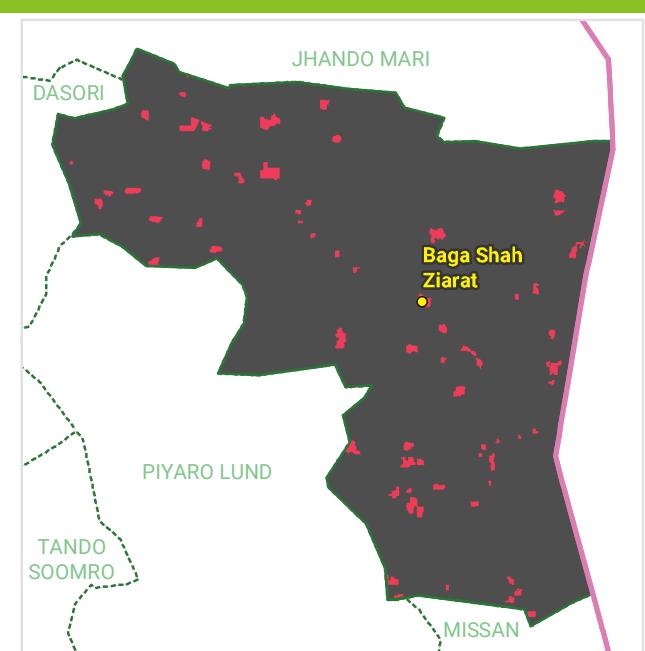
## HAZARD AT DIFFERENT RETURN PERIODS



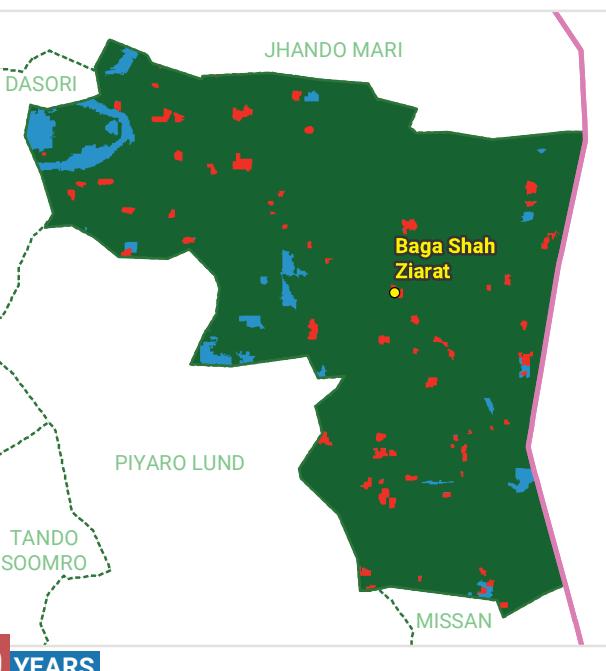
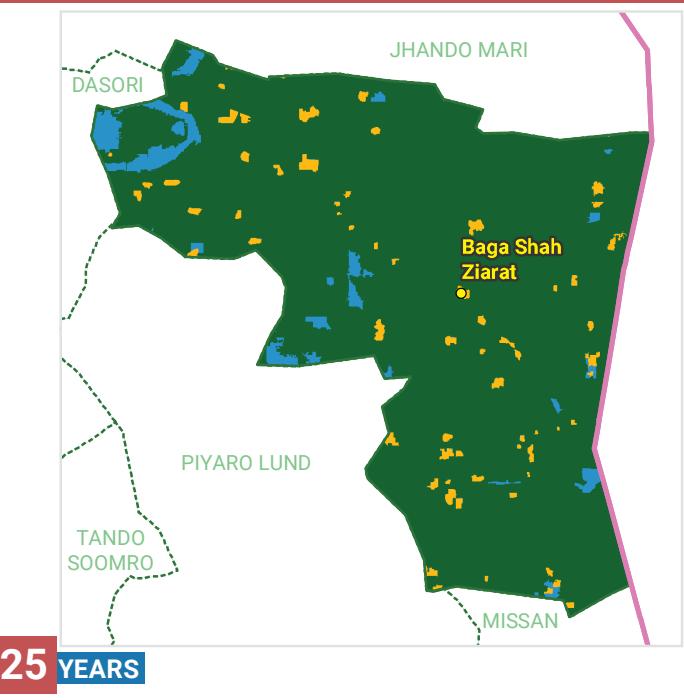
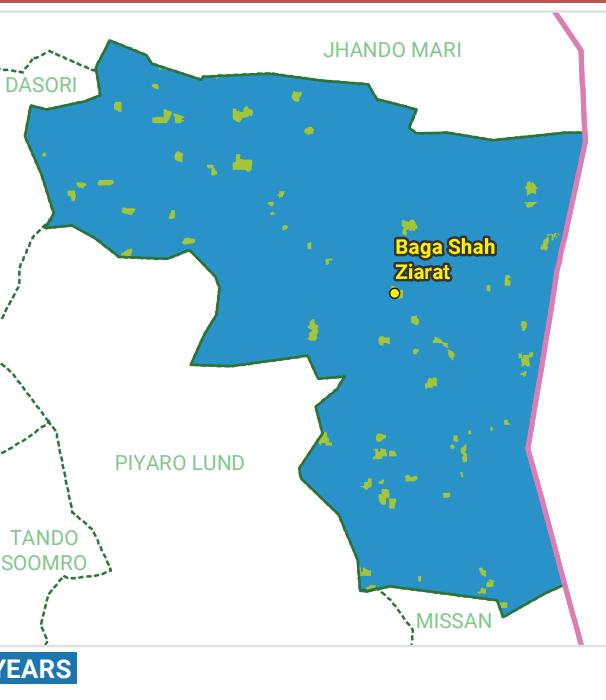
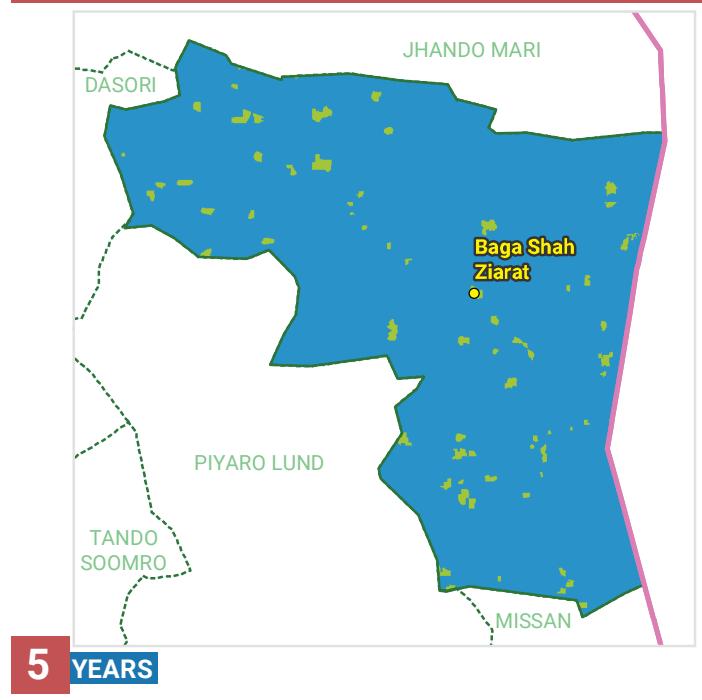
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

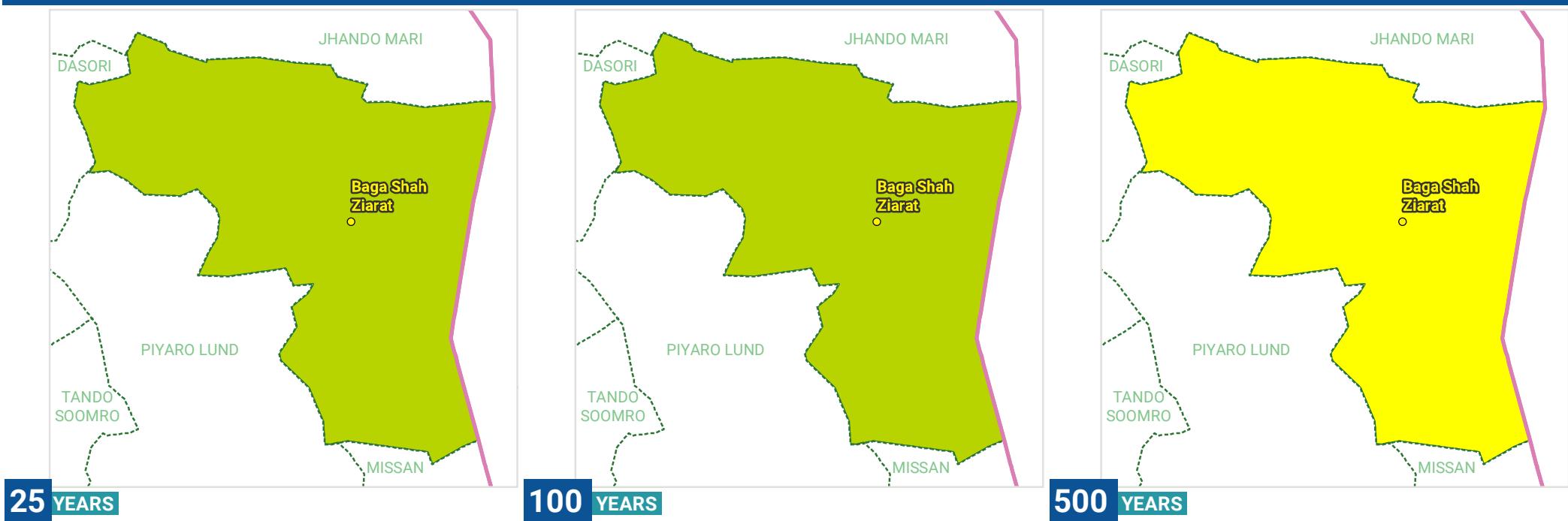
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

92	8026	39770	138.25	0	0	3.44
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

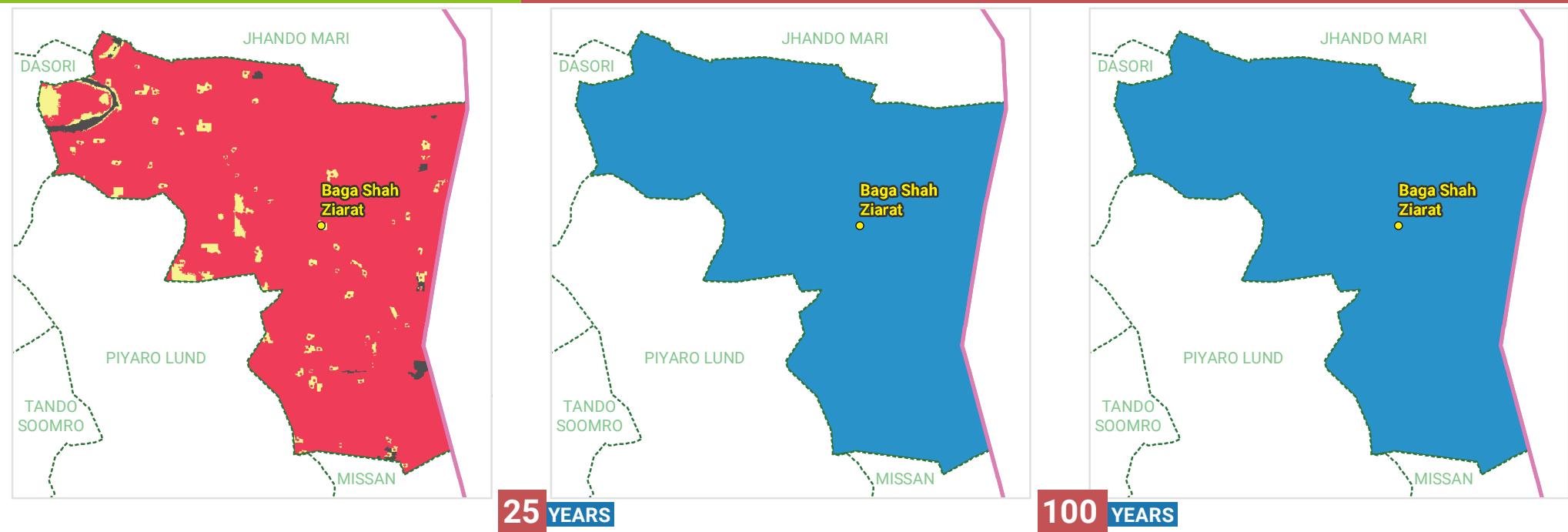
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

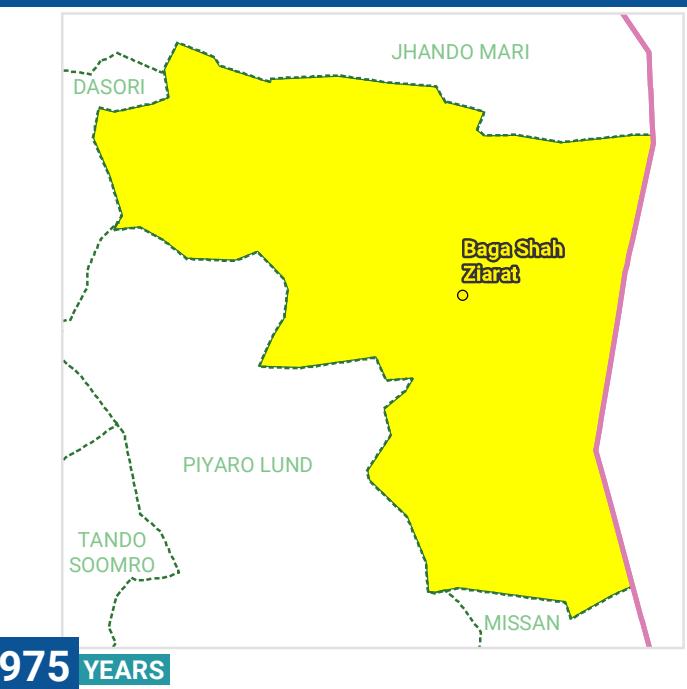
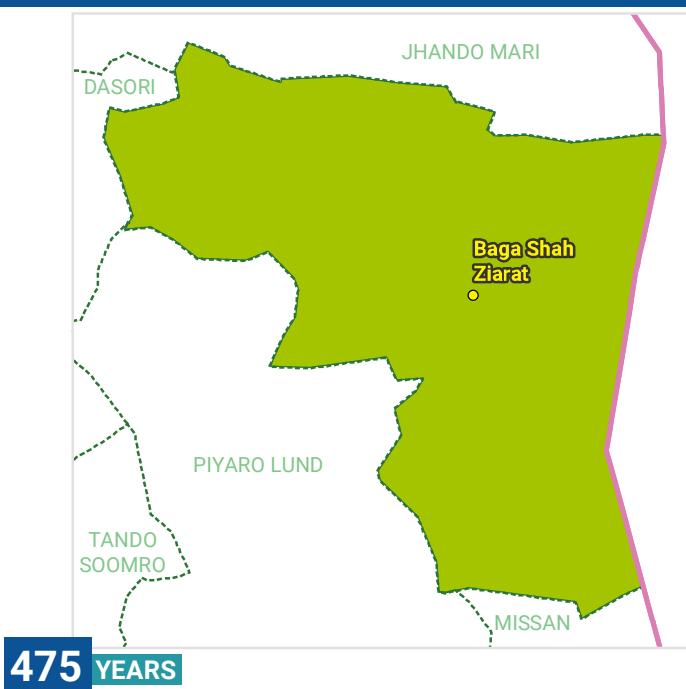
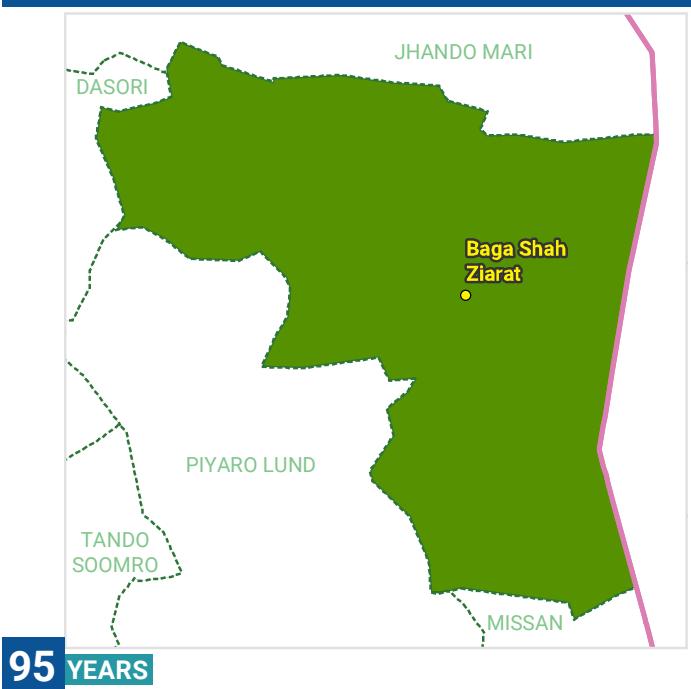
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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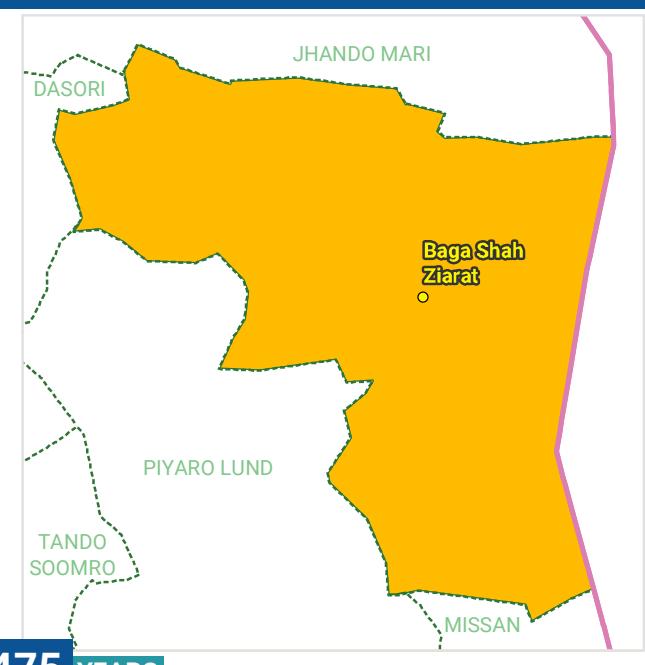
**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

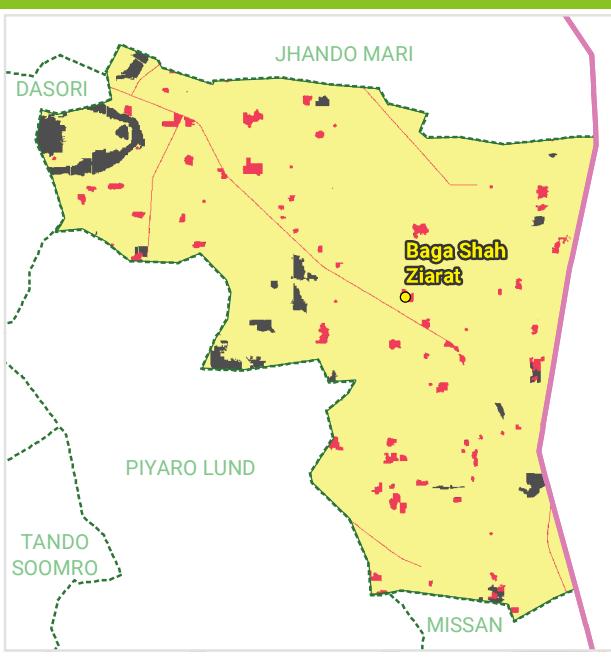
# EARTHQUAKE

## HAZARD



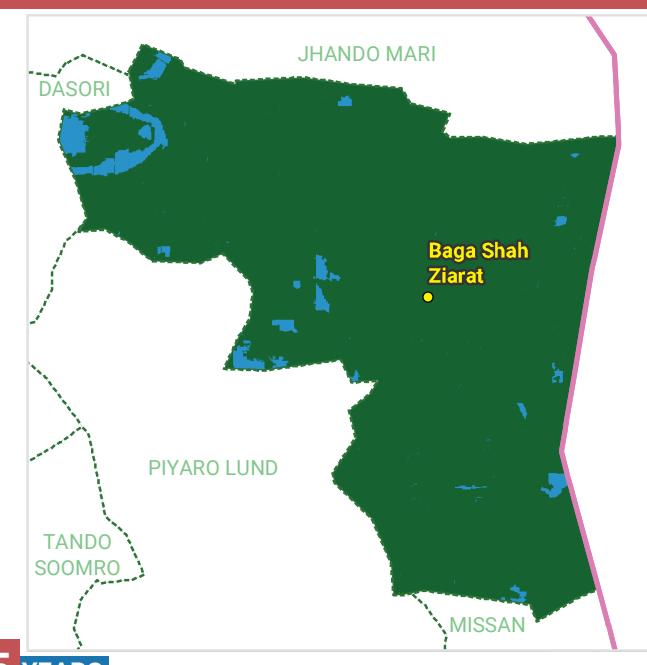
2475 YEARS

## VULNERABILITY



95 YEARS

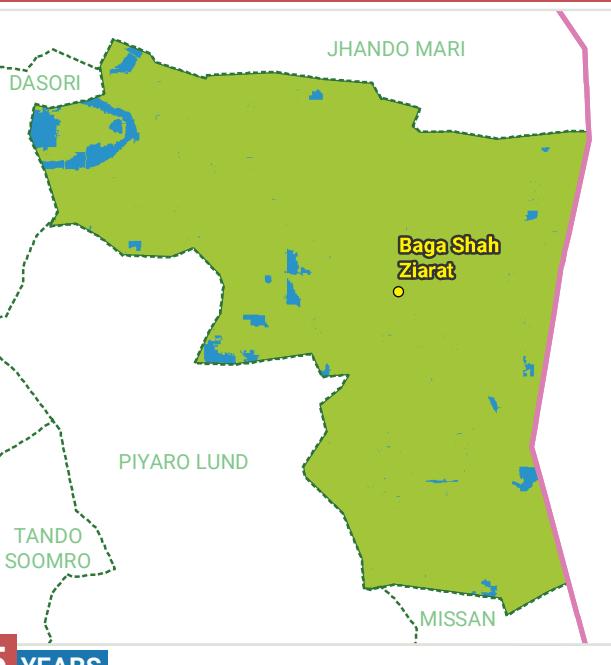
## RISK



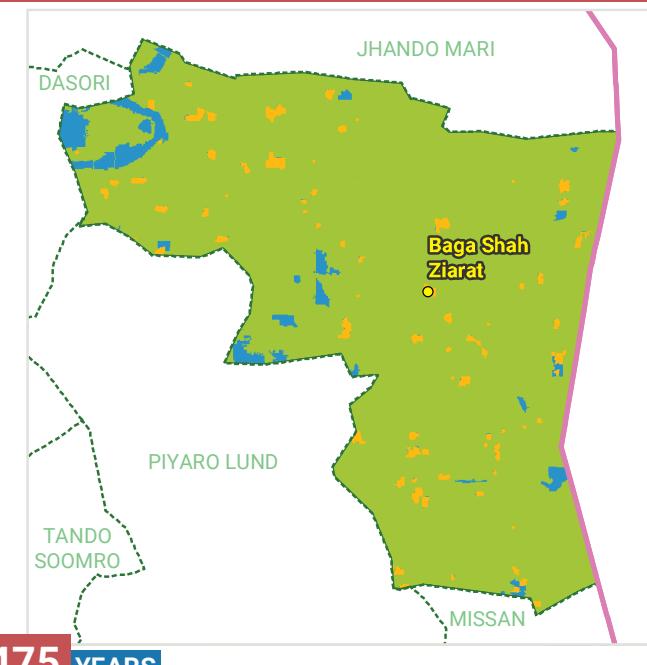
## RISK AT DIFFERENT RETURN PERIODS



475 YEARS



975 YEARS



2475 YEARS

### HAZARD

Zone 1	Zone 2 A	Zone 2 B	Zone 3
Zone 4	Zone 5	Zone 6	

### VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

92	8002	39659	138.29	0	0	0	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
3.43	0.11	158.85	0	28.76	0	2	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
43	0	0	0	0	0	2	0
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - MISSAN

Union Council area in sq. km

Surrounding UCs / Features

**MIRABAD** in North  
**MIRPURKHAS DISTRICT** in East  
**PIYARO LUND** in North West  
**BEGAN JARWAR** in South  
**TANDO ALLAHYAR 4** in West

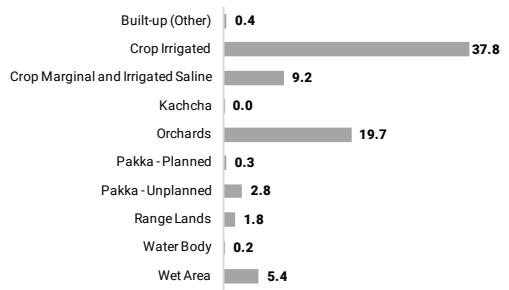
Population

2017 approx. **51,140**

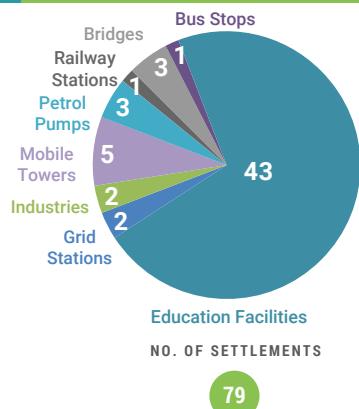
No. of household

2017 approx. **10,124**

Land Use Land Cover coverage area in sq. km

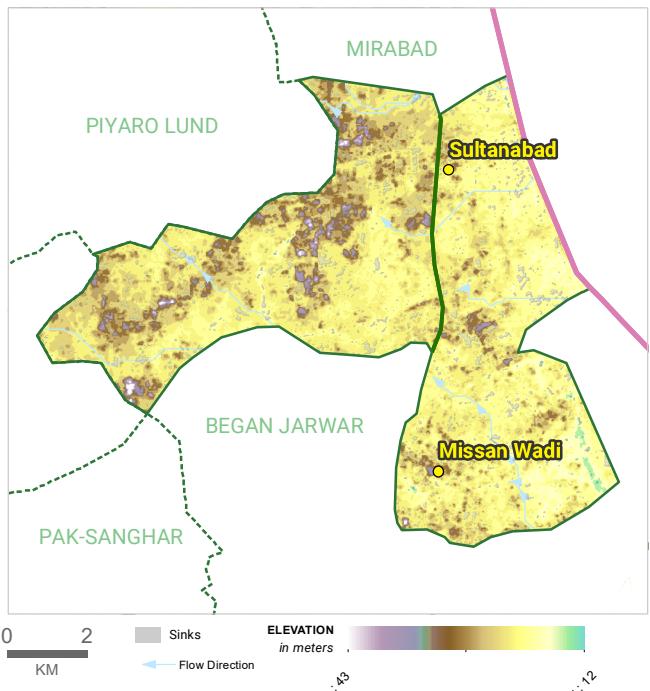


Critical Infrastructure

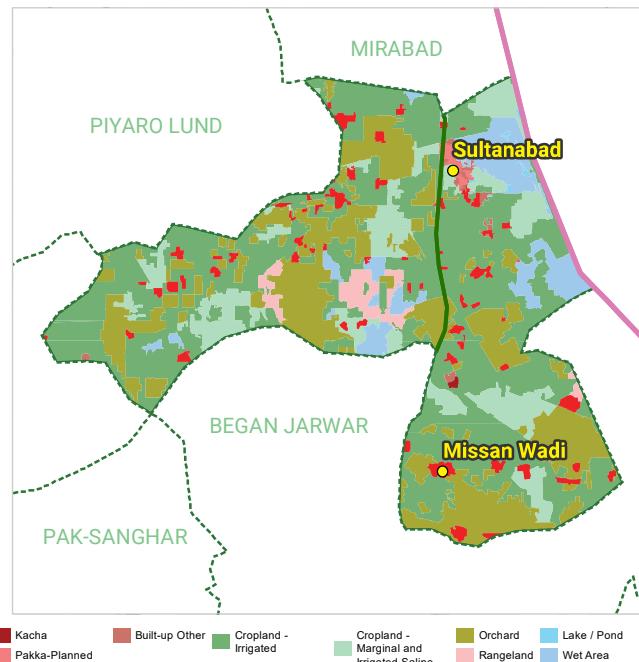


79

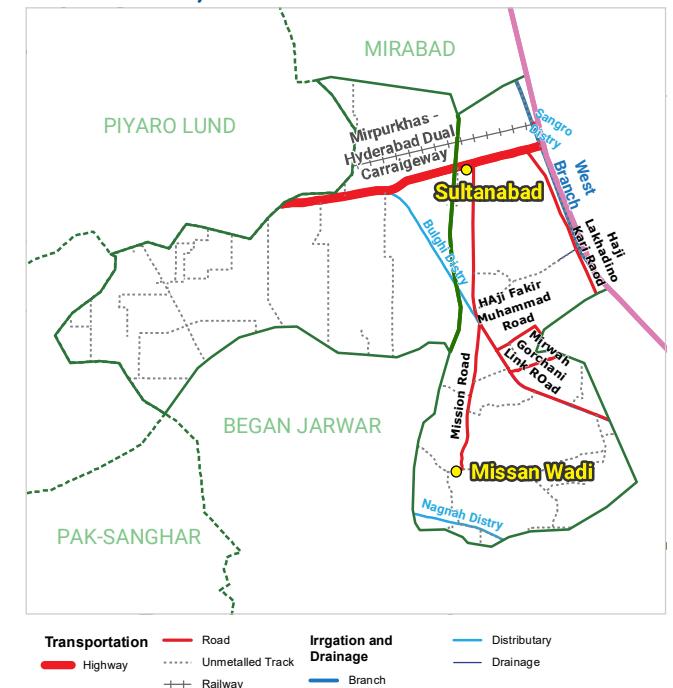
## DEM AND FLOW DIRECTION



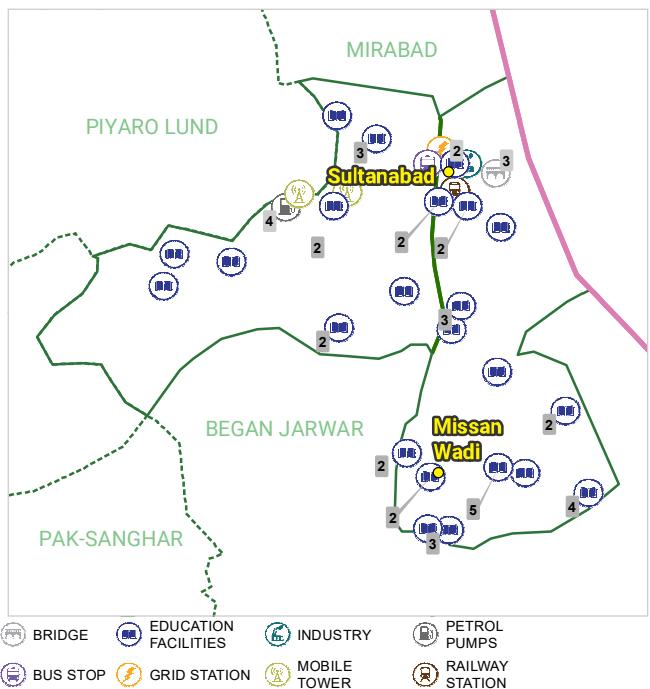
## LAND USE / LAND COVER



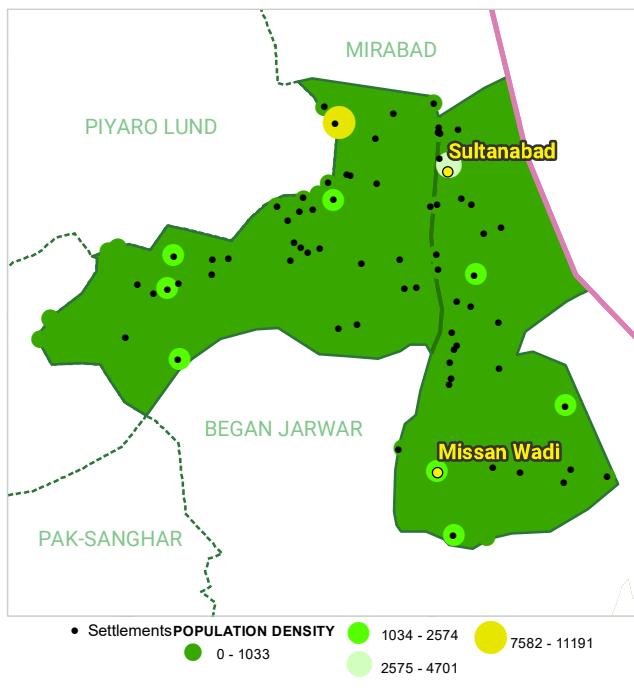
## TRANSPORT, IRRIGATION AND DRAINAGE



## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY

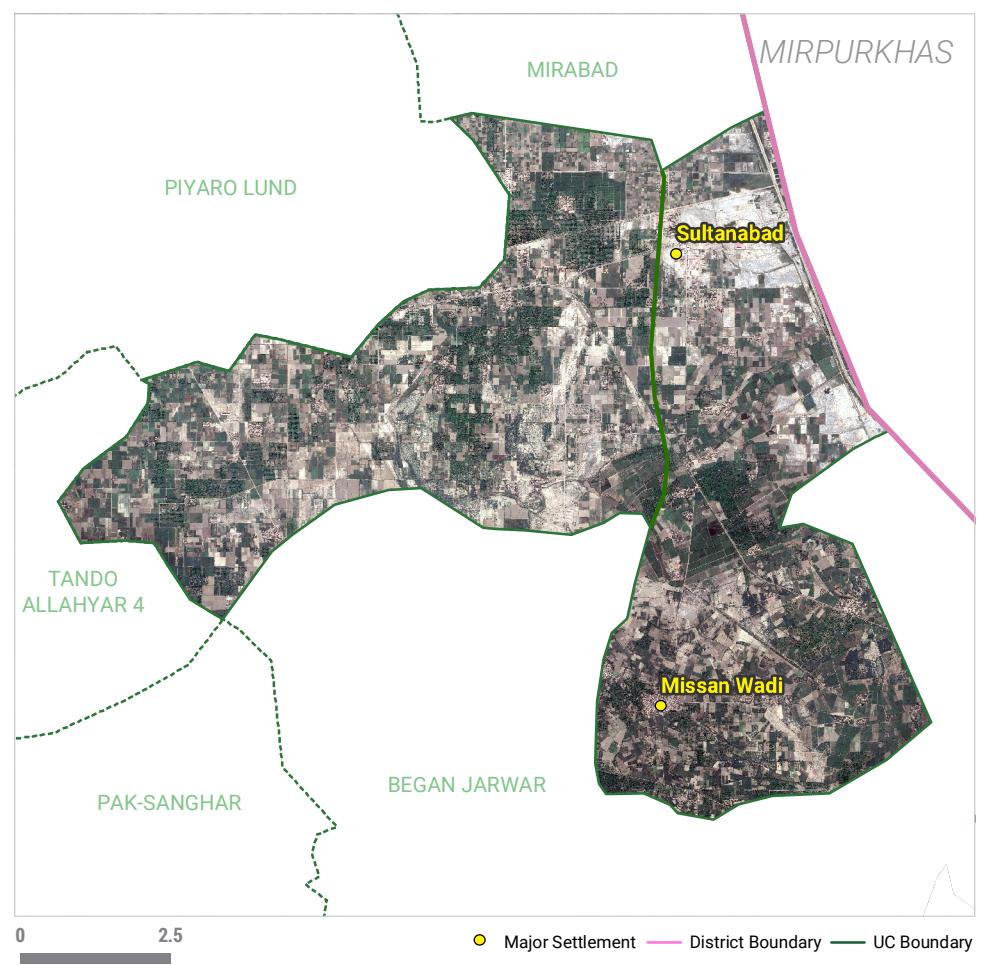


## PAST HAZARDS



78

## SATELLITE IMAGERY

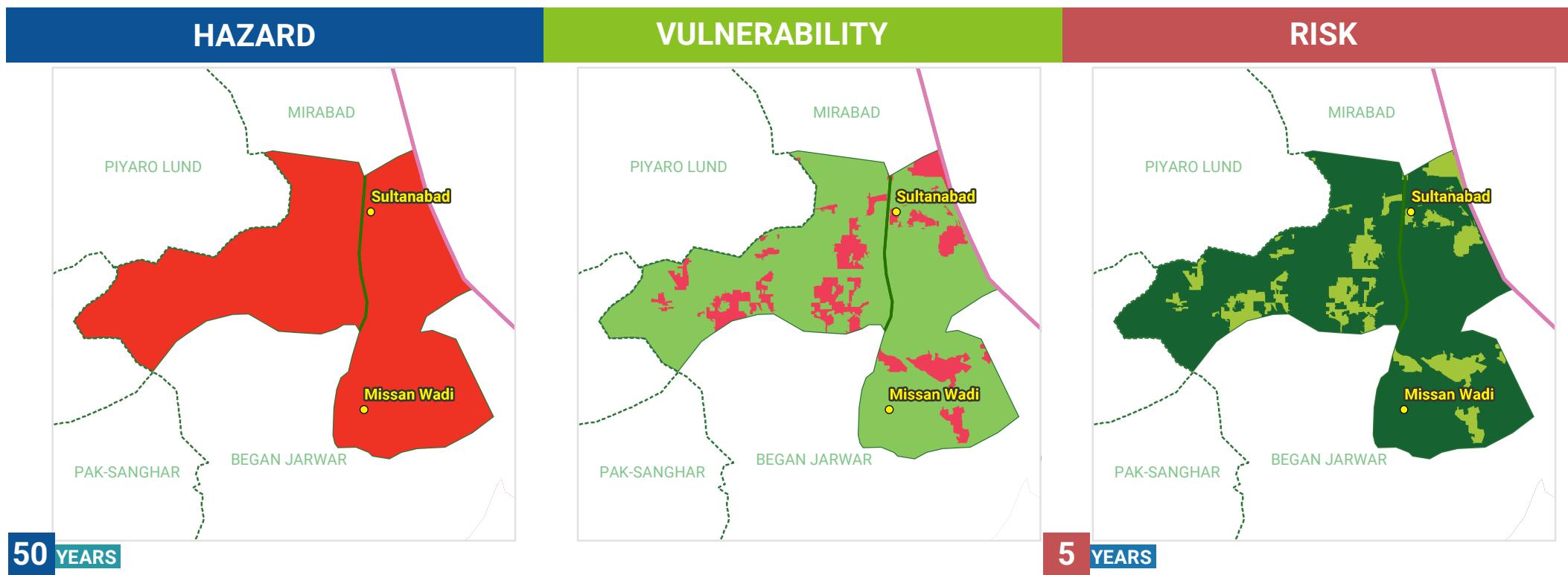
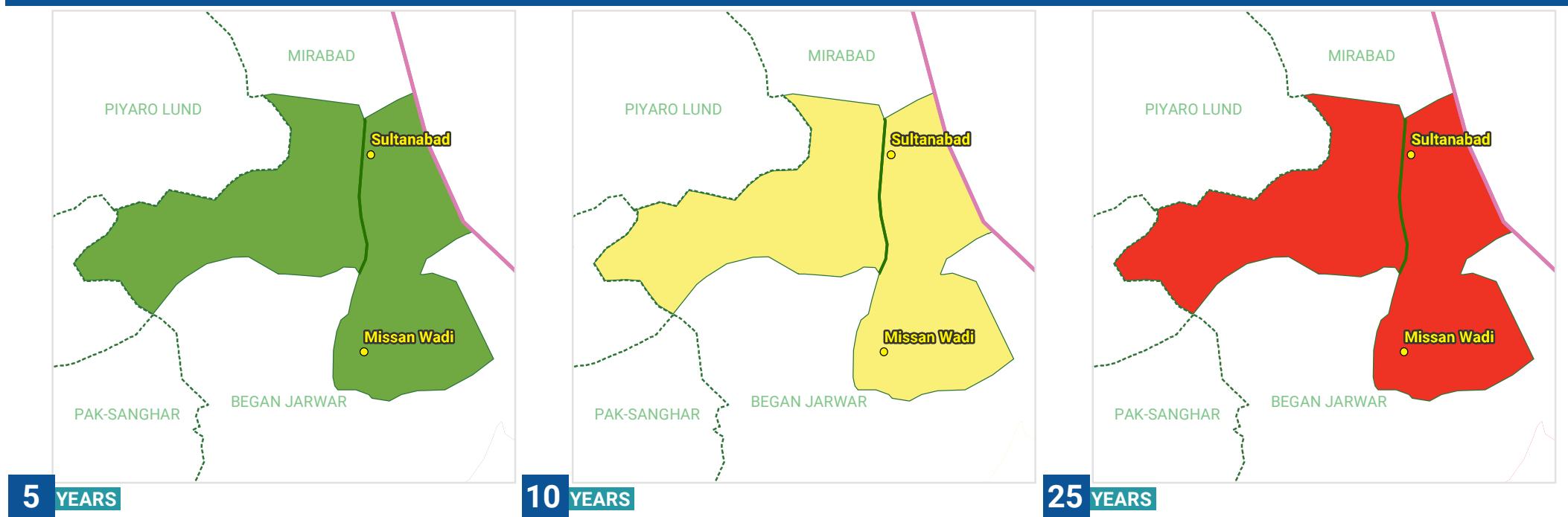


# FLOOD

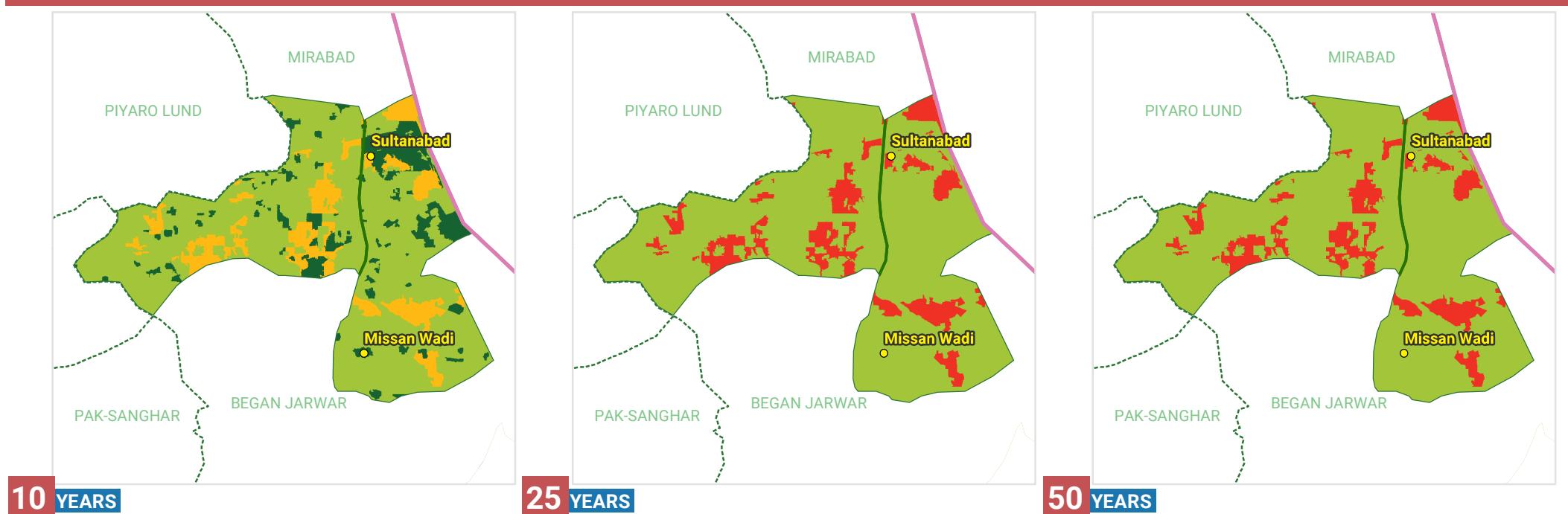
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

### HAZARD AT DIFFERENT RETURN PERIODS



### RISK AT DIFFERENT RETURN PERIODS



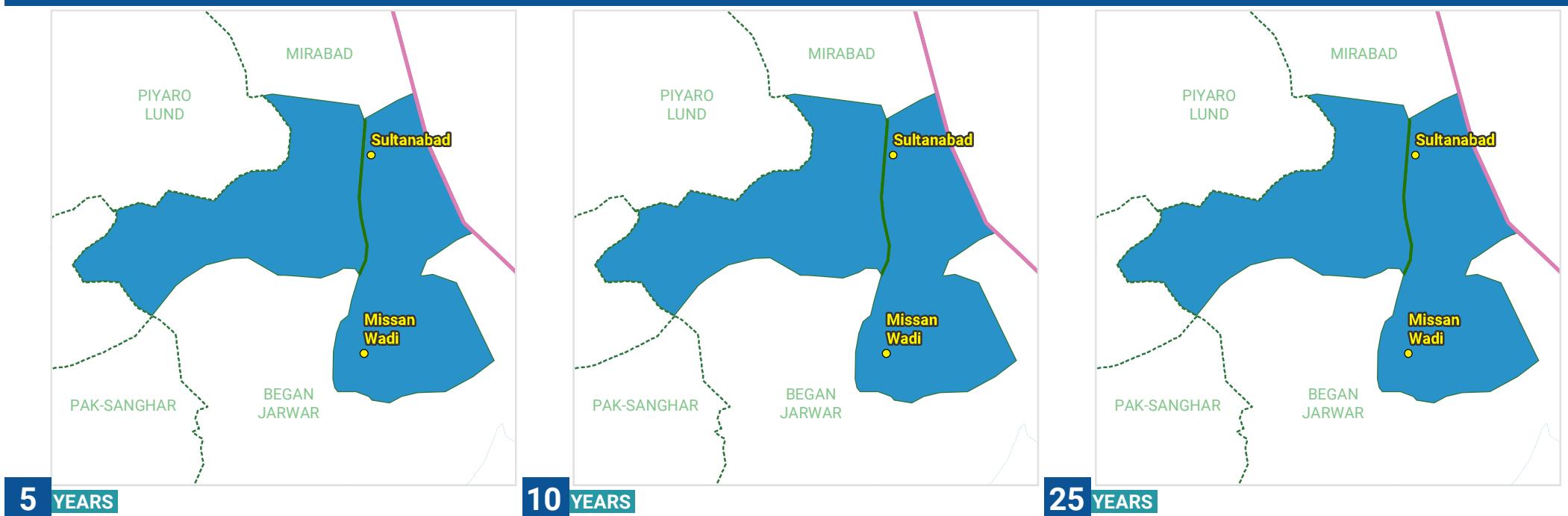
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

79	10124	51140	66.68	0	0	0	1.76
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.15	5.40						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

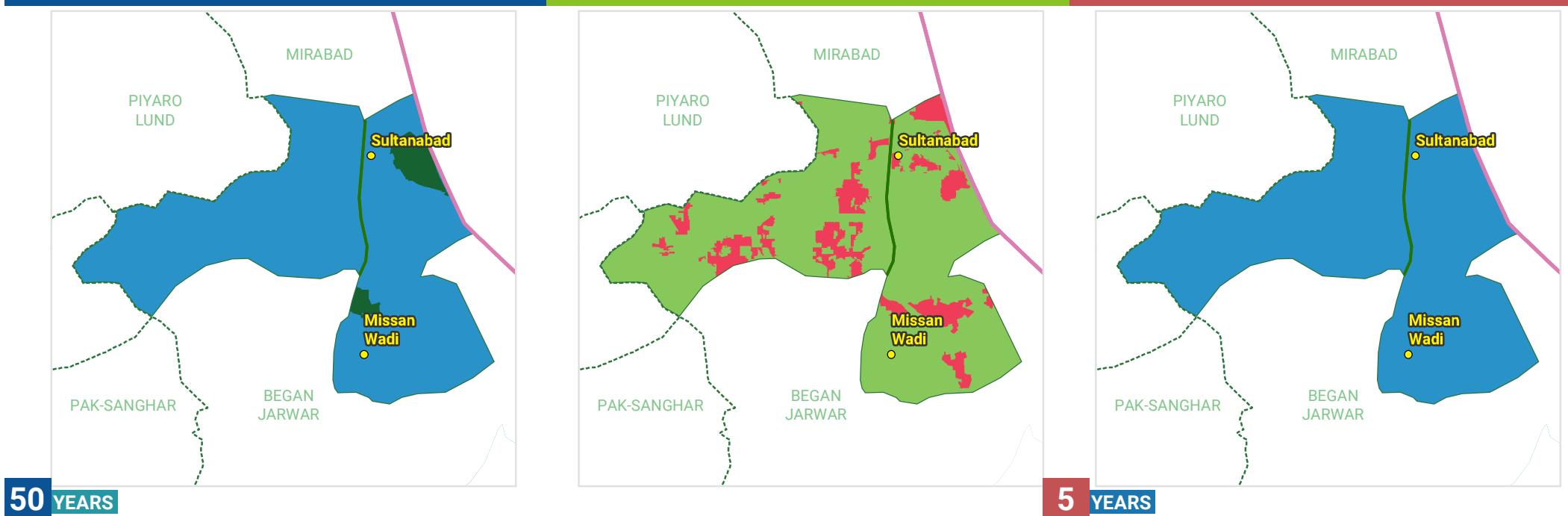
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

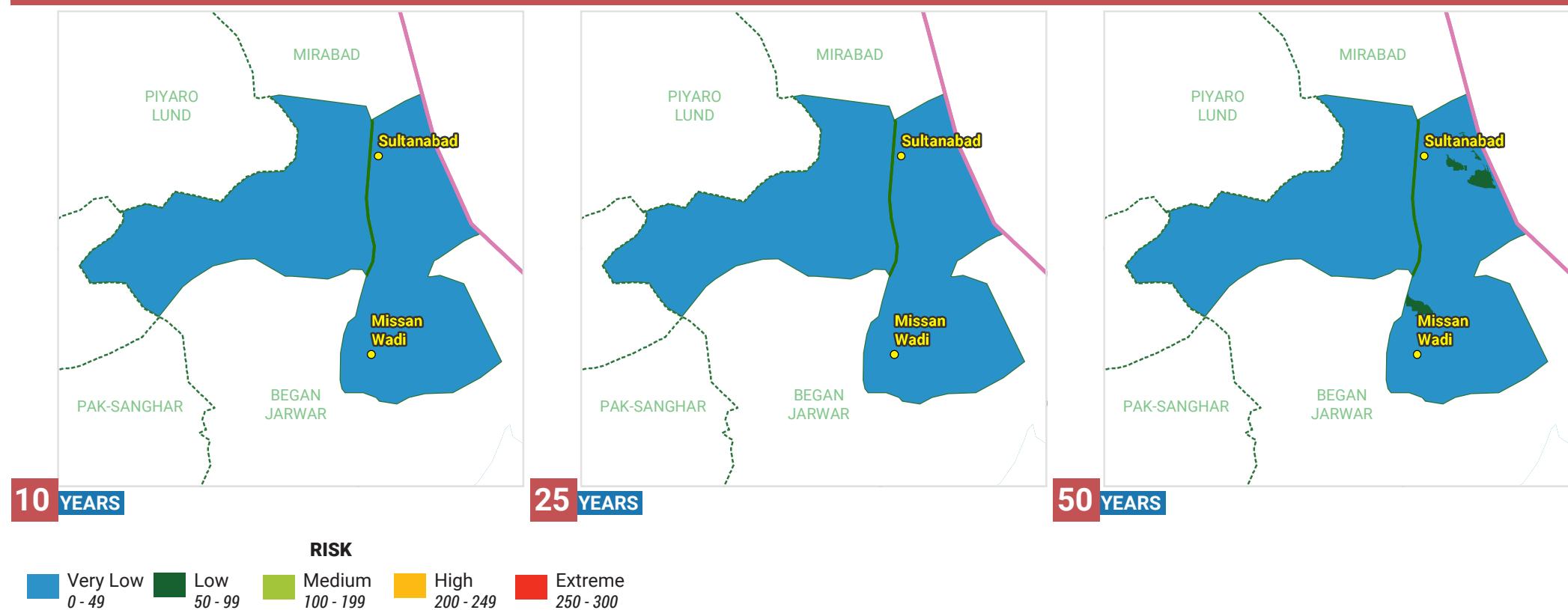
## VULNERABILITY

## RISK



# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



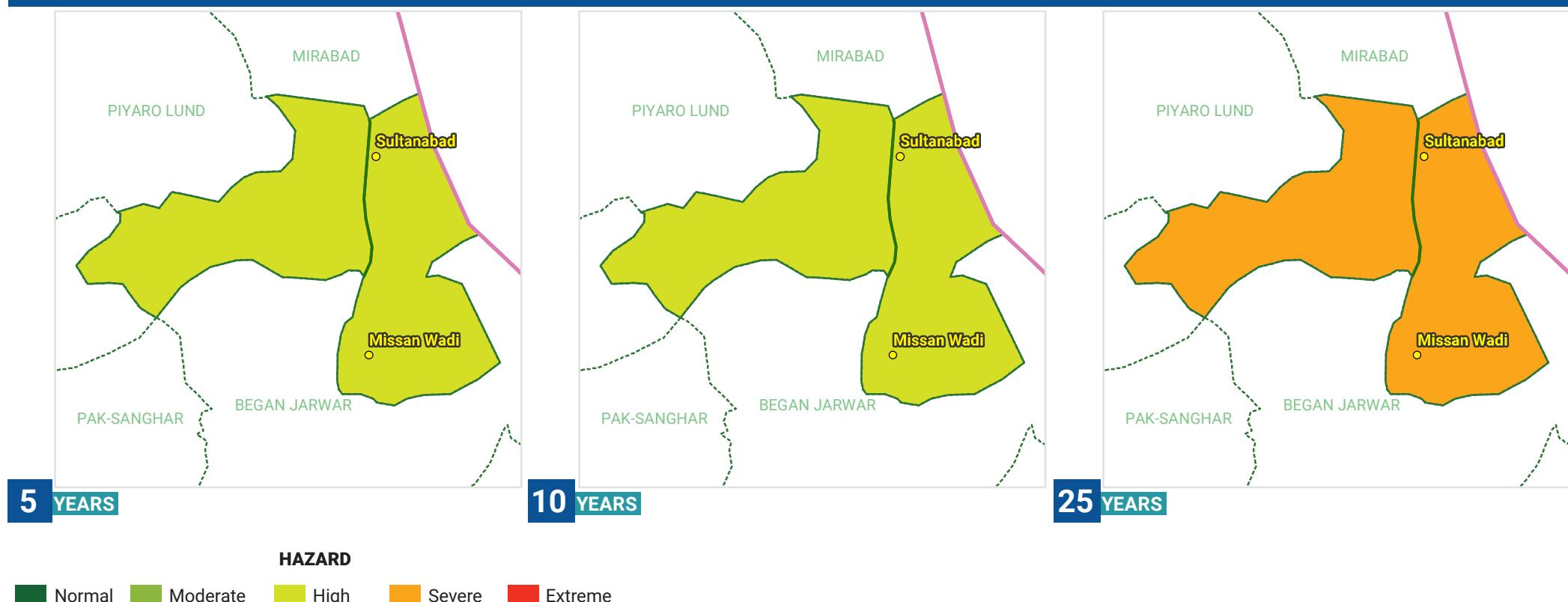
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

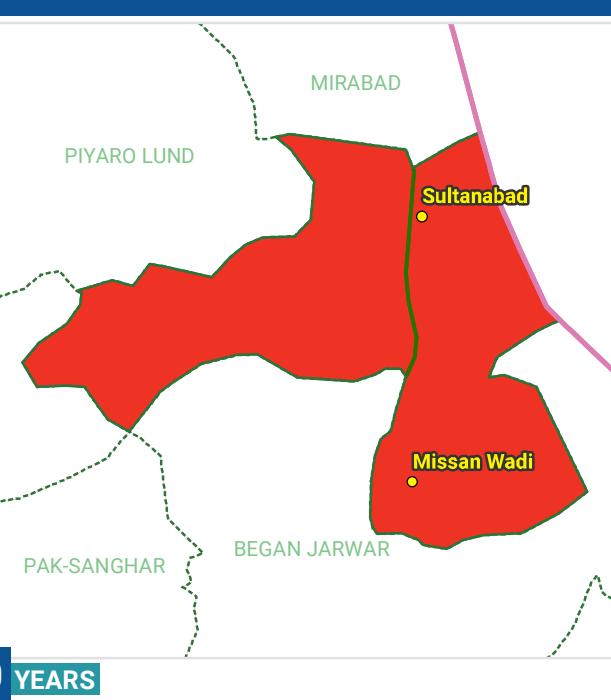
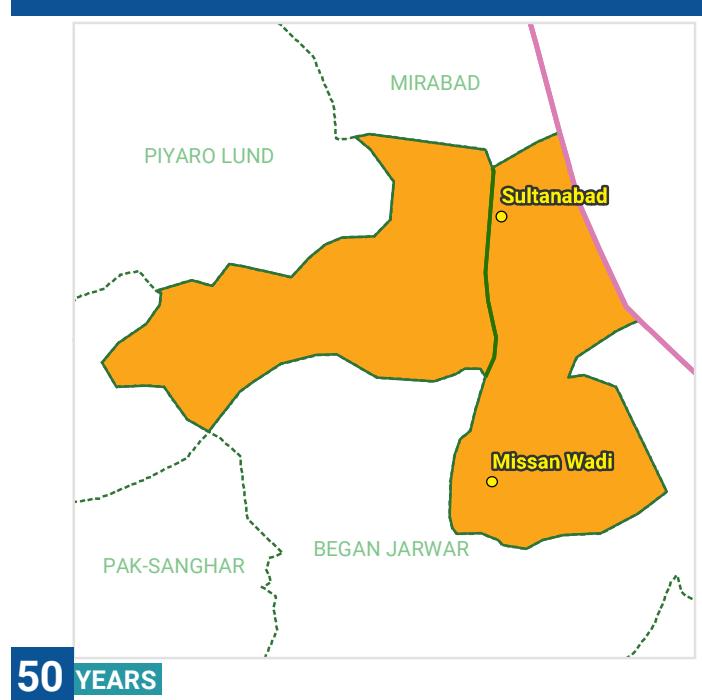
0	0	0	1.27	0	0	0	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.10	0.01						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

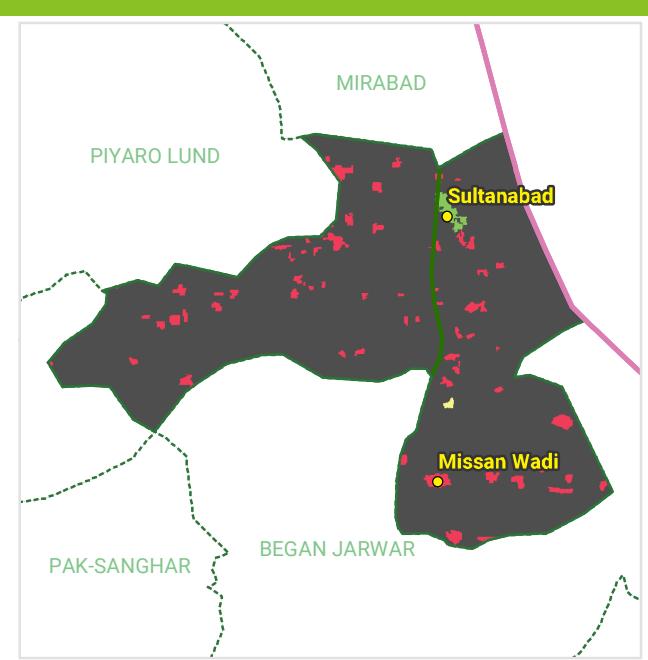
## HAZARD AT DIFFERENT RETURN PERIODS



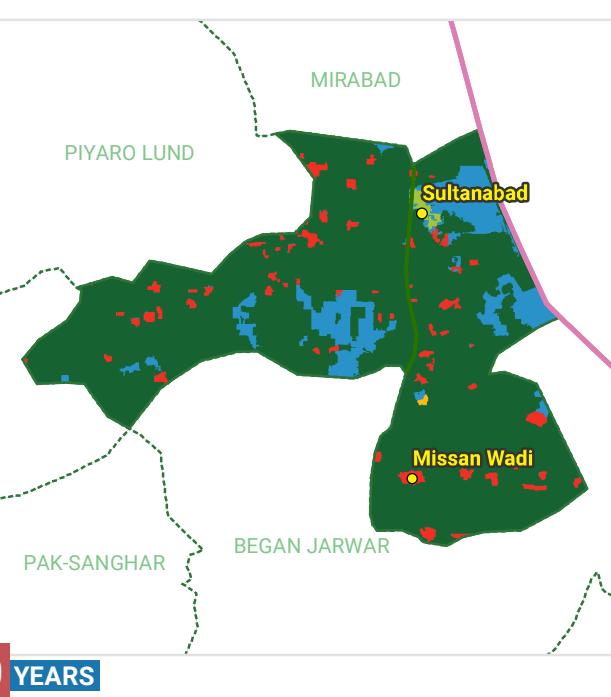
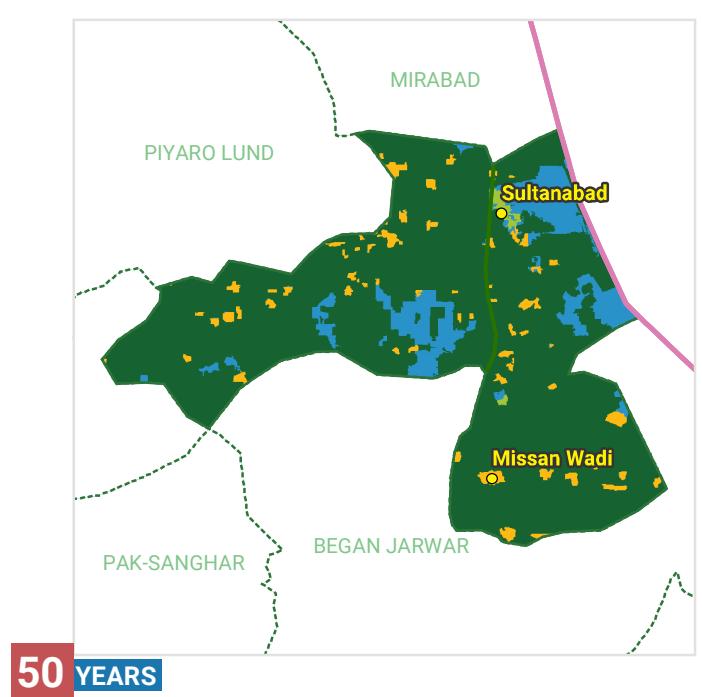
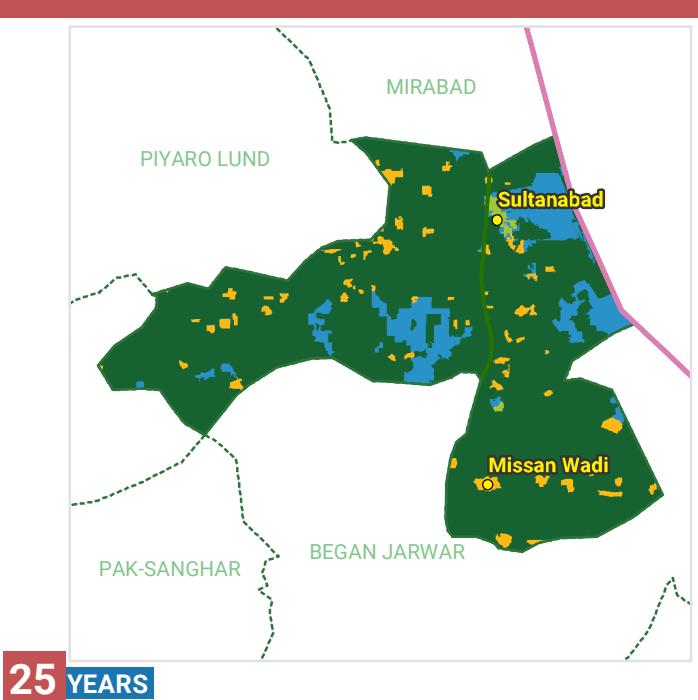
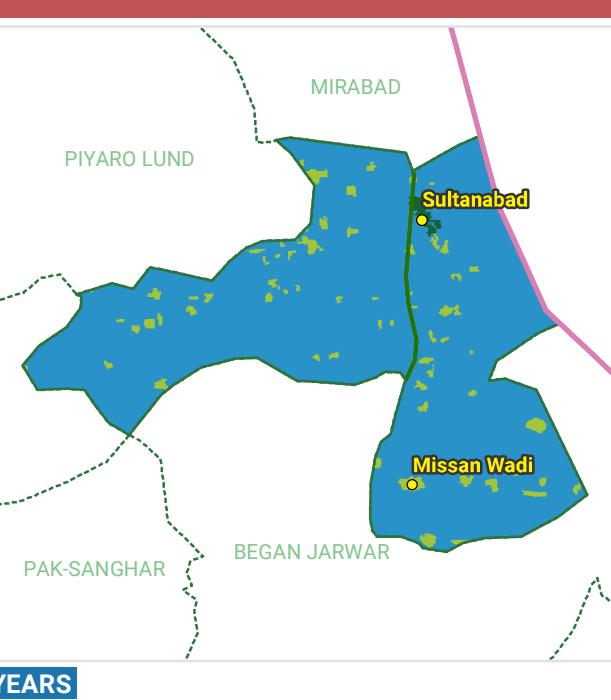
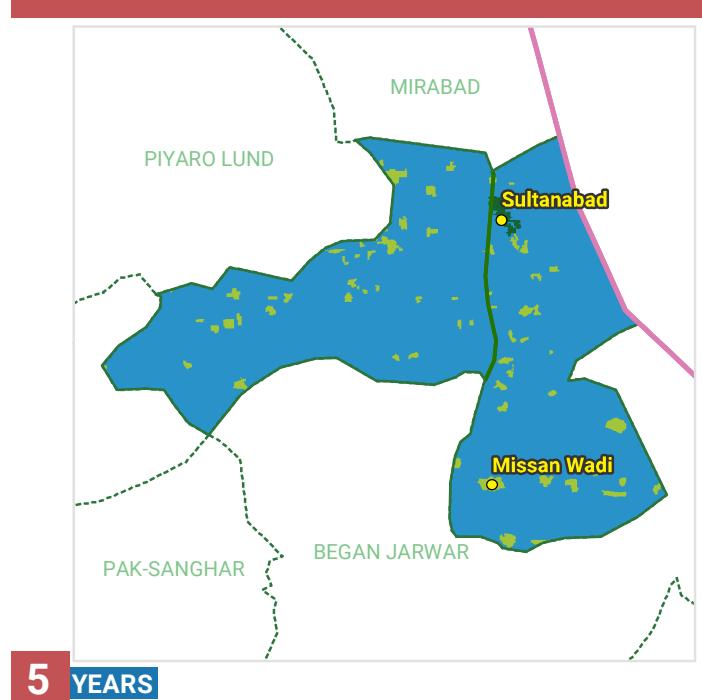
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal
Severe

## Moderate

Extreme
---------

## High

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## Very Low

0 - 49
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## Risk

Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

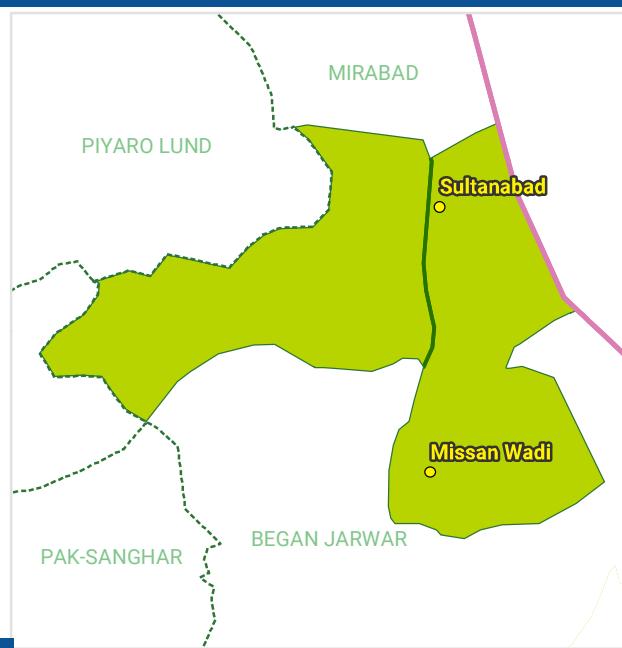
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

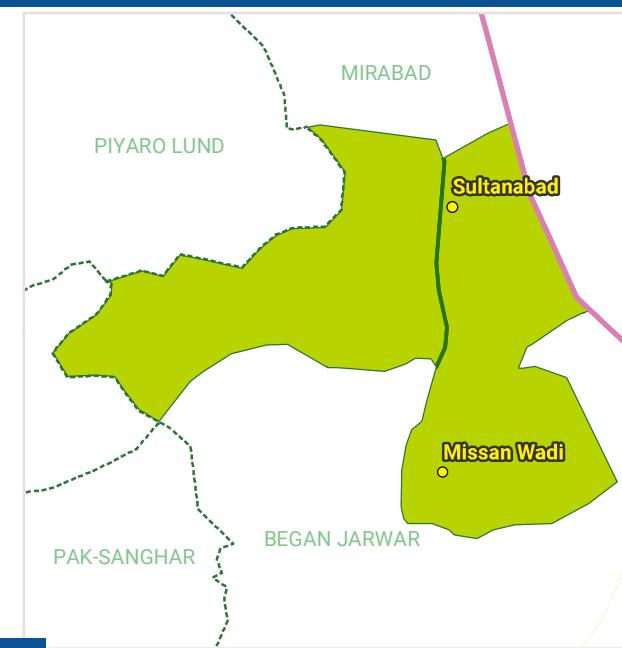
79	10056	50802	66.50	0.05	0.34	2.82
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

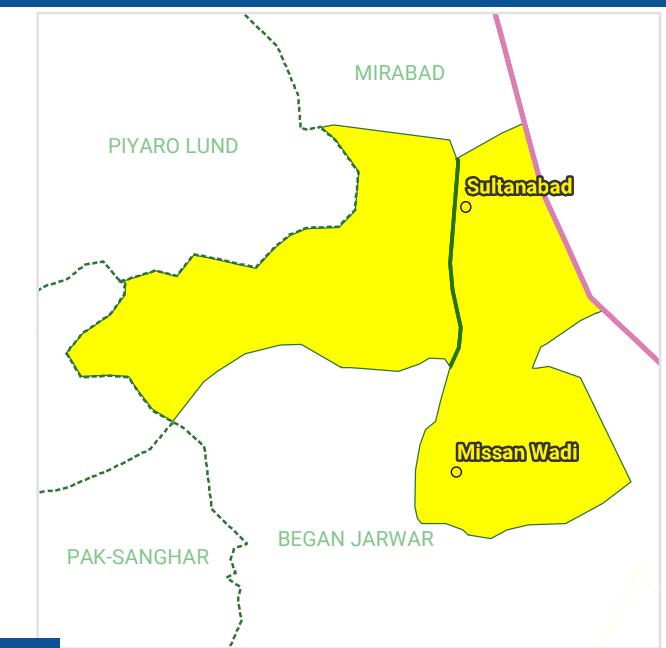
## HAZARD AT DIFFERENT RETURN PERIODS



25 YEARS

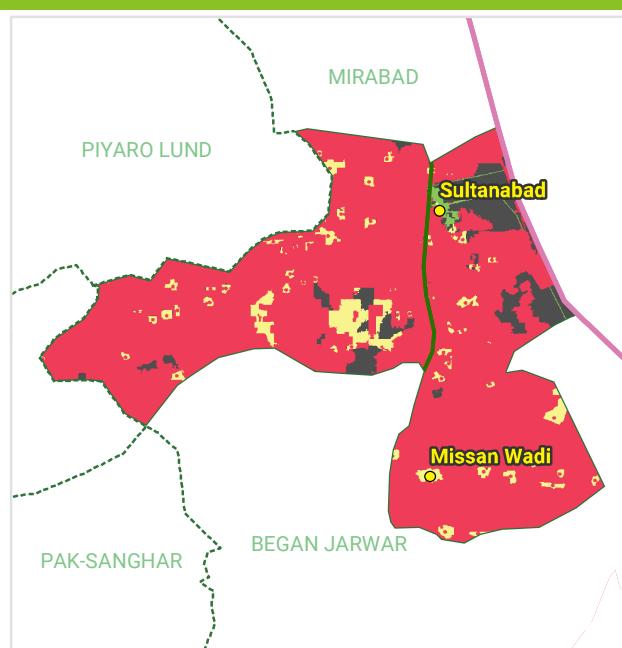


100 YEARS



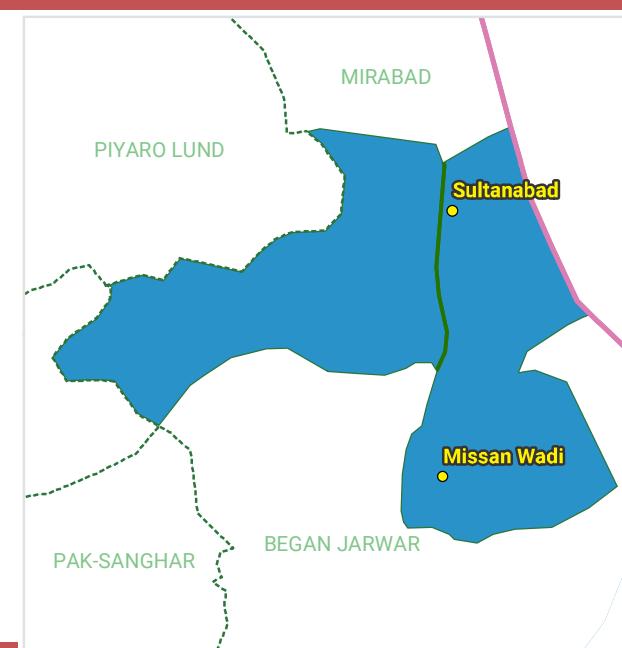
500 YEARS

## VULNERABILITY

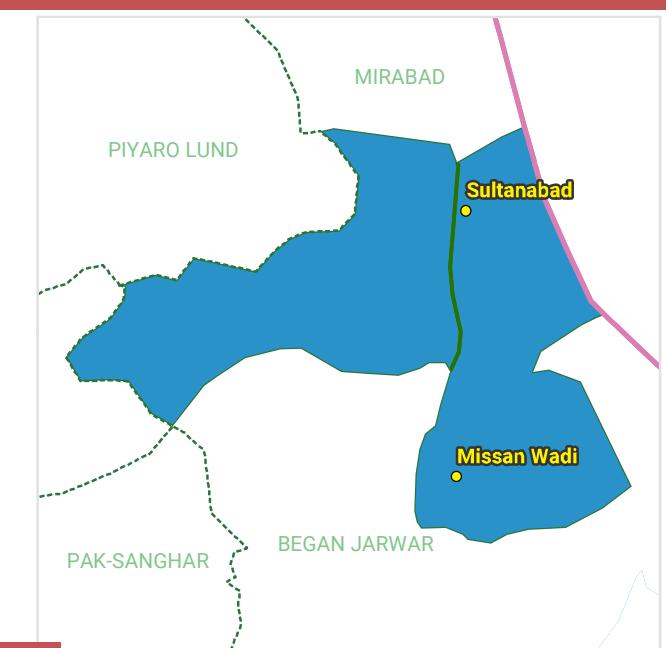


25 YEARS

## RISK AT DIFFERENT RETURN PERIODS



100 YEARS



### HAZARD

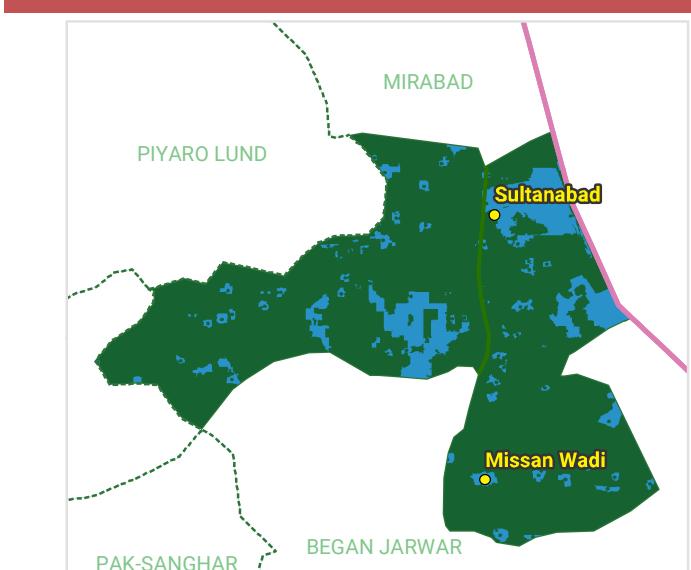
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

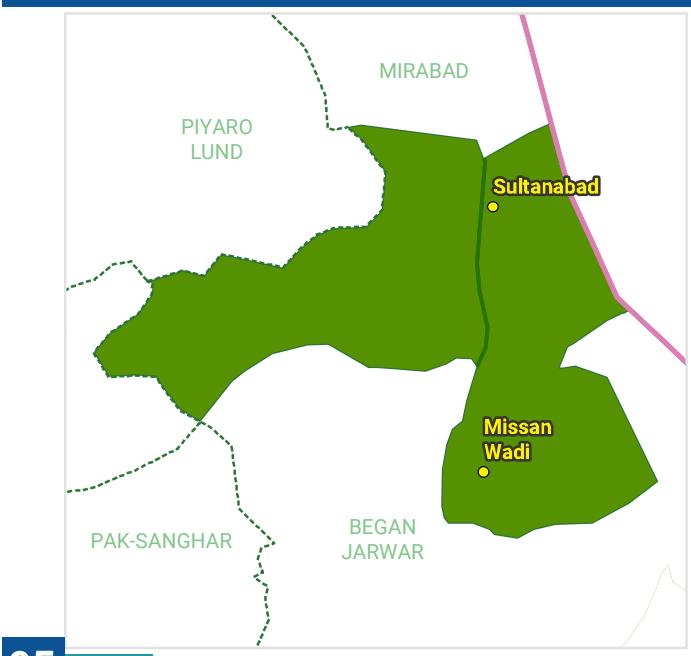
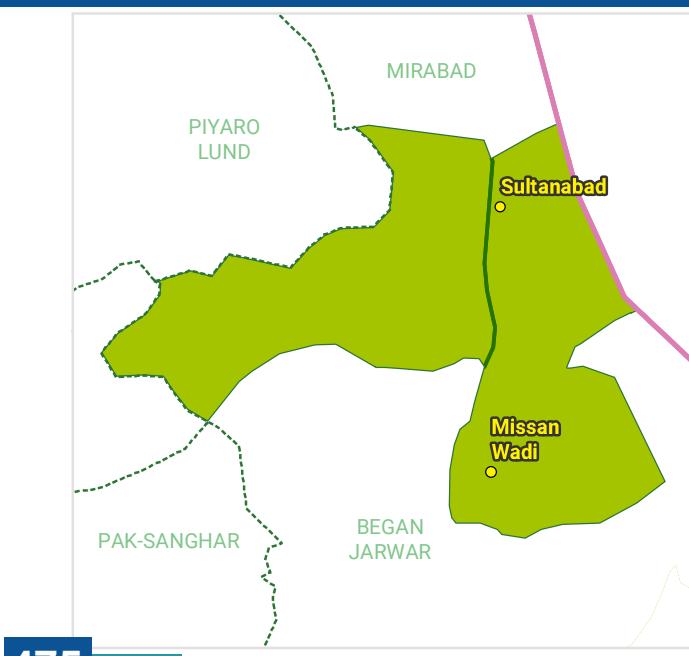
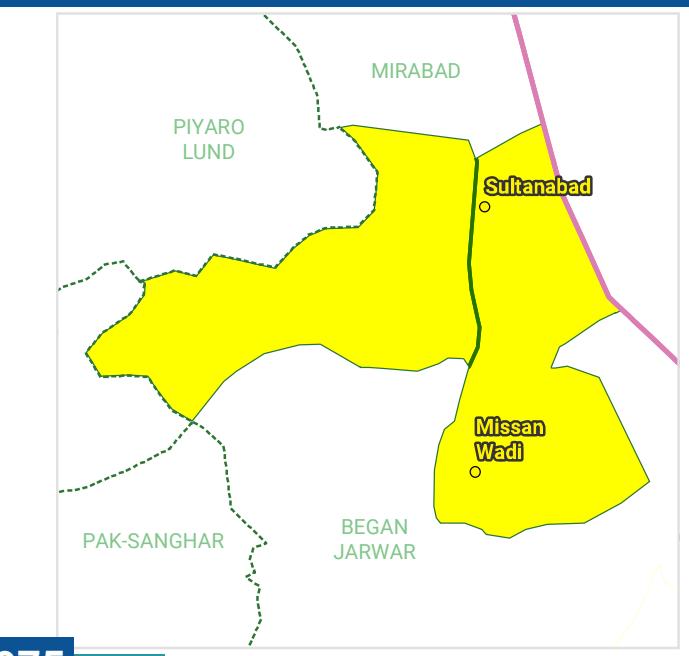
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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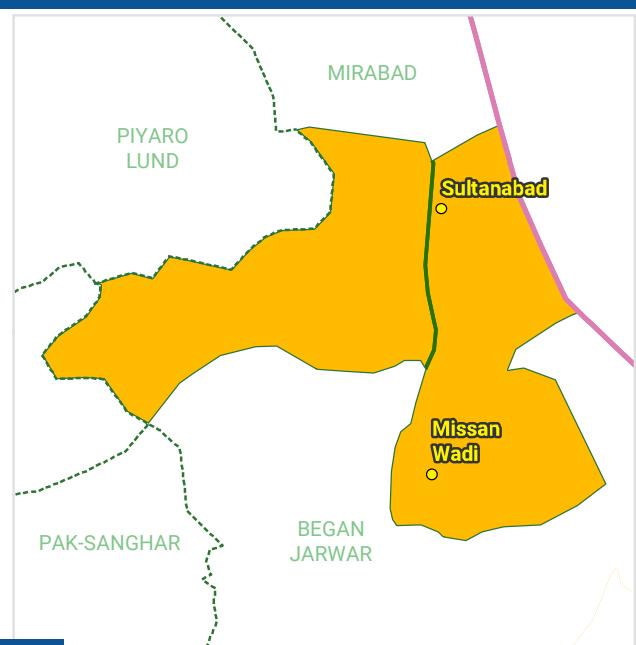
**RISK****500 YEARS****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****95 YEARS****475 YEARS****975 YEARS****HAZARD**

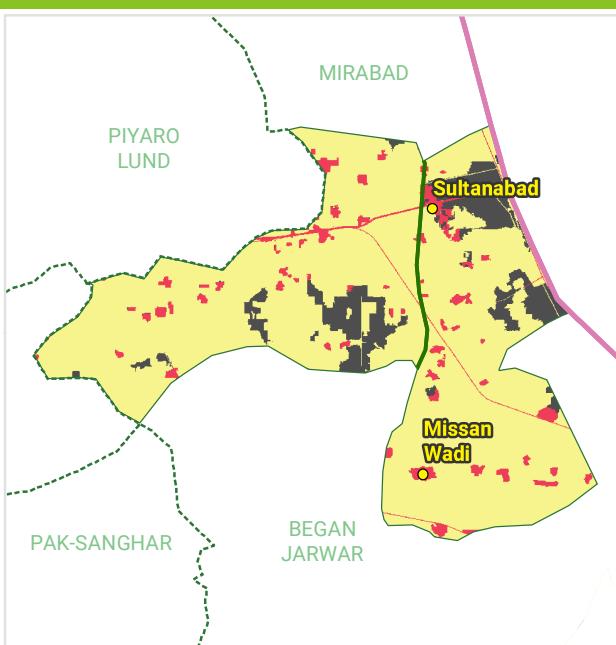
# EARTHQUAKE

## HAZARD



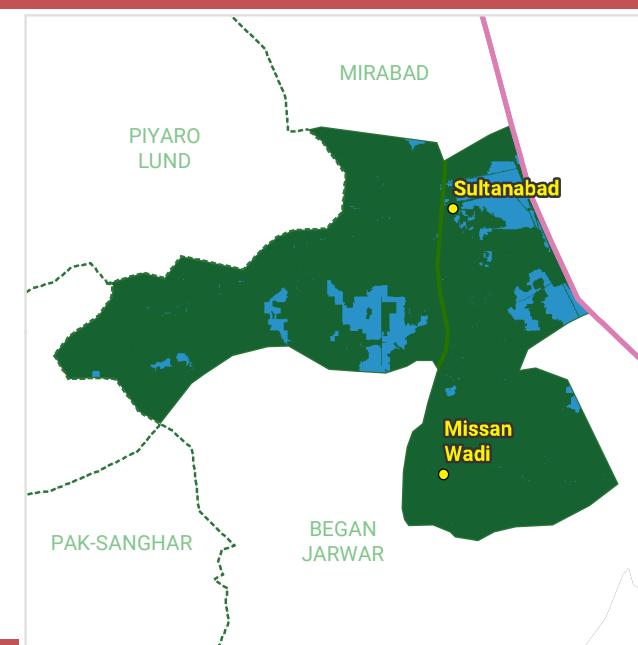
2475 YEARS

## VULNERABILITY

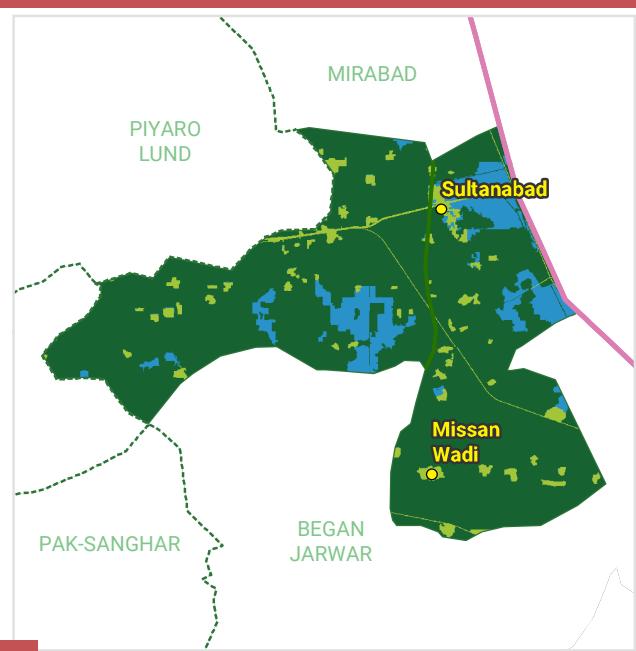


95 YEARS

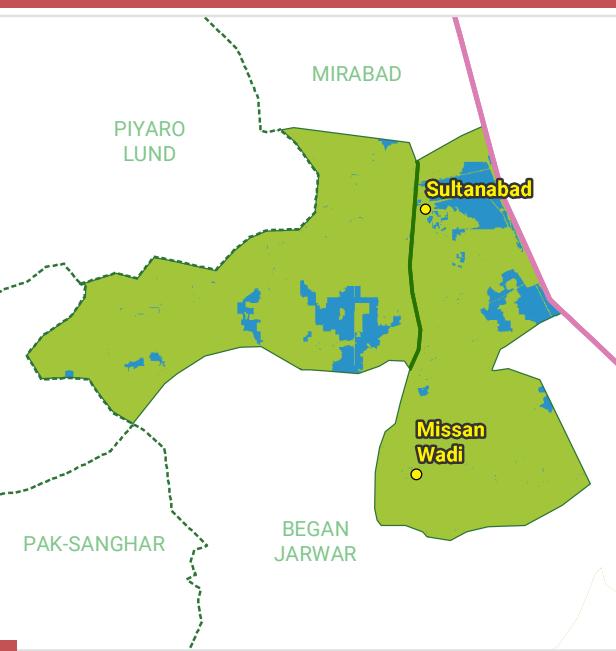
## RISK



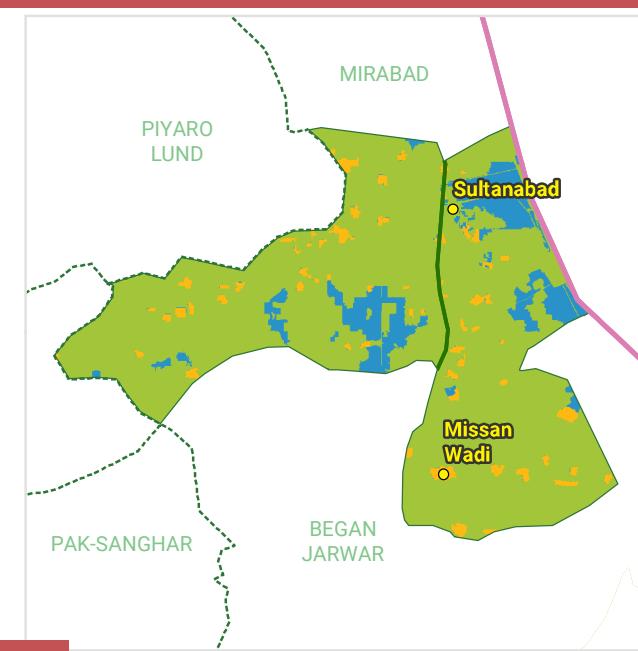
## RISK AT DIFFERENT RETURN PERIODS



475 YEARS



975 YEARS



2475 YEARS

### HAZARD

Zone 1	Zone 2 A	Zone 2 B	Zone 3
Zone 4	Zone 5	Zone 6	

### VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

79	10038	50676	66.55	0	0.05	0	0.34
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
2.81	0.03	102.89	4.76	19.36	0	3	1
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
43	0	0	1	0	2	5	3
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

## NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - PAK-SANGHAR

Union Council area in sq. km

84

Surrounding UCs / Features

**BEGAN JARWAR** in East  
**TANDO ALLAHYAR 2** in North West  
**TANDO ALLAHYAR 4** in North  
**DAD KHAN JARWAR** in South  
**BUKERANI SHARIF** in West

Population

2017 approx. **39,453**

No. of household

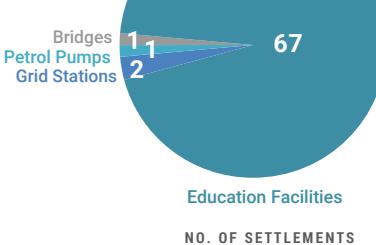
2017 approx. **7,715**

## Land Use Land Cover

coverage area in sq.km

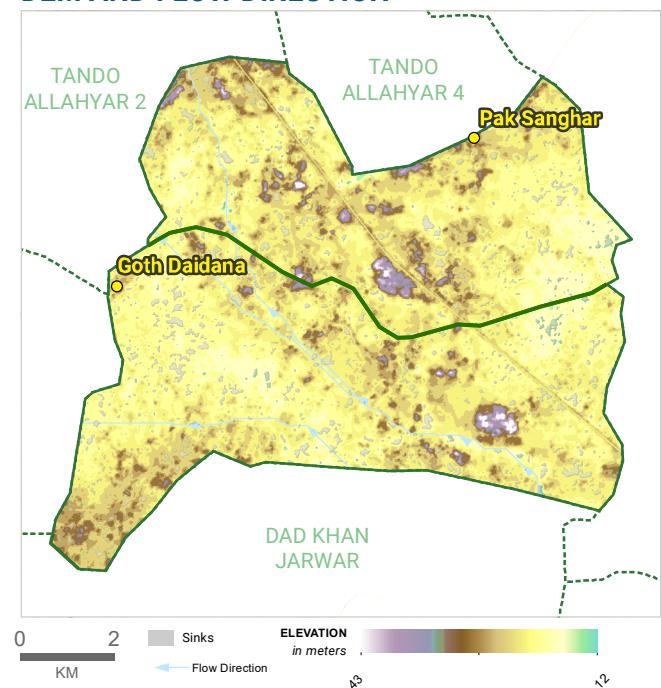
Built-up (Other)	0.3
Crop Irrigated	53.9
Crop Marginal and Irrigated Saline	6.9
Orchards	17.9
Pakka -Planned	0.1
Pakka -Unplanned	2.6
Range Lands	1.0
Water Body	0.1
Wet Area	1.3

## Critical Infrastructure

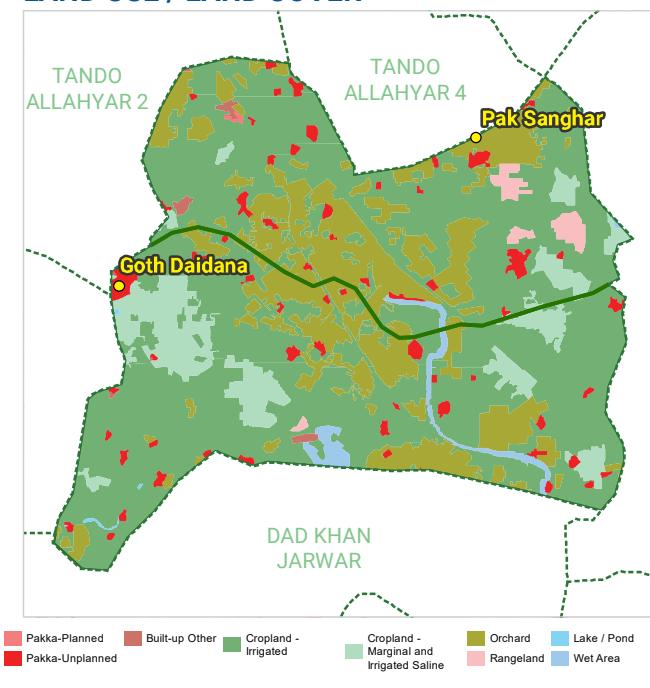


74

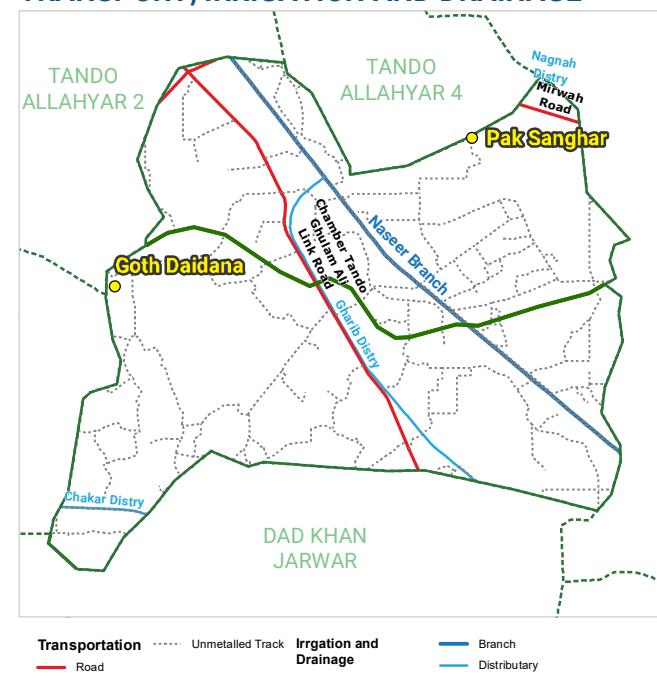
## DEM AND FLOW DIRECTION



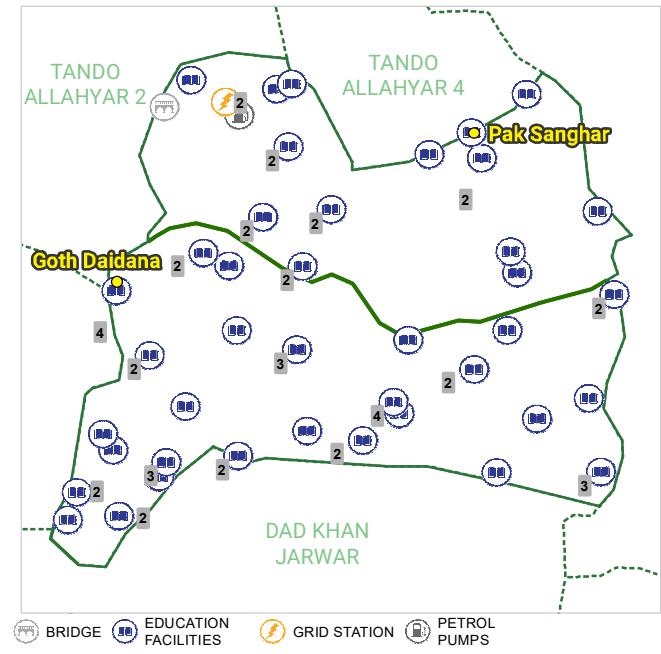
## LAND USE / LAND COVER



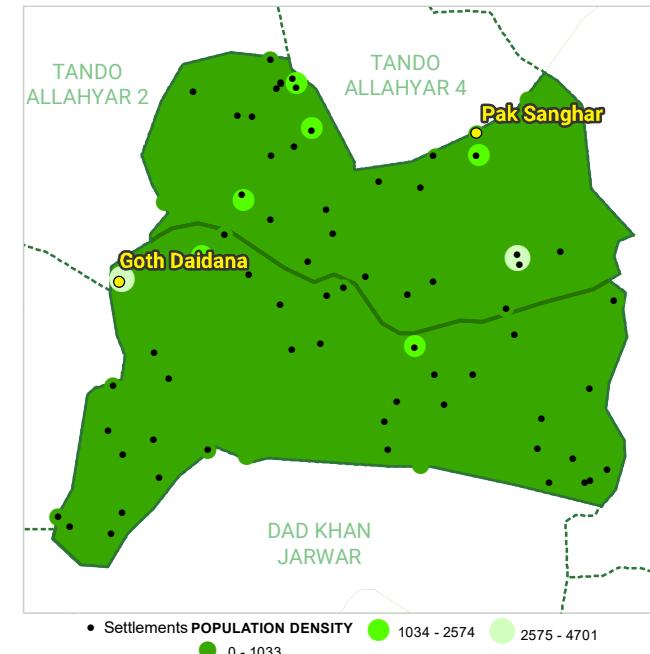
## TRANSPORT, IRRIGATION AND DRAINAGE



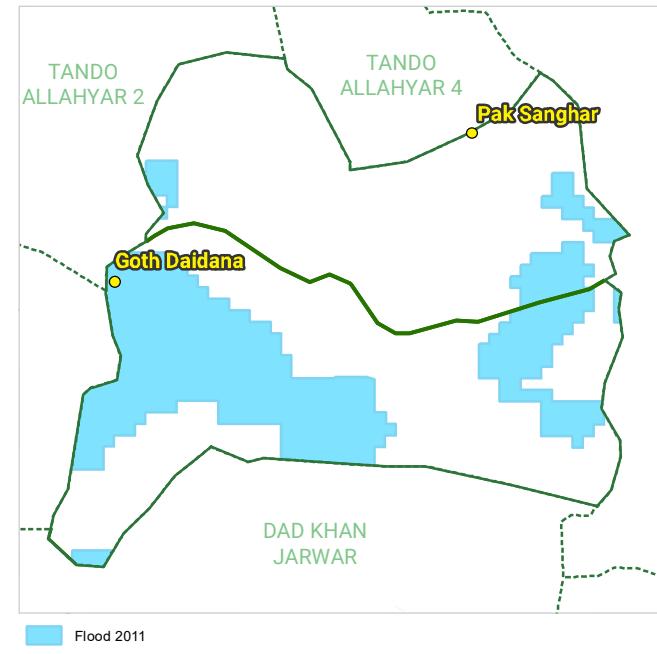
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

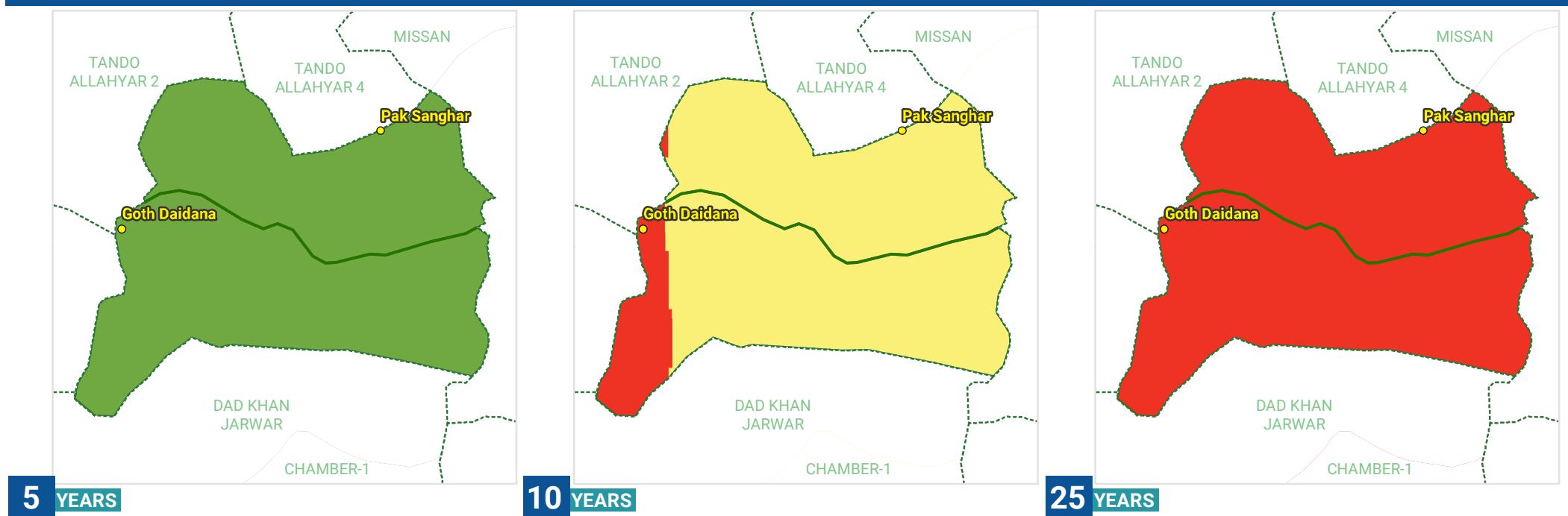


## FLOOD

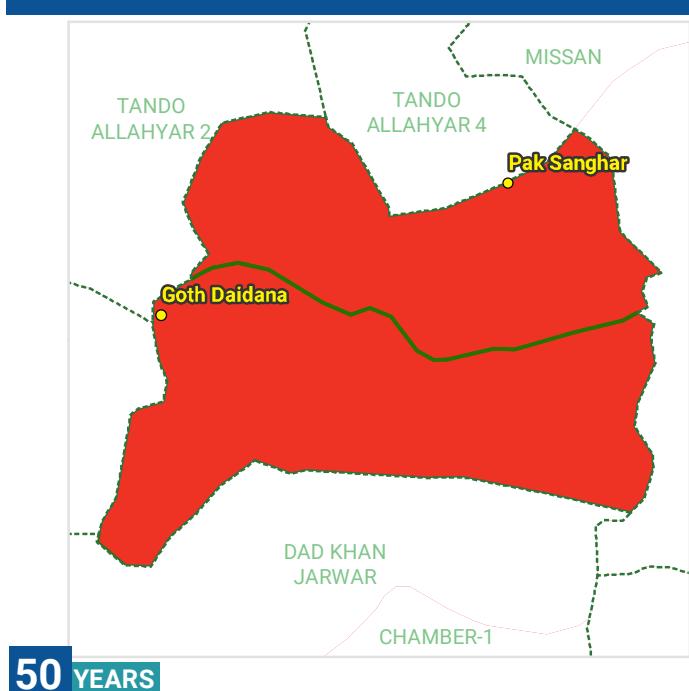
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

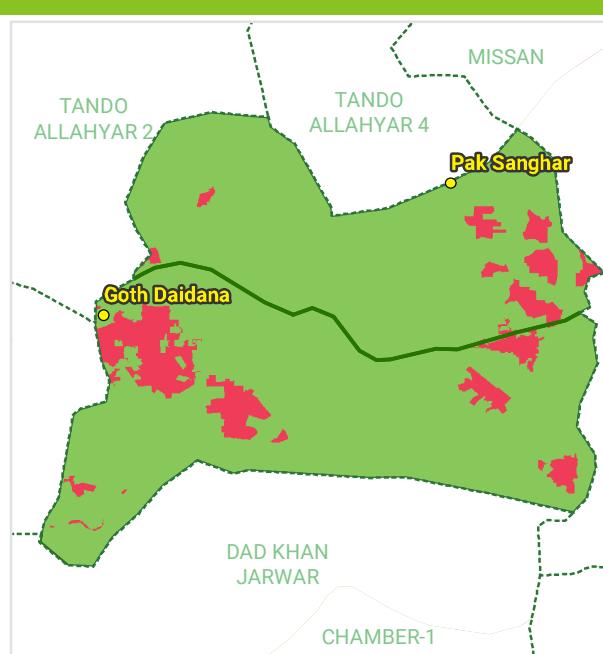
## HAZARD AT DIFFERENT RETURN PERIODS



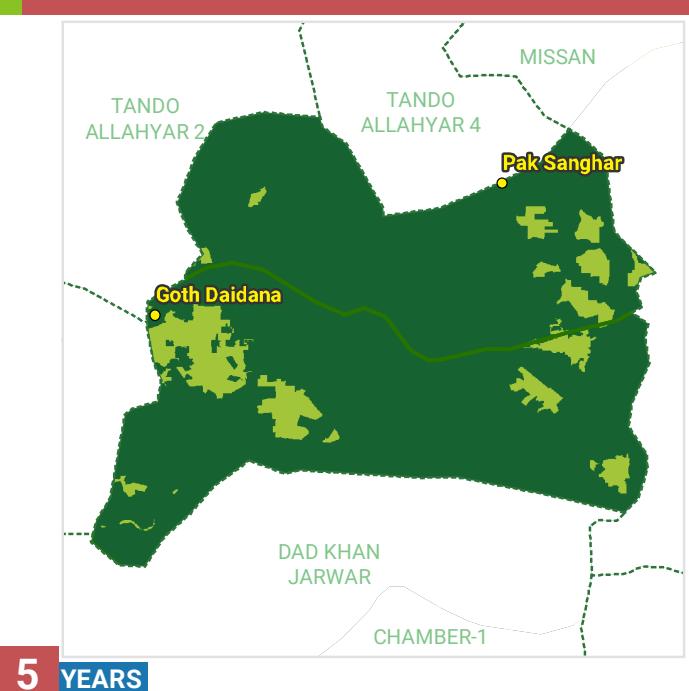
## HAZARD



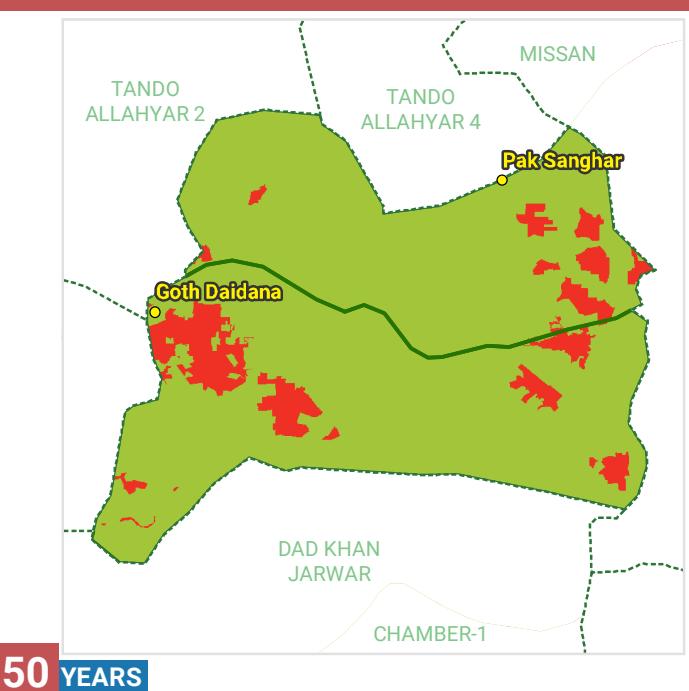
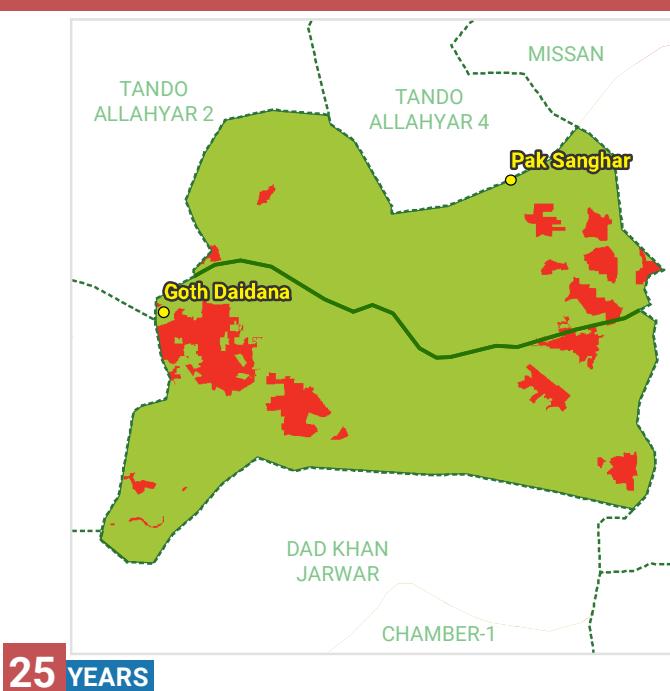
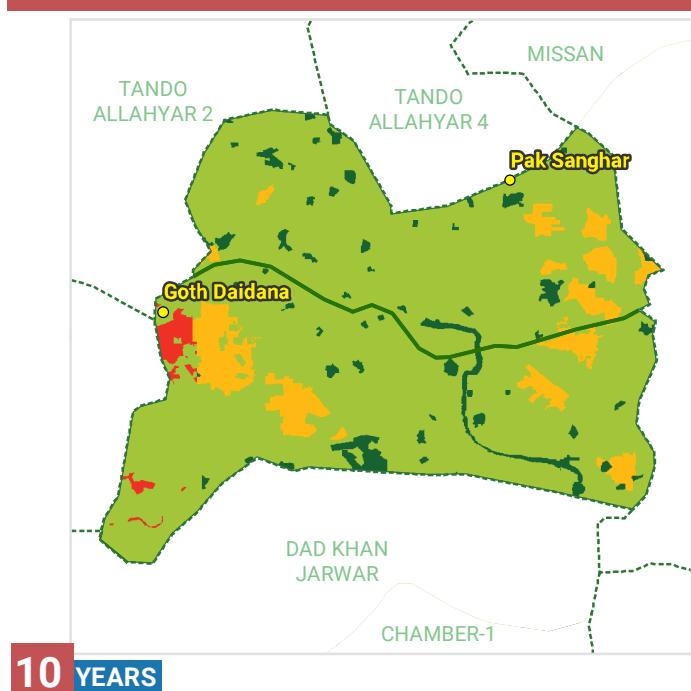
## VULNERABILITY



## RISK



## RISK AT DIFFERENT RETURN PERIODS



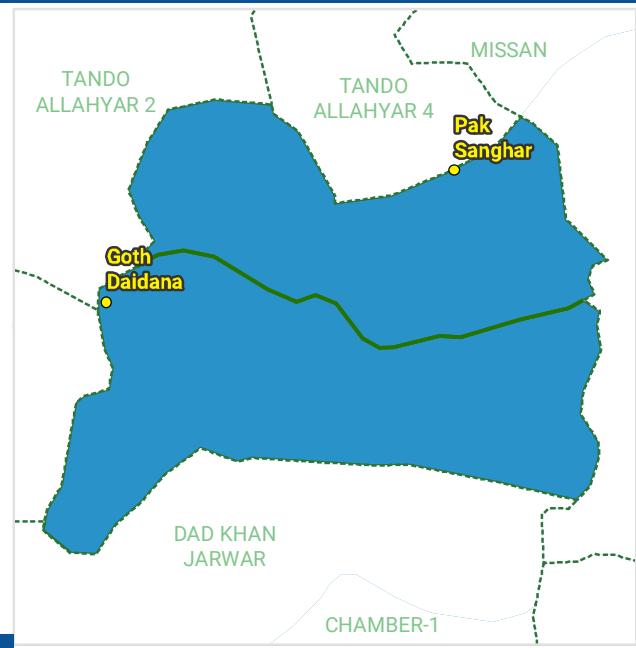
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

74	7715	39453	78.77	0	0	0	0.96
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.07	1.31						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

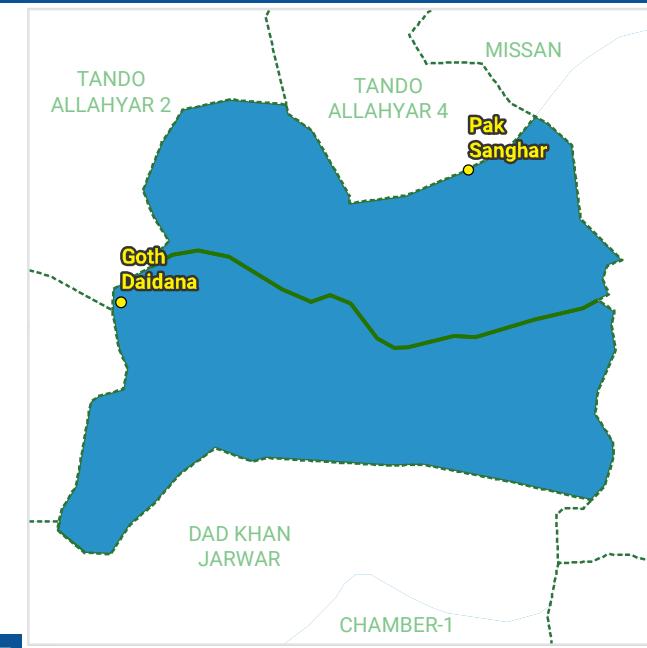
## HAZARD AT DIFFERENT RETURN PERIODS



5 YEARS

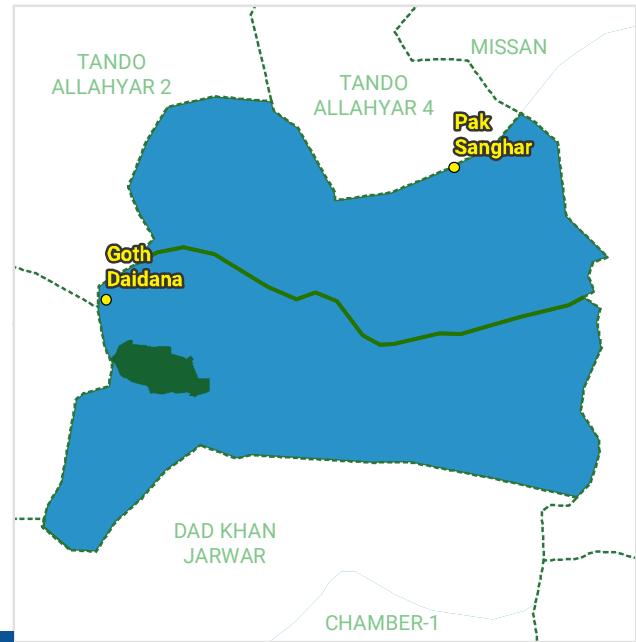


10 YEARS



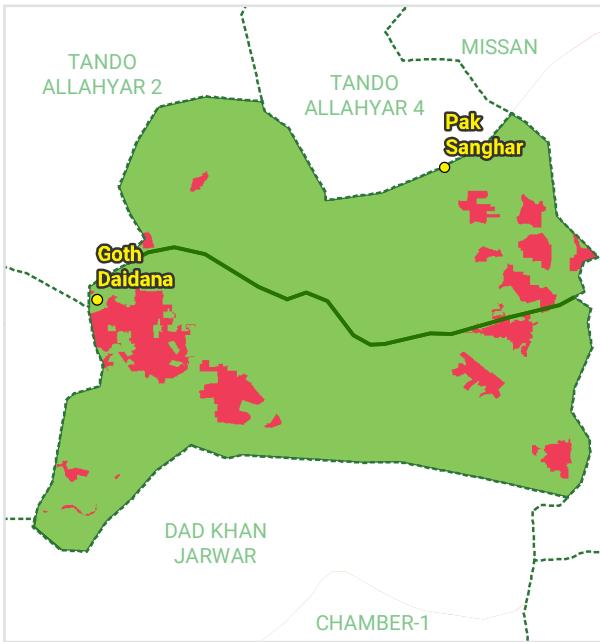
25 YEARS

## HAZARD



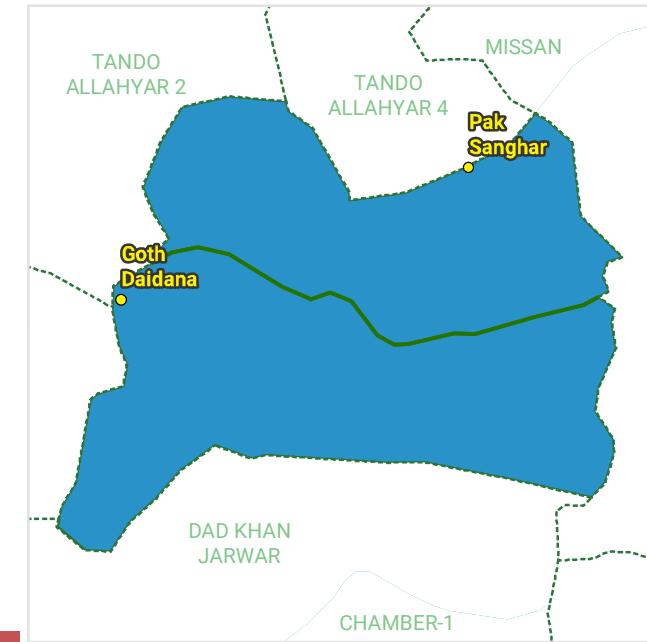
50 YEARS

## VULNERABILITY



5 YEARS

## RISK



## HAZARD

No Hazard	Mild	Moderate
Severe	Extremely	

## VULNERABILITY

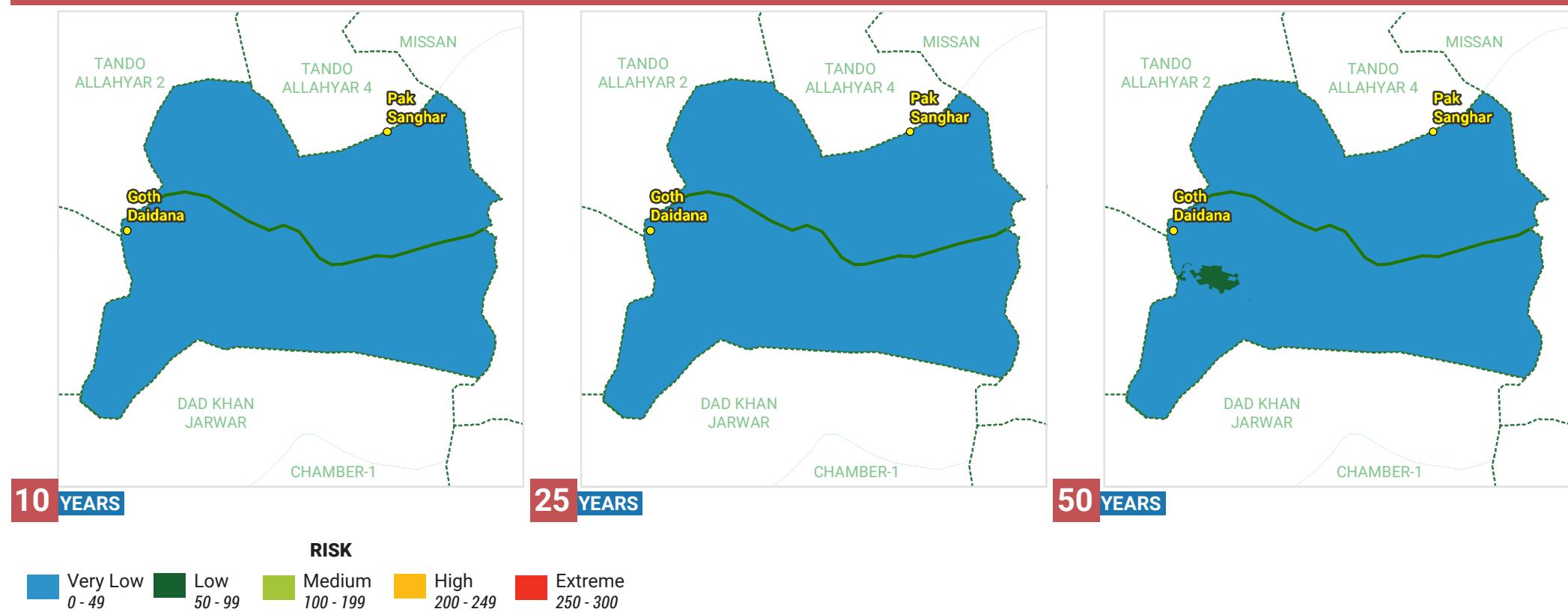
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



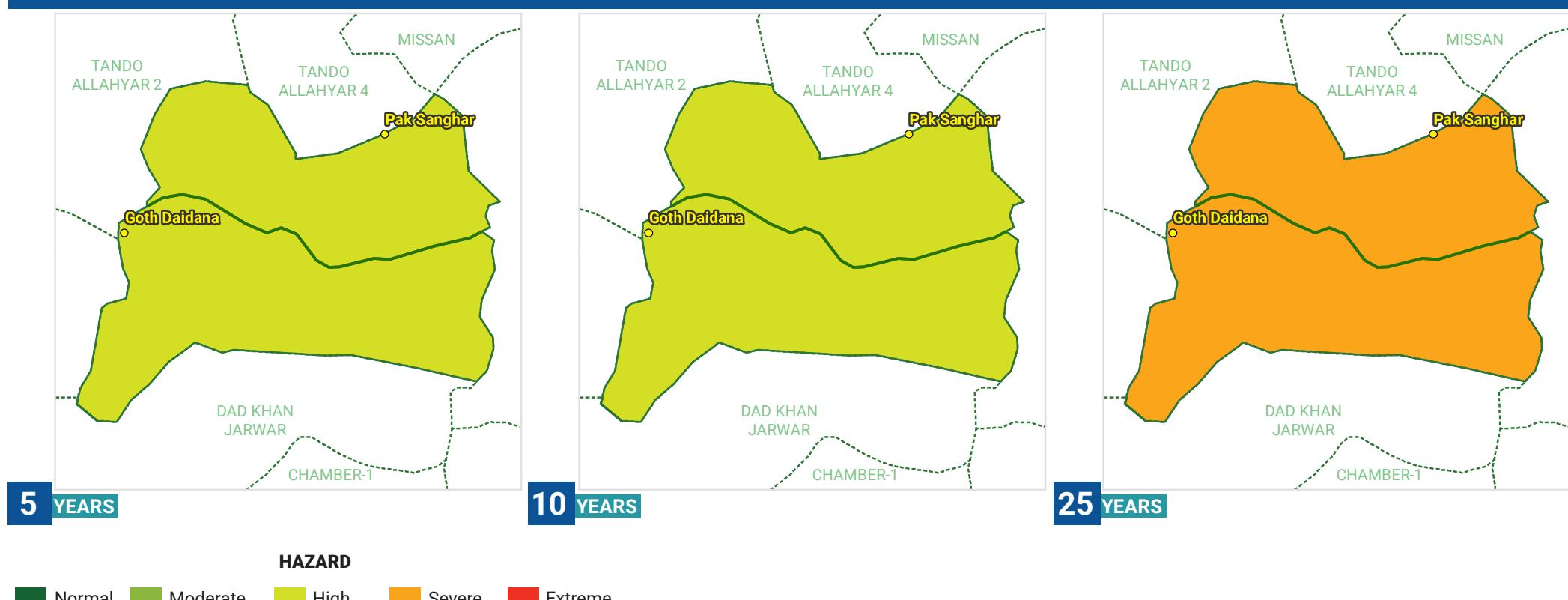
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

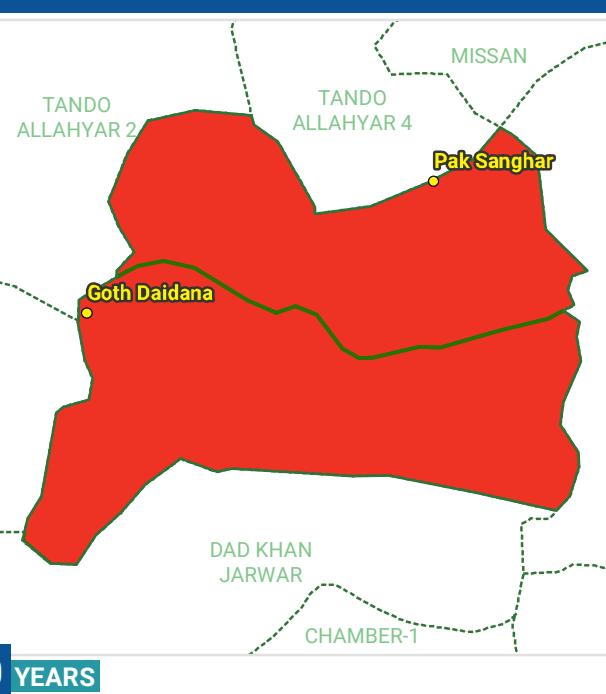
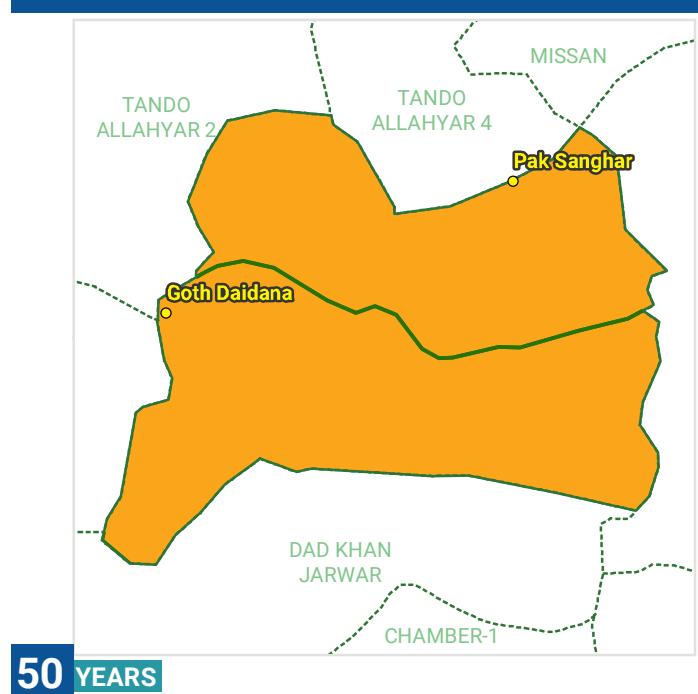
0	1	6	0.91	0	0	0	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

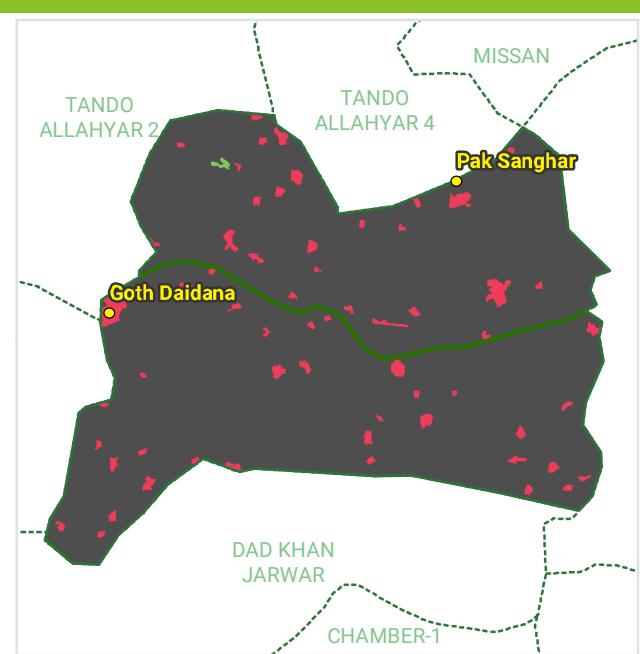
## HAZARD AT DIFFERENT RETURN PERIODS



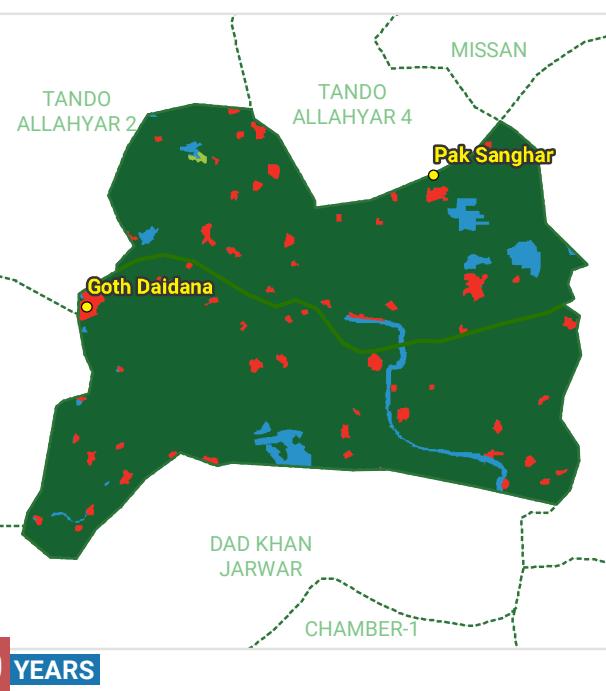
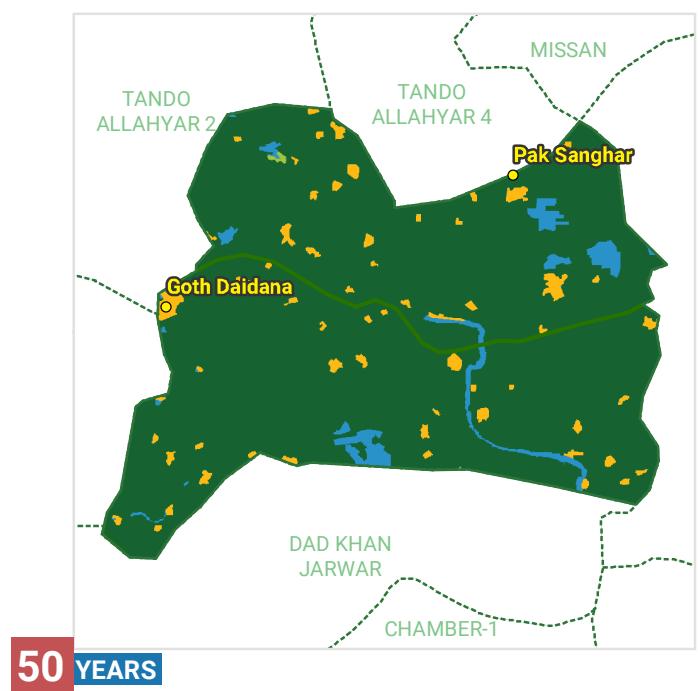
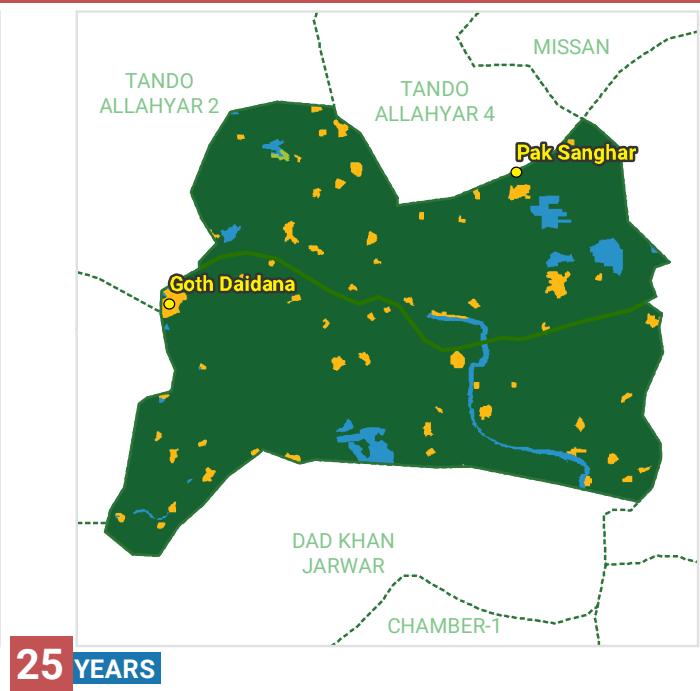
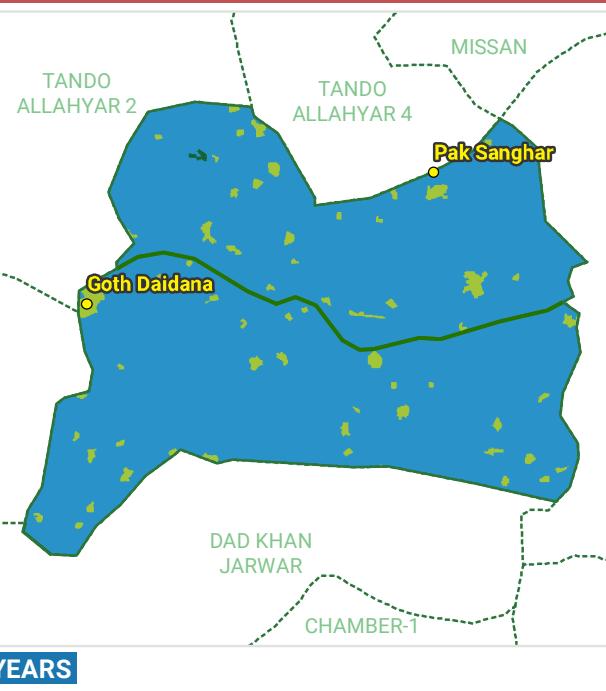
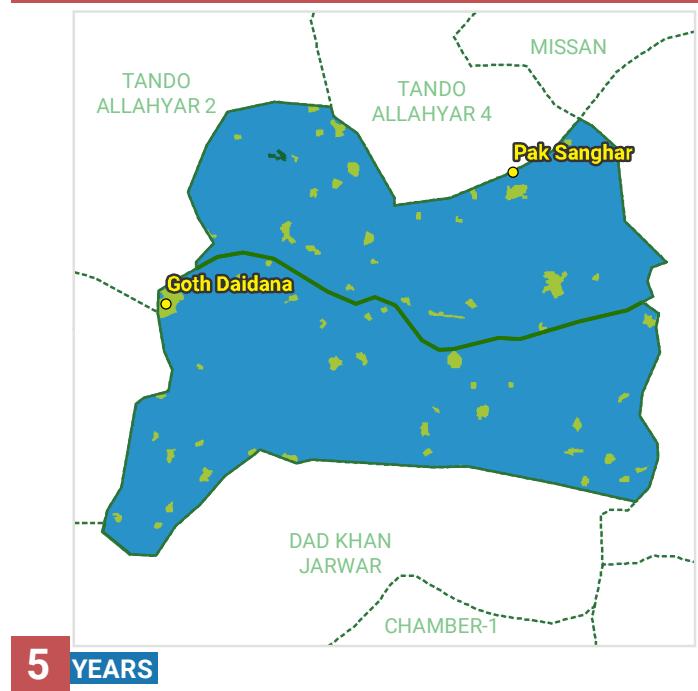
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal  
Severe

Moderate  
Extreme

High

## VULNERABILITY

None  
0 - 25  
Low  
26 - 50  
Medium  
51 - 75  
High  
76 - 100

## RISK

Very Low  
0 - 49  
Low  
50 - 99  
Medium  
100 - 199  
High  
200 - 249  
Extreme  
250 - 300

# HEATWAVE

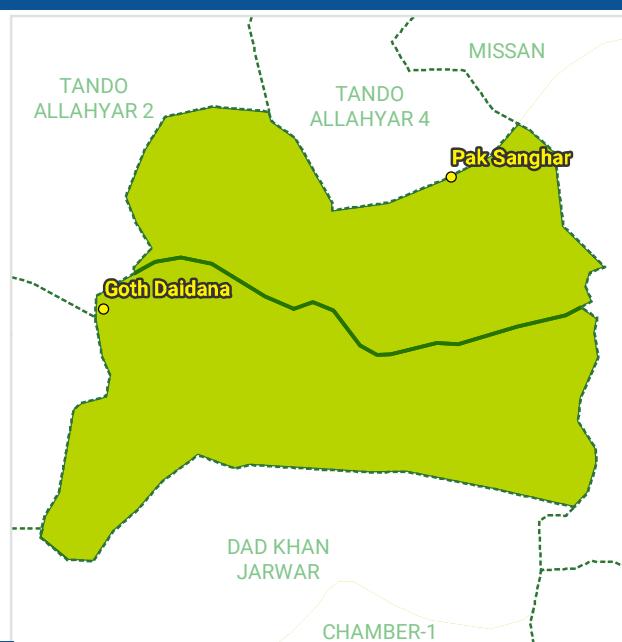
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

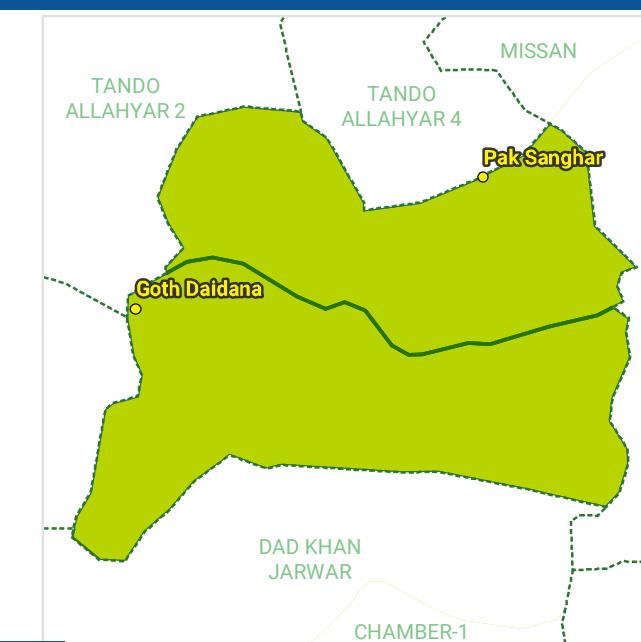
74	7676	39231	78.64	0	0.05	2.55
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

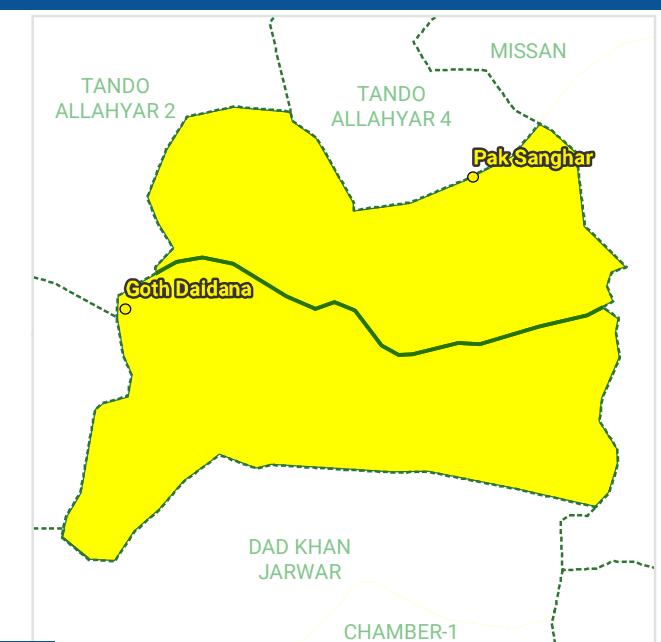
## HAZARD AT DIFFERENT RETURN PERIODS



25 YEARS

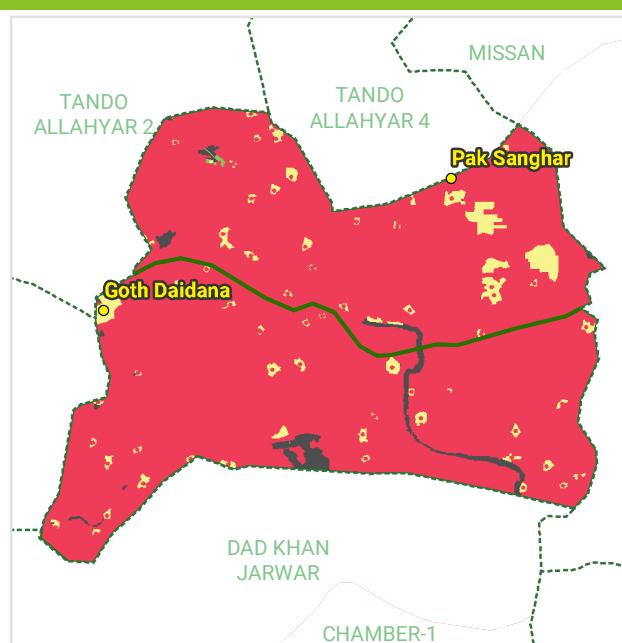


100 YEARS



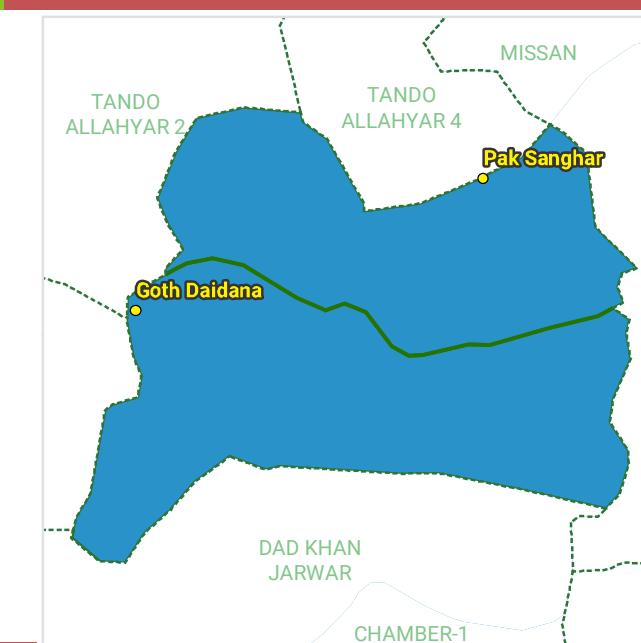
500 YEARS

## VULNERABILITY

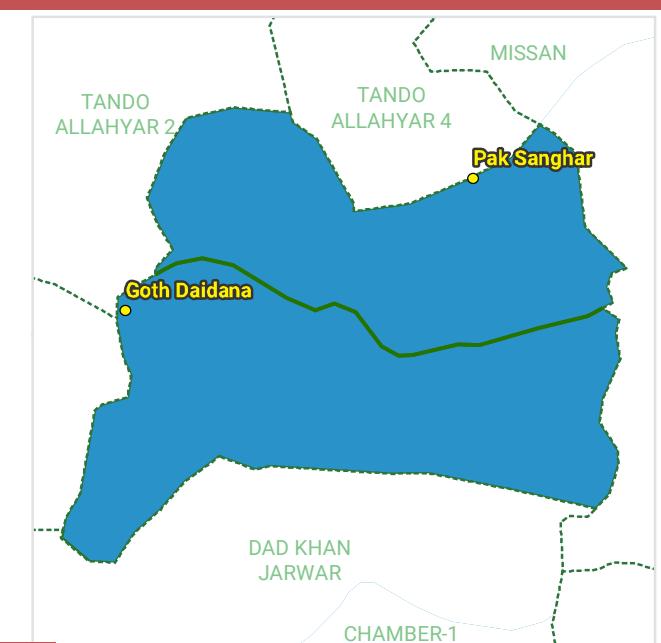


25 YEARS

## RISK AT DIFFERENT RETURN PERIODS



25 YEARS



100 YEARS

### HAZARD

Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

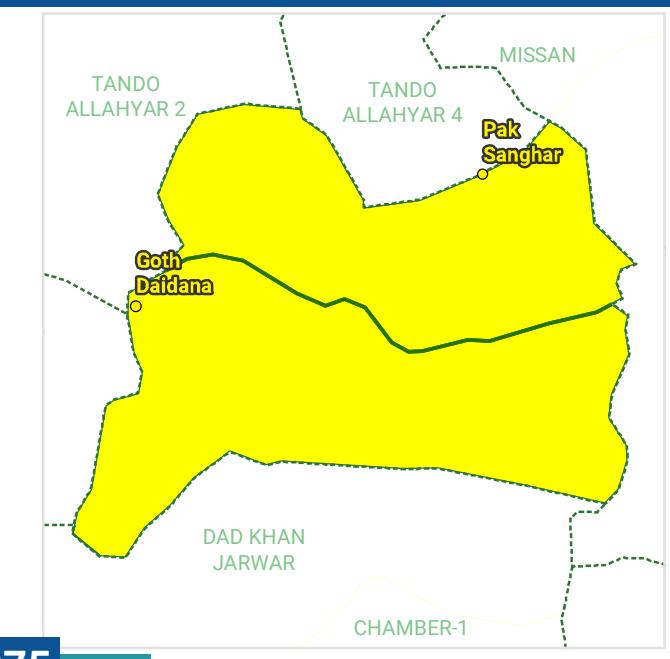
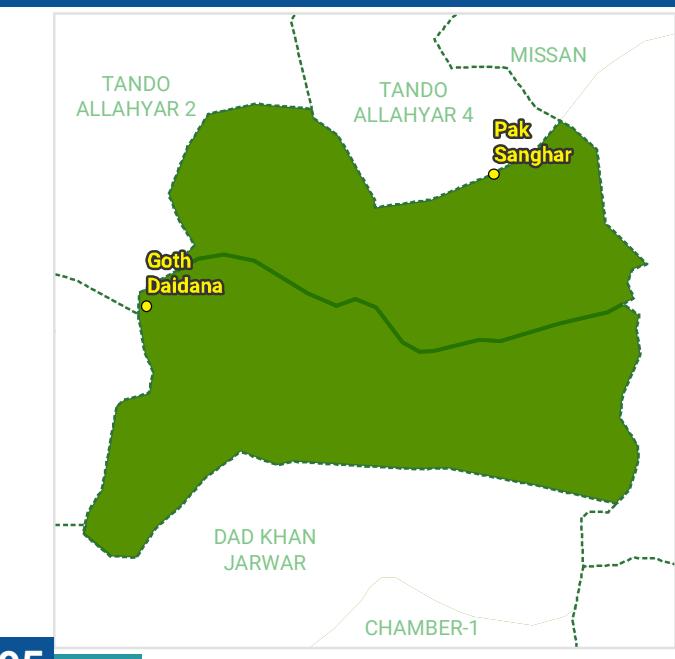
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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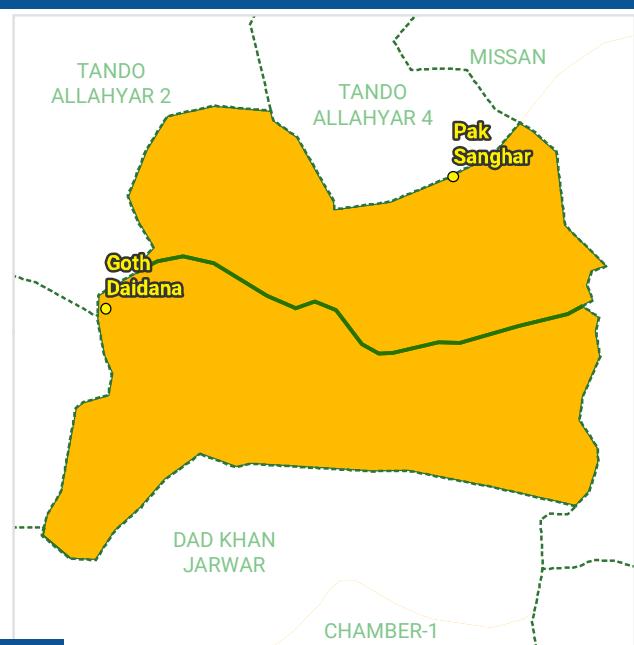
**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

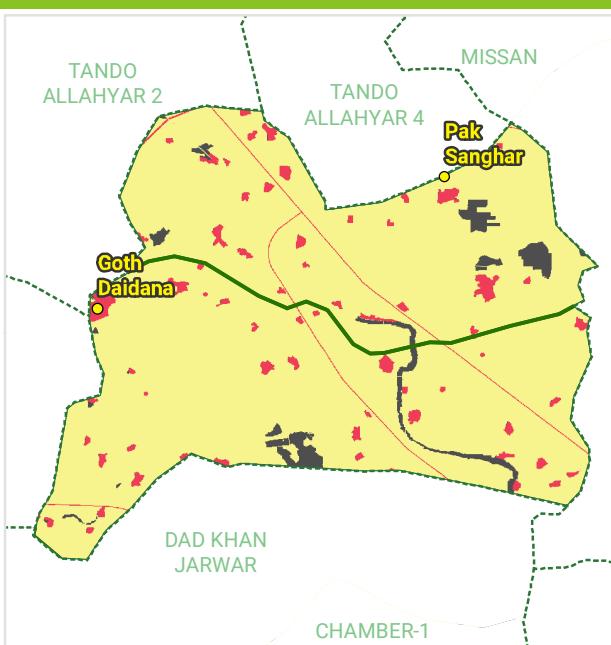
# EARTHQUAKE

## HAZARD



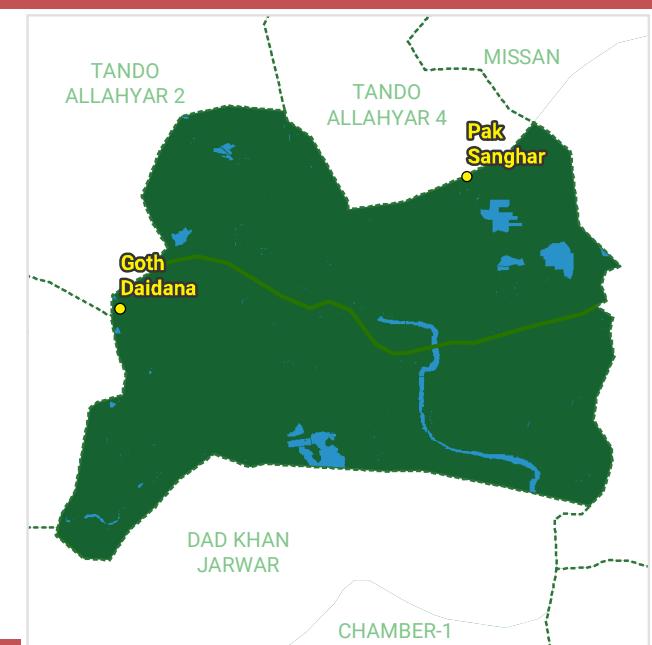
2475 YEARS

## VULNERABILITY



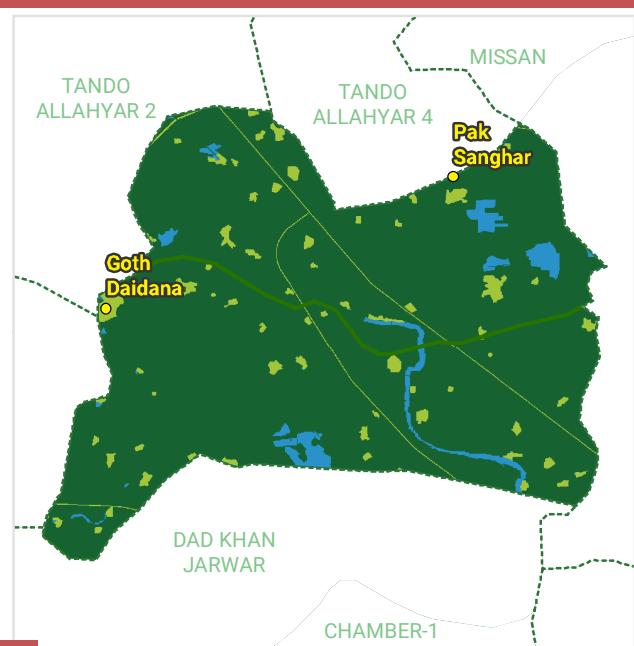
95 YEARS

## RISK



2475 YEARS

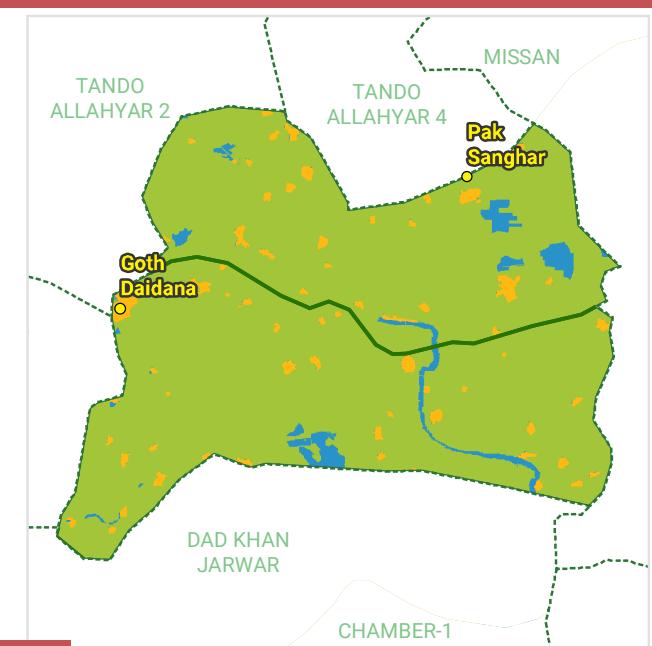
## RISK AT DIFFERENT RETURN PERIODS



475 YEARS



975 YEARS



2475 YEARS

### HAZARD

Zone 1	Zone 2 A	Zone 2 B	Zone 3
Zone 4	Zone 5	Zone 6	

### VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

74	7652	39132	78.68	0	0	0	0.05
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
2.54	0.02	164.06	0	22.21	0	1	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
67	0	0	1	0	0	0	1
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - PIYARO LUND

Union Council area in sq. km

115

Surrounding UCs / Features

**MISSAN** in South East  
**MIRABAD** in North East  
**TANDO ALLAHYAR 4** in South  
**DASORI** in North West  
**TANDO SOOMRO** in West

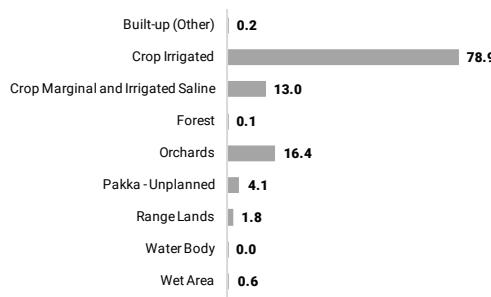
Population

2017 approx. 73,922

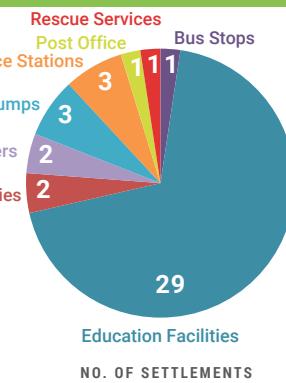
No. of household

2017 approx. 14,709

**Land Use Land Cover**  
coverage area in sq.km

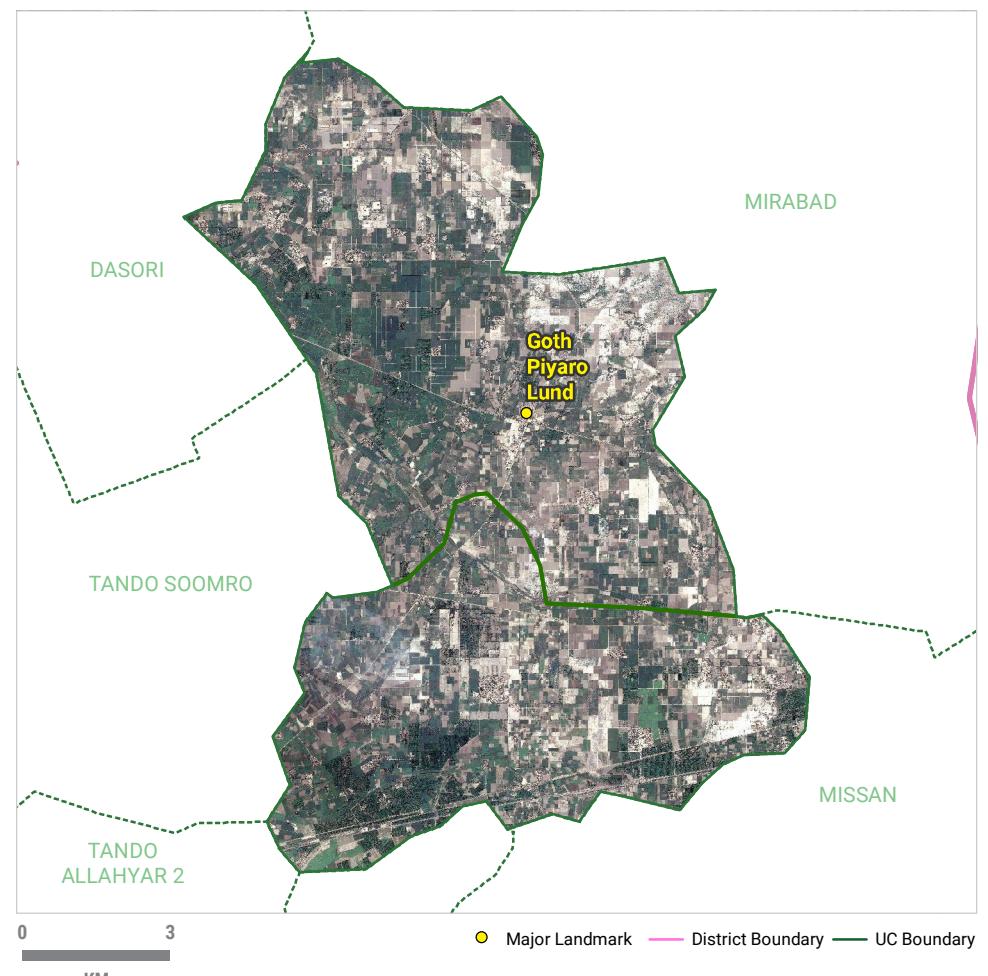


**Critical Infrastructure**

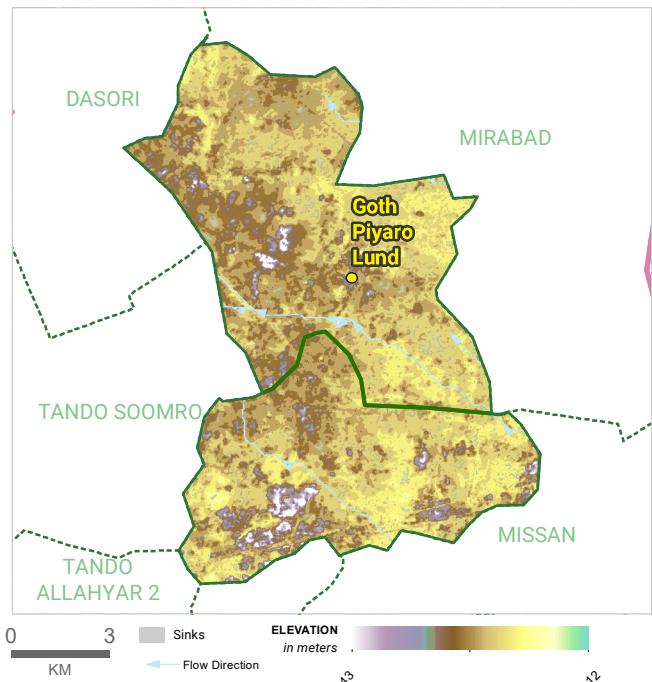


72

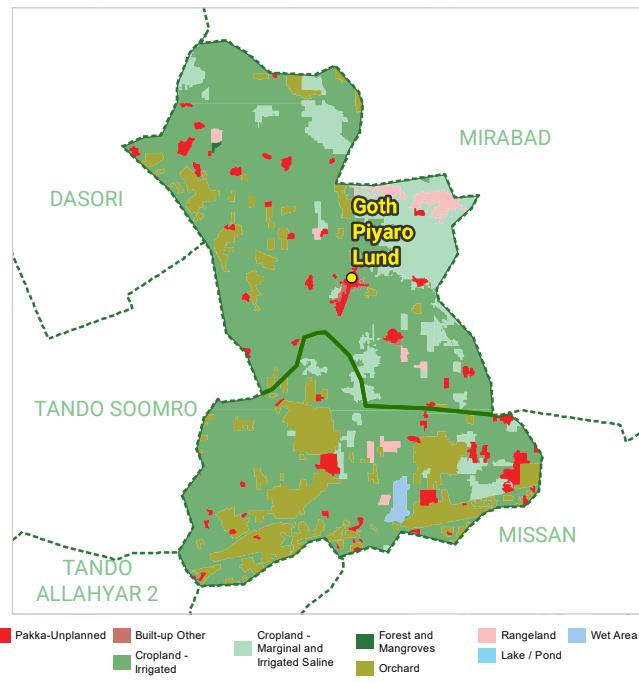
## SATELLITE IMAGERY



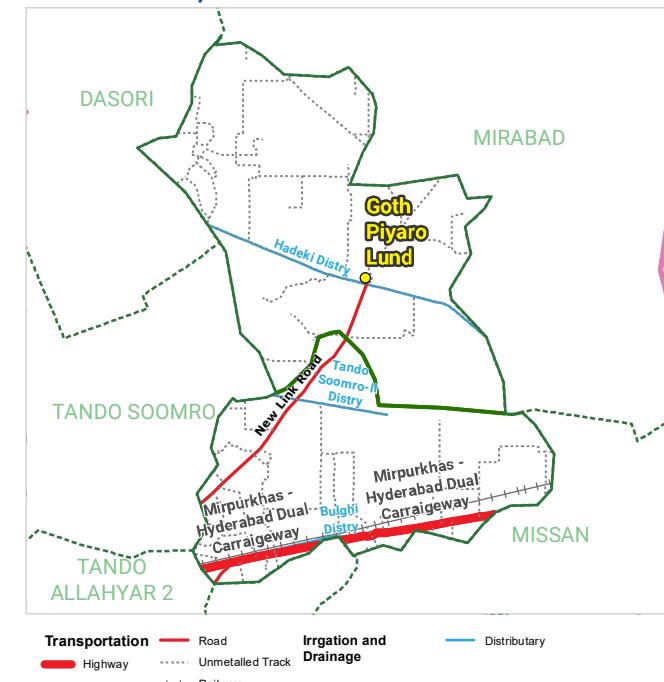
## DEM AND FLOW DIRECTION



## LAND USE / LAND COVER



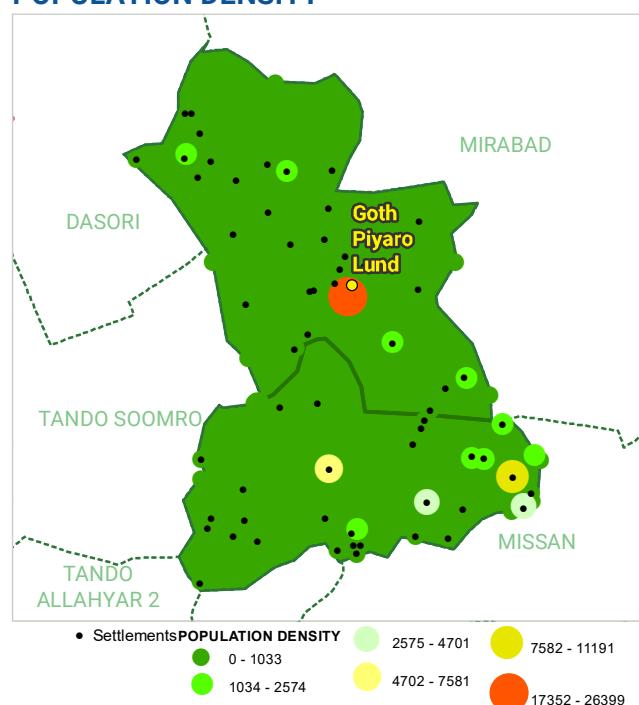
## TRANSPORT, IRRIGATION AND DRAINAGE



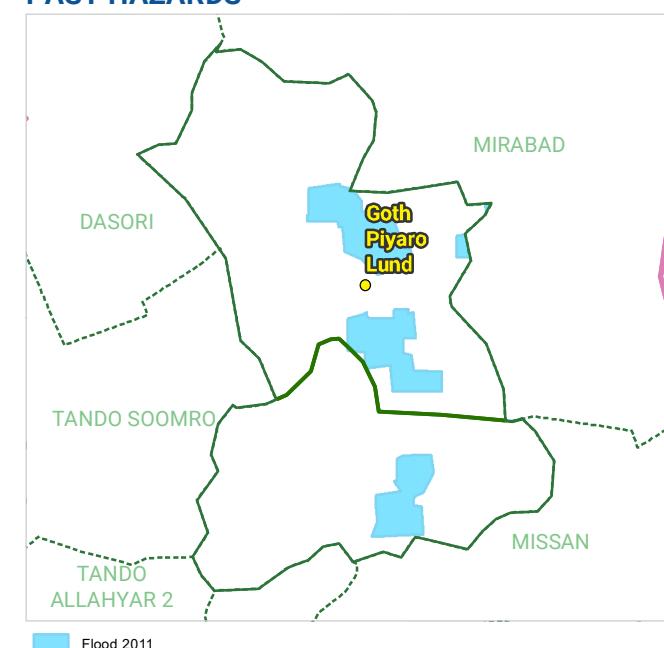
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

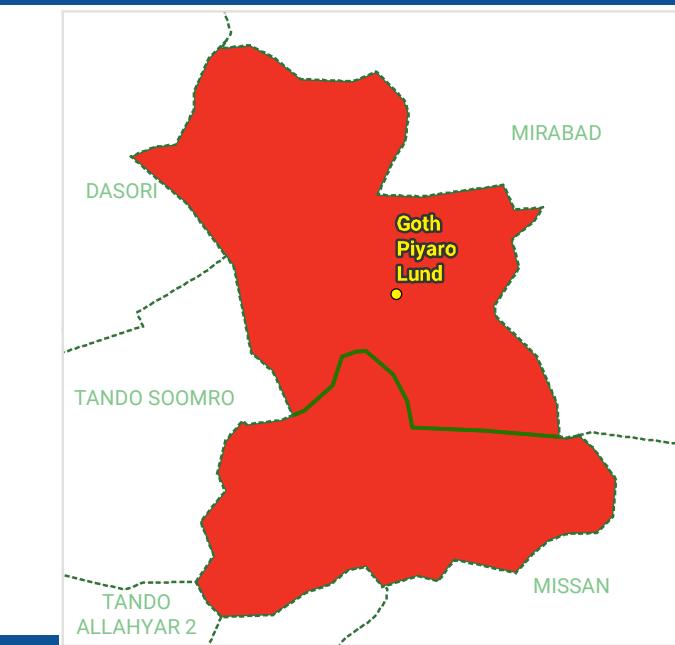
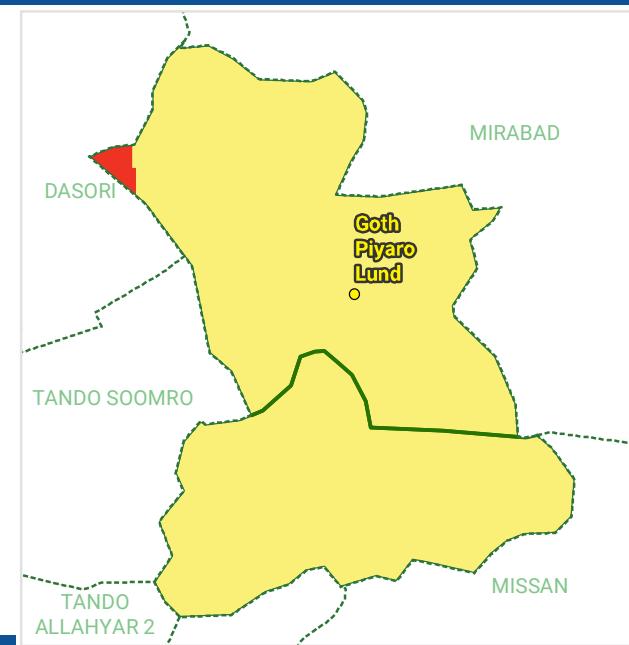
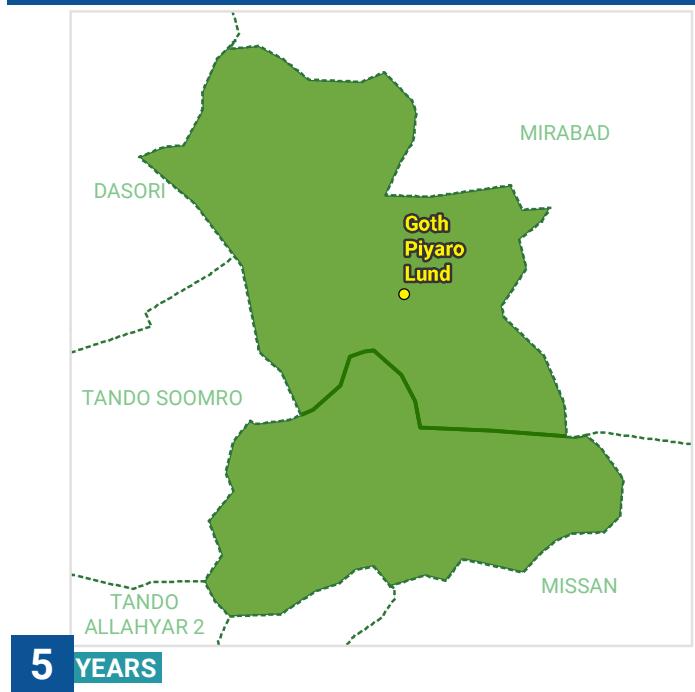


# FLOOD

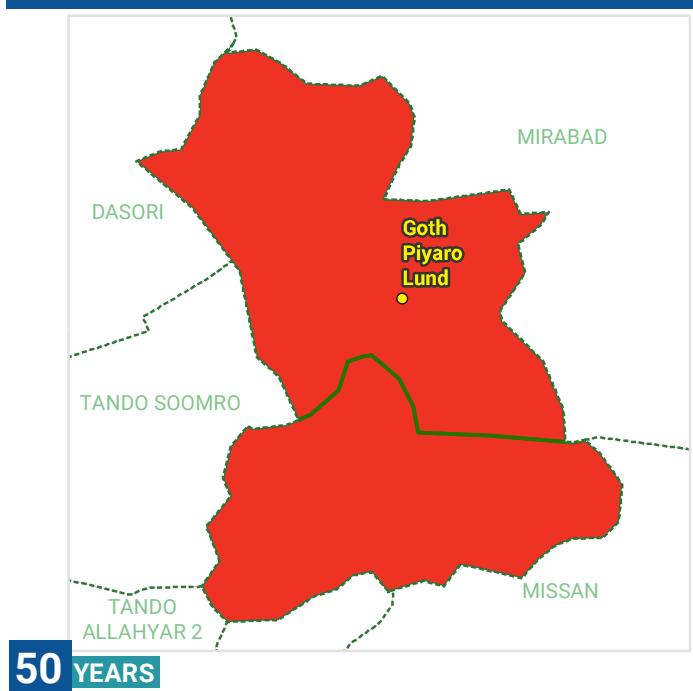
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

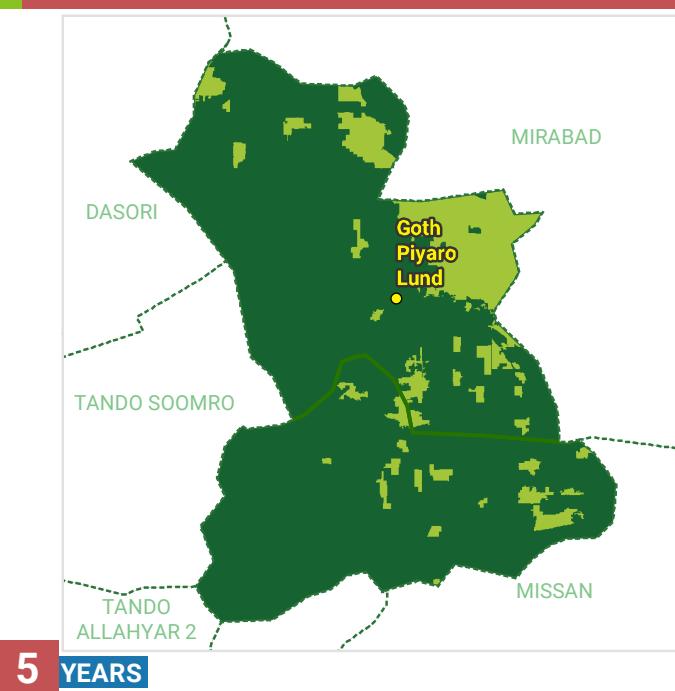
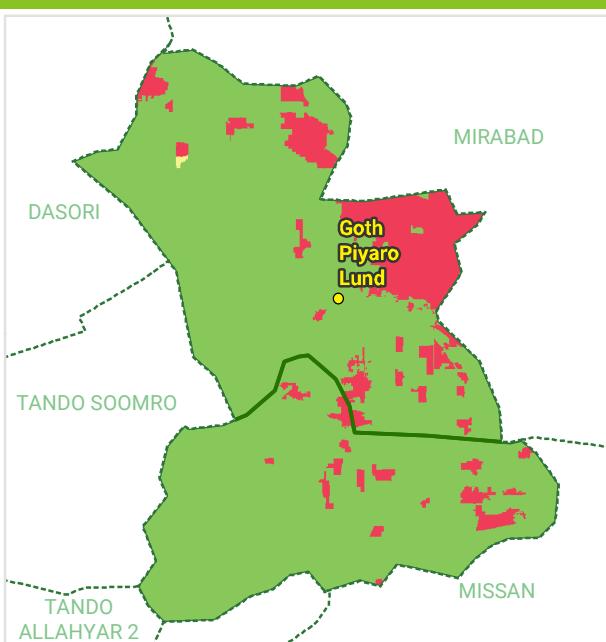
### HAZARD AT DIFFERENT RETURN PERIODS



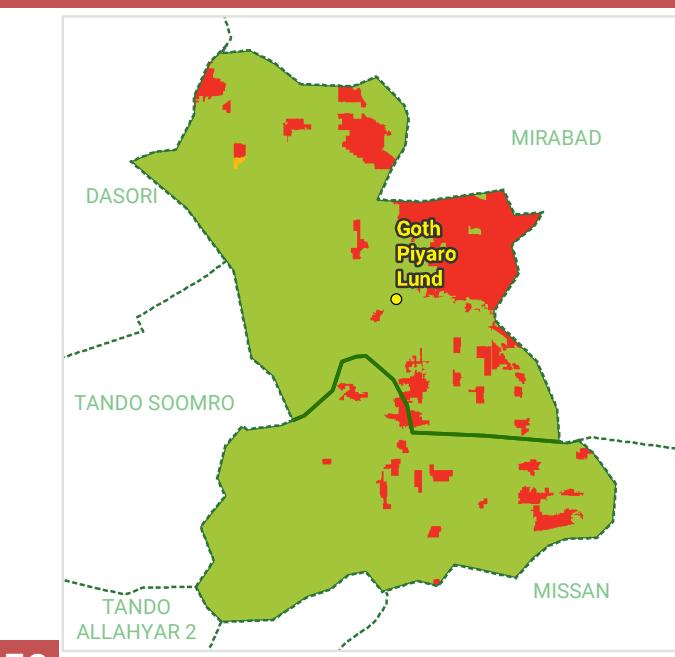
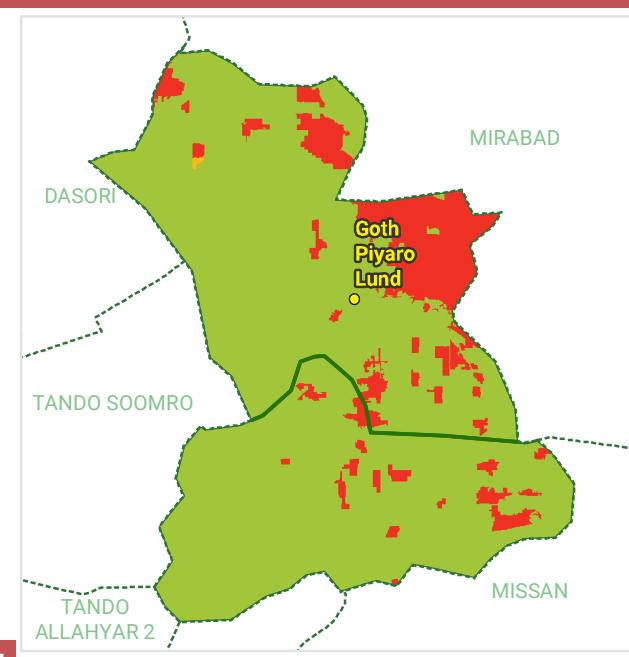
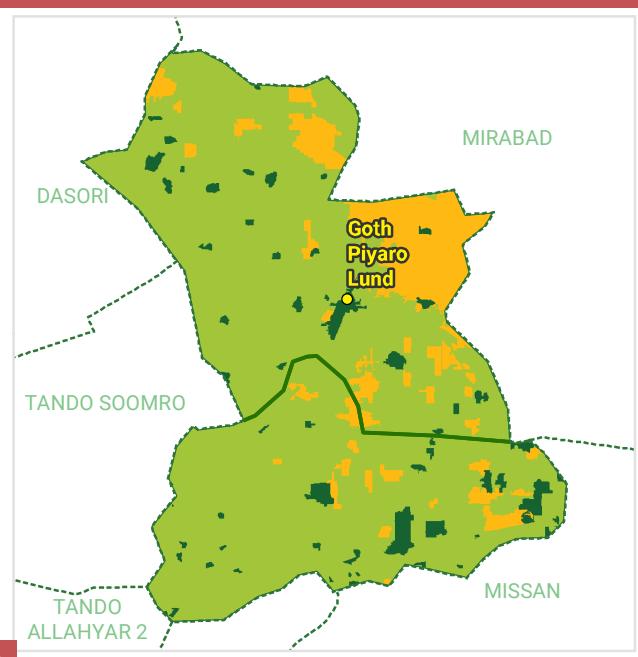
### HAZARD



### VULNERABILITY



### RISK



### RISK AT DIFFERENT RETURN PERIODS

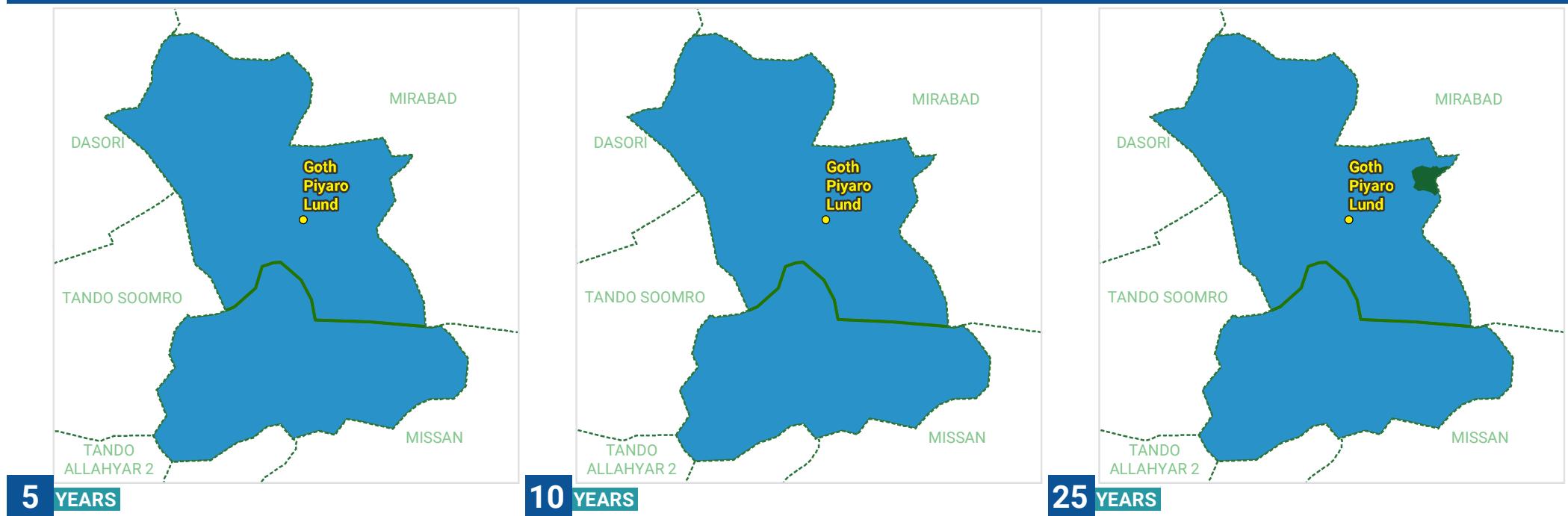
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

72	14709	73922	108.39	0	0.06	0	1.85
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.01	0.60						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

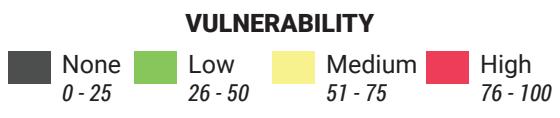
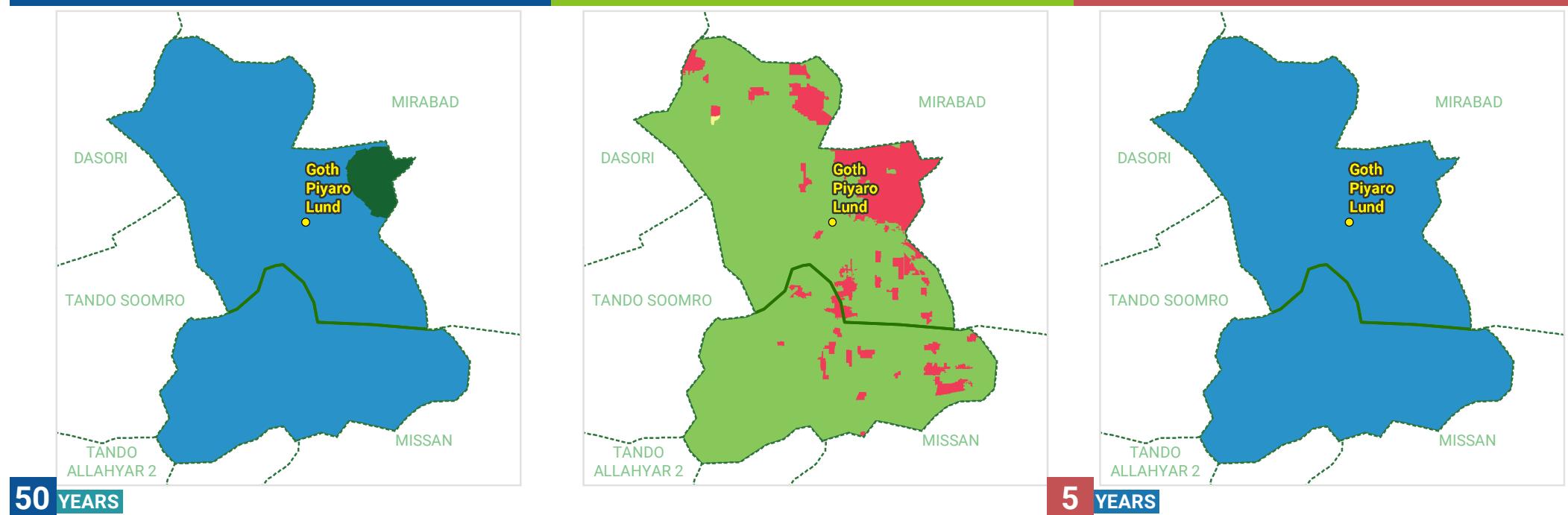
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

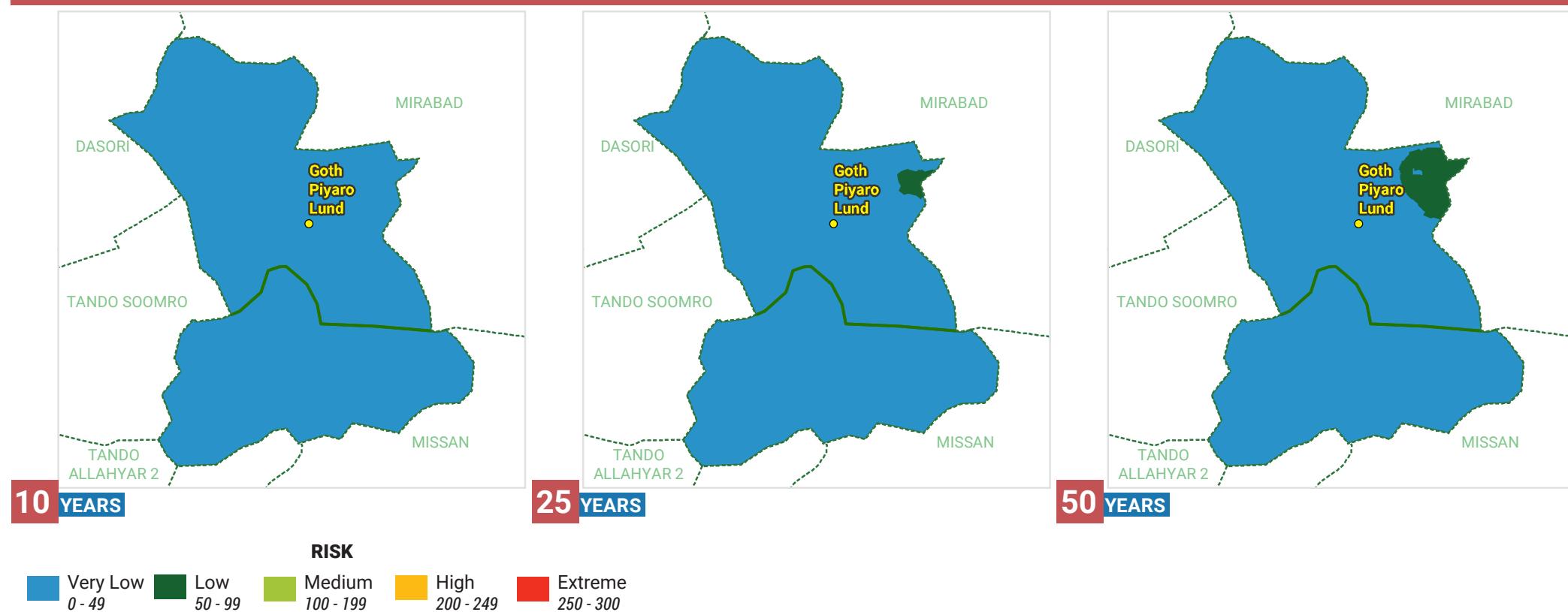
## VULNERABILITY

## RISK



# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



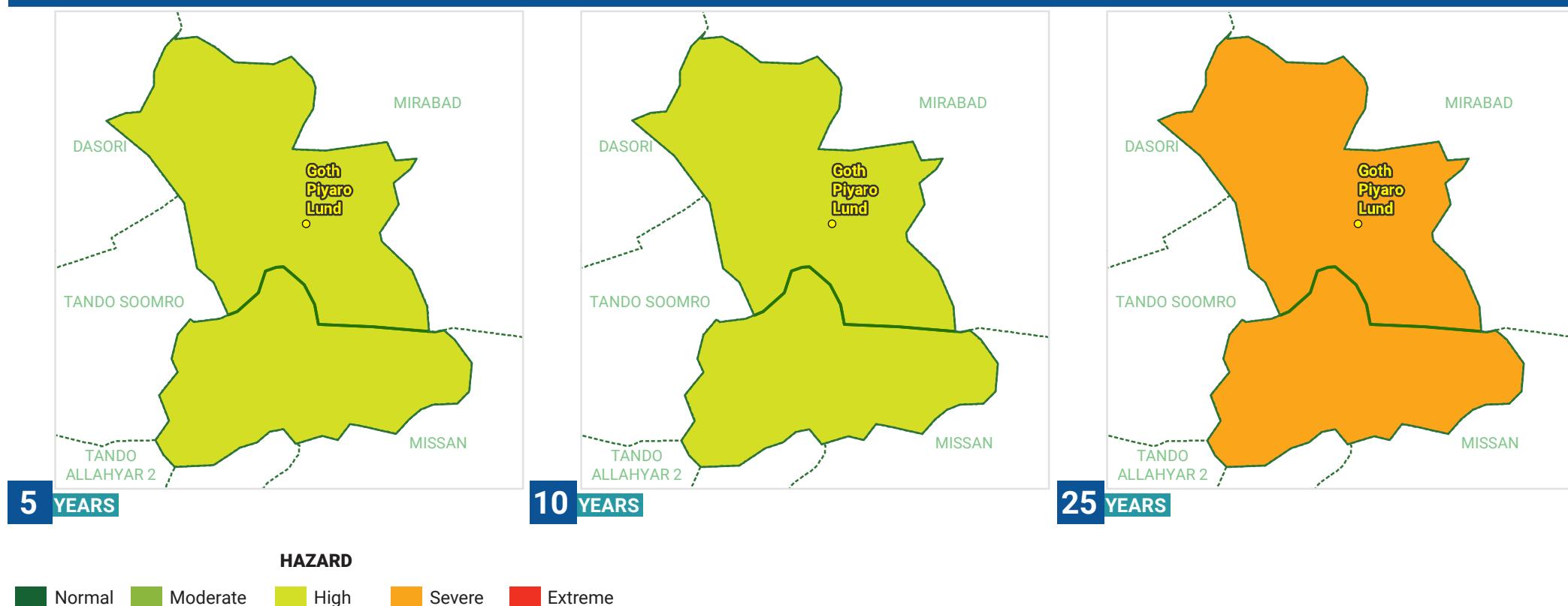
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

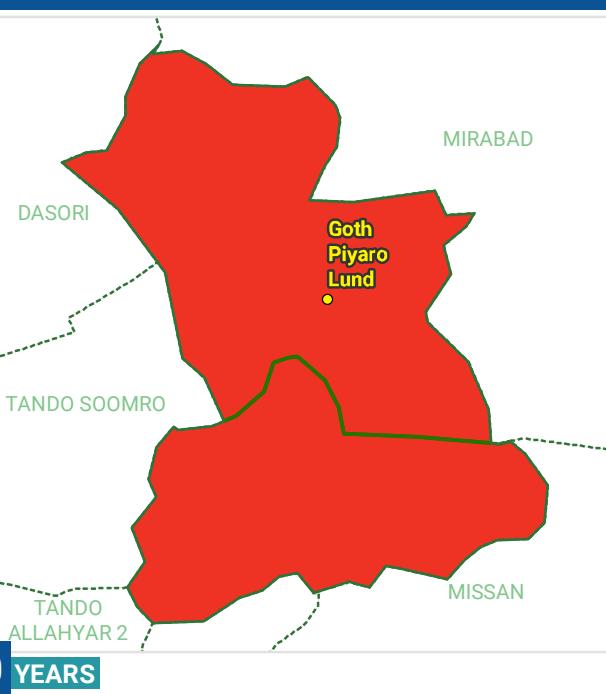
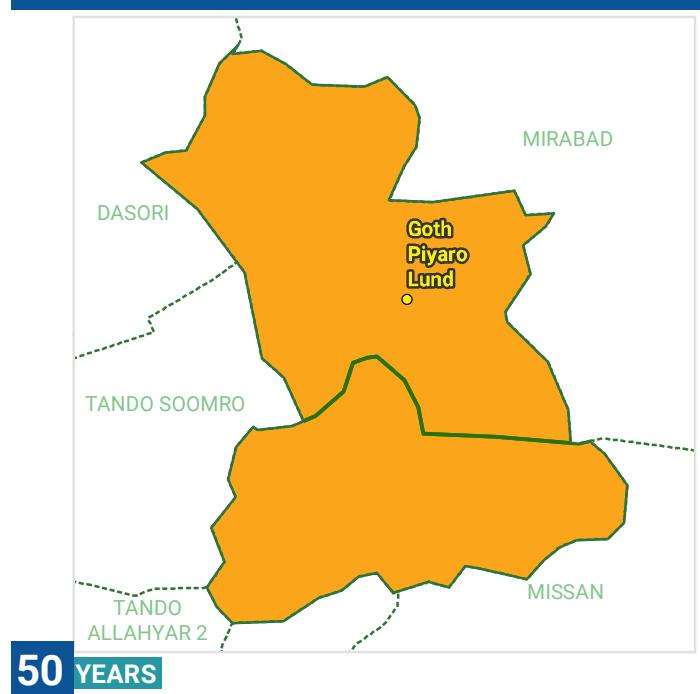
0	5	25	3.87	0	0	0	0.90
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

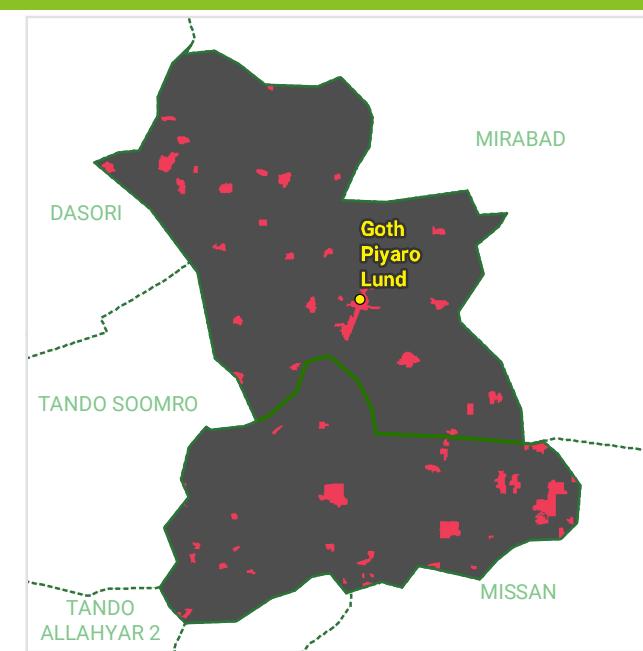
## HAZARD AT DIFFERENT RETURN PERIODS



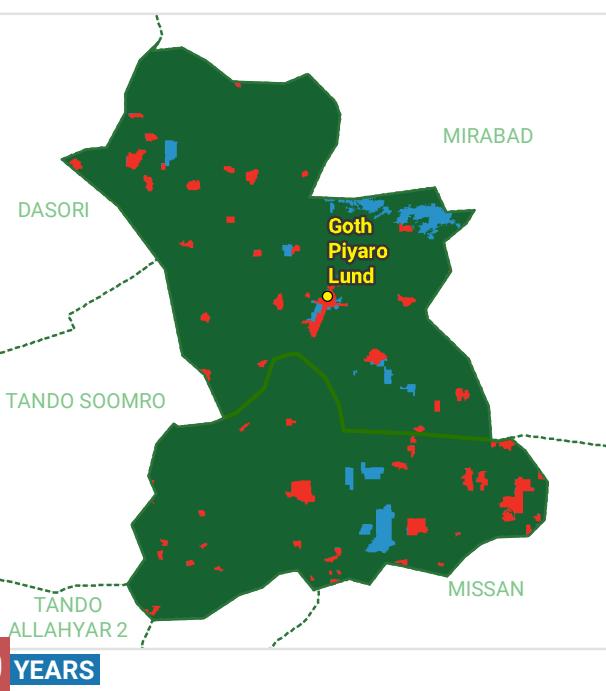
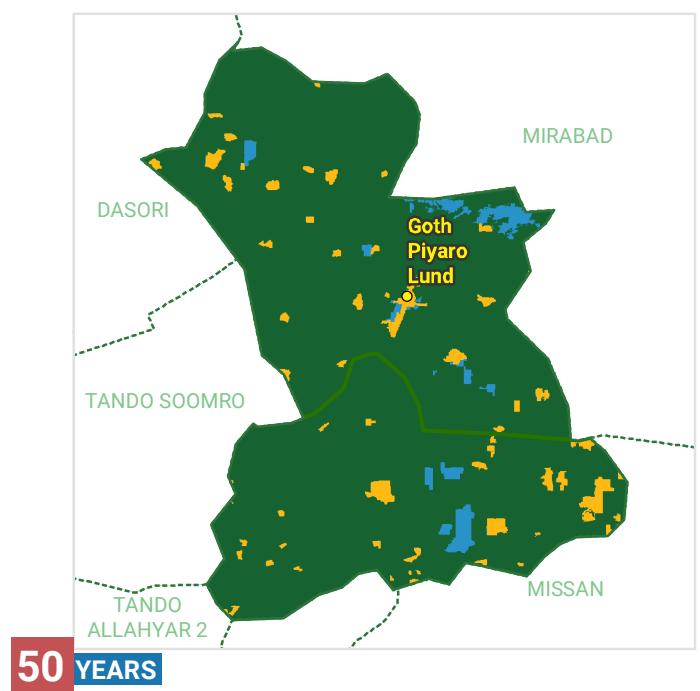
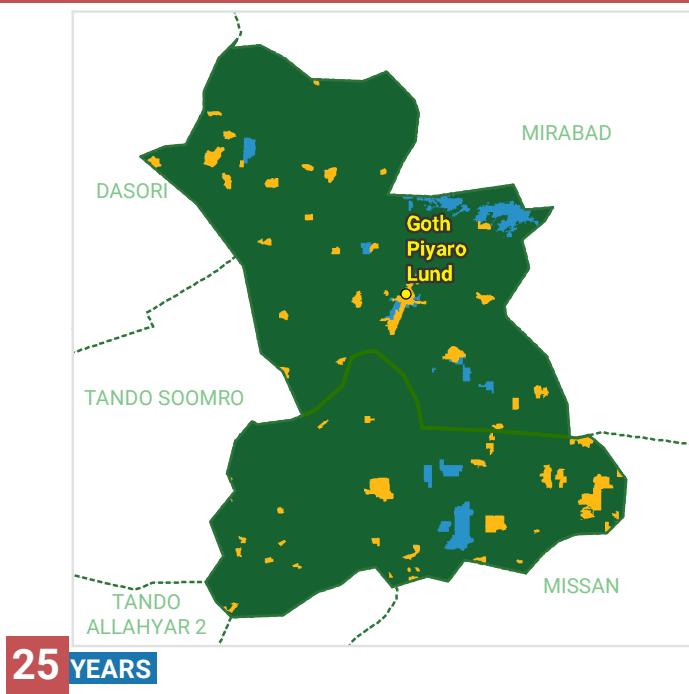
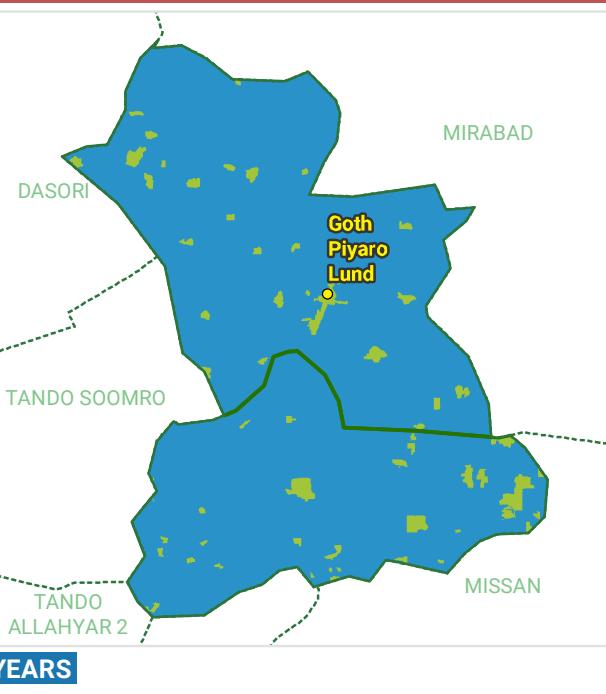
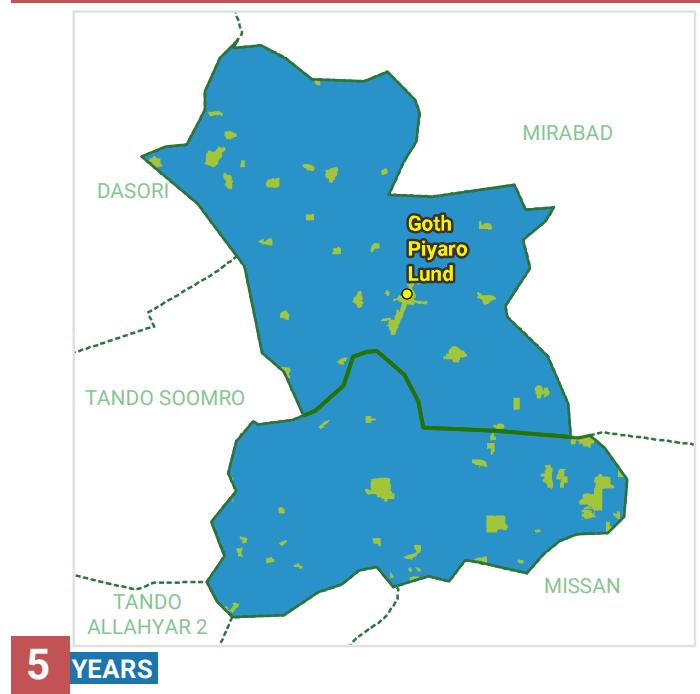
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

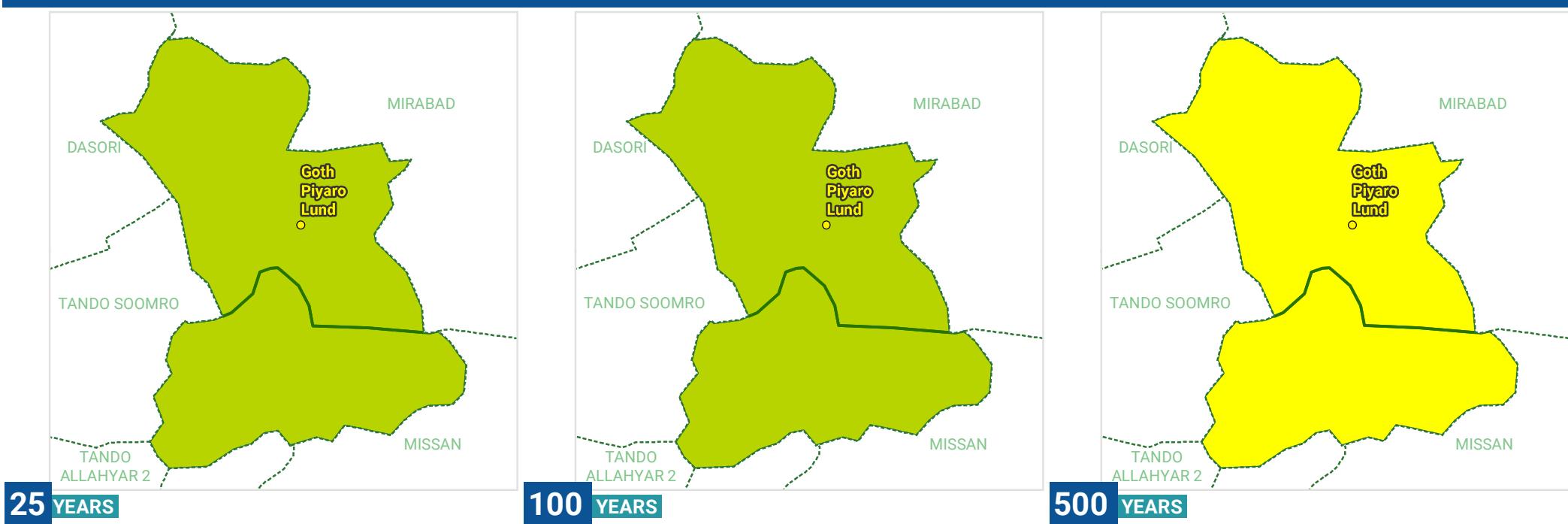
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

72	14640	73575	108.24	0	0	4.06
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

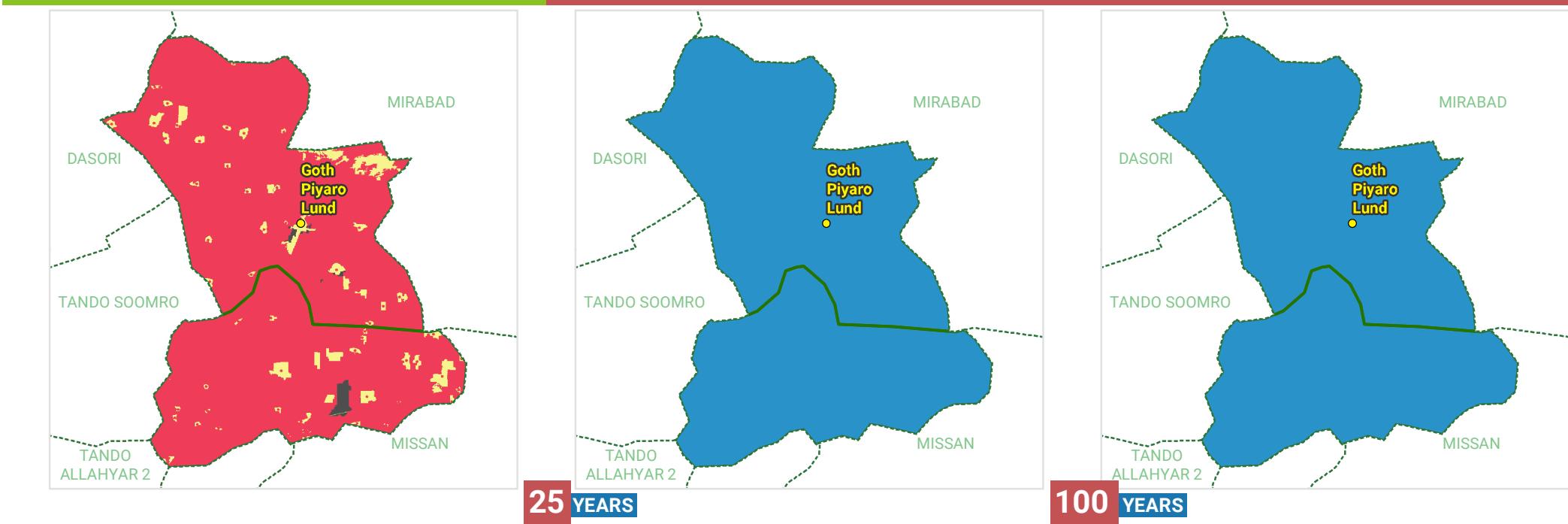
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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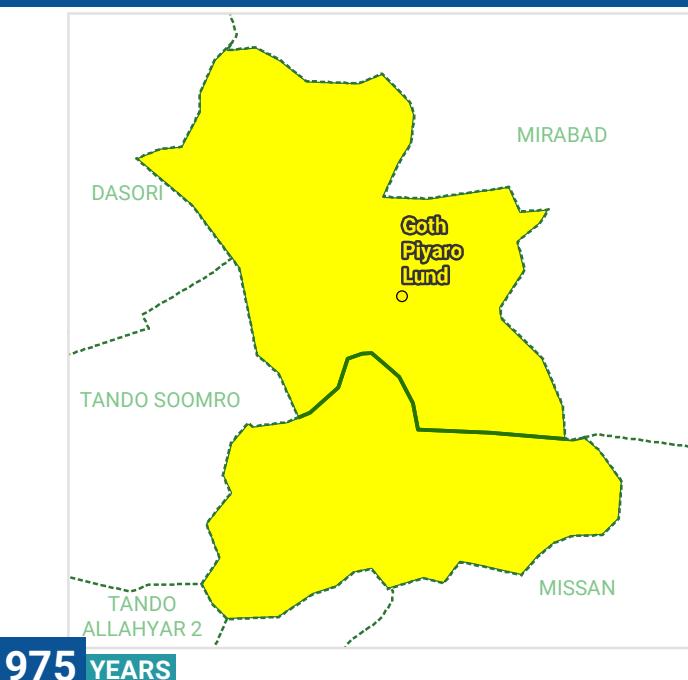
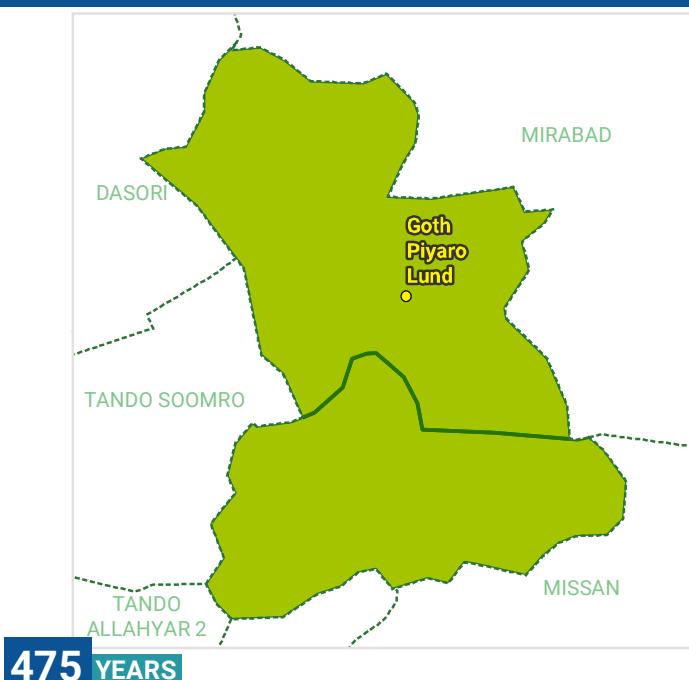
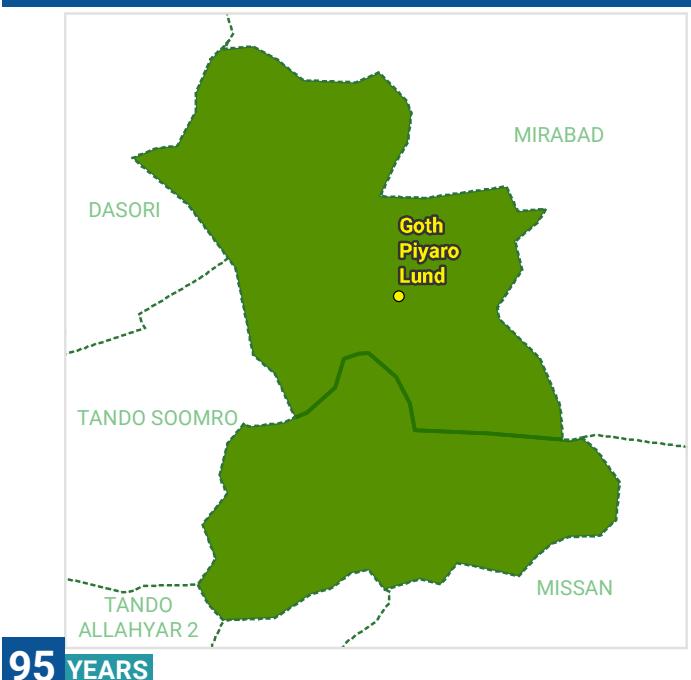
**RISK**

**RISK**

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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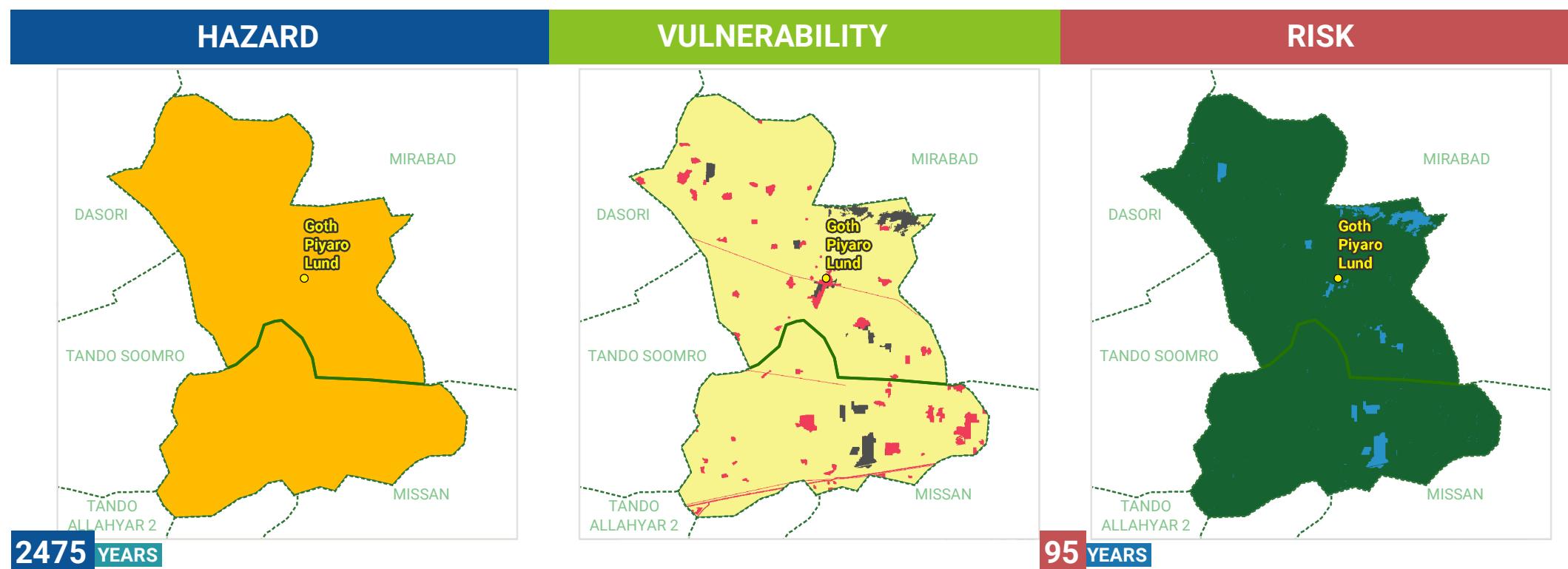
**ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

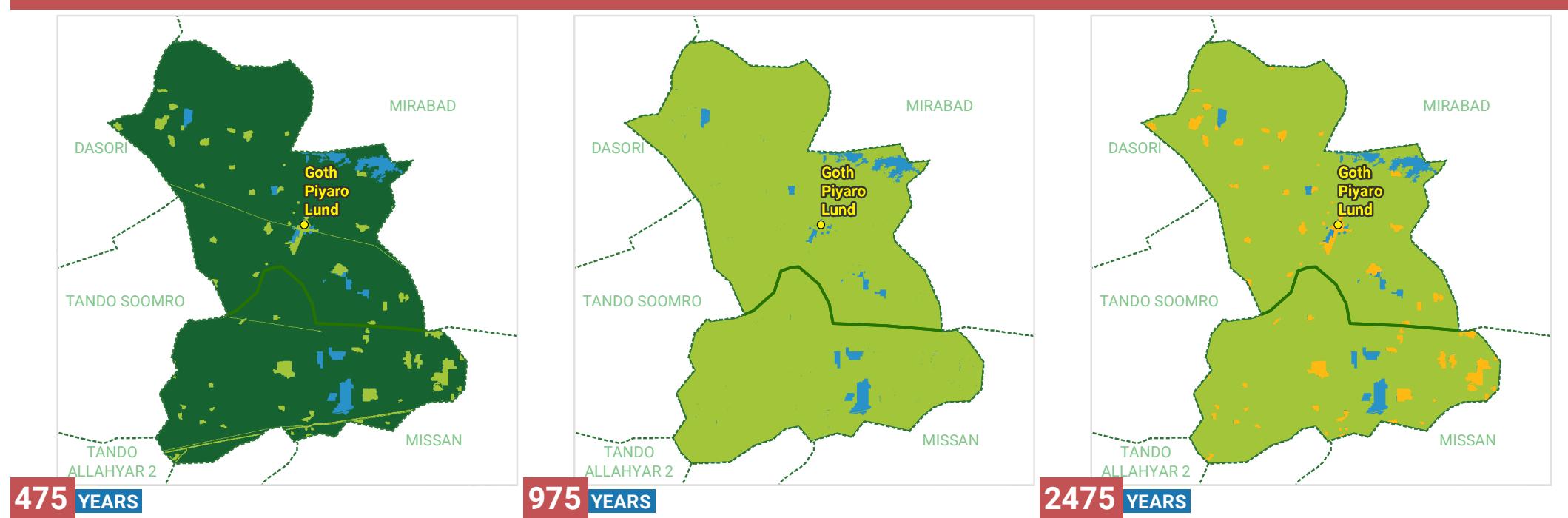
**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

Zone 1	Zone 2 A	Zone 2 B	Zone 3	Zone 4	Zone 5	Zone 6
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# EARTHQUAKE



## RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

72	14590	73332	108.29	0.00	0	0	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
4.05	0.06	137.15	11.01	21.81	1	0	1
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
29	0	0	0	2	0	2	3
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
3	1	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - SANJAR CHANG

Union Council area in sq. km

124

Surrounding UCs / Features **BEGAN JARWAR** in North  
**BADIN DISTRICT** in South  
**MIRPURKHAS DISTRICT** in East  
**CHAMBER-2** in West

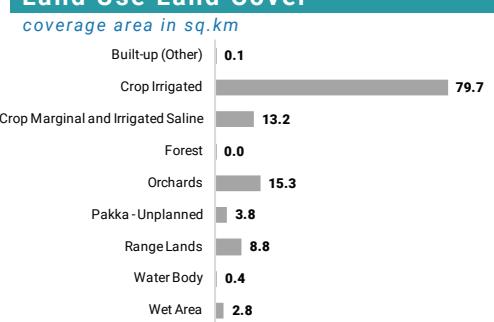
Population

2017 approx. **50,548**

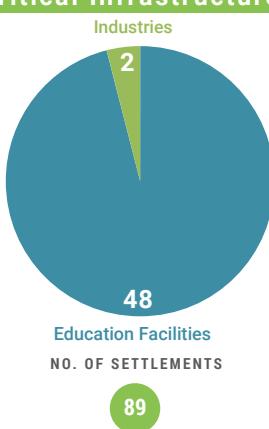
No. of household

2017 approx. **10,064**

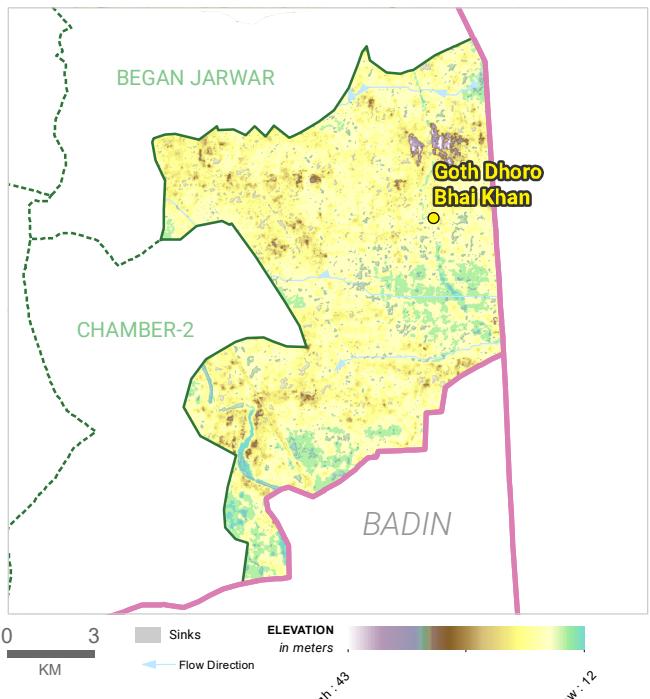
## Land Use Land Cover



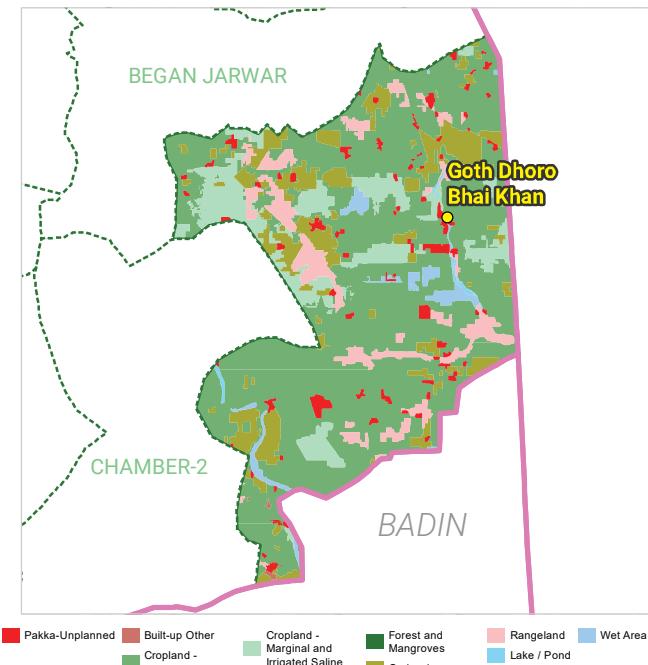
## Critical Infrastructure



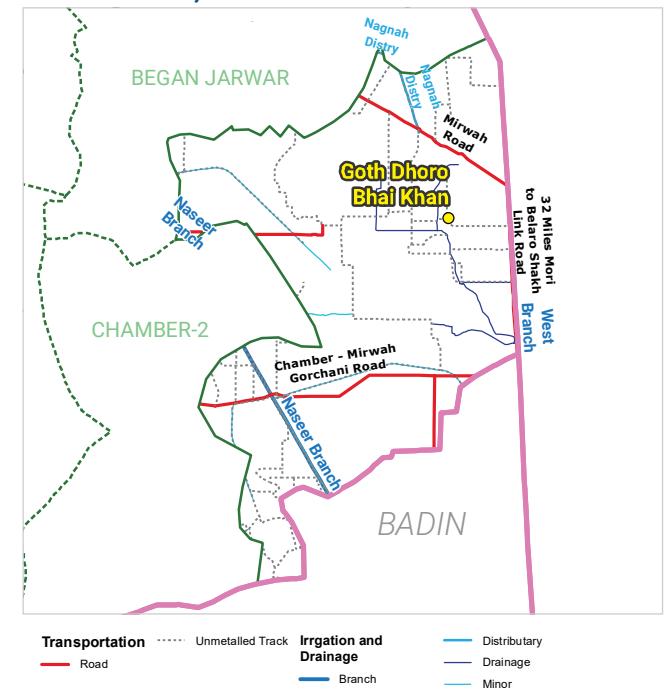
## DEM AND FLOW DIRECTION



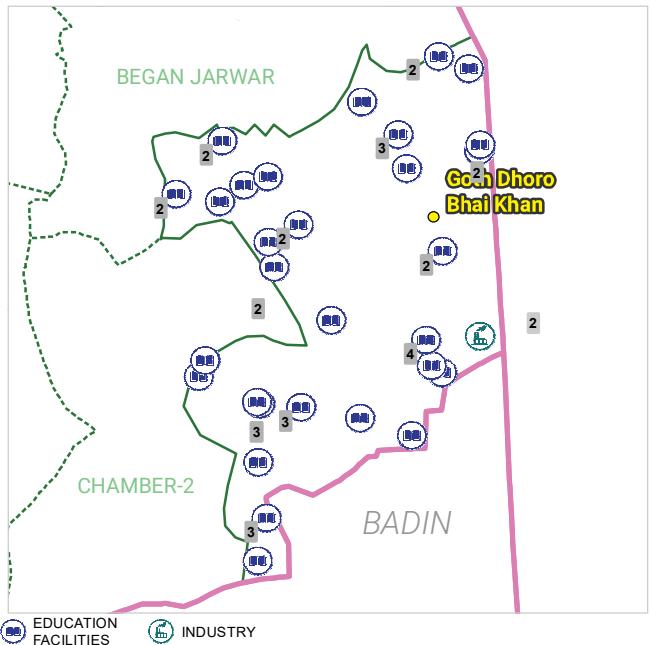
## LAND USE / LAND COVER



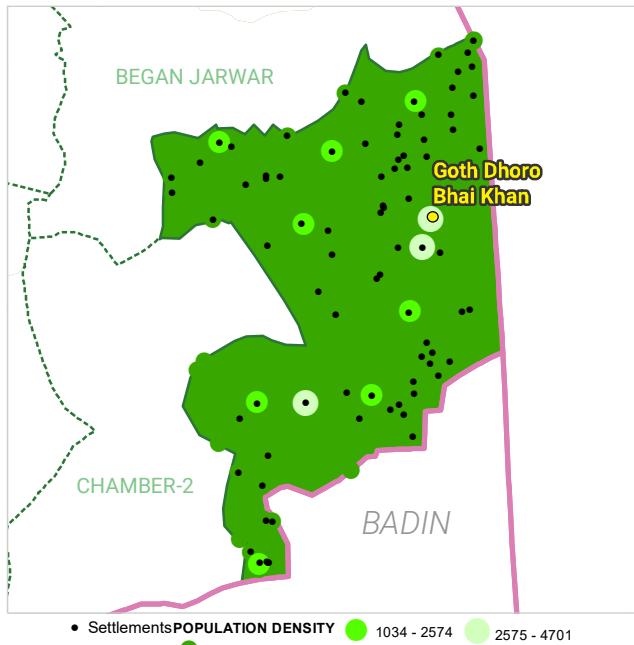
## TRANSPORT, IRRIGATION AND DRAINAGE



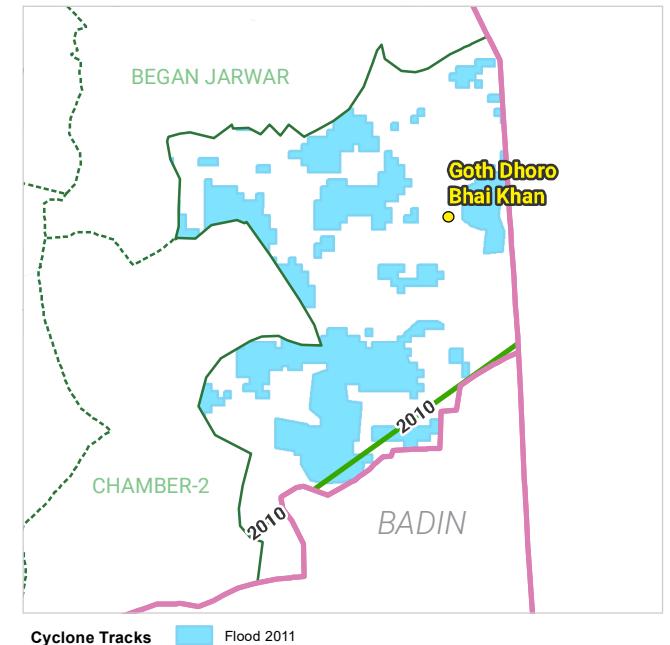
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

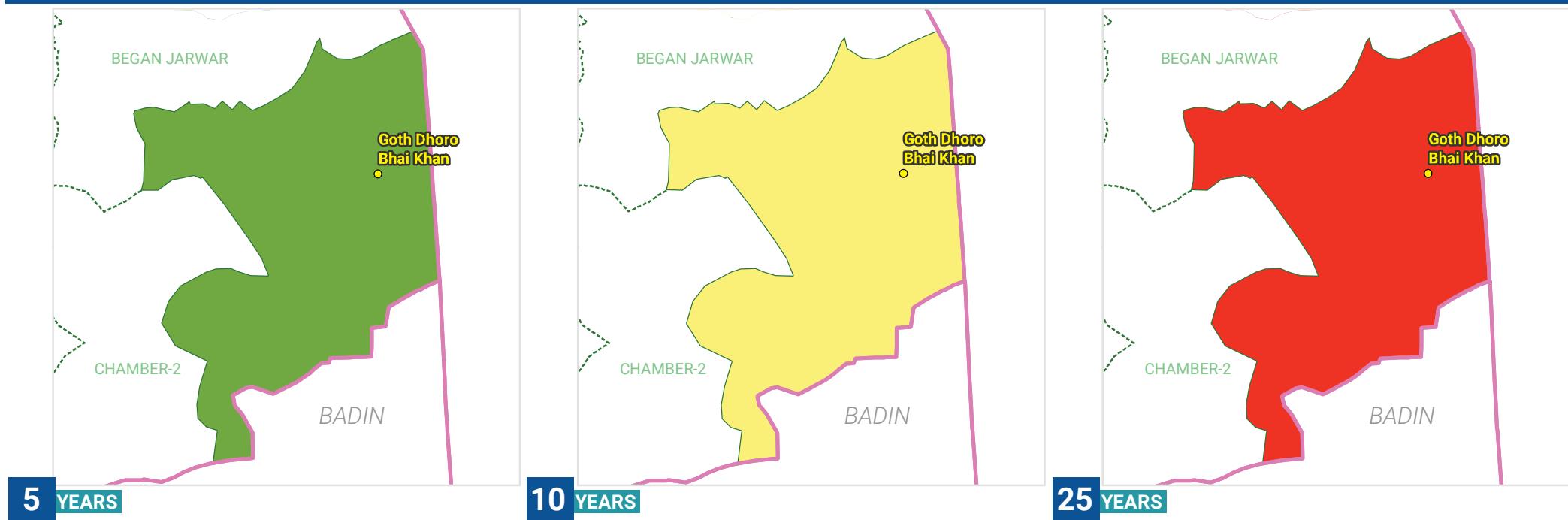


# FLOOD

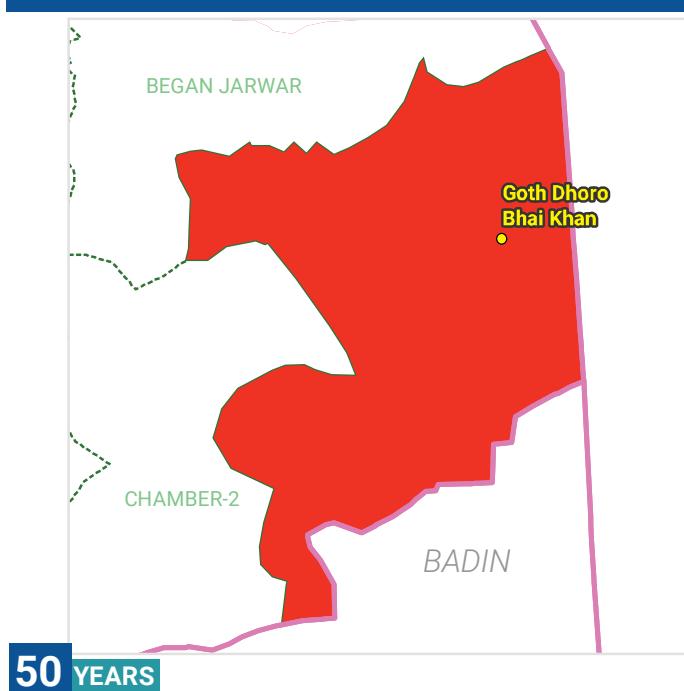
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

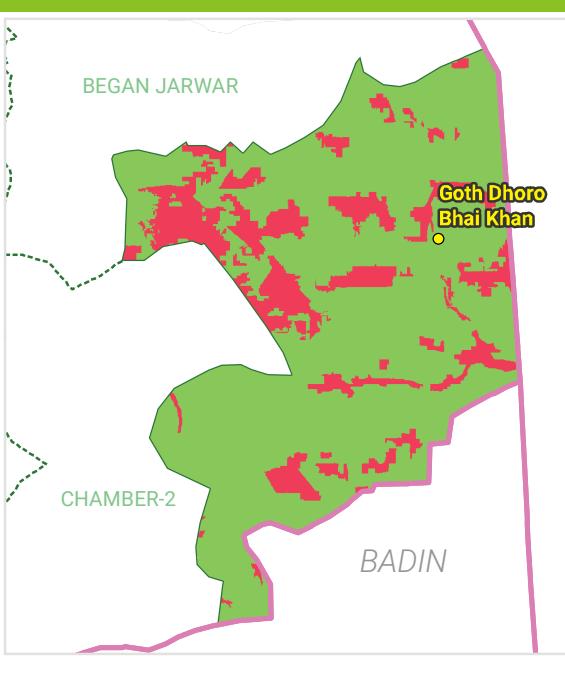
### HAZARD AT DIFFERENT RETURN PERIODS



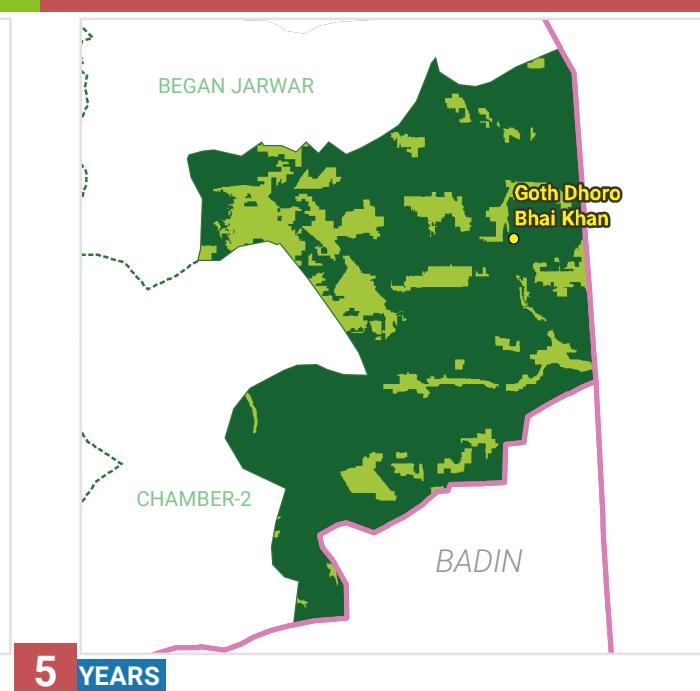
### HAZARD



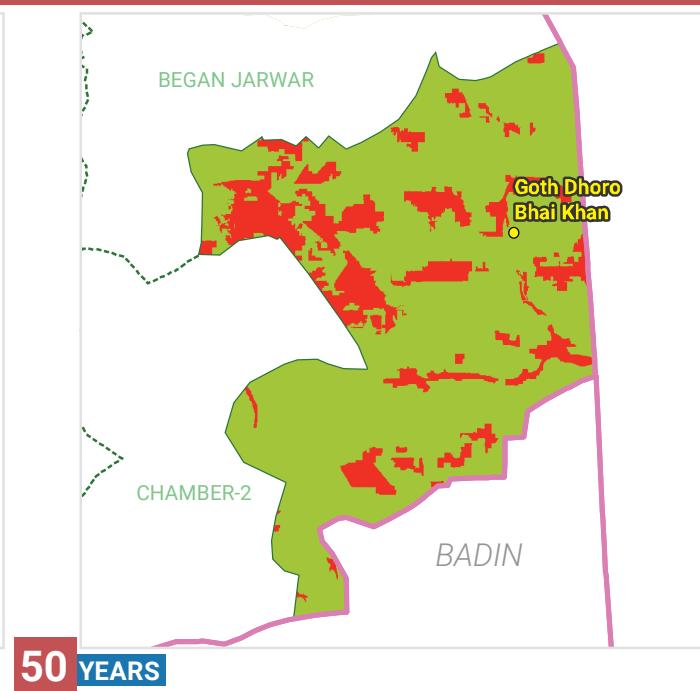
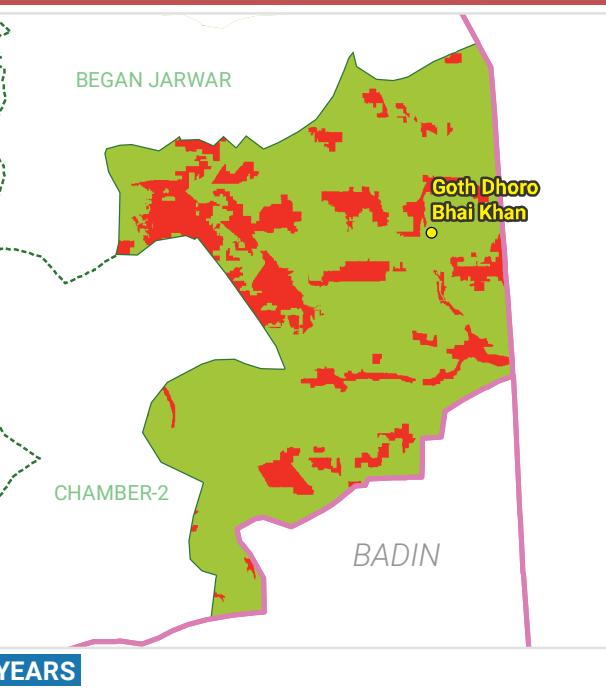
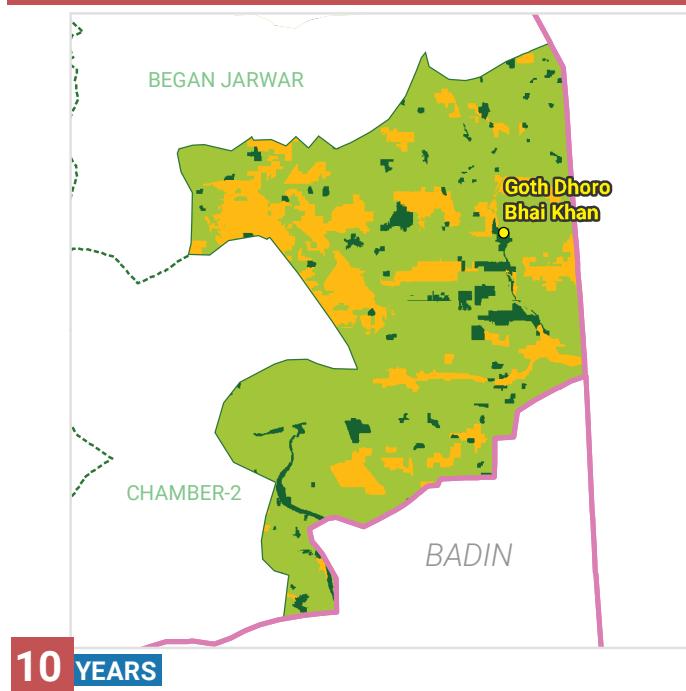
### VULNERABILITY



### RISK



### RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

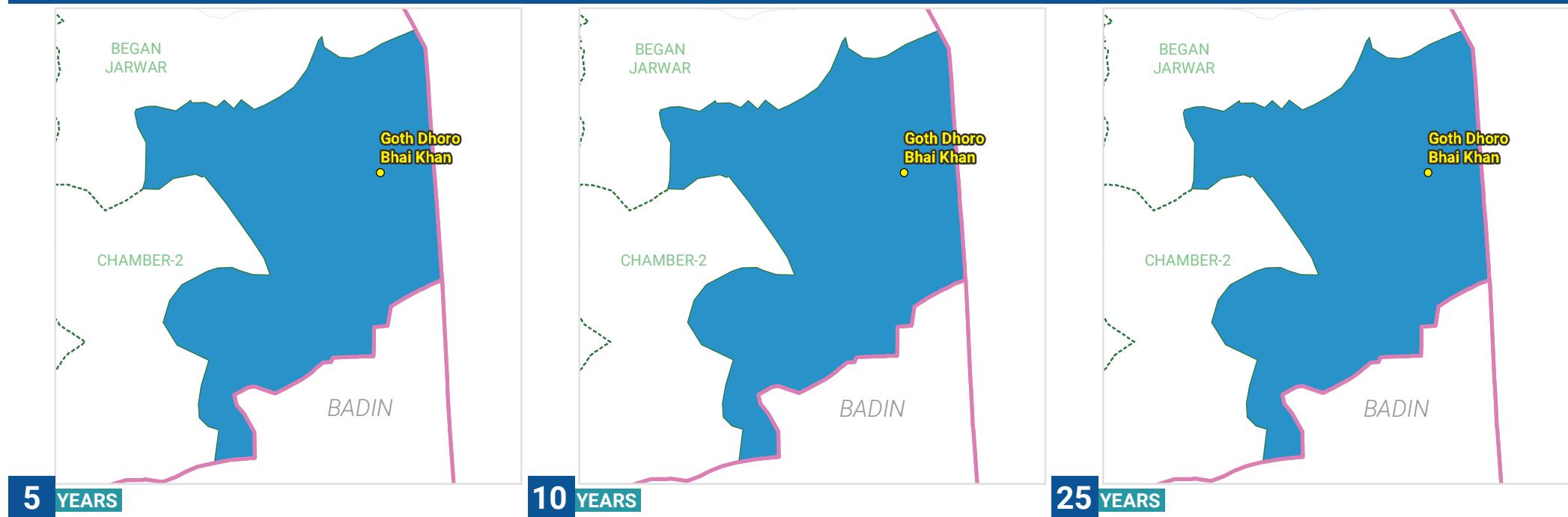
89	10064	50548	108.25	0	0.00	0	8.84
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.36	2.81						

WATER BODY (SQ. KM)	WET AREA (SQ. KM)
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## AGRICULTURAL DROUGHT

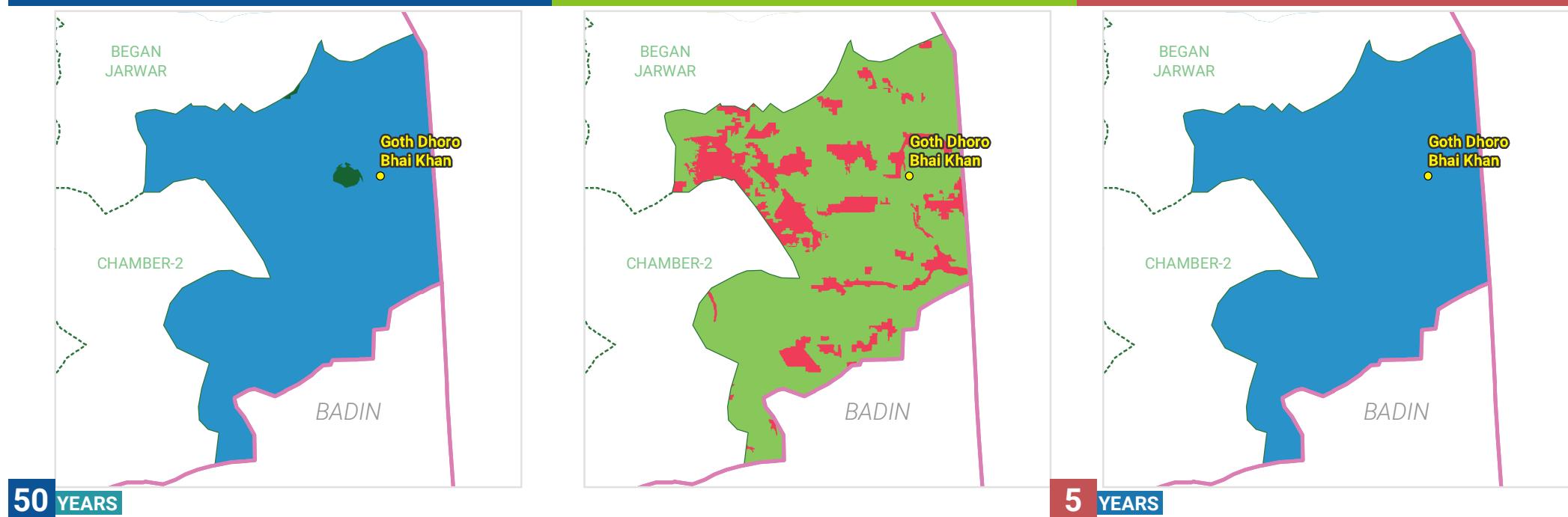
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

No Hazard	Mild	Moderate
Severe	Extremely	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



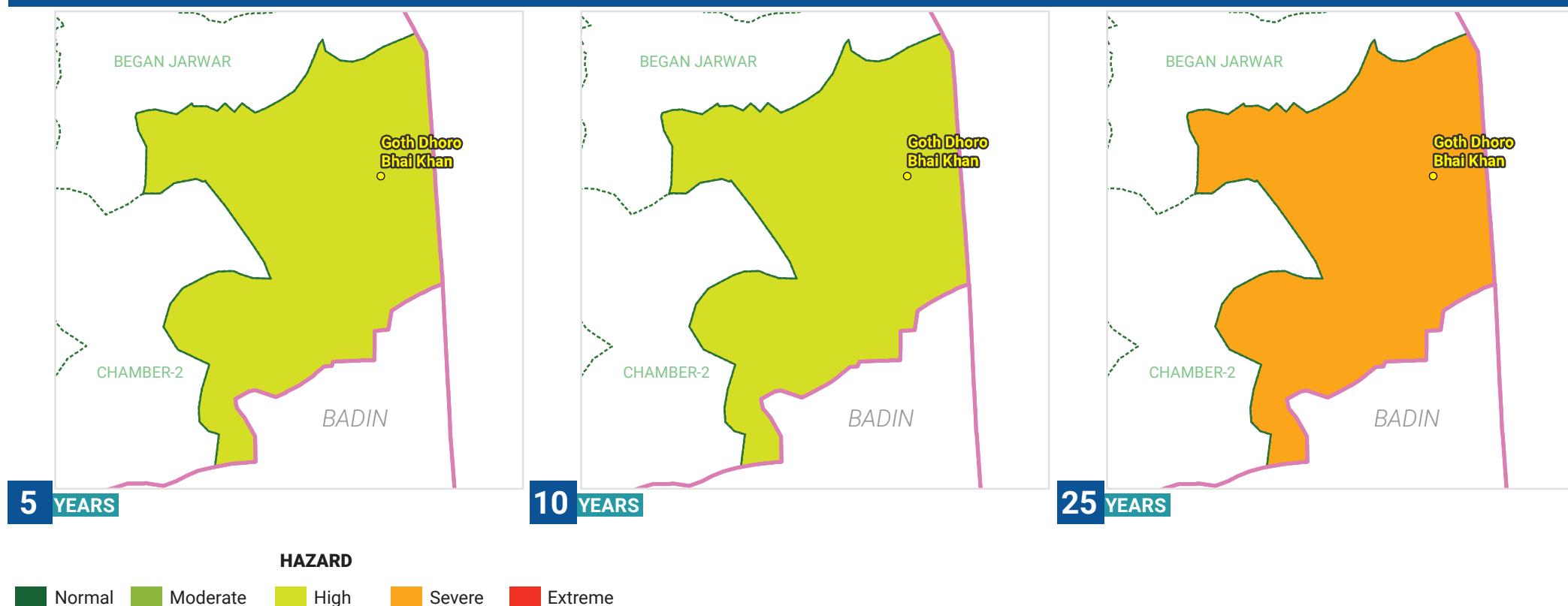
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

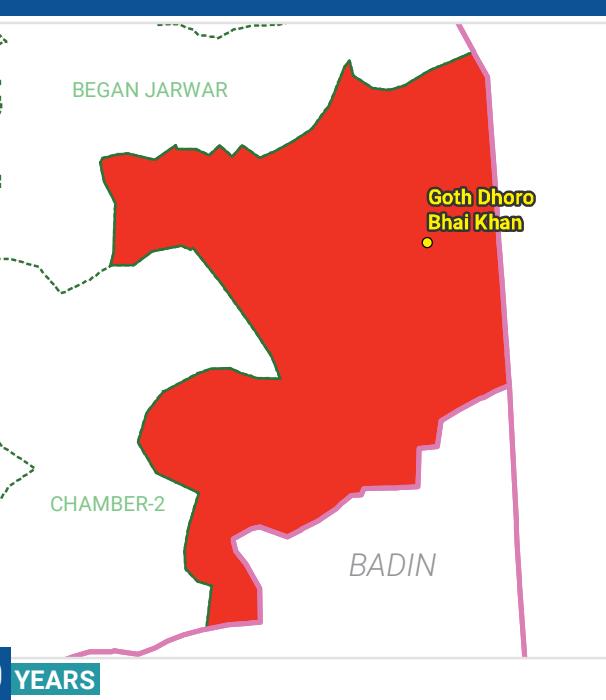
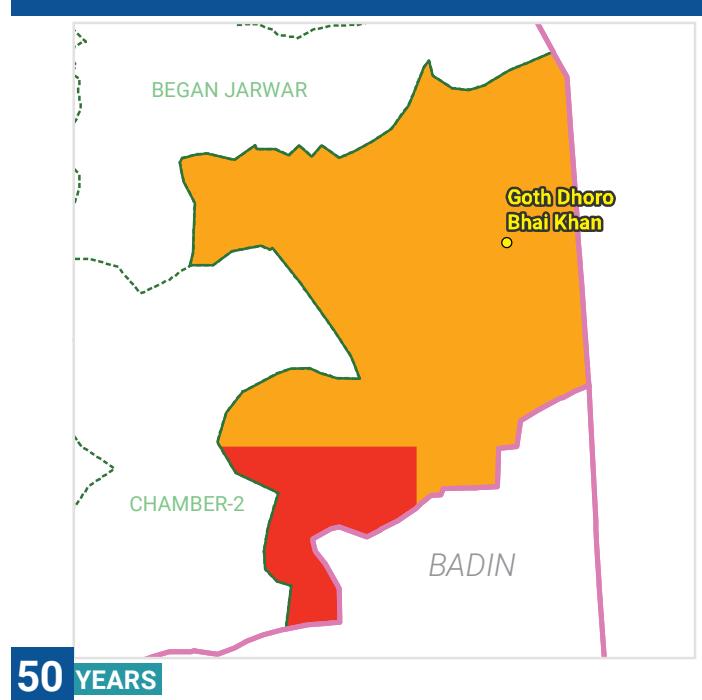
0	0	2	0.13	0	0	0	0.01
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

# HEATWAVE

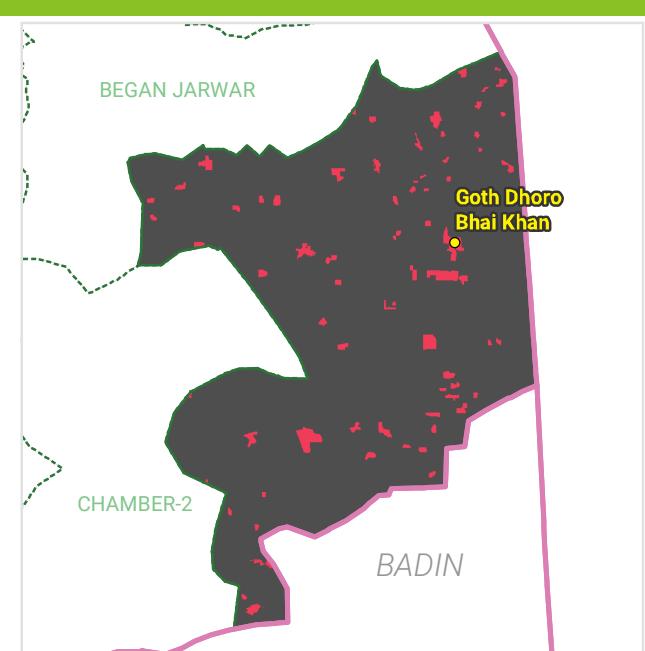
## HAZARD AT DIFFERENT RETURN PERIODS



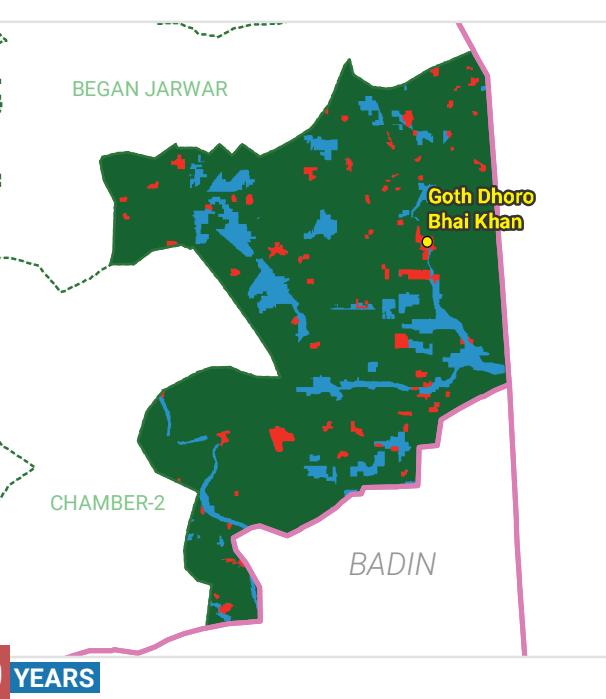
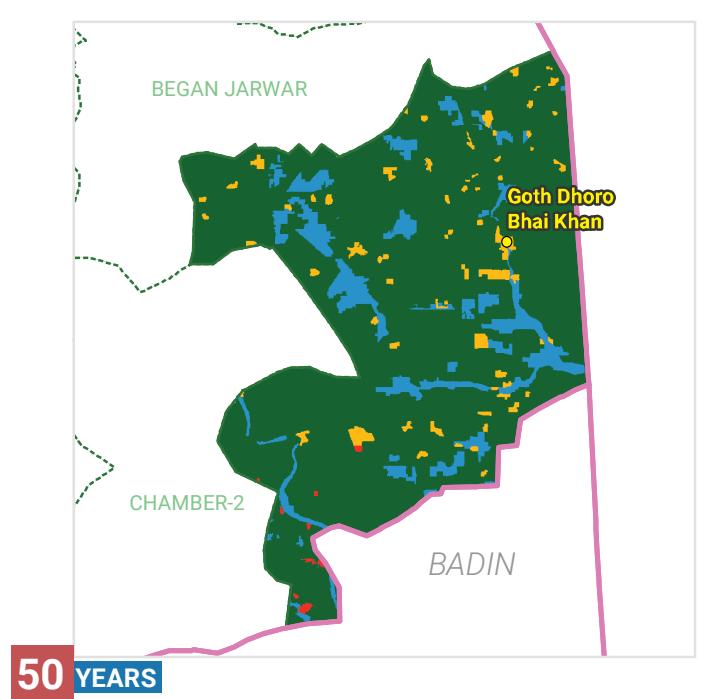
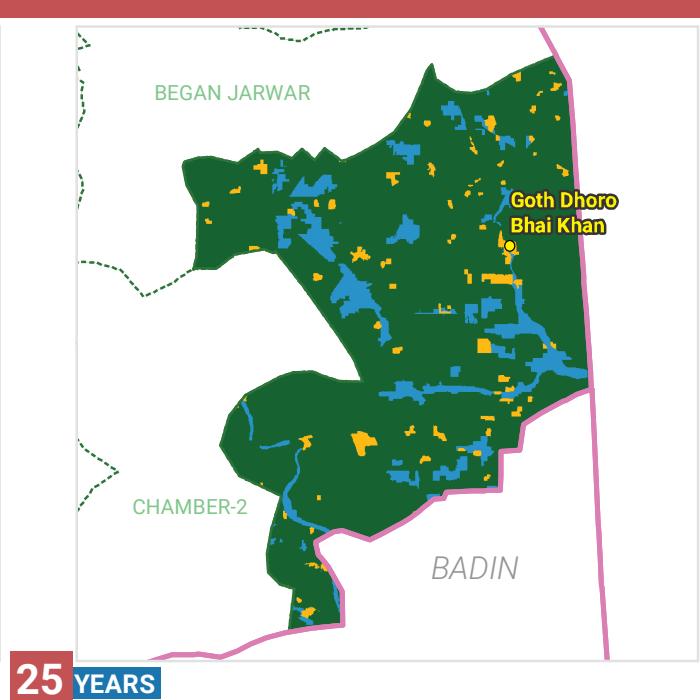
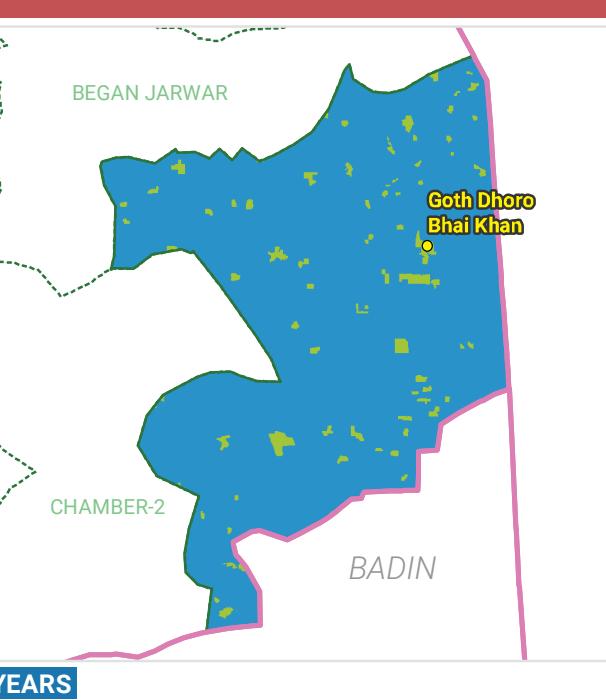
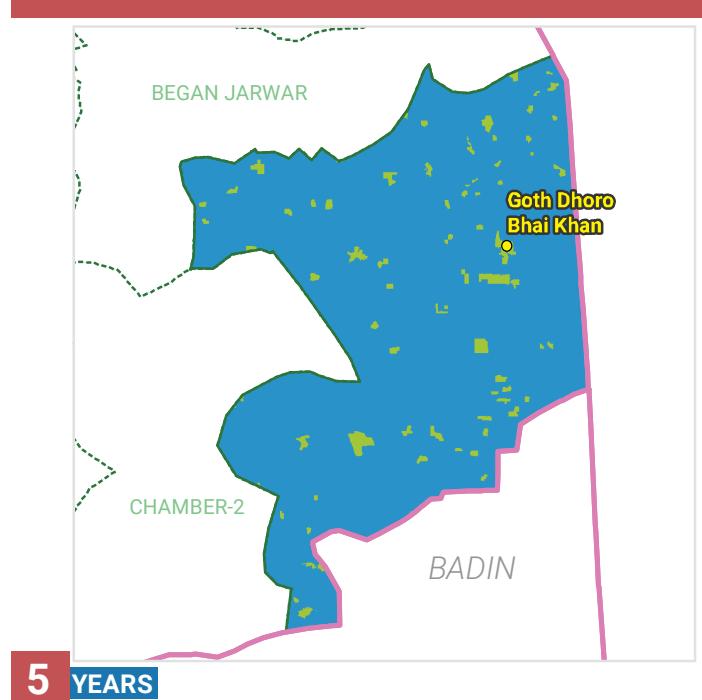
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

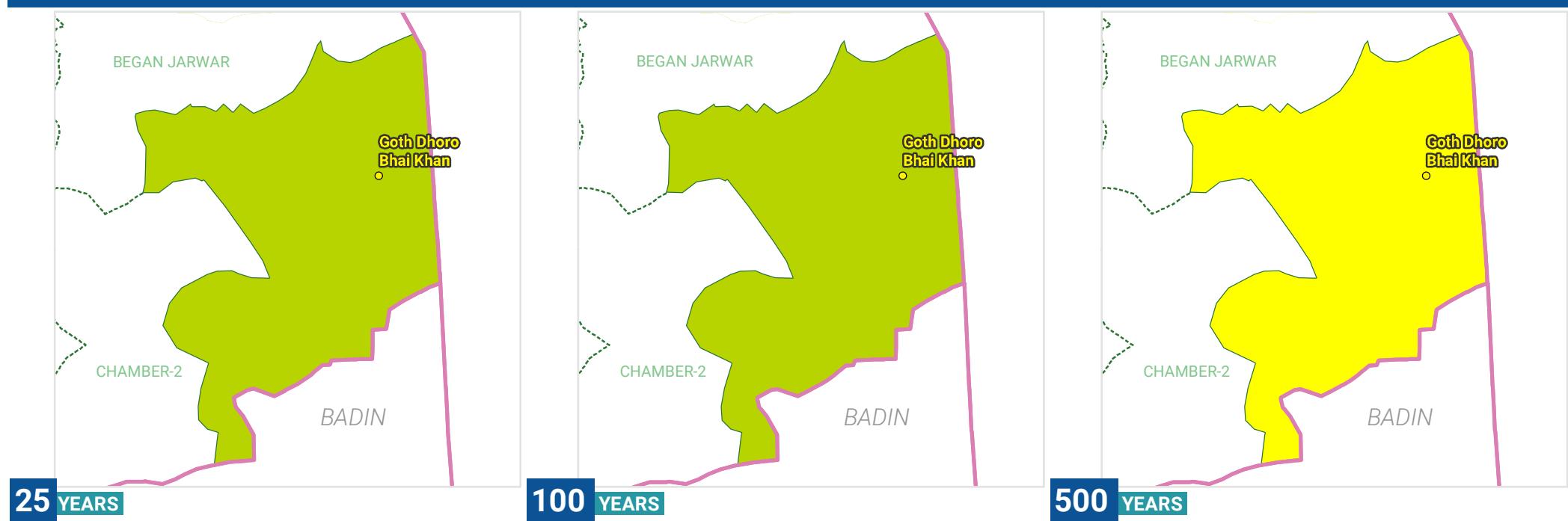
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

88	9999	50204	107.90	0	0	3.82
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

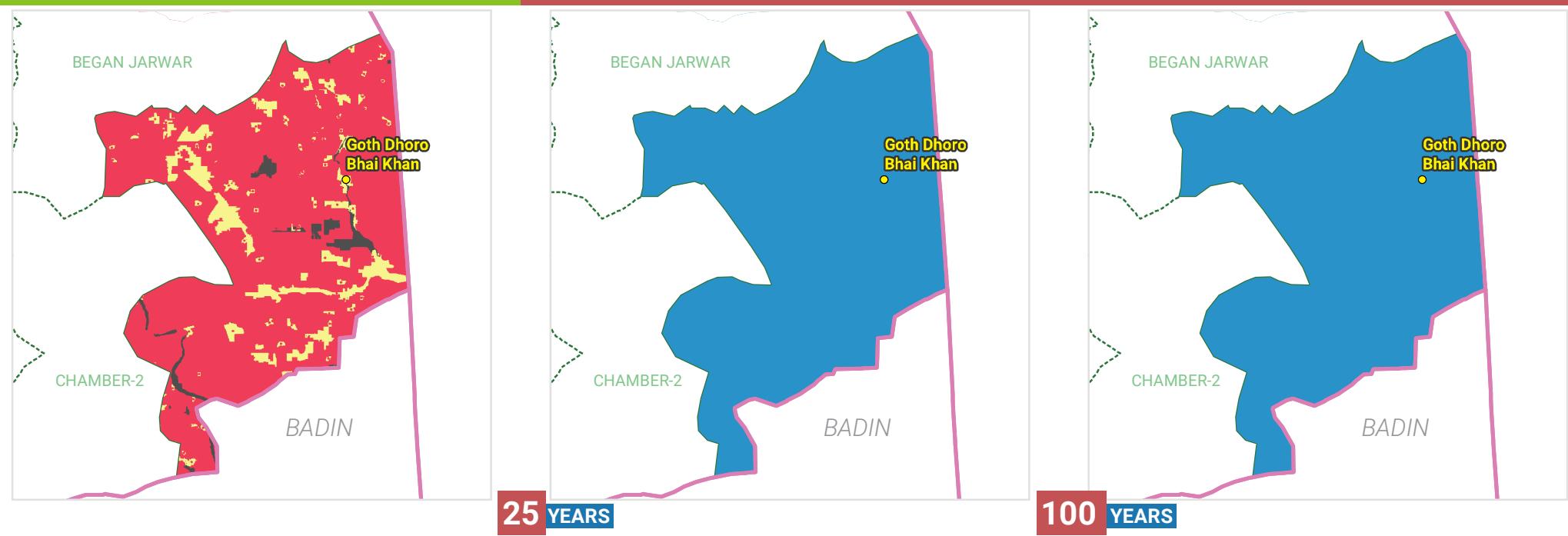
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

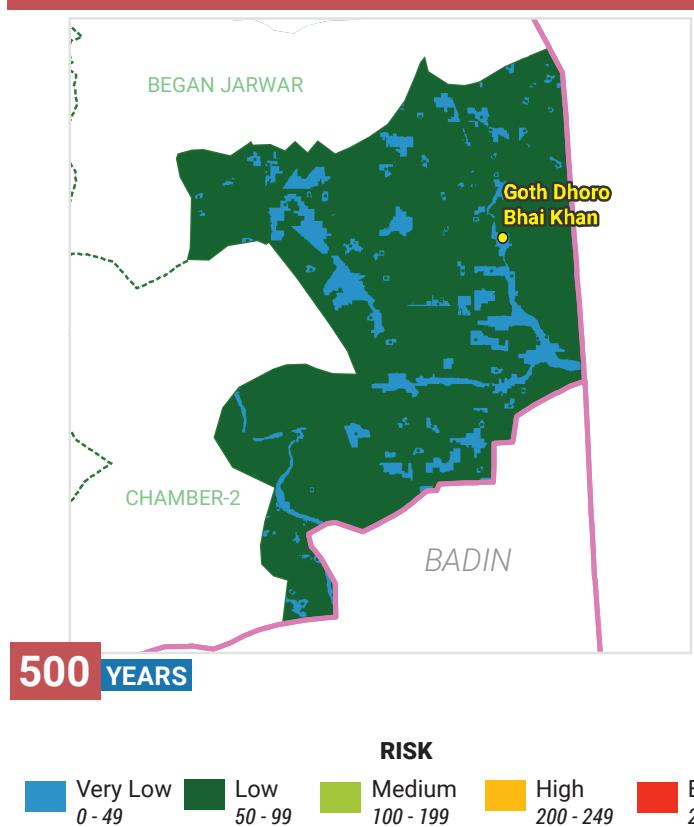
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

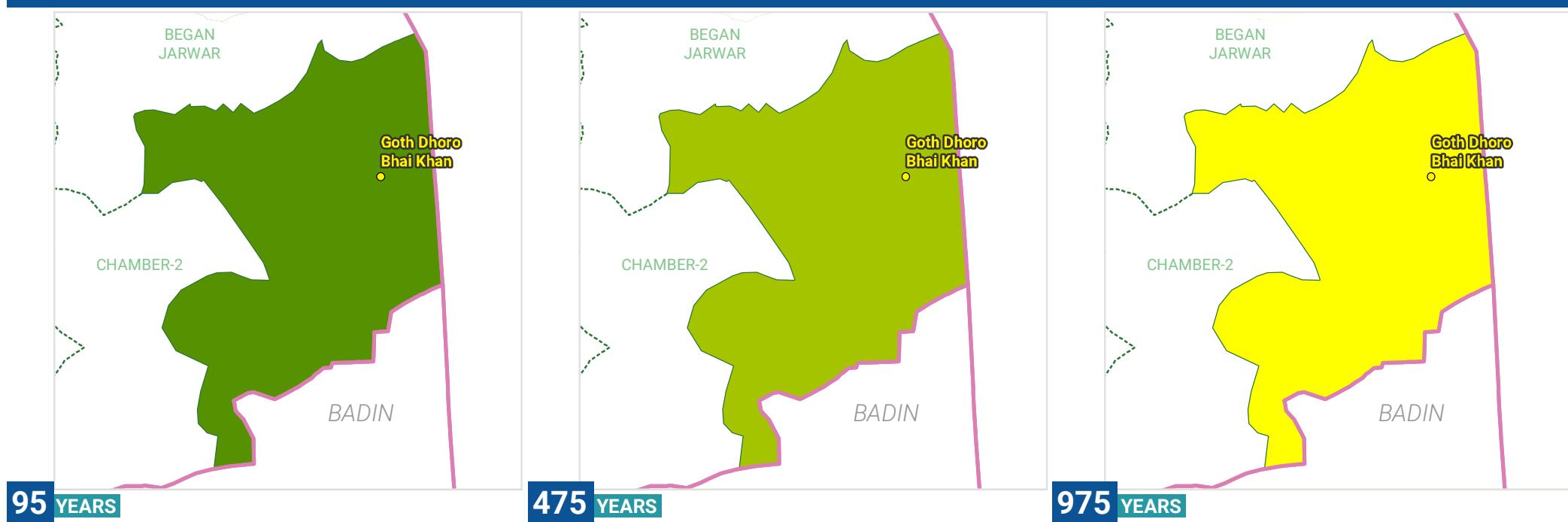
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

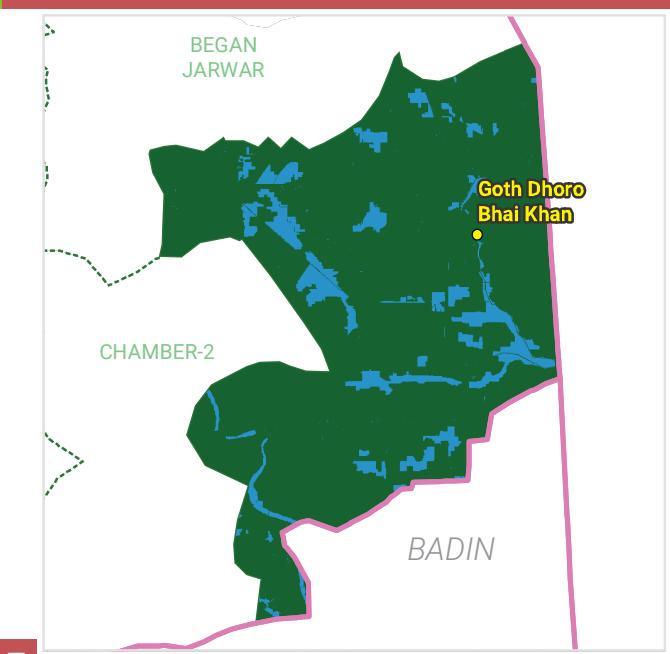
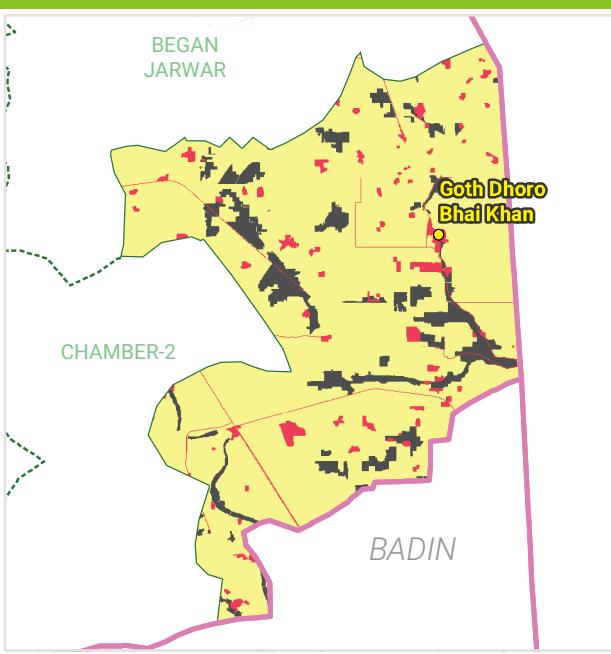
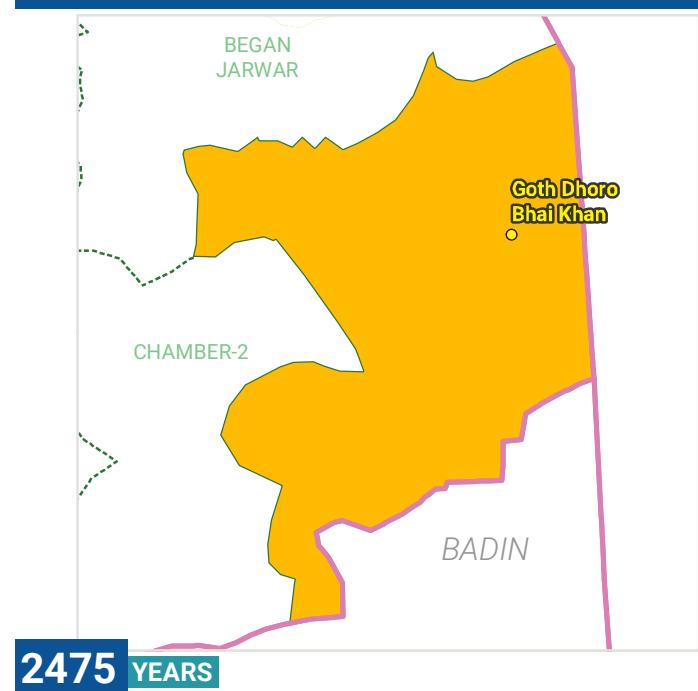
**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS**

# EARTHQUAKE

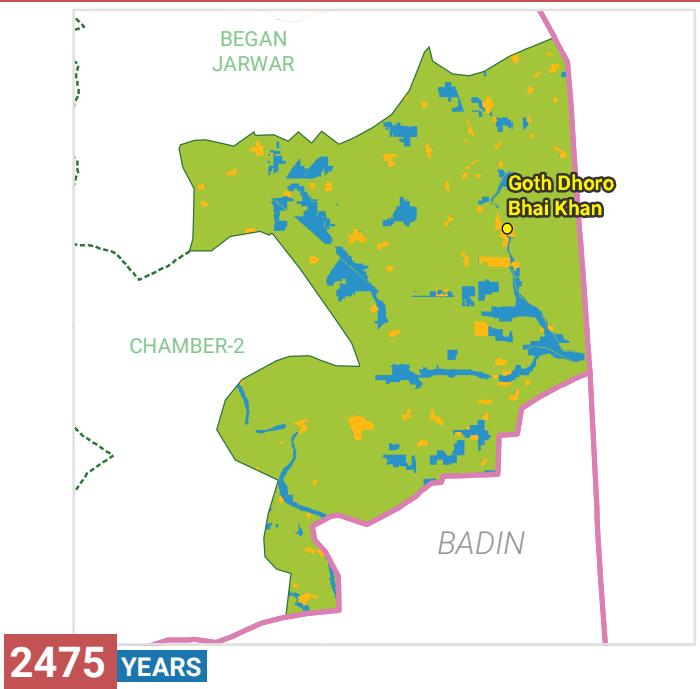
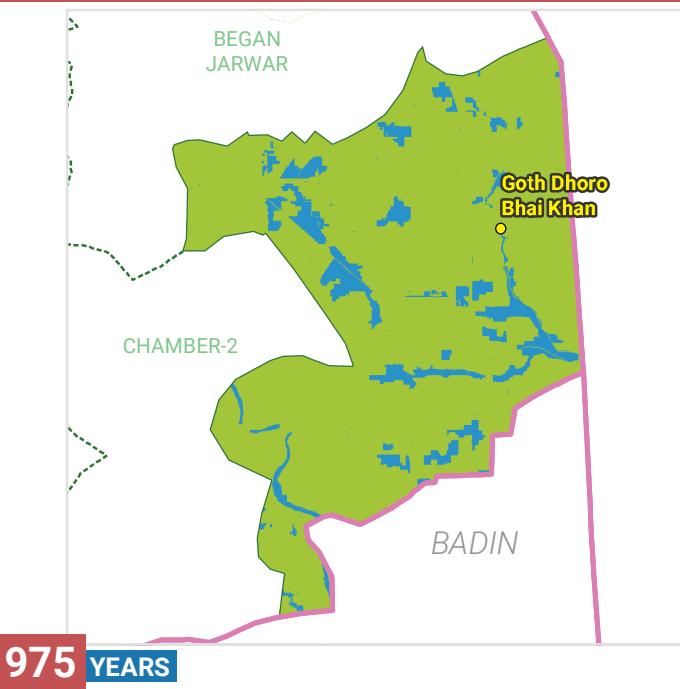
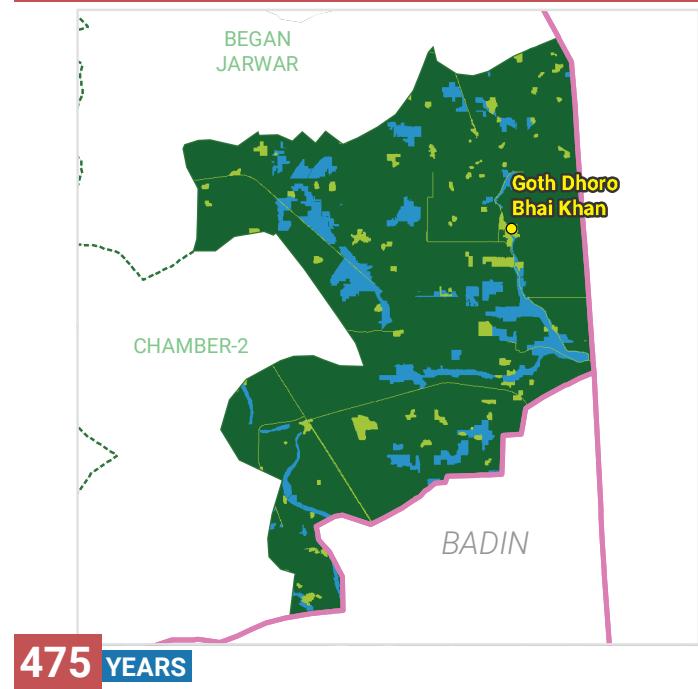
## HAZARD

## VULNERABILITY

## RISK



## RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

89	9975	50095	107.98	0.00	0	0	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
3.81	0.35	138.40	0	51.33	0	0	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
48	0	0	0	0	2	0	0
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - TANDO ALLAHYAR 2

Union Council area in sq. km

41

Surrounding UCs / Features **TANDO SOOMRO** in North  
**BUKERANI SHARIF** in South  
**TANDO ALLAHYAR 4** in East  
**PAK-SANGHAR** in South East  
**DHINGANO BOZDAR** in West

Population

2017 approx. 169,192

No. of household

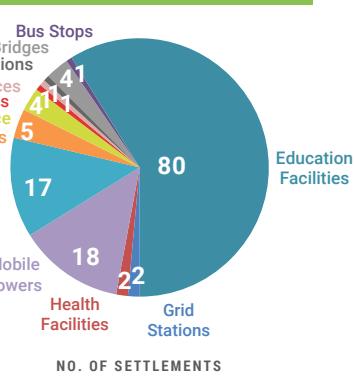
2017 approx. 32,439

## Land Use Land Cover

coverage area in sq.km

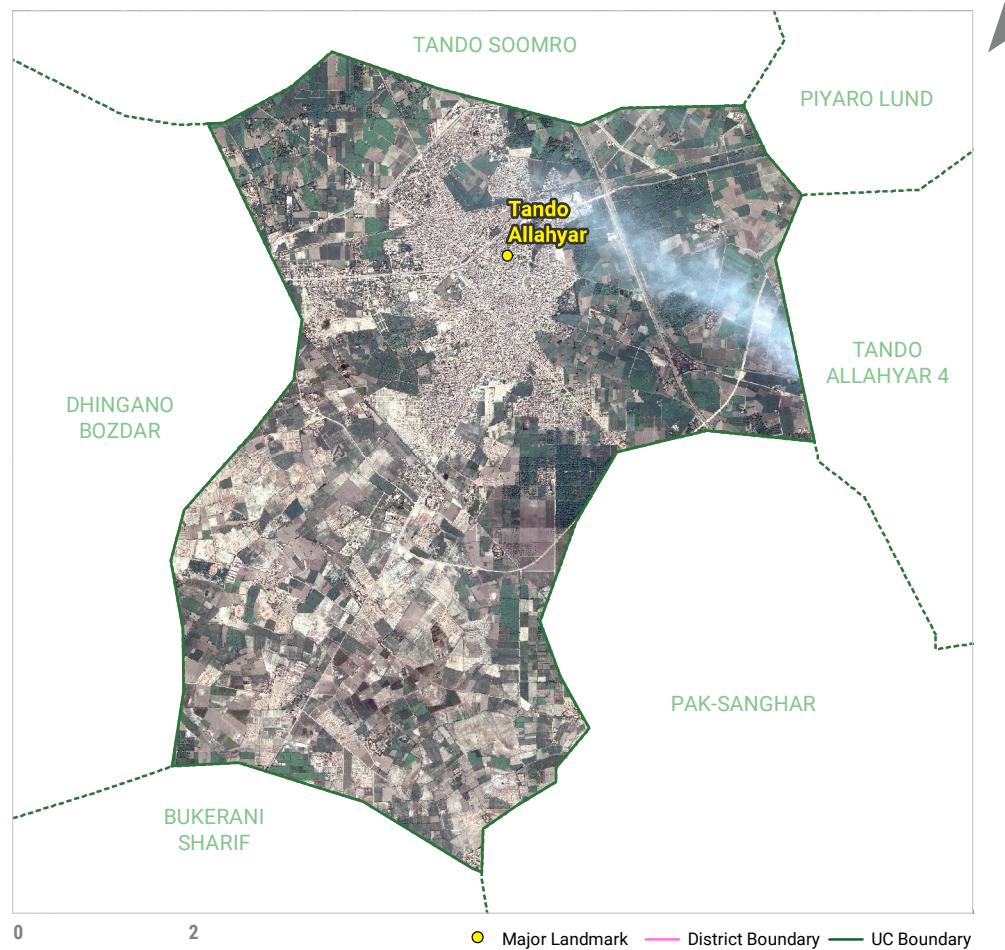
Built-up (Other)	6.1
Crop Irrigated	23.5
Crop Marginal and Irrigated Saline	0.3
Orchards	4.0
Pakka -Planned	6.0
Pakka -Unplanned	1.0
Range Lands	0.0
Water Body	0.3
Wet Area	0.3

## Critical Infrastructure

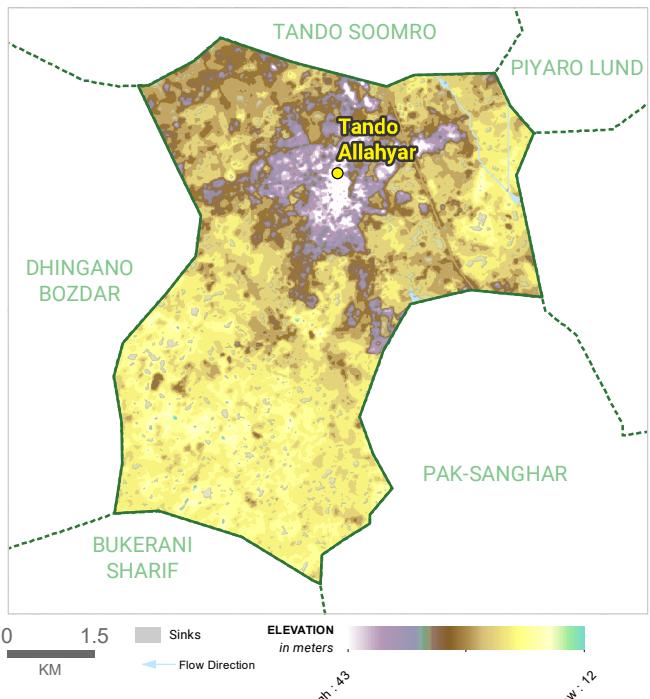


33

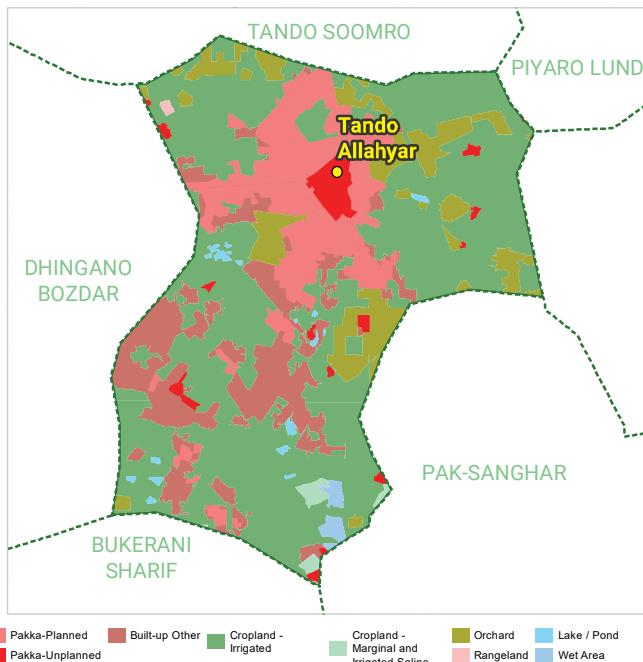
## SATELLITE IMAGERY



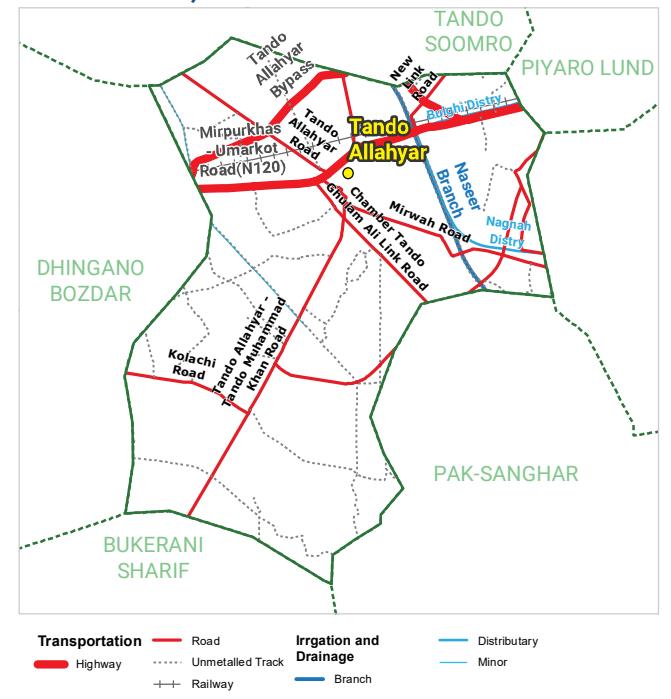
## DEM AND FLOW DIRECTION



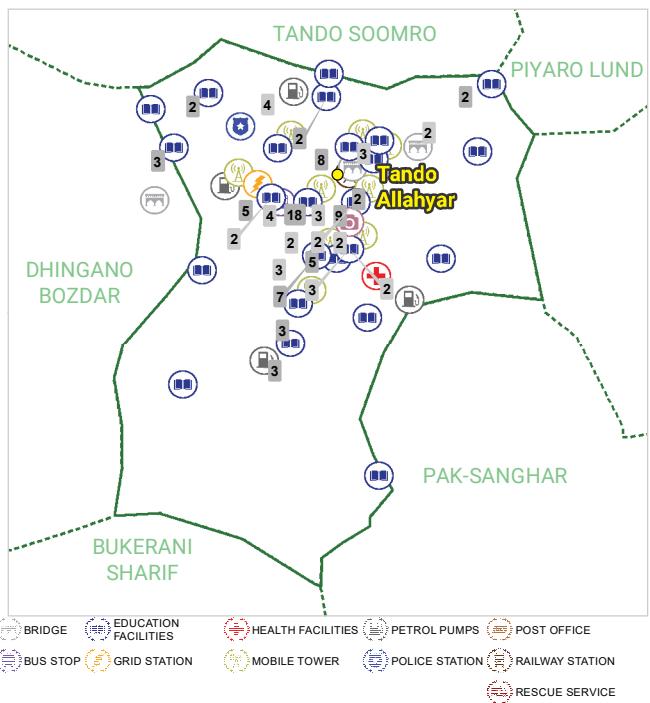
## LAND USE / LAND COVER



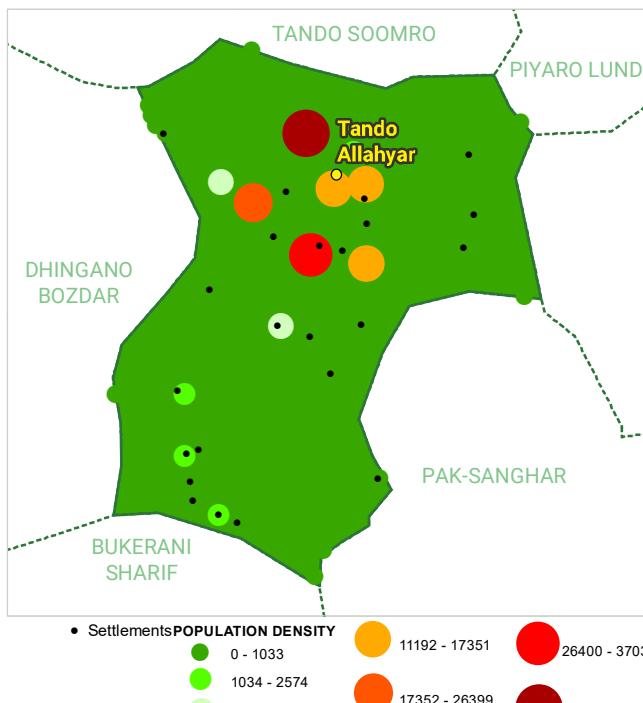
## TRANSPORT, IRRIGATION AND DRAINAGE



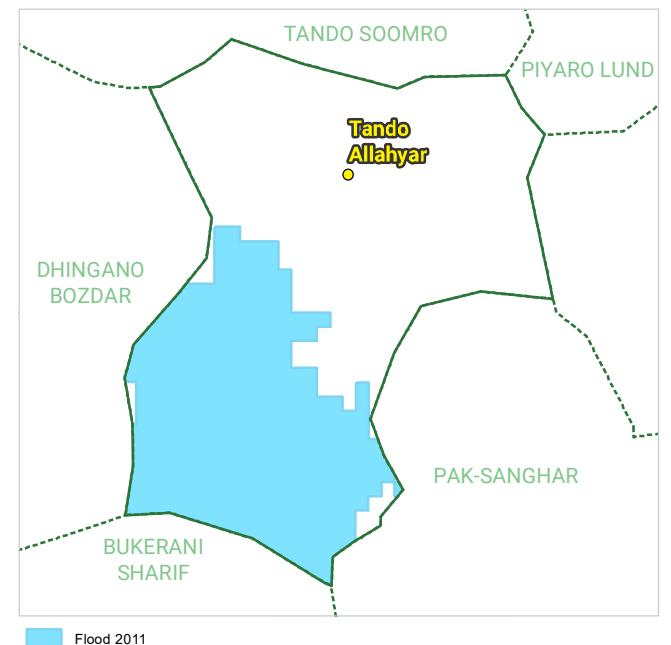
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

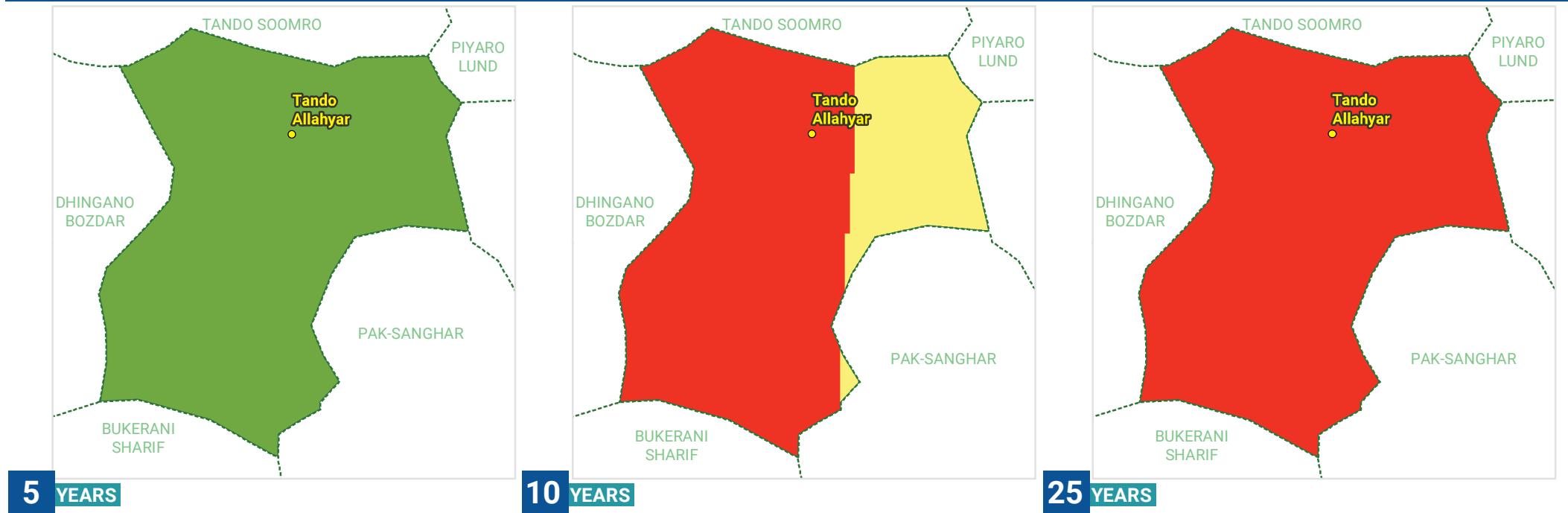


# FLOOD

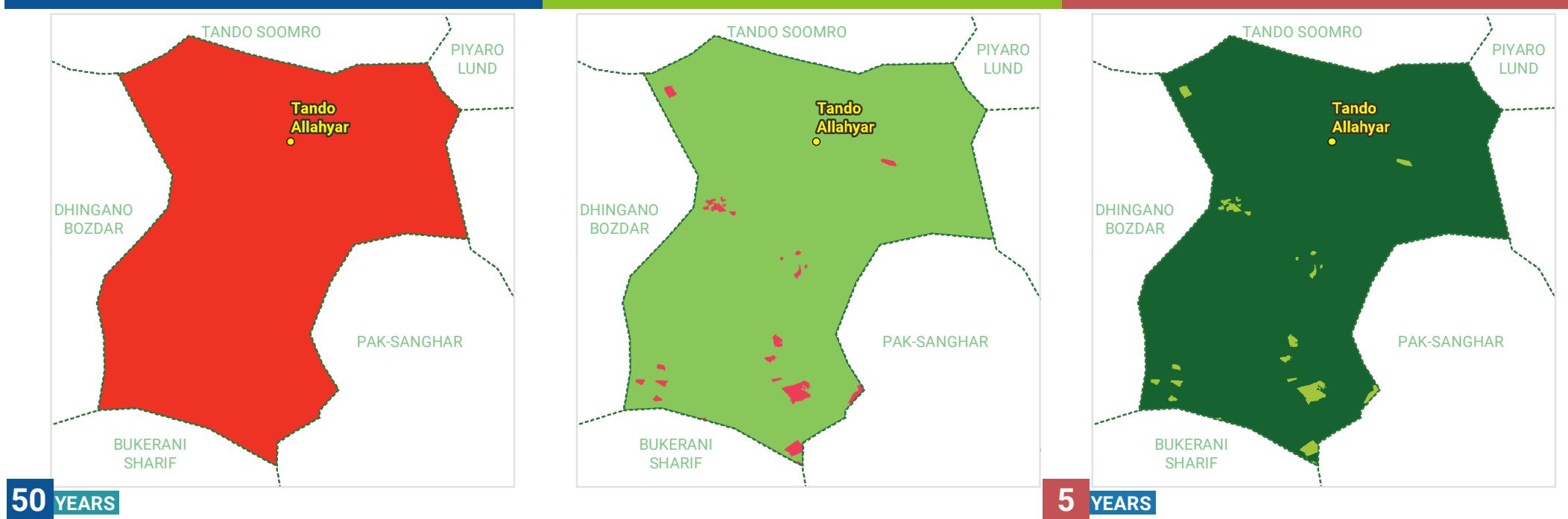
THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES

## METEOROLOGICAL DROUGHT

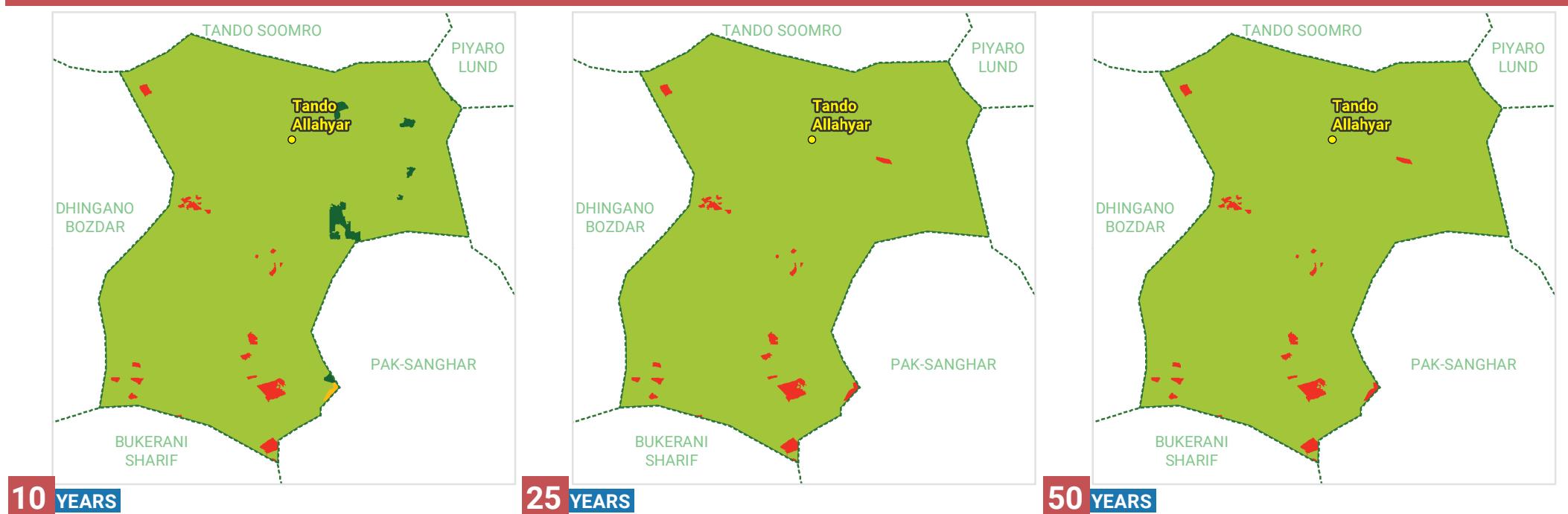
### HAZARD AT DIFFERENT RETURN PERIODS



### HAZARD



### RISK AT DIFFERENT RETURN PERIODS



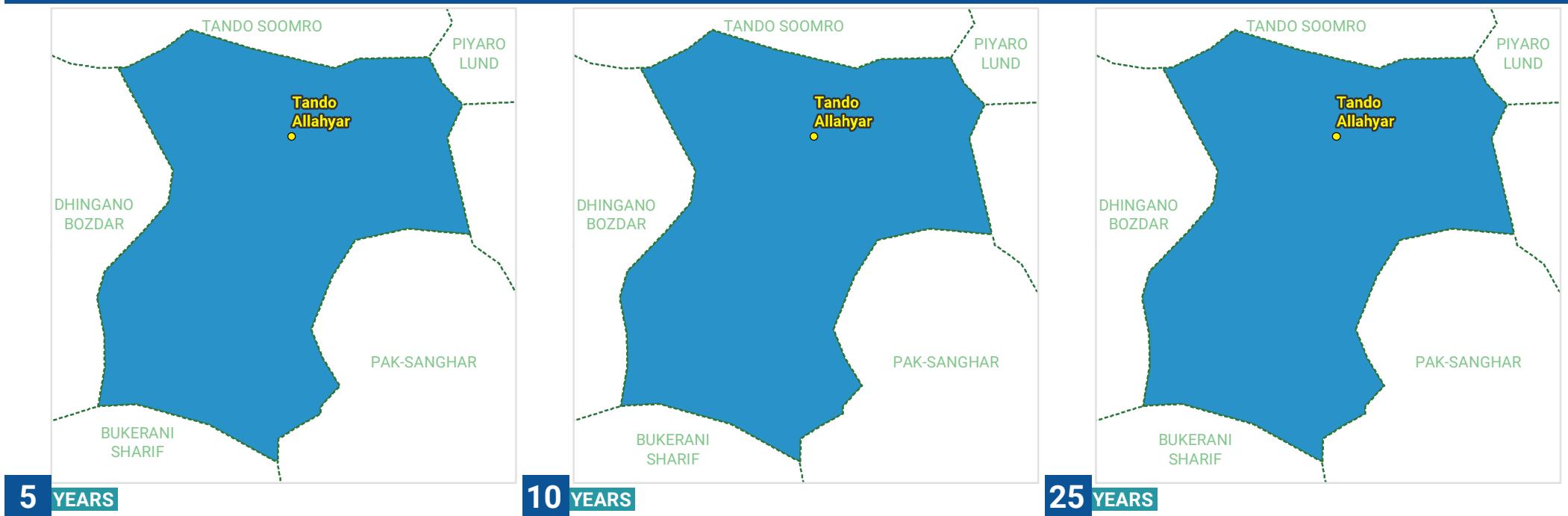
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

33	32439	169192	27.81	0	0	0	0.04
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.27	0.28						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

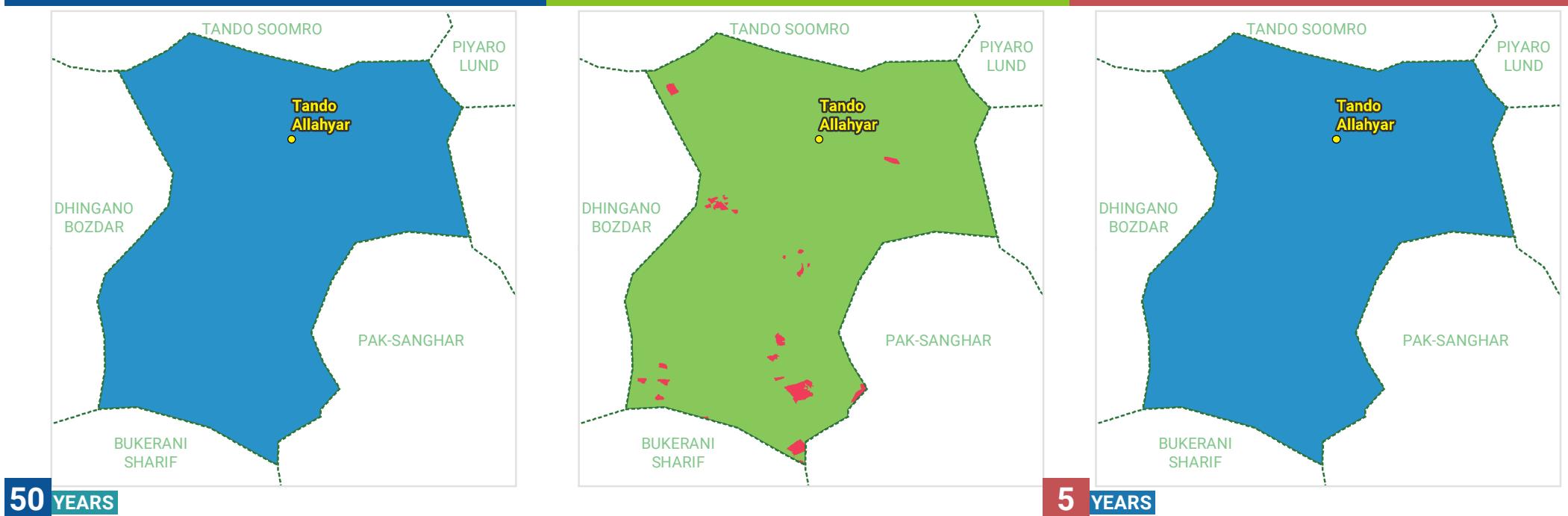
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

No Hazard	Mild	Moderate
Severe	Extreme	

## VULNERABILITY

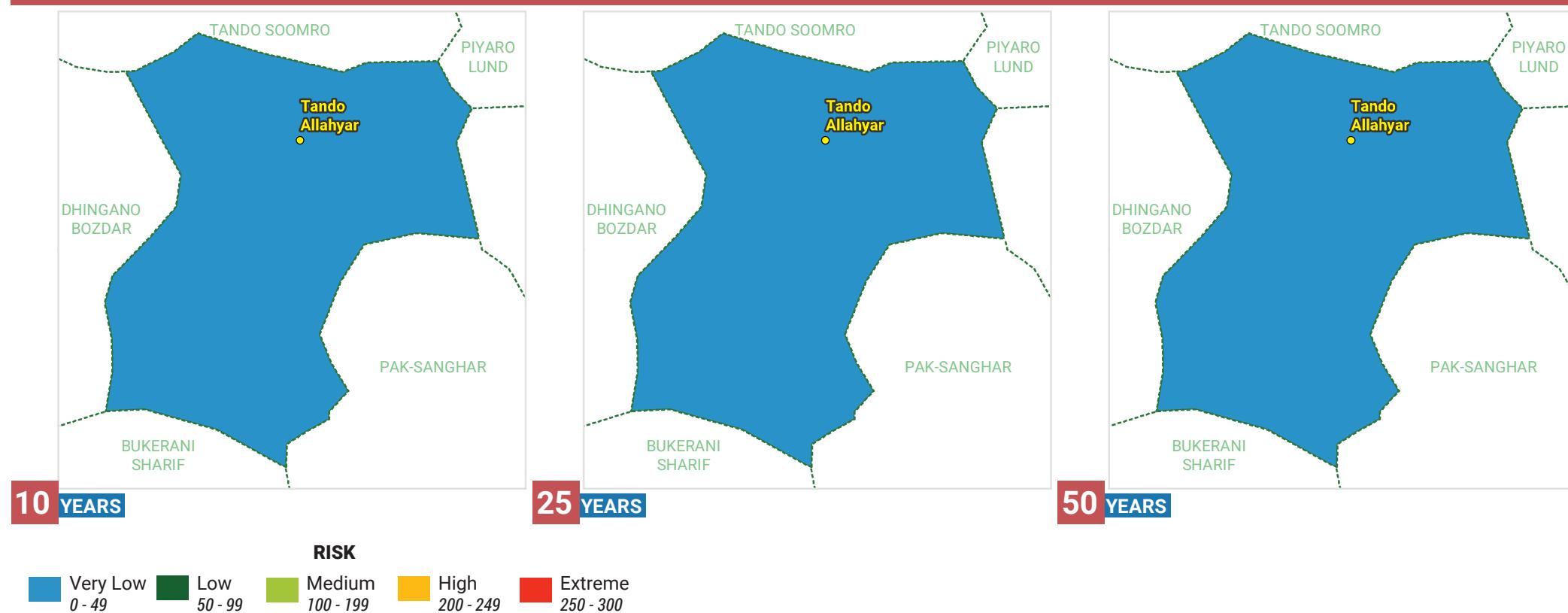
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



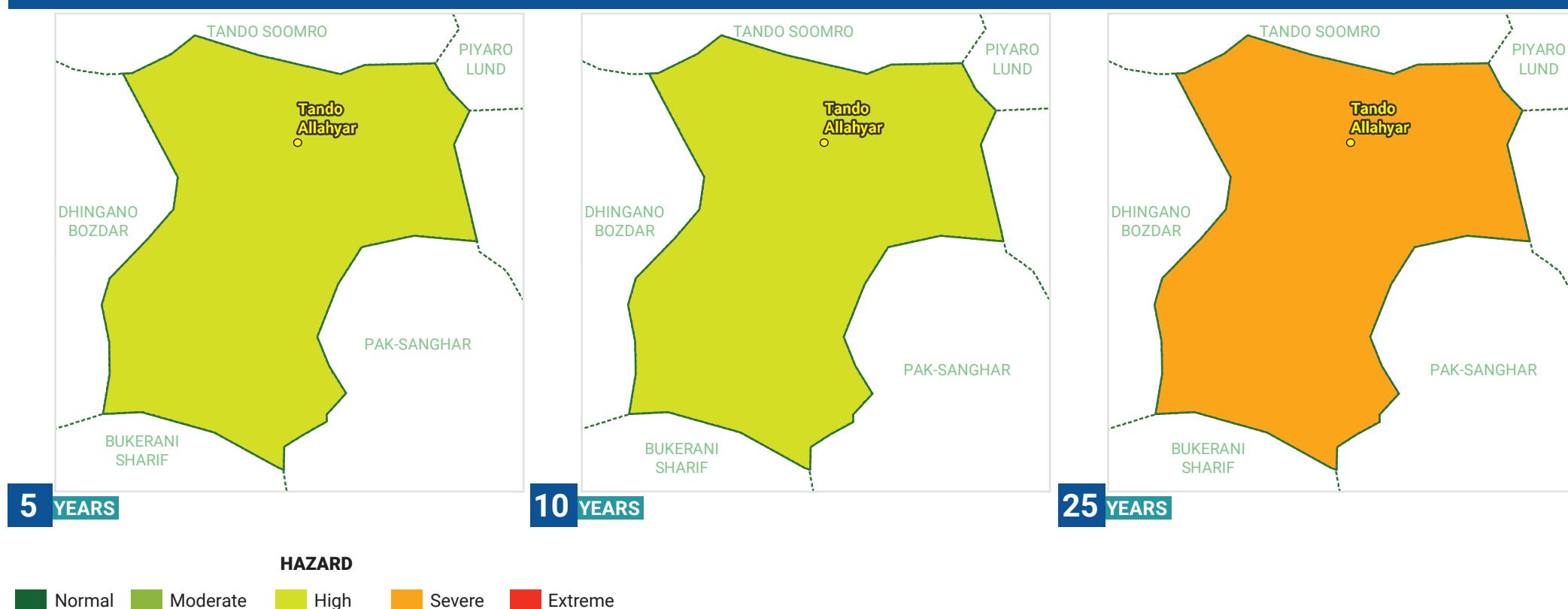
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

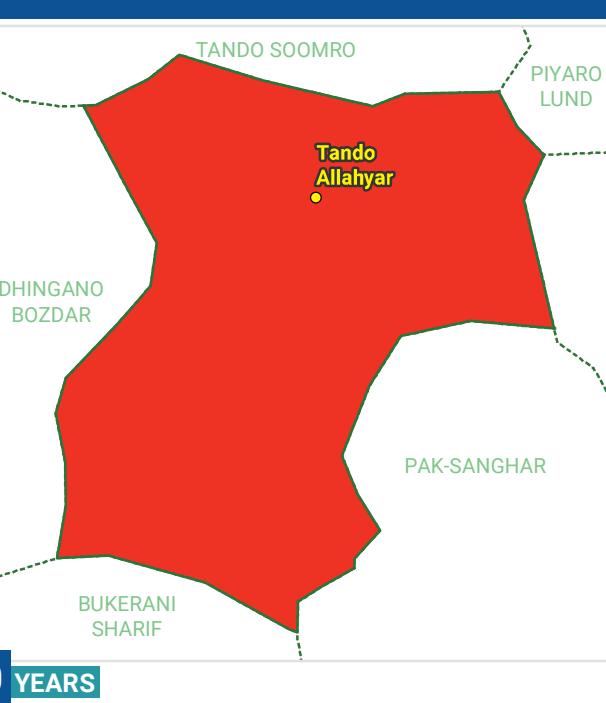
**NO ELEMENTS AT RISK FOR AGRICULTURAL DROUGHT**

# HEATWAVE

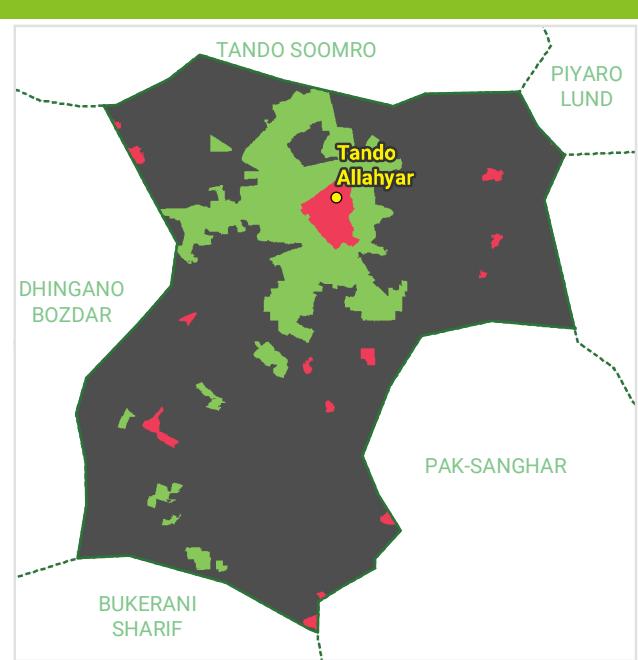
## HAZARD AT DIFFERENT RETURN PERIODS



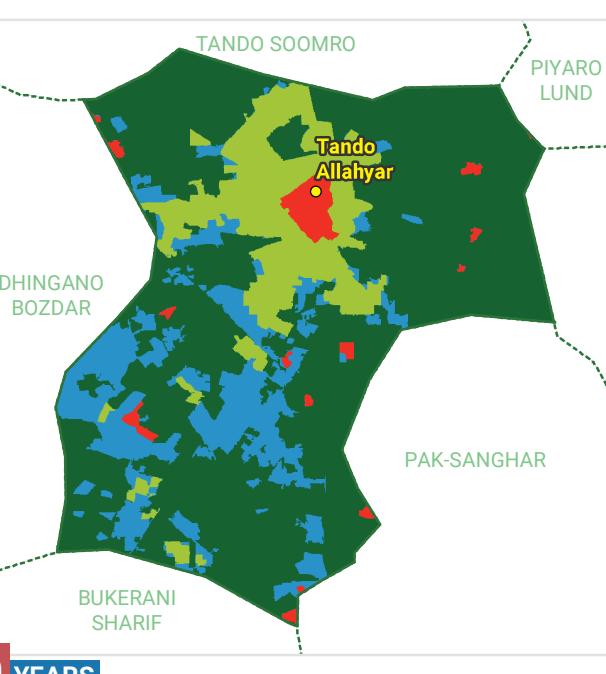
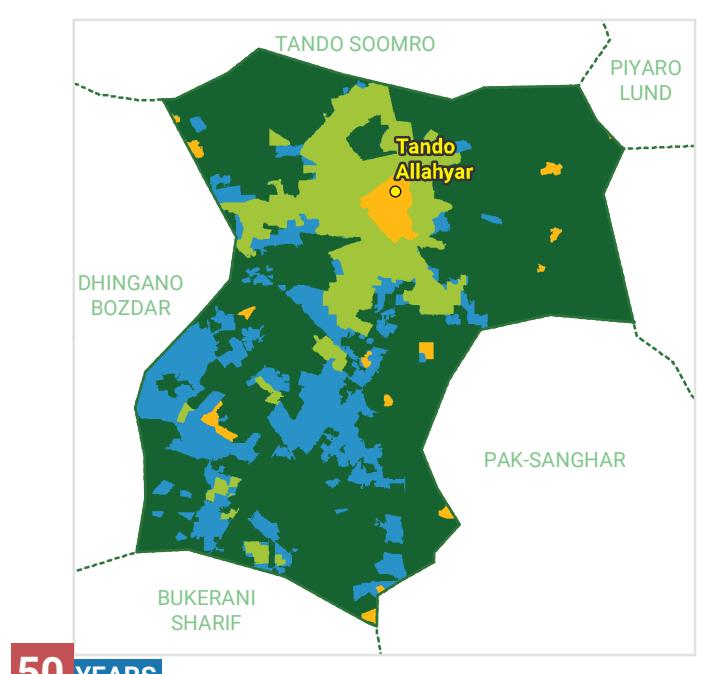
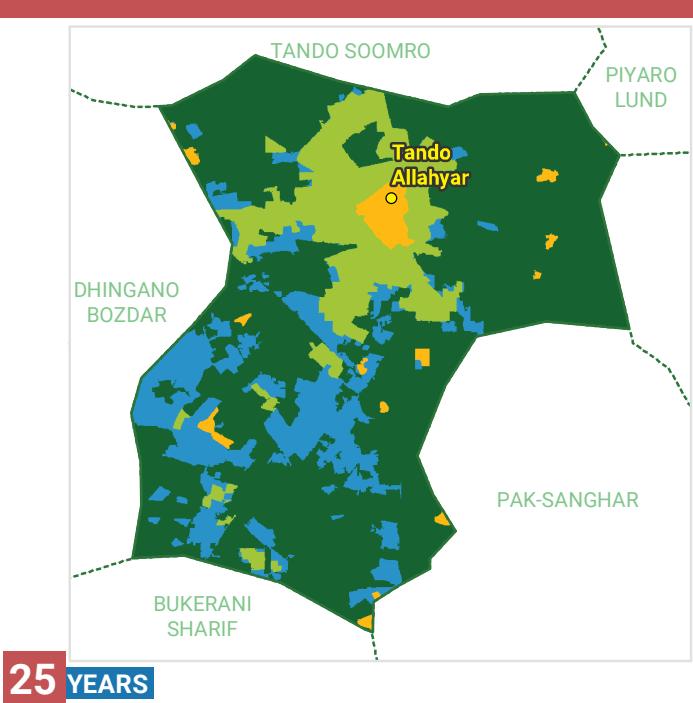
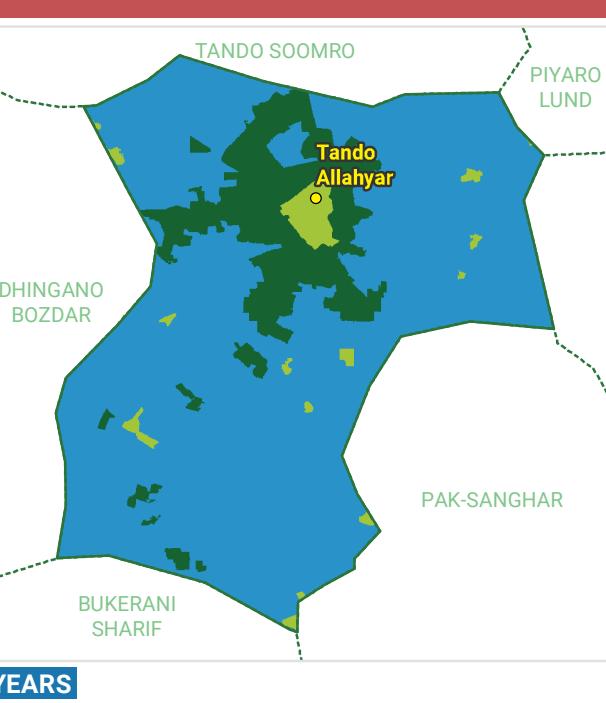
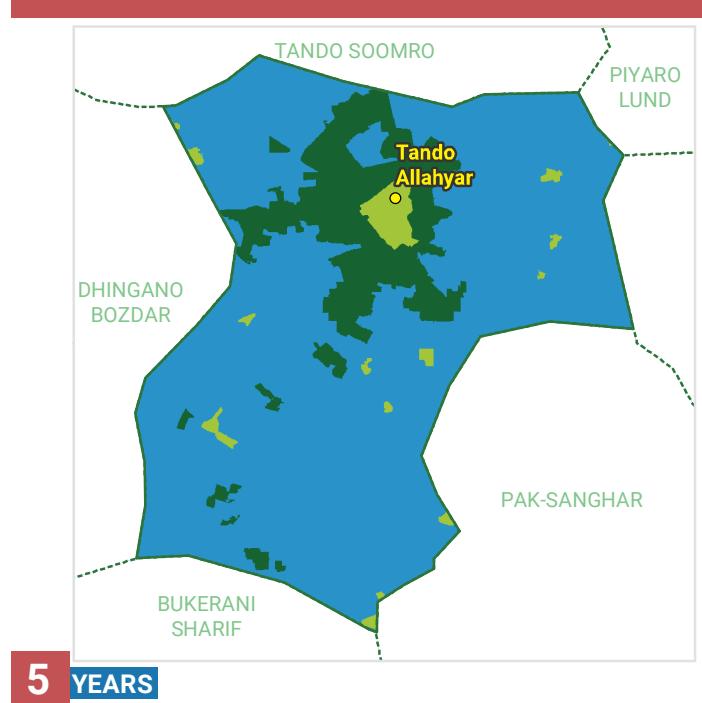
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal  
Severe

Moderate  
Extreme

## High

## VULNERABILITY

None  
0 - 25  
Low  
26 - 50  
Medium  
51 - 75  
High  
76 - 100

## RISK

Very Low  
0 - 49  
Low  
50 - 99  
Medium  
100 - 199  
High  
200 - 249  
Extreme  
250 - 300

# HEATWAVE

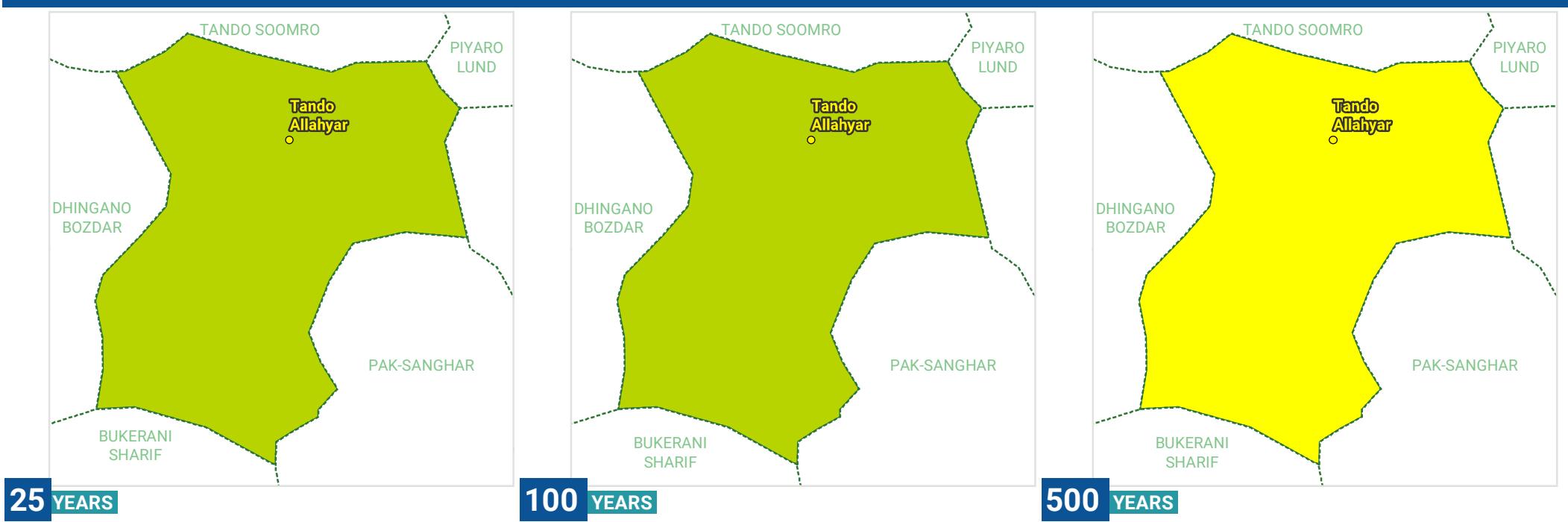
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

33	32354	168755	27.61	0	5.99	1.00
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

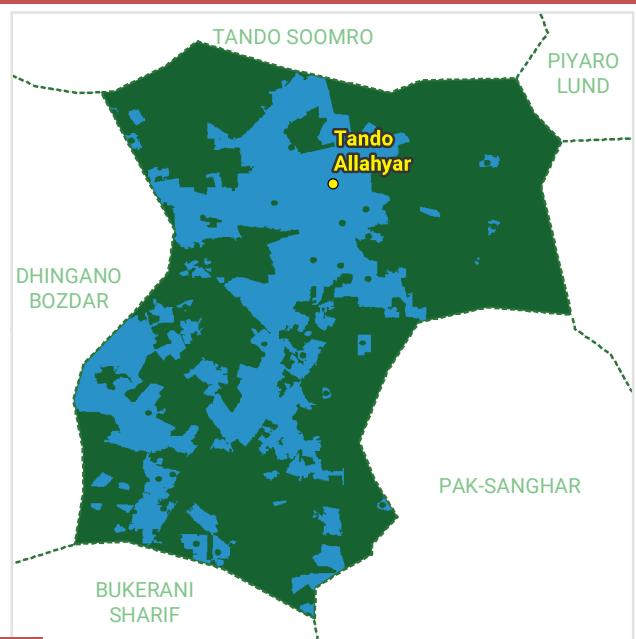
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

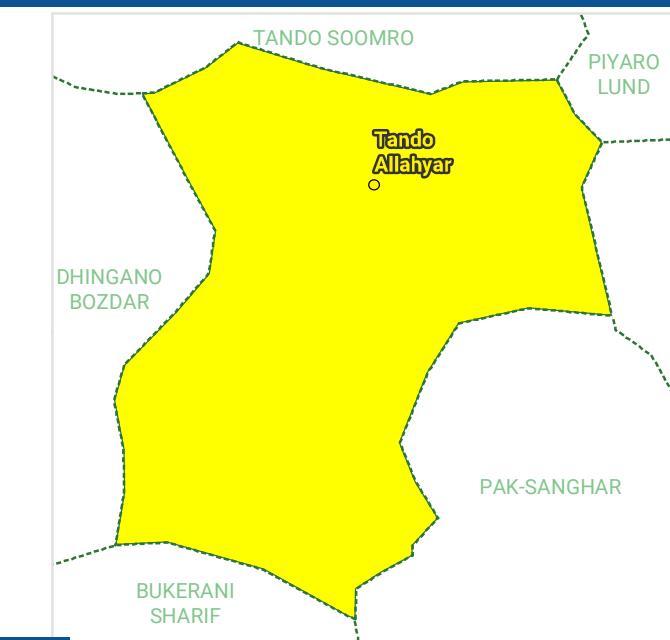
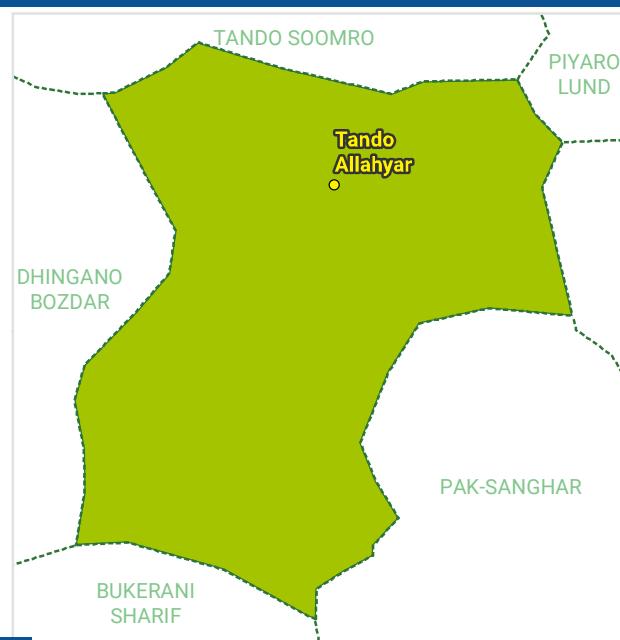
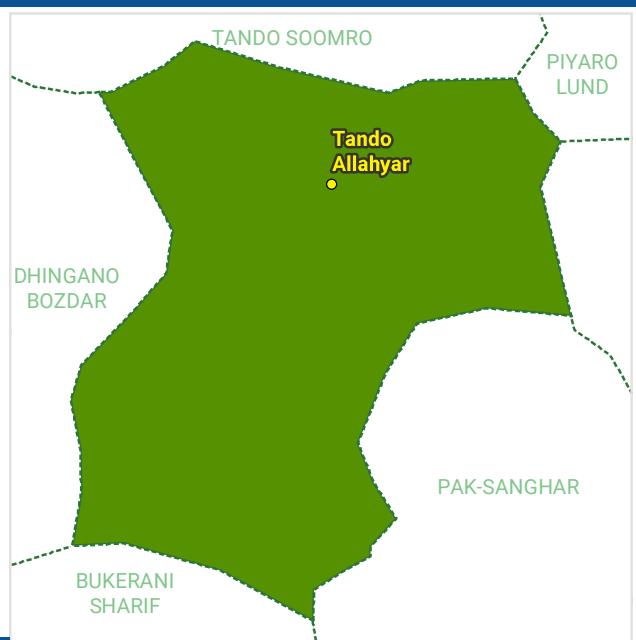
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

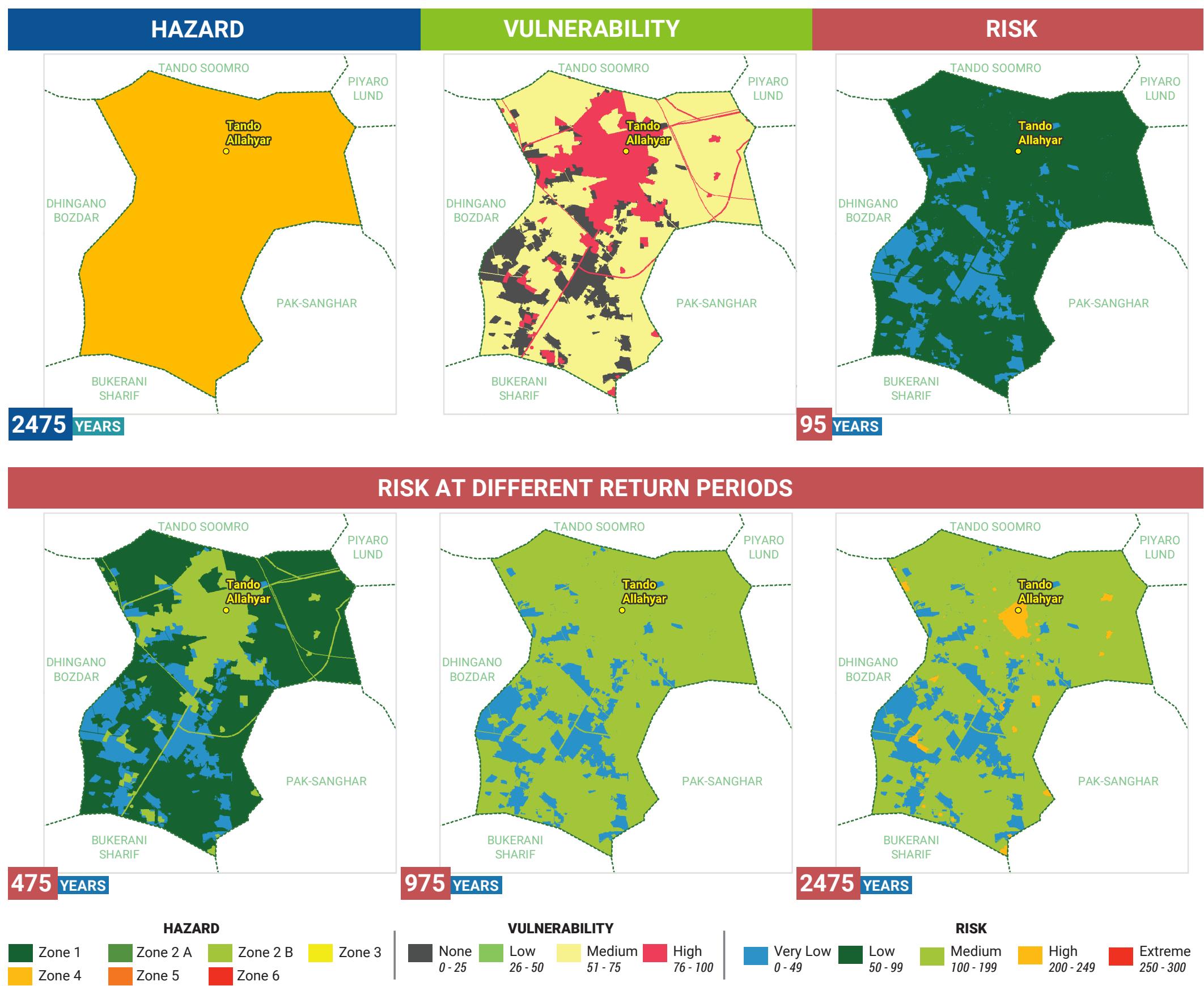
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

## EARTHQUAKE



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

33	32337	168651	27.68	0	0	0	5.98
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
1.00	0.00	89.89	5.76	13.28	1	4	1
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
80	0	0	1	2	0	18	17
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
5	4	0	1	1	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - TANDO ALLAHYAR 4

 Union Council area in sq. km

22

 Surrounding UCs / Features

**PIYARO LUND** in North  
**MISSAN** in East  
**PAK-SANGHAR** in South  
**TANDO ALLAHYAR 2** in West

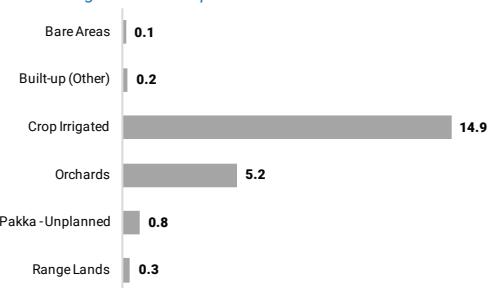
 Population

2017 approx. **12,751**

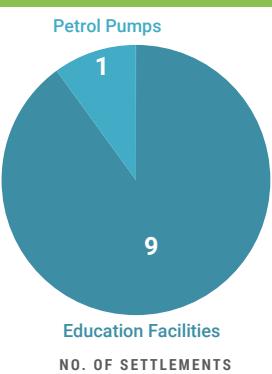
 No. of household

2017 approx. **2,469**

**Land Use Land Cover**  
coverage area in sq.km

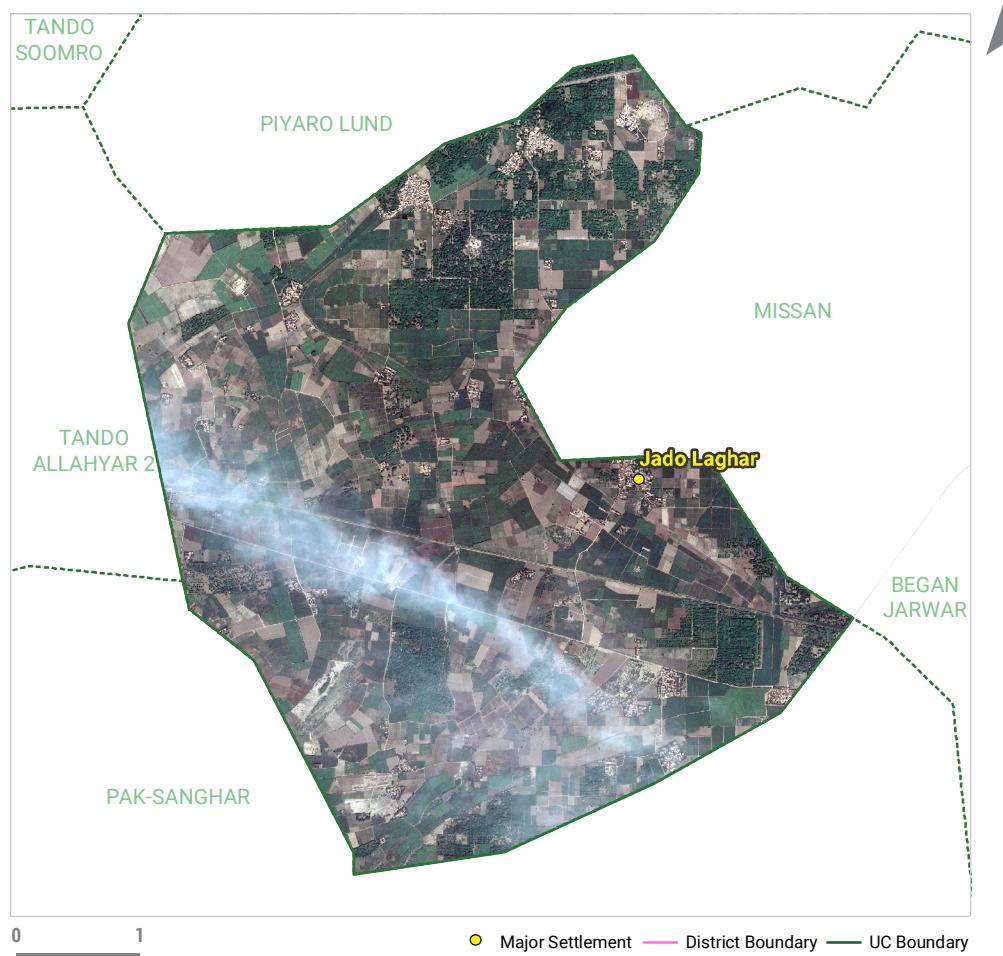


Critical Infrastructure

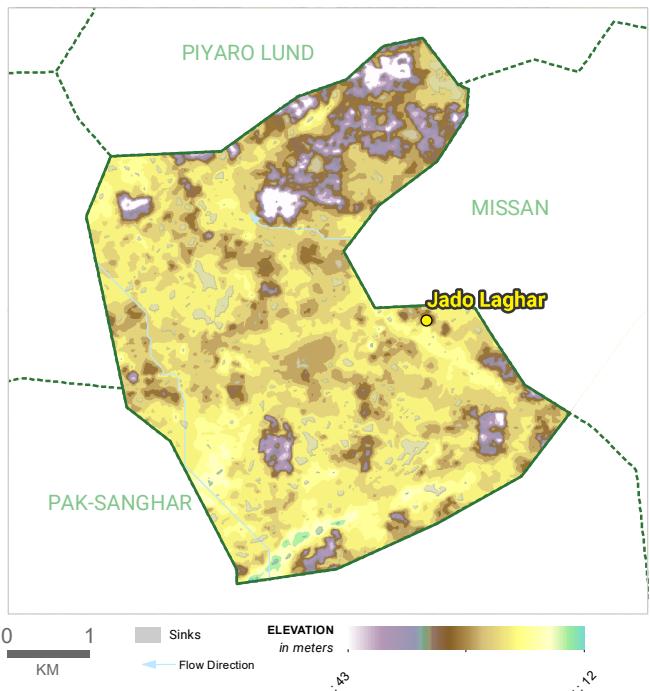


23

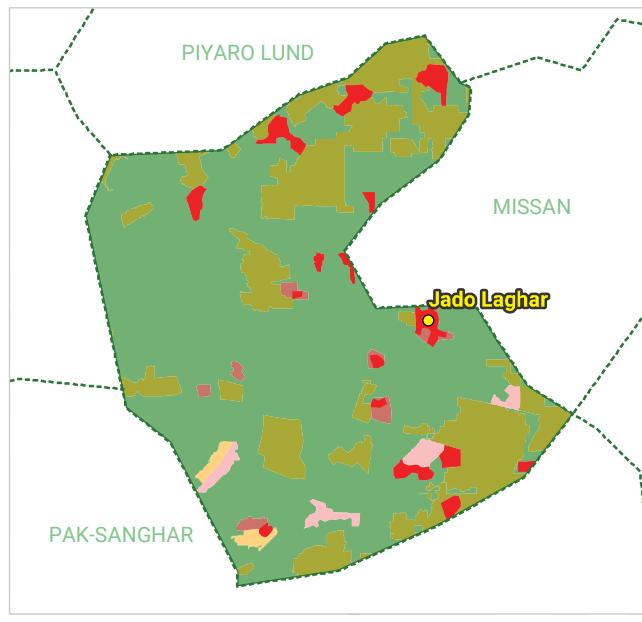
## SATELLITE IMAGERY



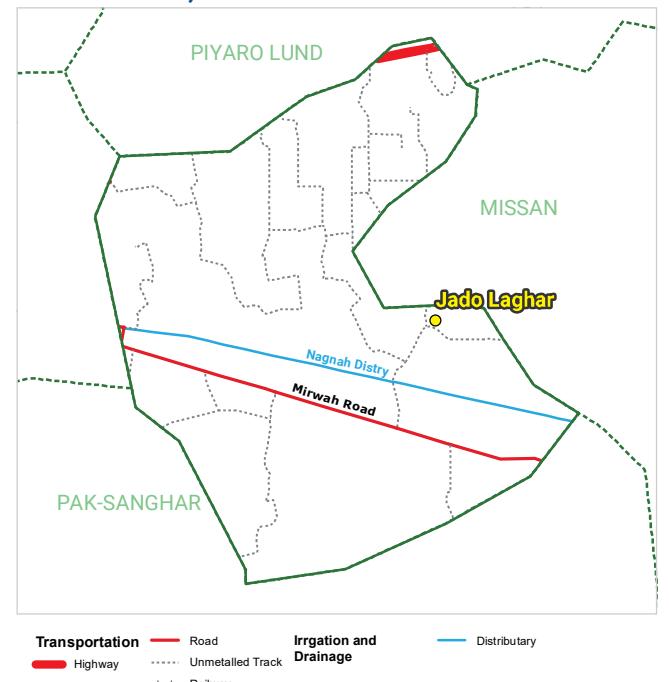
## DEM AND FLOW DIRECTION



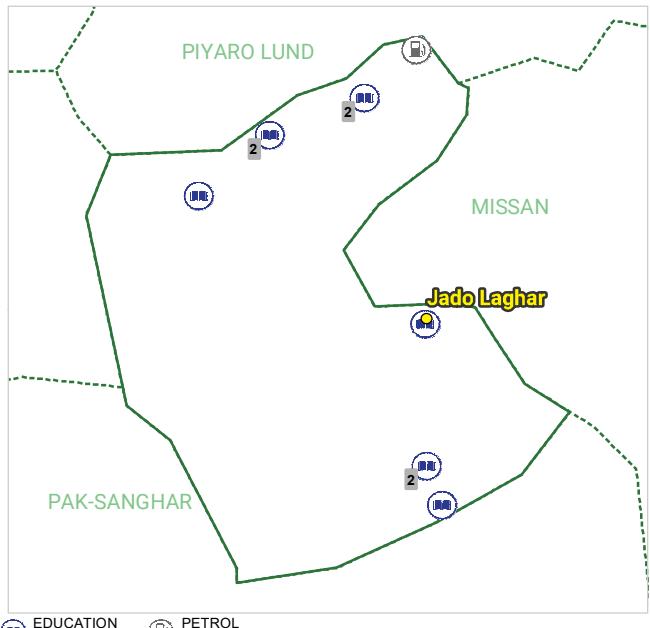
## LAND USE / LAND COVER



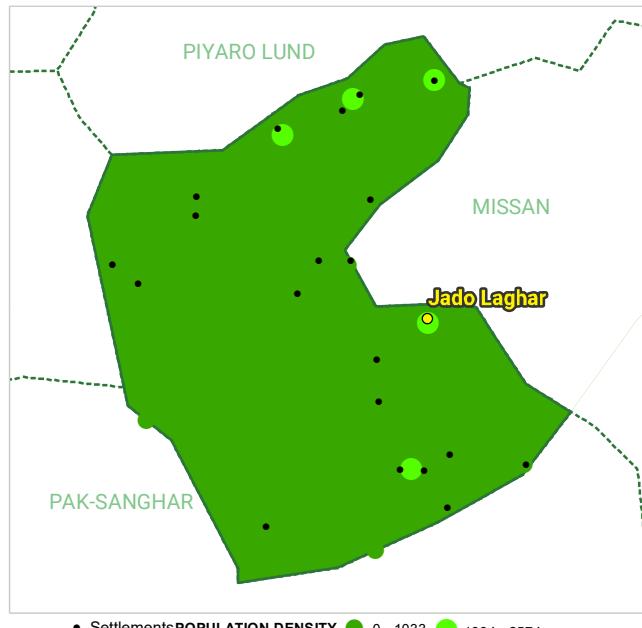
## TRANSPORT, IRRIGATION AND DRAINAGE



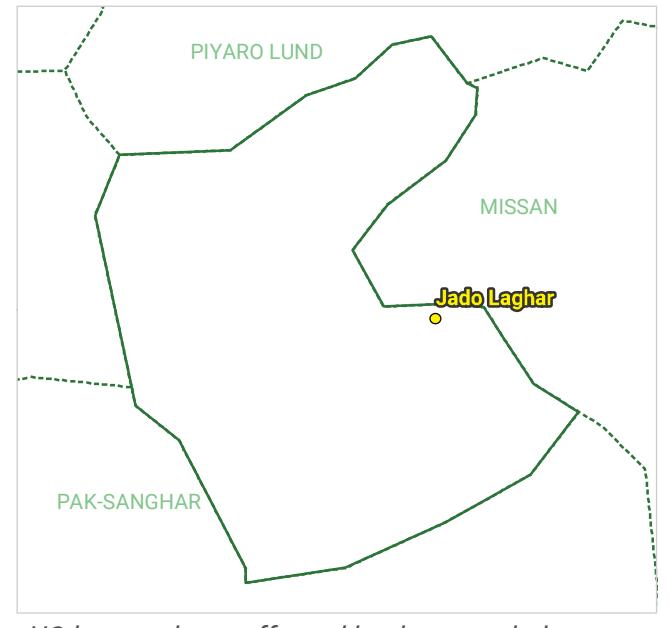
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY

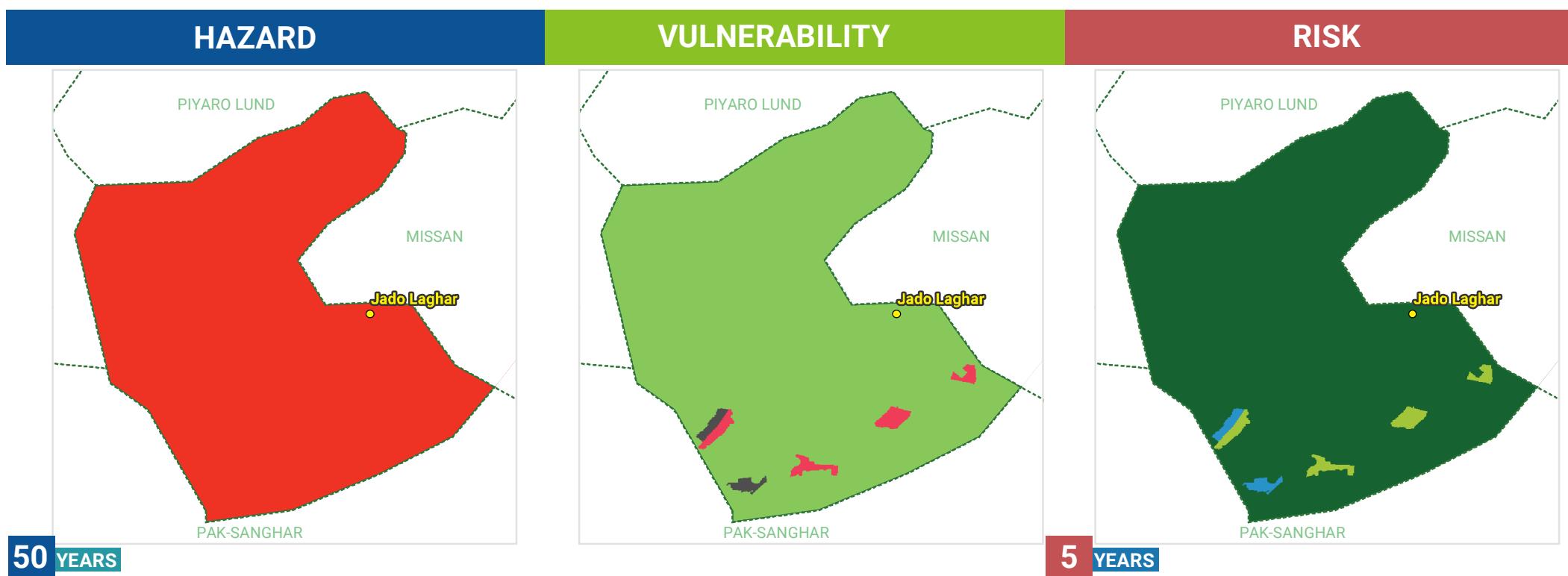
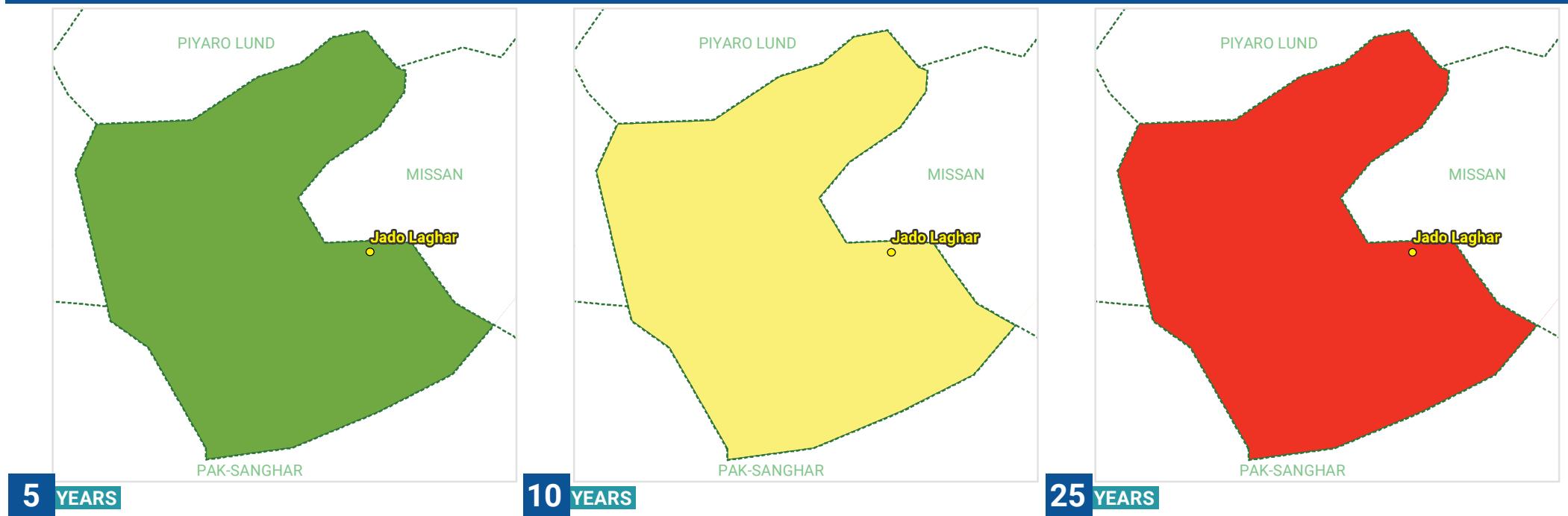
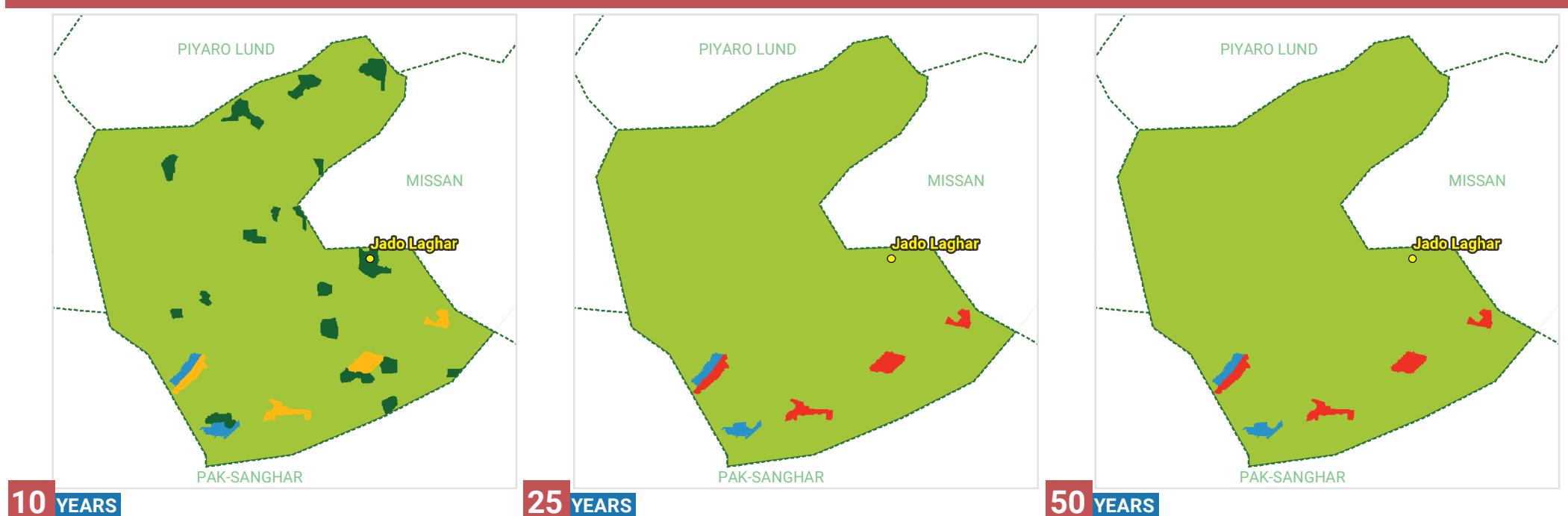


## PAST HAZARDS



**FLOOD**

**THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES**

**METEOROLOGICAL DROUGHT****HAZARD AT DIFFERENT RETURN PERIODS****RISK AT DIFFERENT RETURN PERIODS**

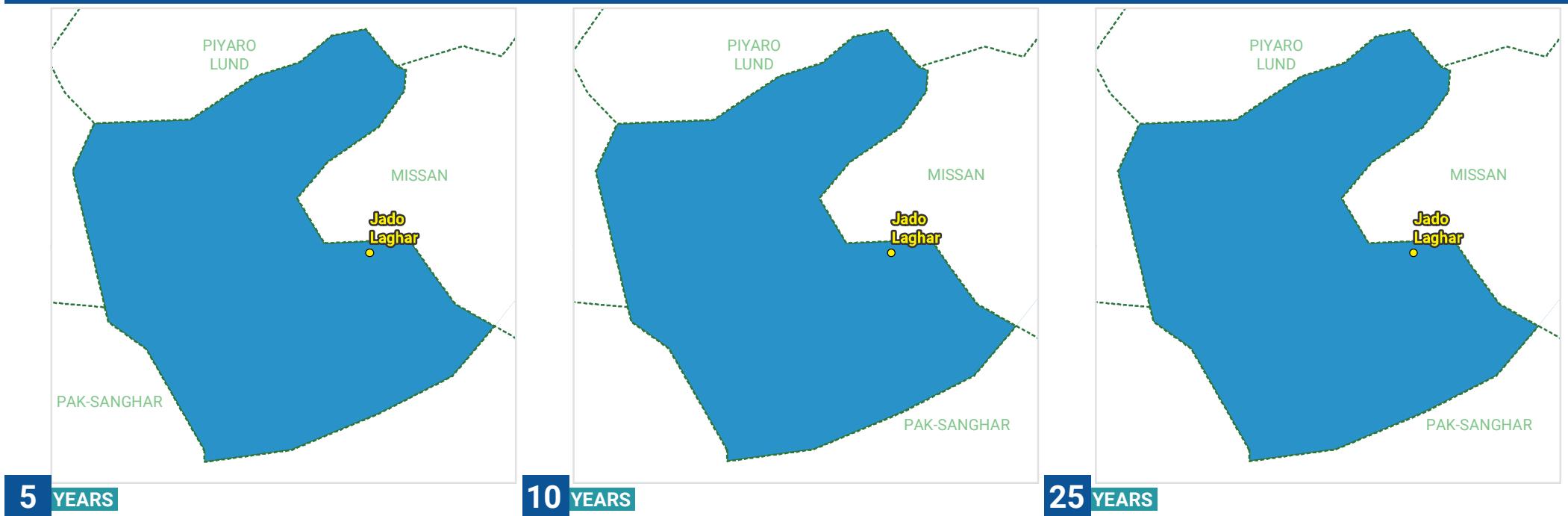
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

23	2468	12746	20.11	0	0	0	0.34
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0	0						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

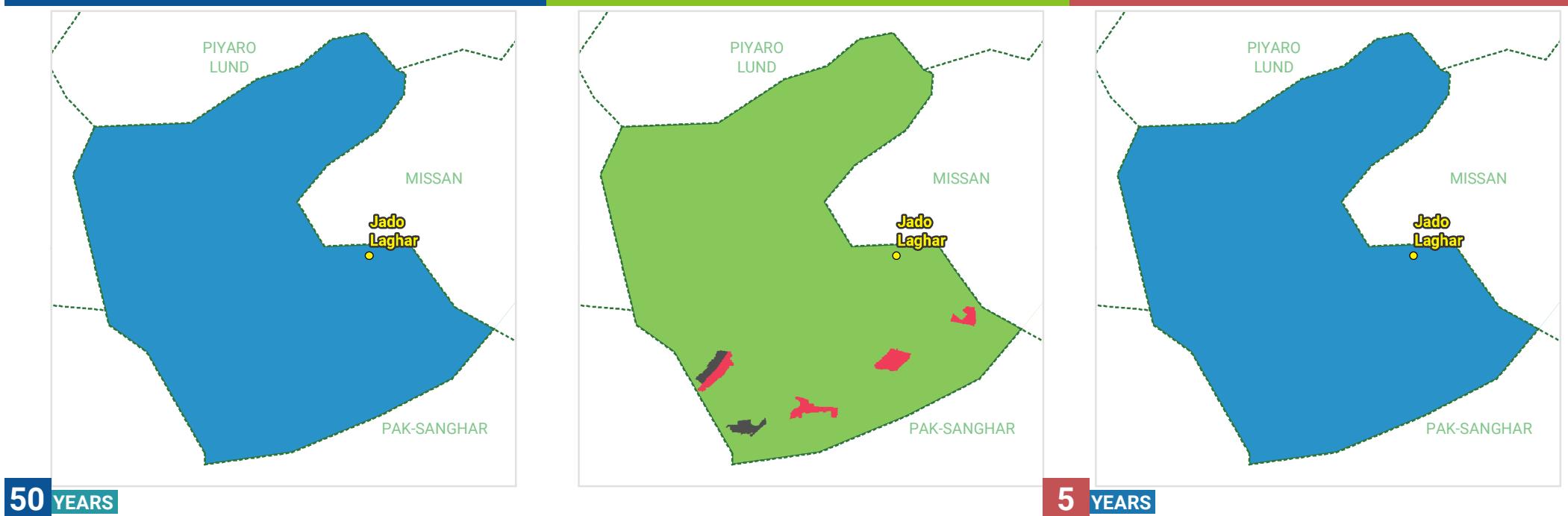
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

## VULNERABILITY

## RISK

No Hazard	Mild	Moderate	None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100	Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
Severe	Extremely Severe										

# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



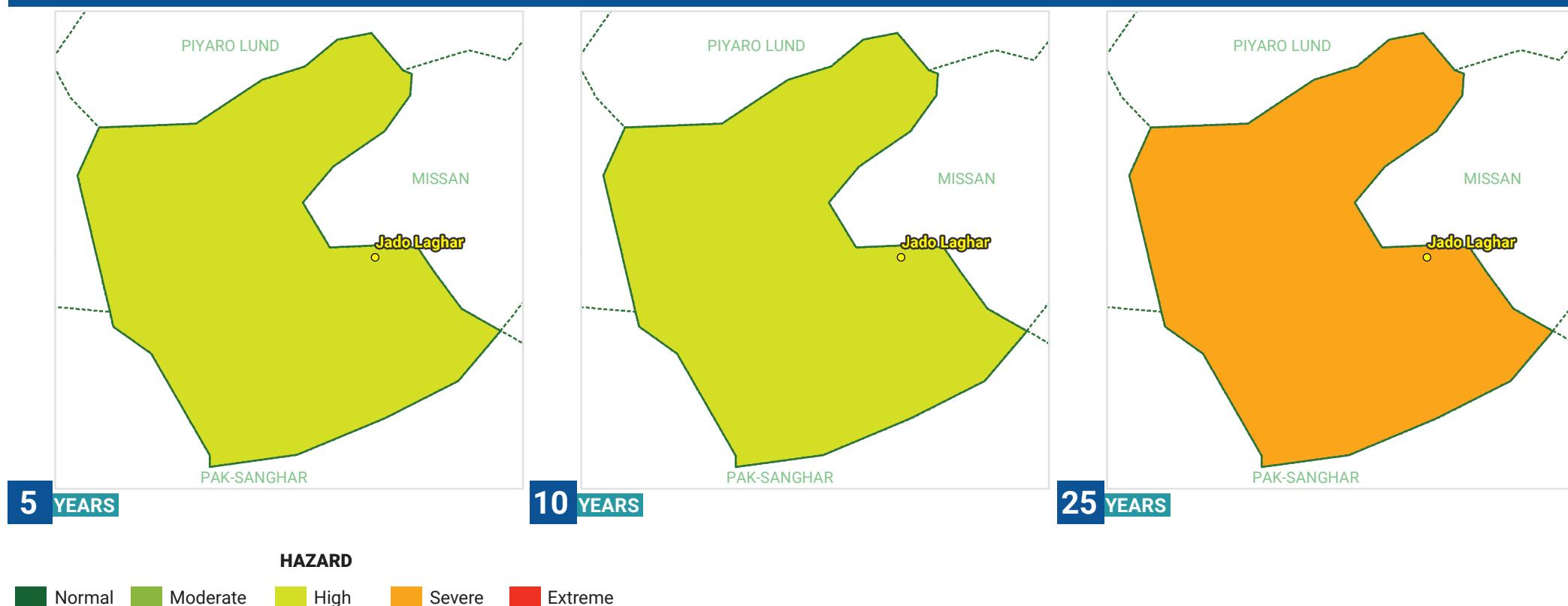
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

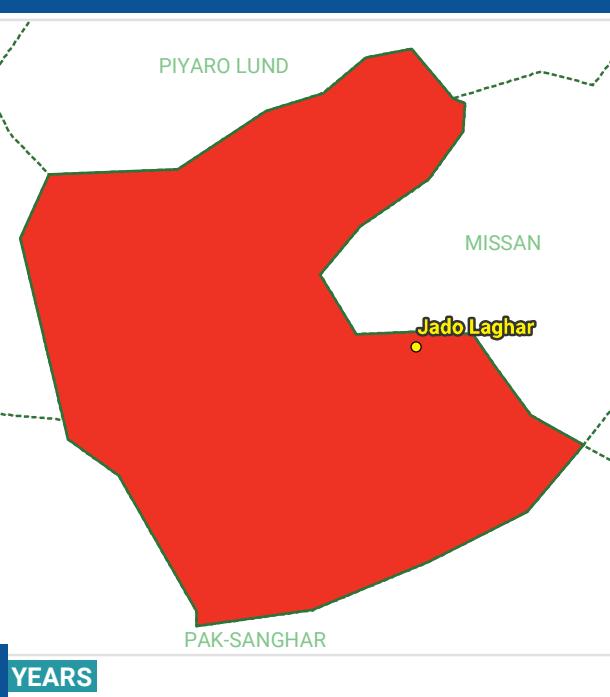
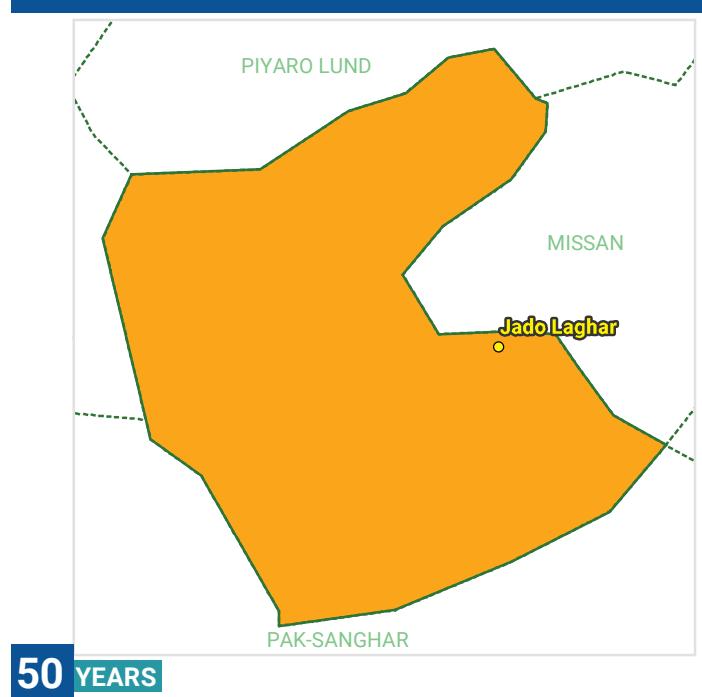
NO ELEMENTS AT RISK FOR AGRICULTURAL DROUGHT

# HEATWAVE

## HAZARD AT DIFFERENT RETURN PERIODS



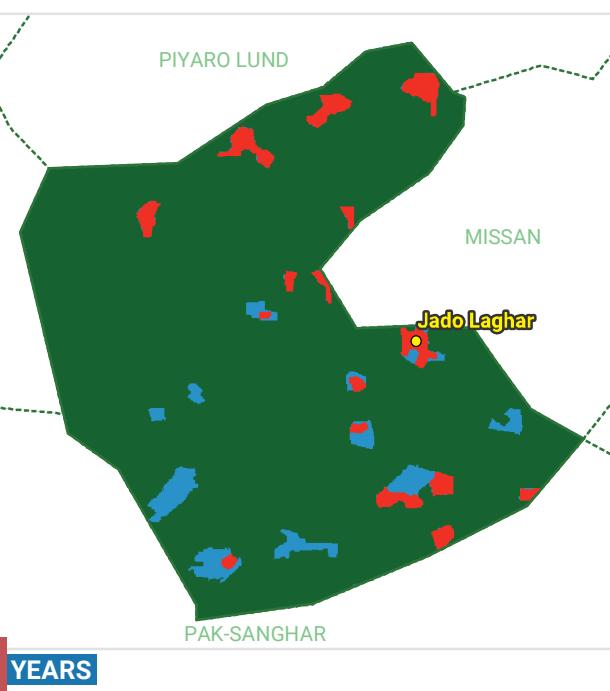
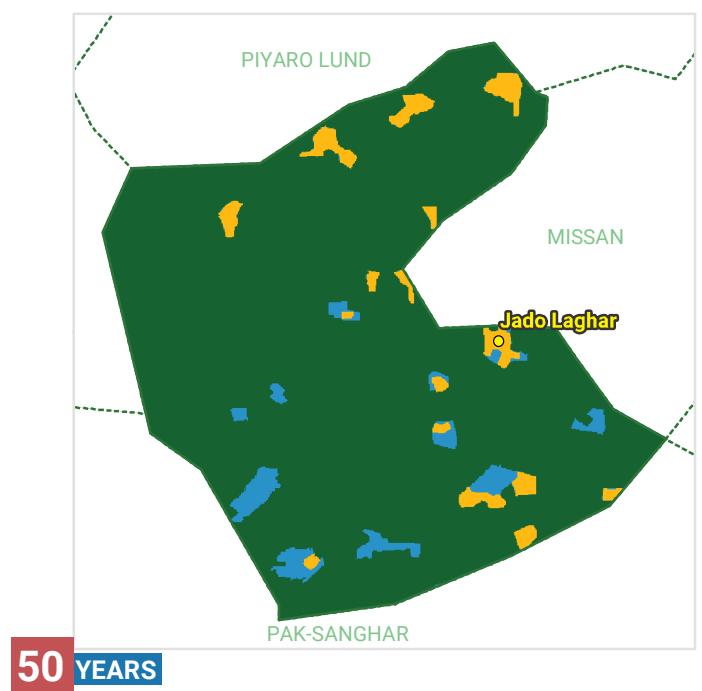
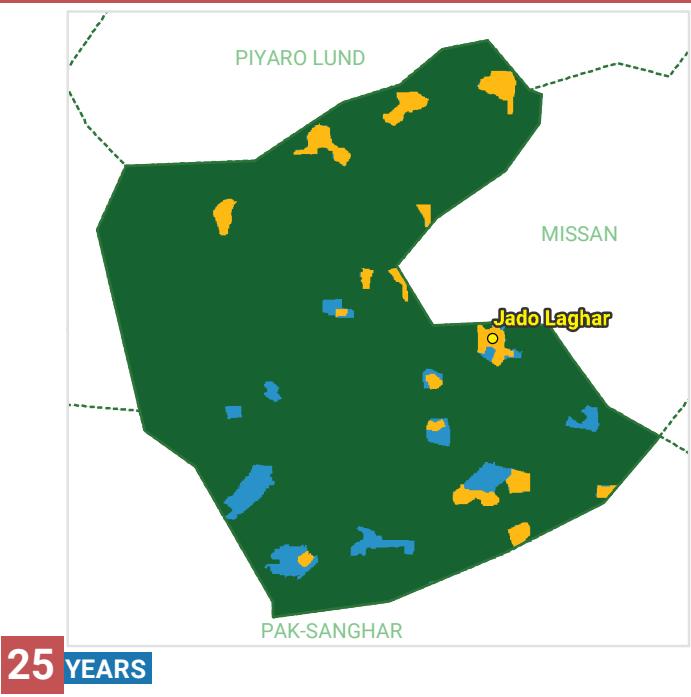
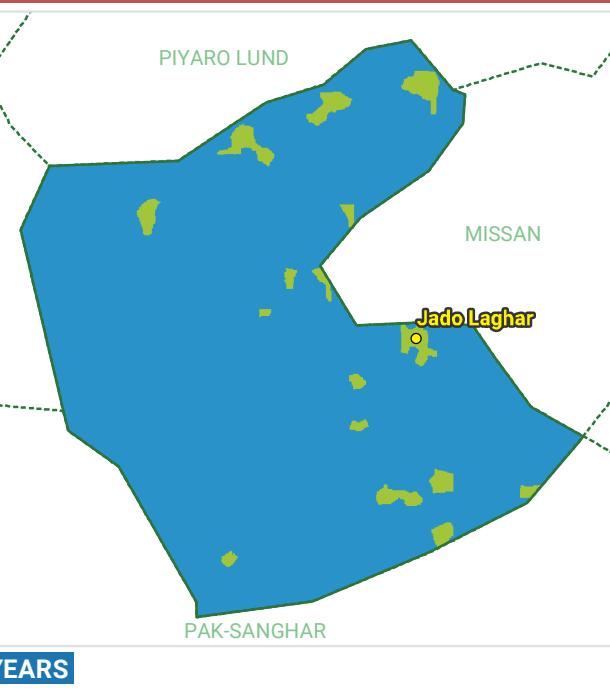
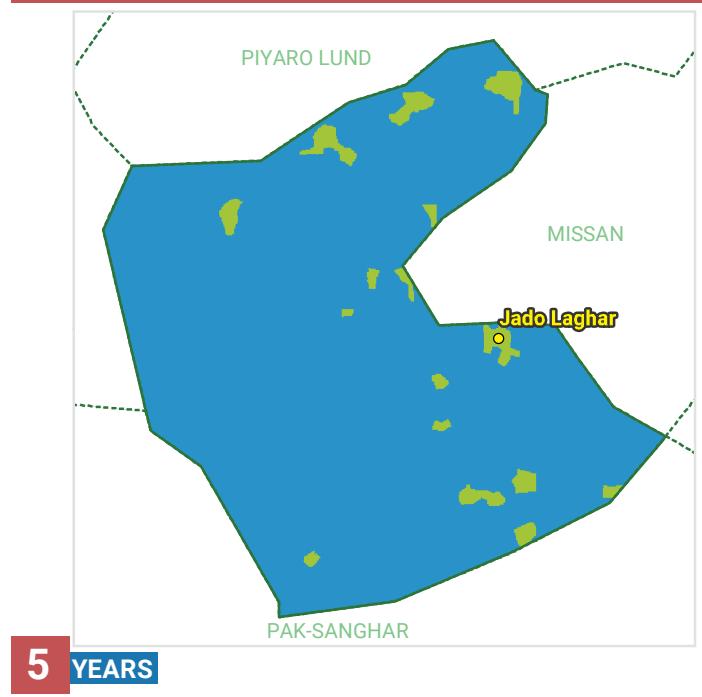
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

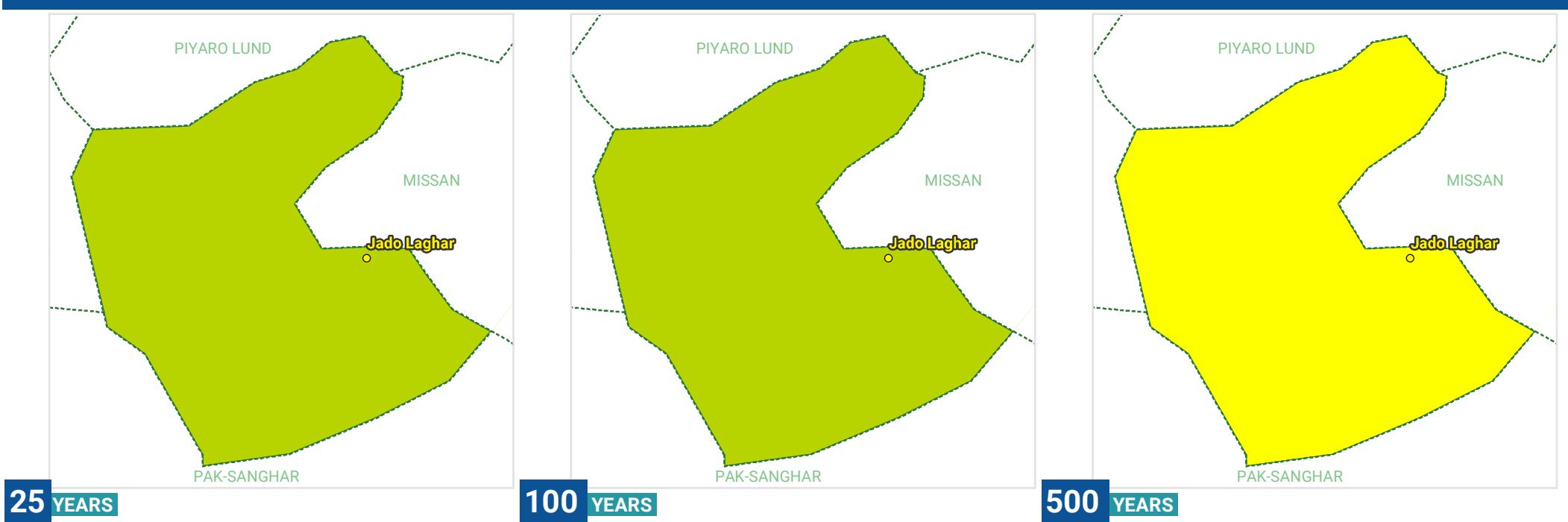
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

23	2449	12639	20.08	0	0	0.77
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

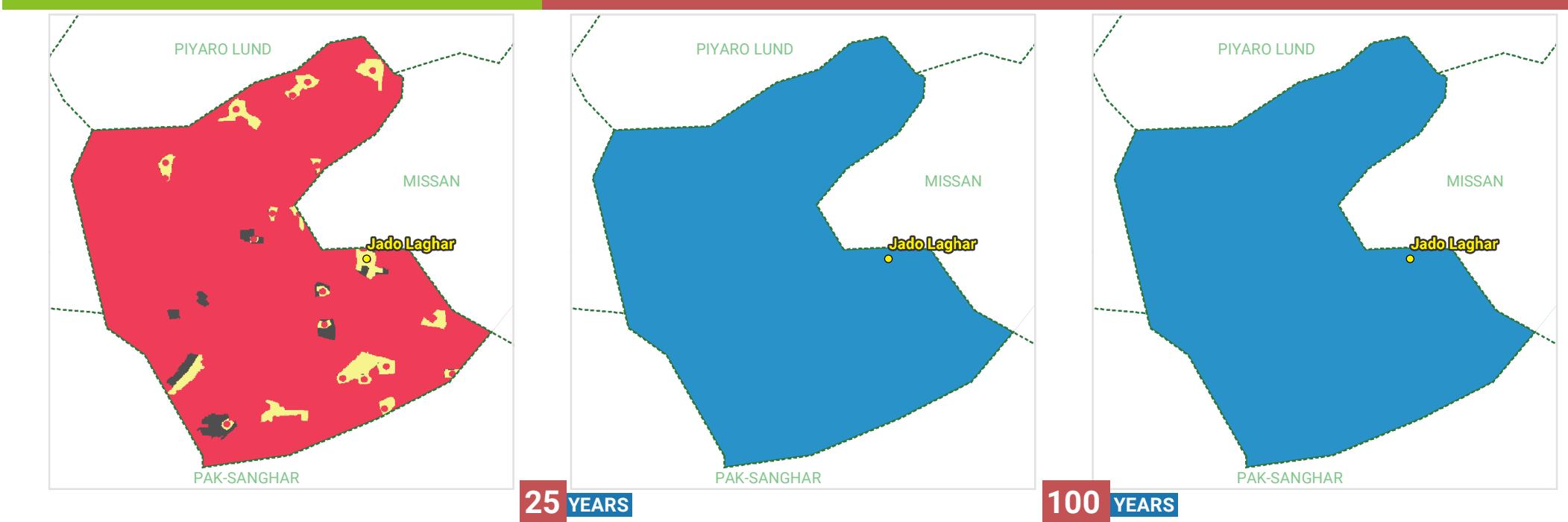
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

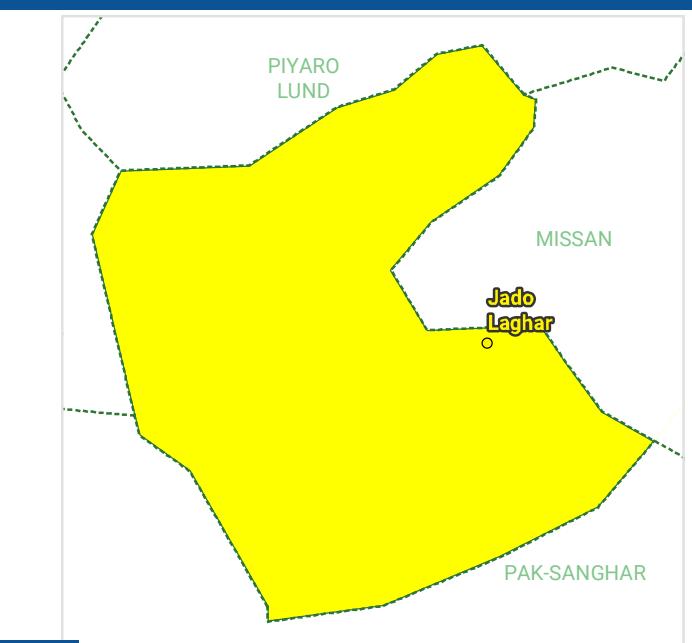
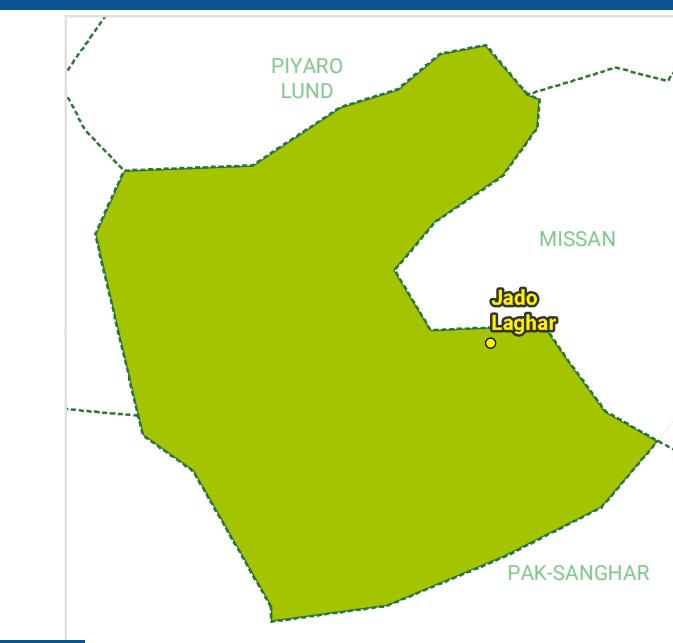
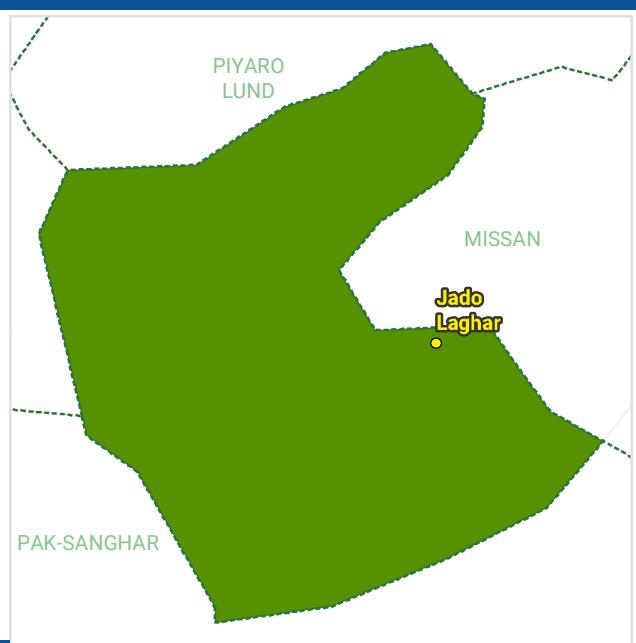
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

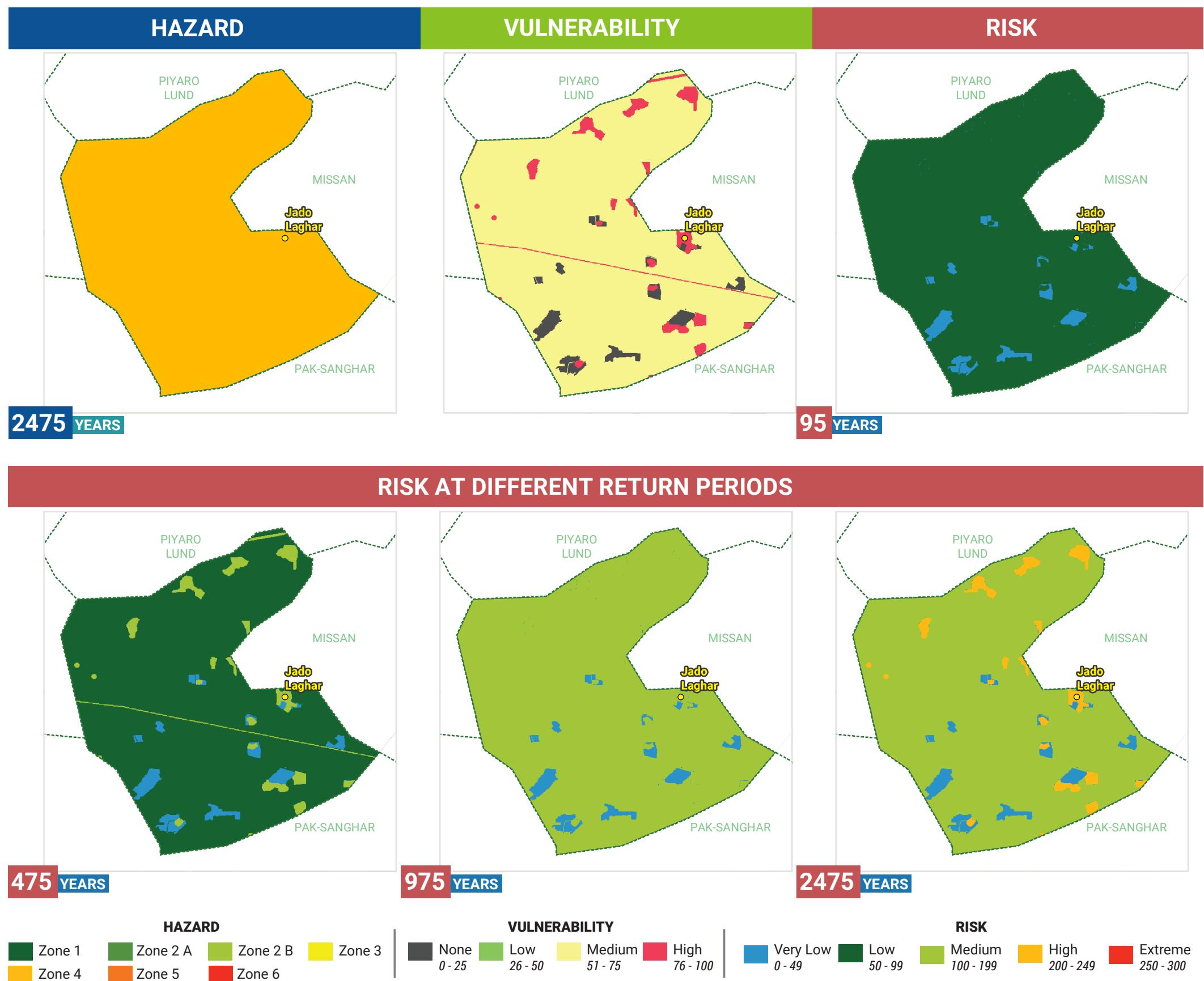
Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

# EARTHQUAKE



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

23	2443	12620	20.09	0	0	0	0
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
0.76	0.02	35.70	0	5.63	0	0	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
9	0	0	0	0	0	0	1
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
0	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX





## UC - TANDO SOOMRO

Union Council area in sq. km

137

Surrounding UCs / Features

DASORI in North  
**TANDO ALLAHYAR 2** in South East  
 PIYARO LUND in East  
 DHINGANO BOZDAR in South  
 MATIARI DISTRICT in West

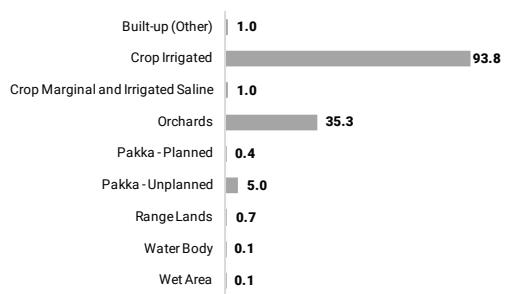
Population

2017 approx. 88,899

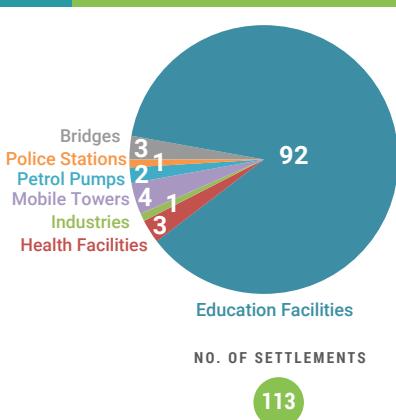
No. of household

2017 approx. 17,945

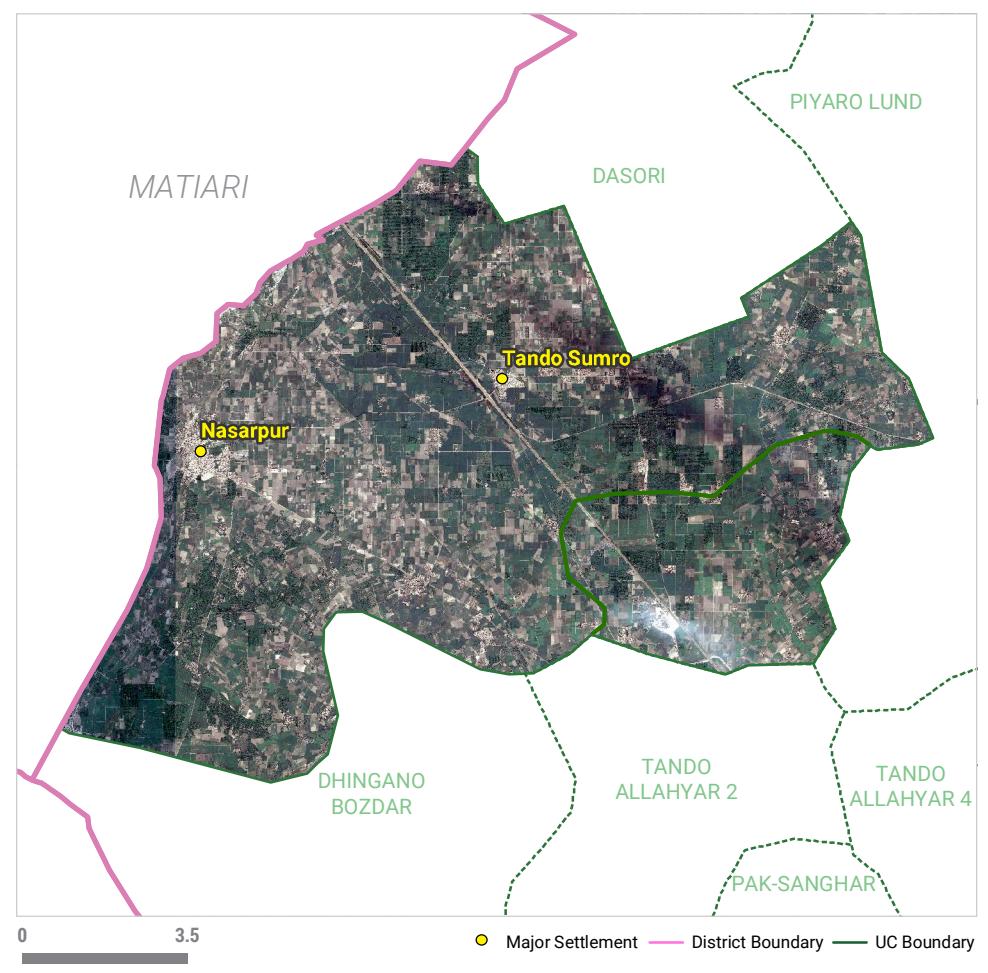
**Land Use Land Cover**  
coverage area in sq.km



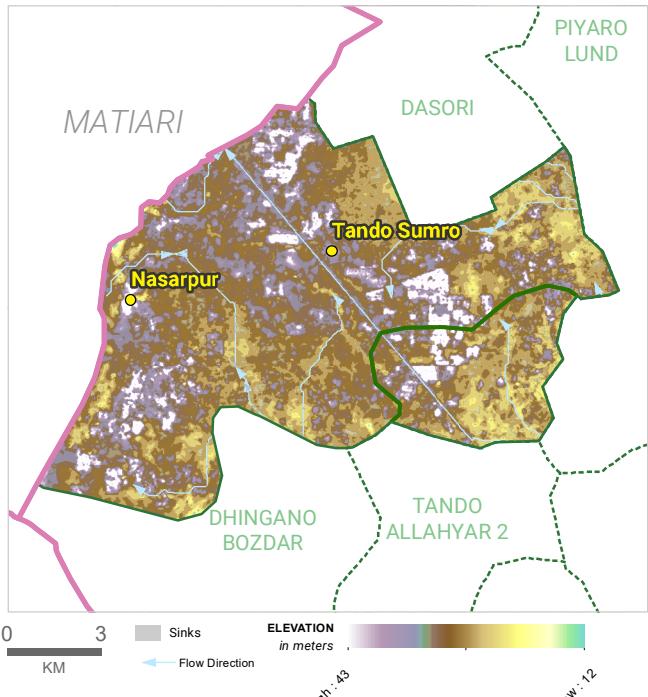
**Critical Infrastructure**



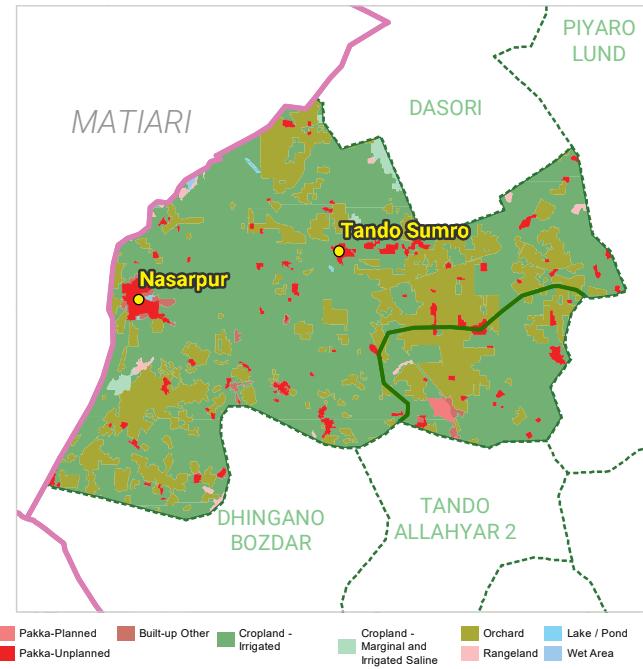
## SATELLITE IMAGERY



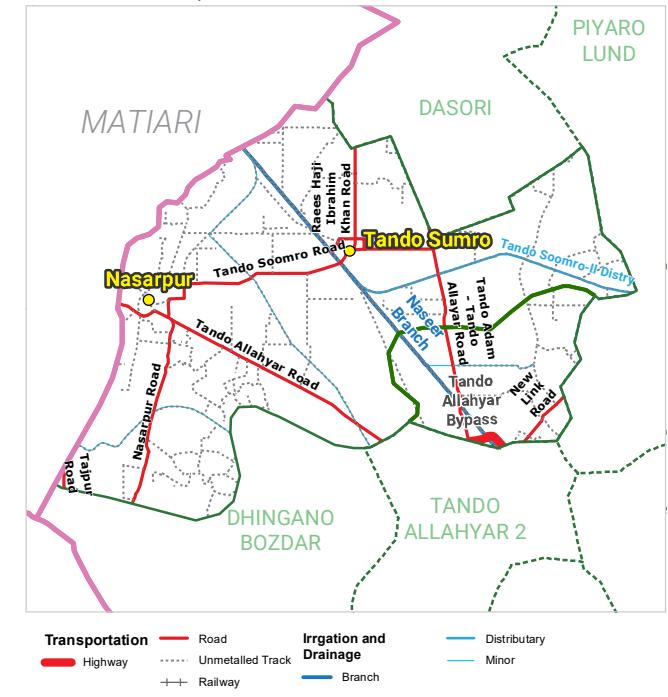
## DEM AND FLOW DIRECTION



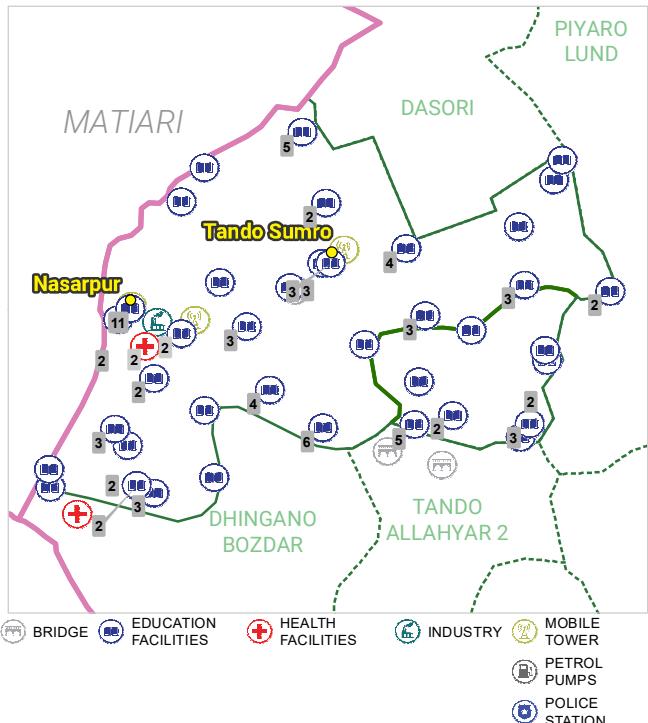
## LAND USE / LAND COVER



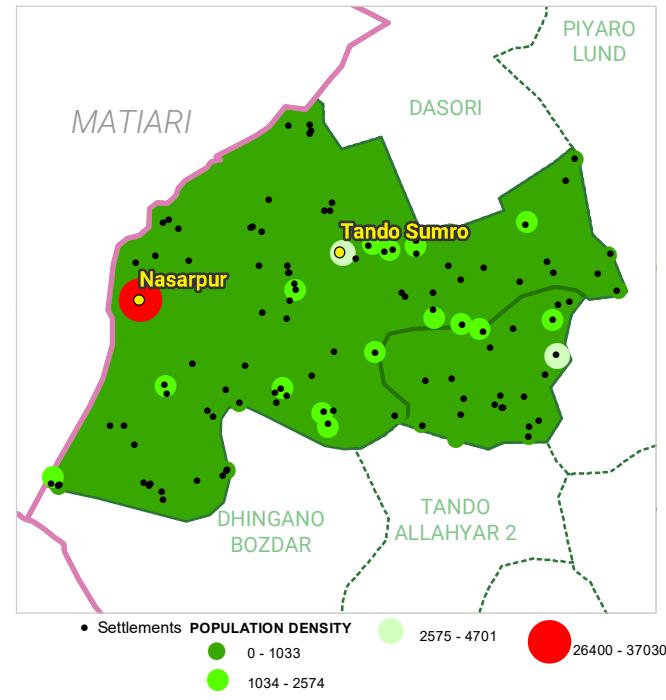
## TRANSPORT, IRRIGATION AND DRAINAGE



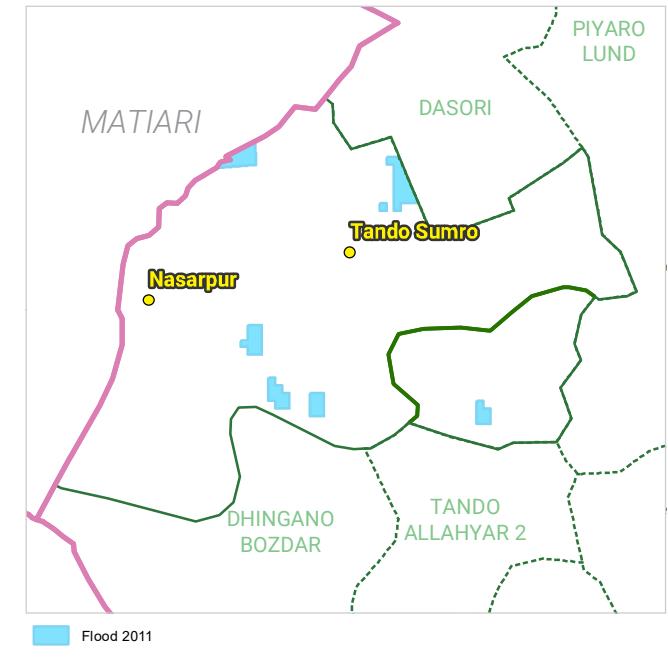
## CRITICAL INFRASTRUCTURE



## POPULATION DENSITY



## PAST HAZARDS

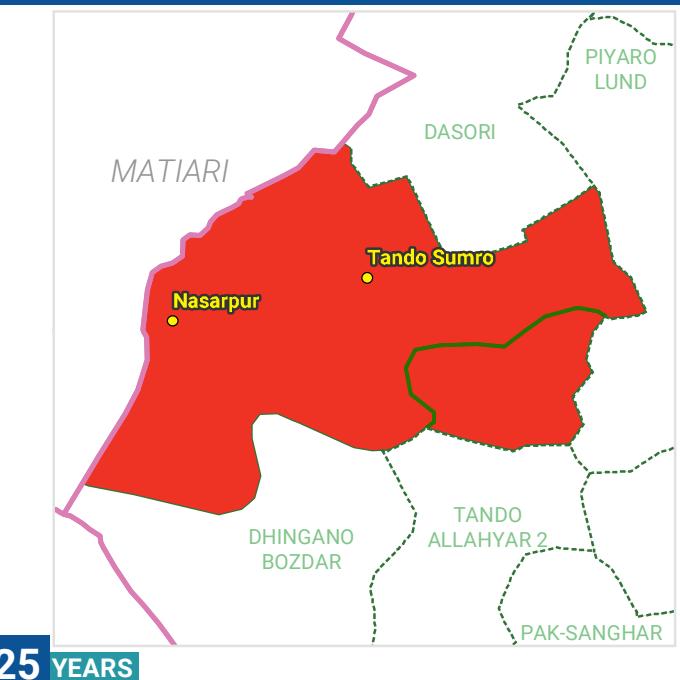
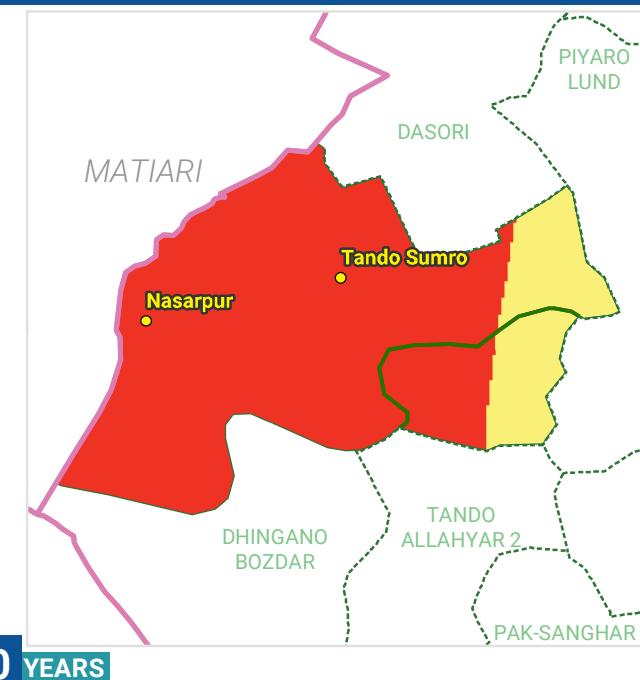
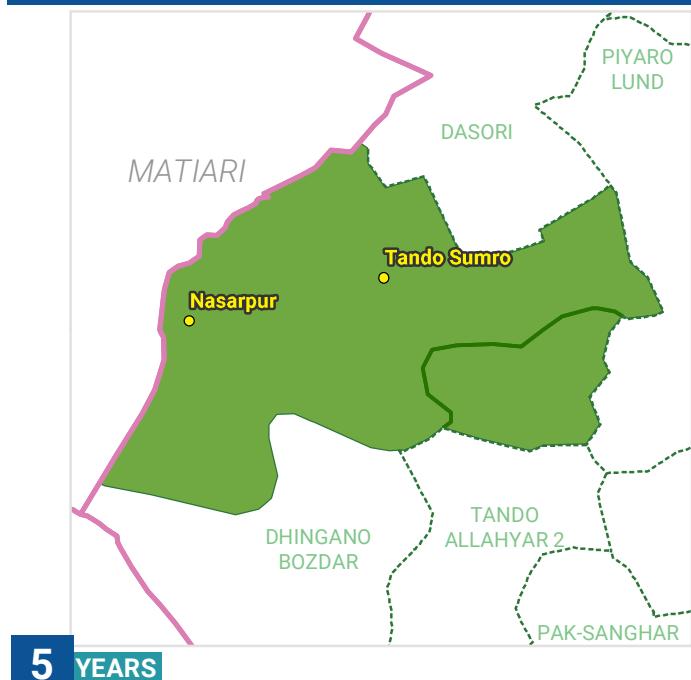


# FLOOD

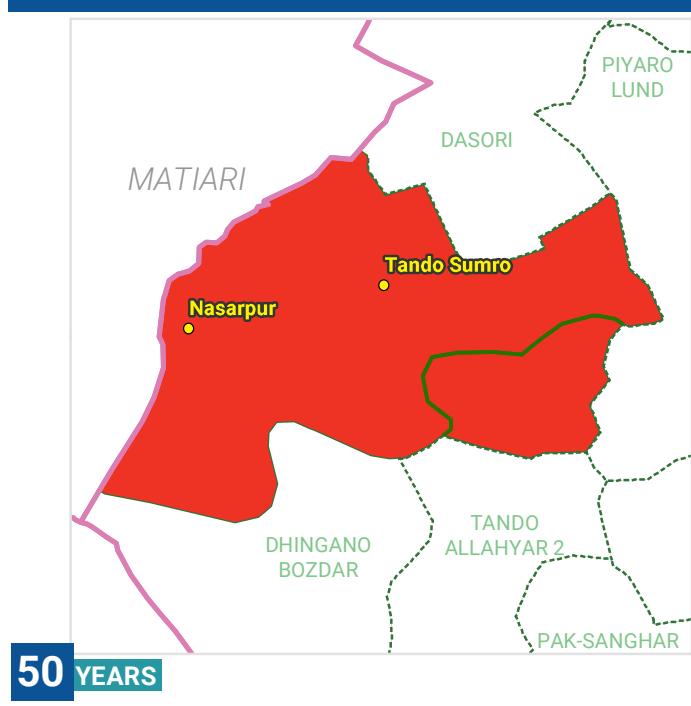
**THERE IS NO HAZARD/RISK OF RIVERINE FLOOD IN THIS UC, HOWEVER IT IS PRONE TO THE FLOODS OCCURRING DUE TO HEAVY RAINFALL AND EMBANKMENT BREACHES**

## METEOROLOGICAL DROUGHT

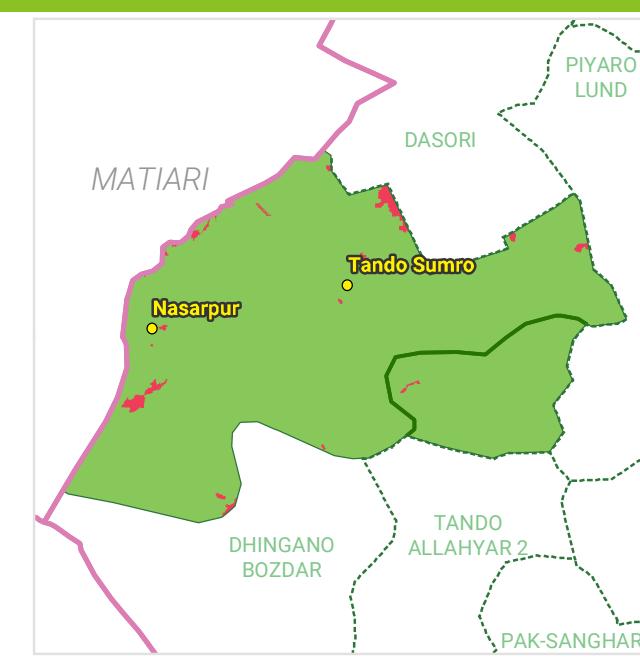
### HAZARD AT DIFFERENT RETURN PERIODS



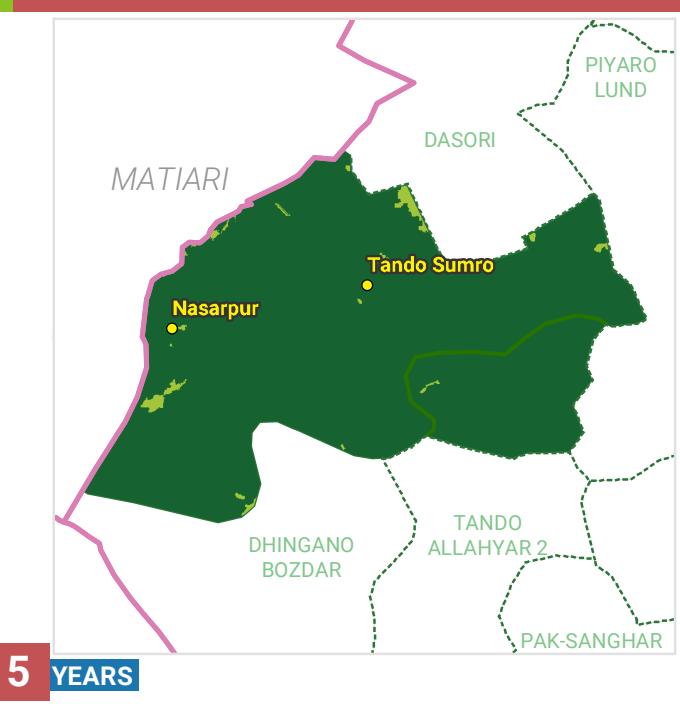
### HAZARD



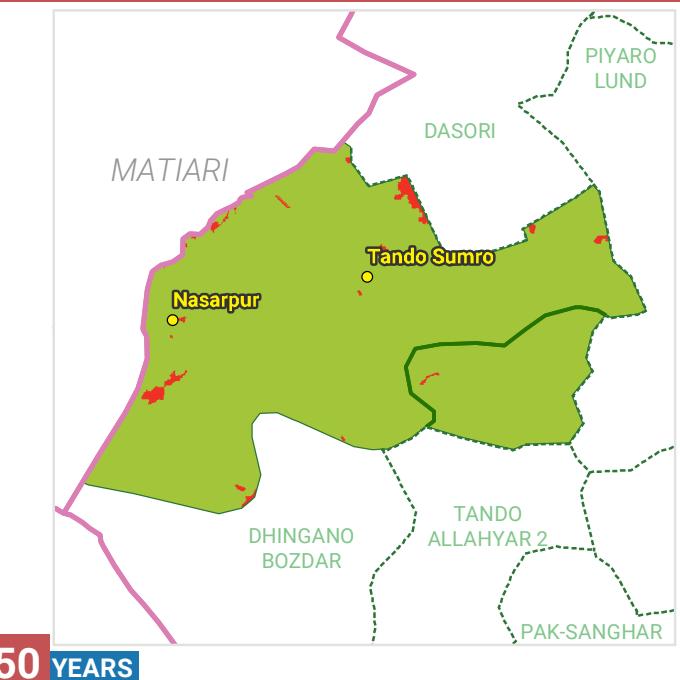
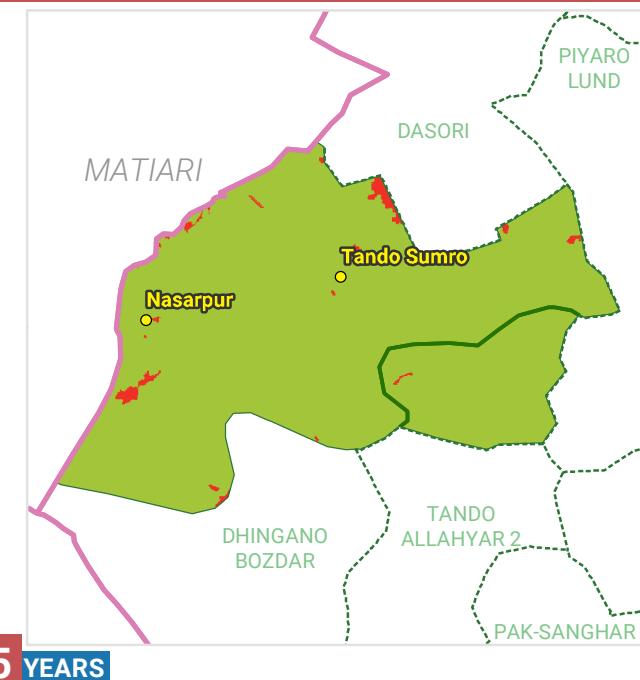
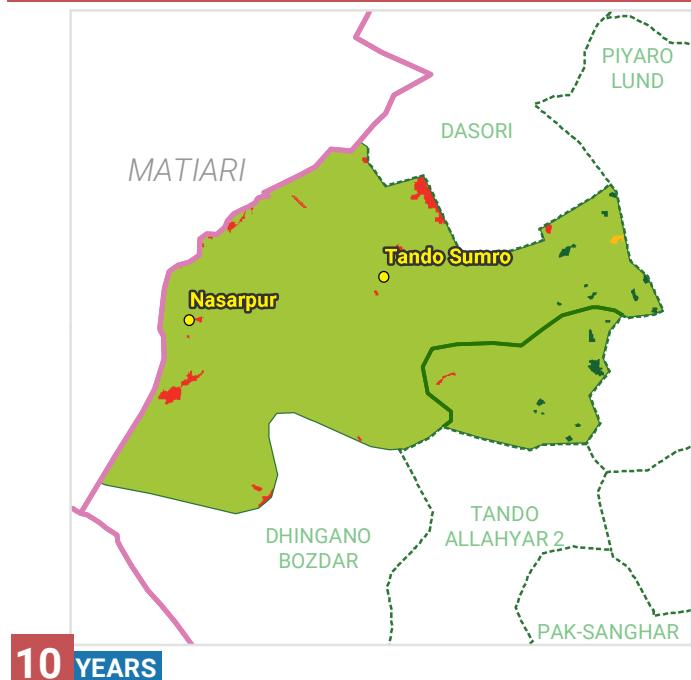
### VULNERABILITY



### RISK



### RISK AT DIFFERENT RETURN PERIODS



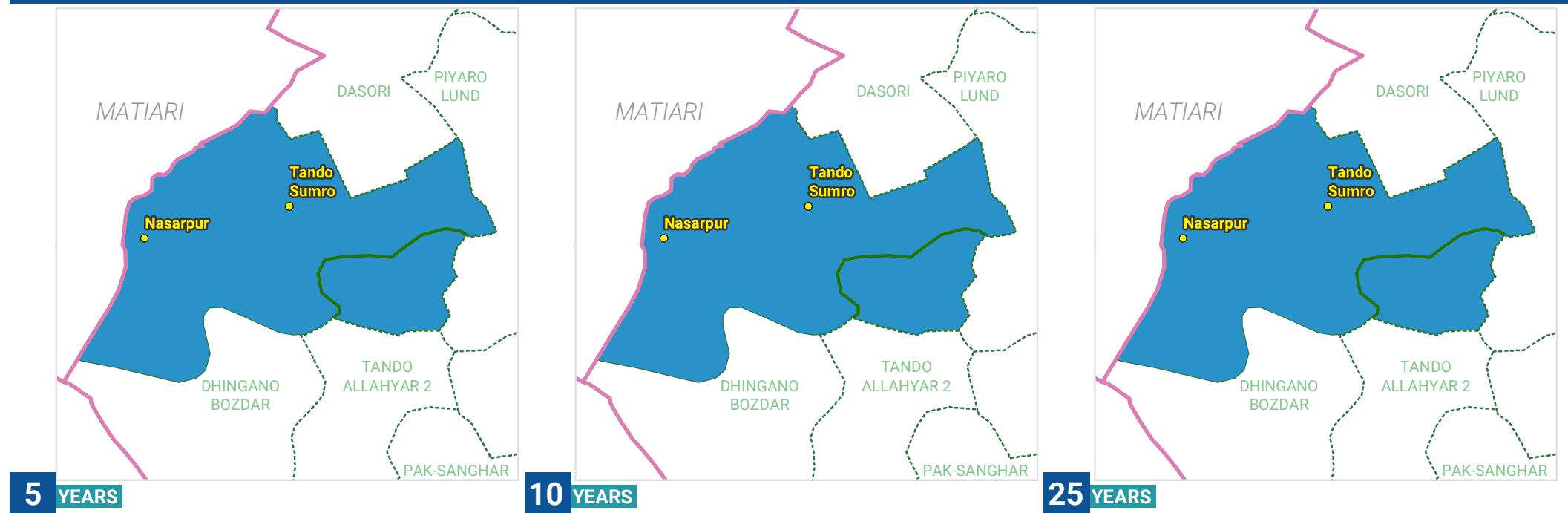
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

113	17945	88899	130.11	0	0	0	0.73
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	BARE AREA WITH SPARSE NATURAL VEGETATION (SQ. KM)	FOREST AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	RANGE LAND (SQ. KM)
0.11	0.12						
WATER BODY (SQ. KM)	WET AREA (SQ. KM)						

## AGRICULTURAL DROUGHT

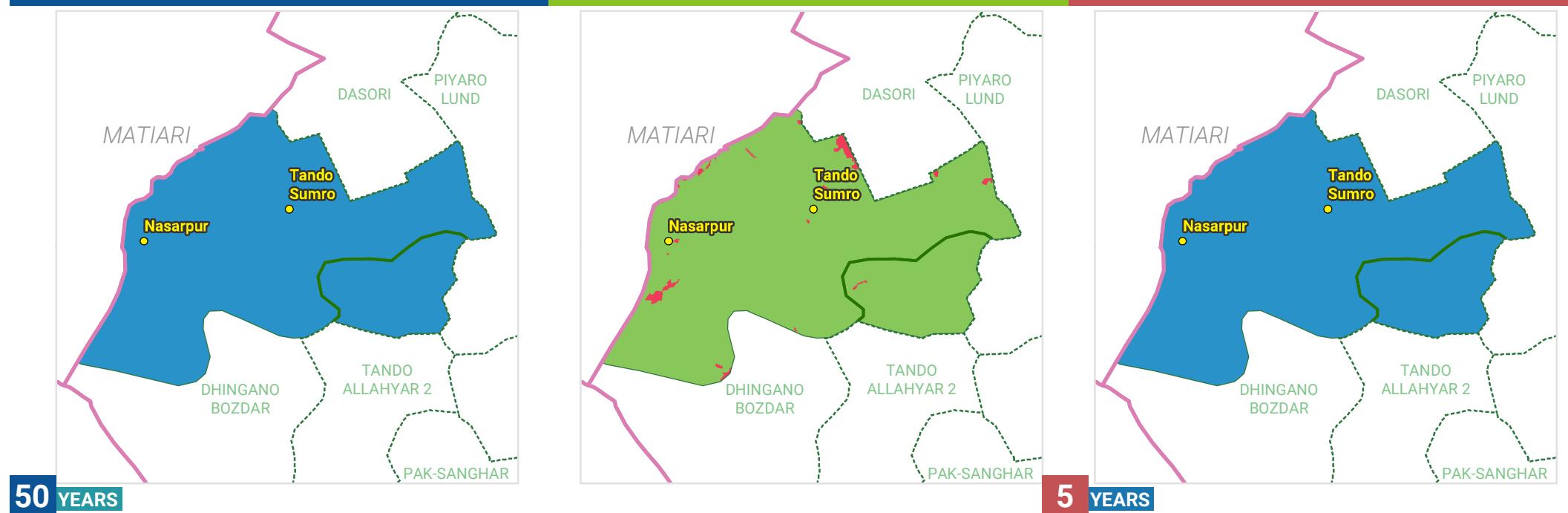
## HAZARD AT DIFFERENT RETURN PERIODS



## HAZARD

## VULNERABILITY

## RISK



## HAZARD

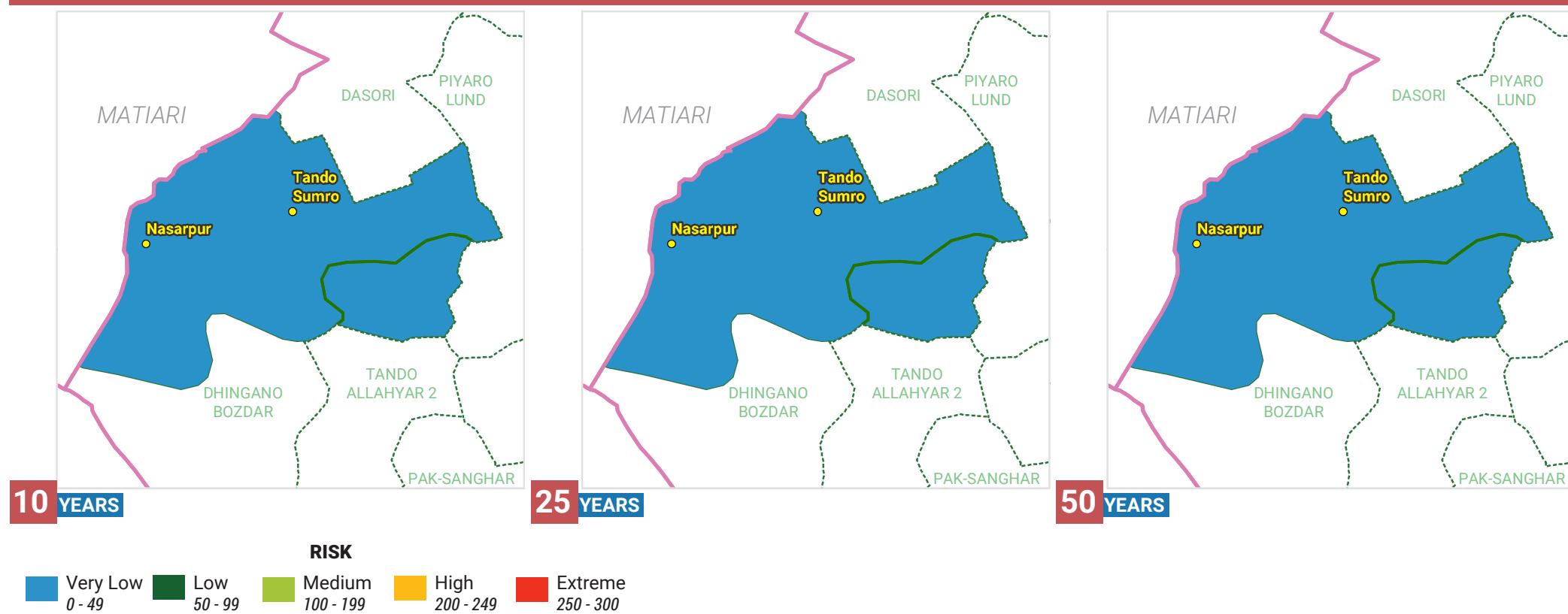
## VULNERABILITY

## RISK

No Hazard	Mild	Moderate	None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100	Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
Severe	Extremely										

# AGRICULTURAL DROUGHT

## RISK AT DIFFERENT RETURN PERIODS



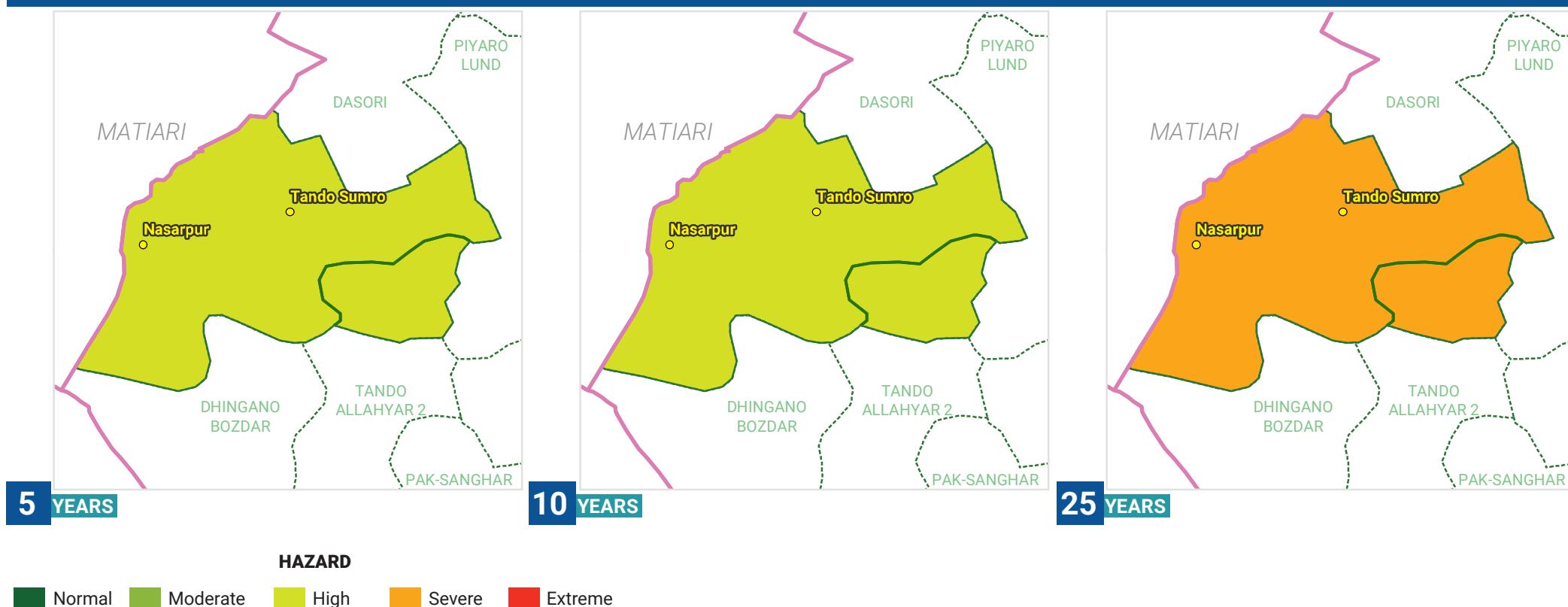
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

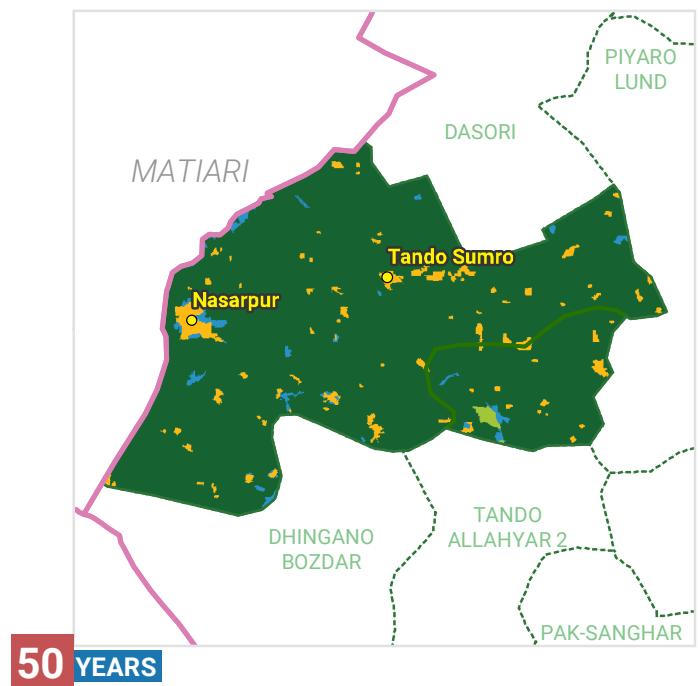
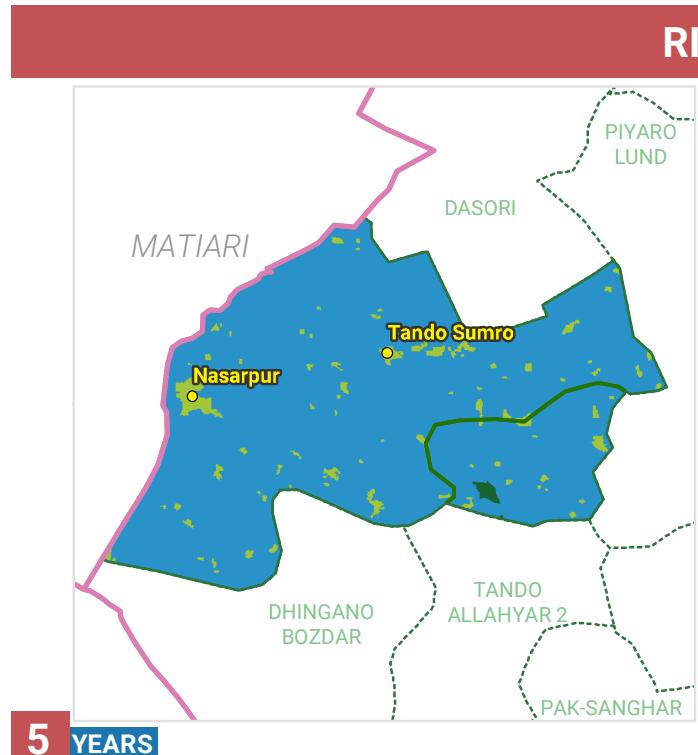
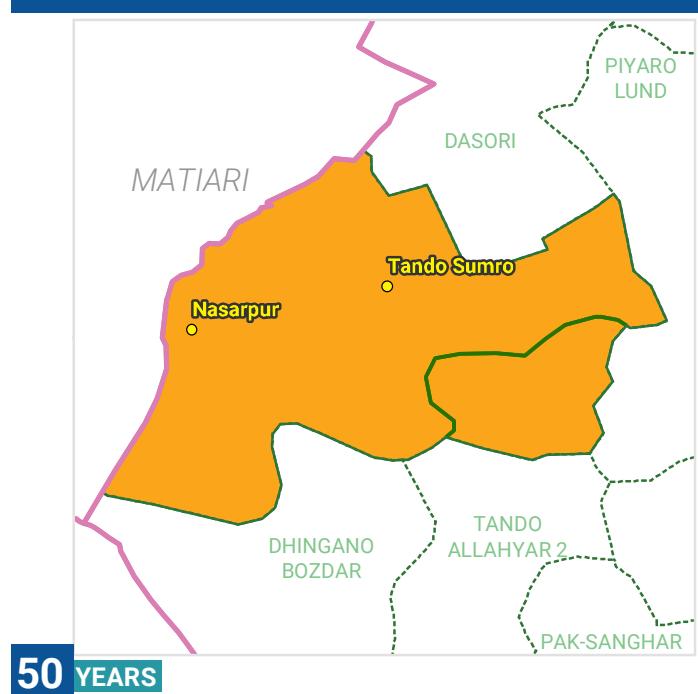
NO ELEMENTS AT RISK FOR AGRICULTURAL DROUGHT

# HEATWAVE

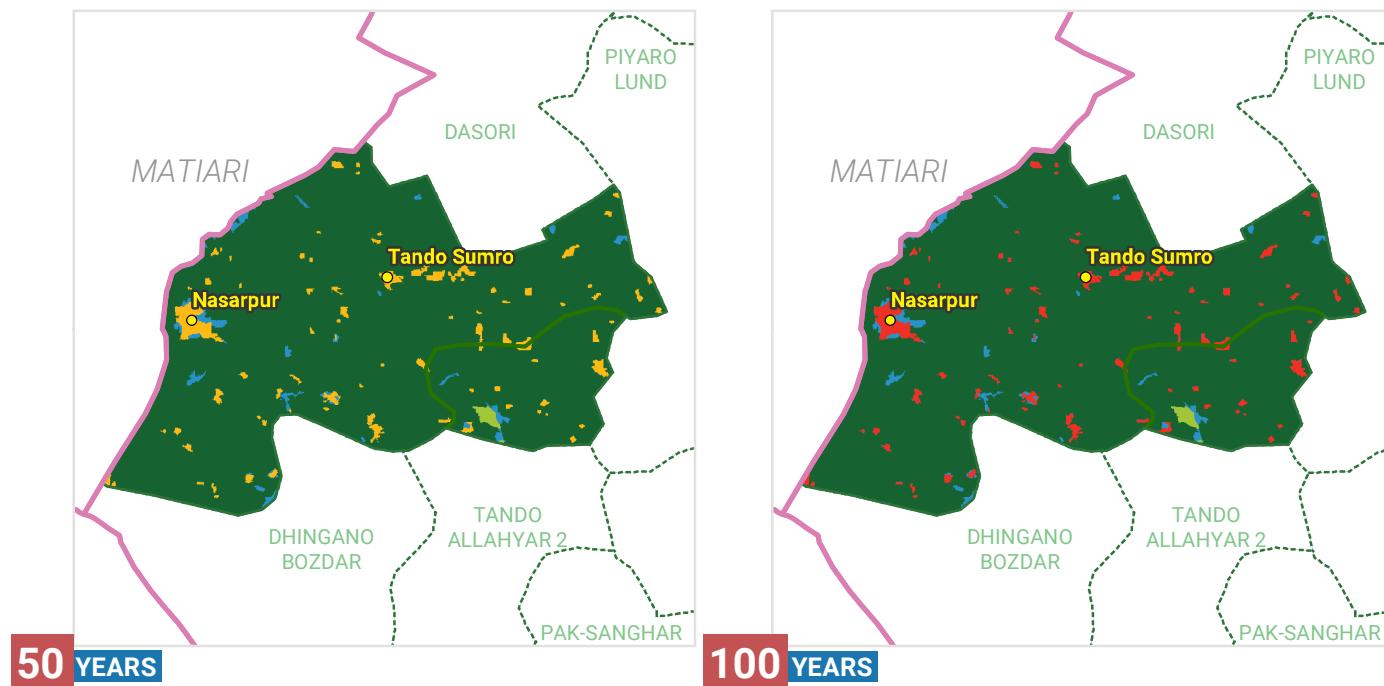
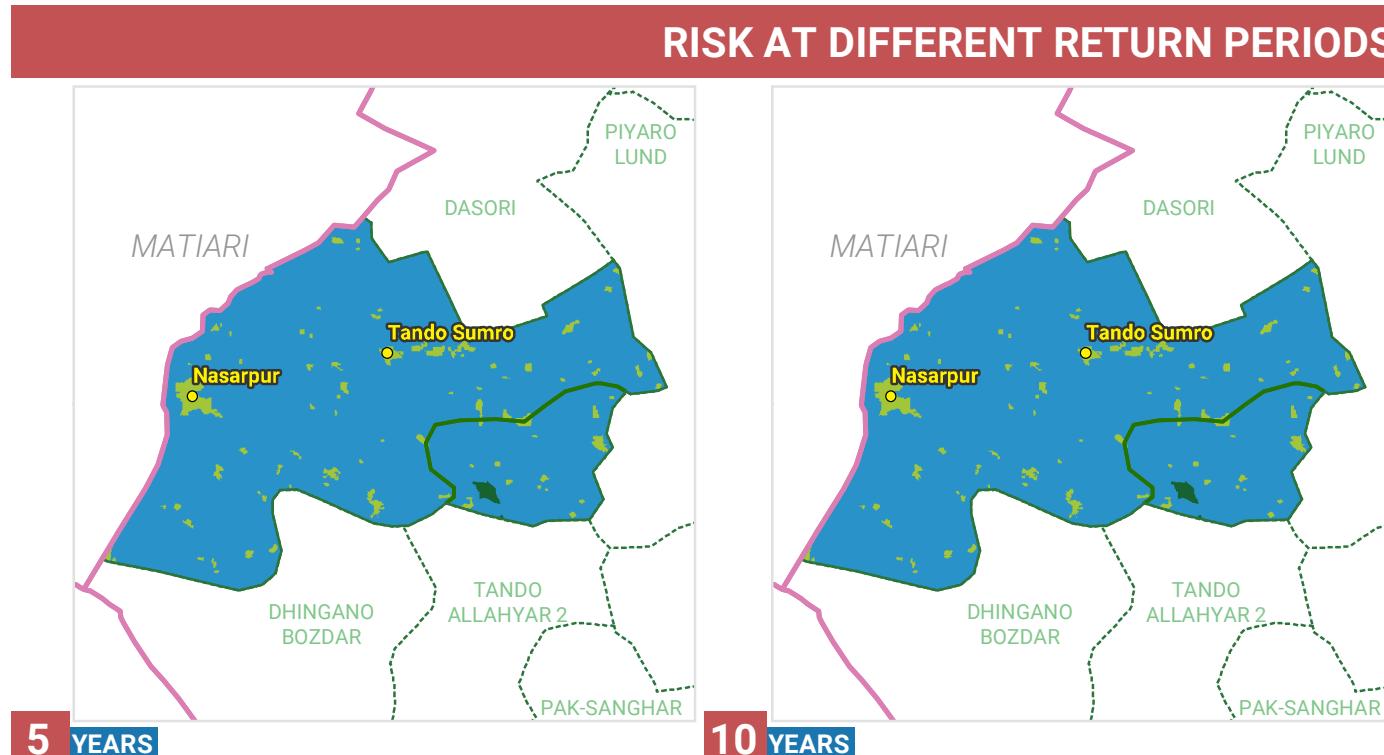
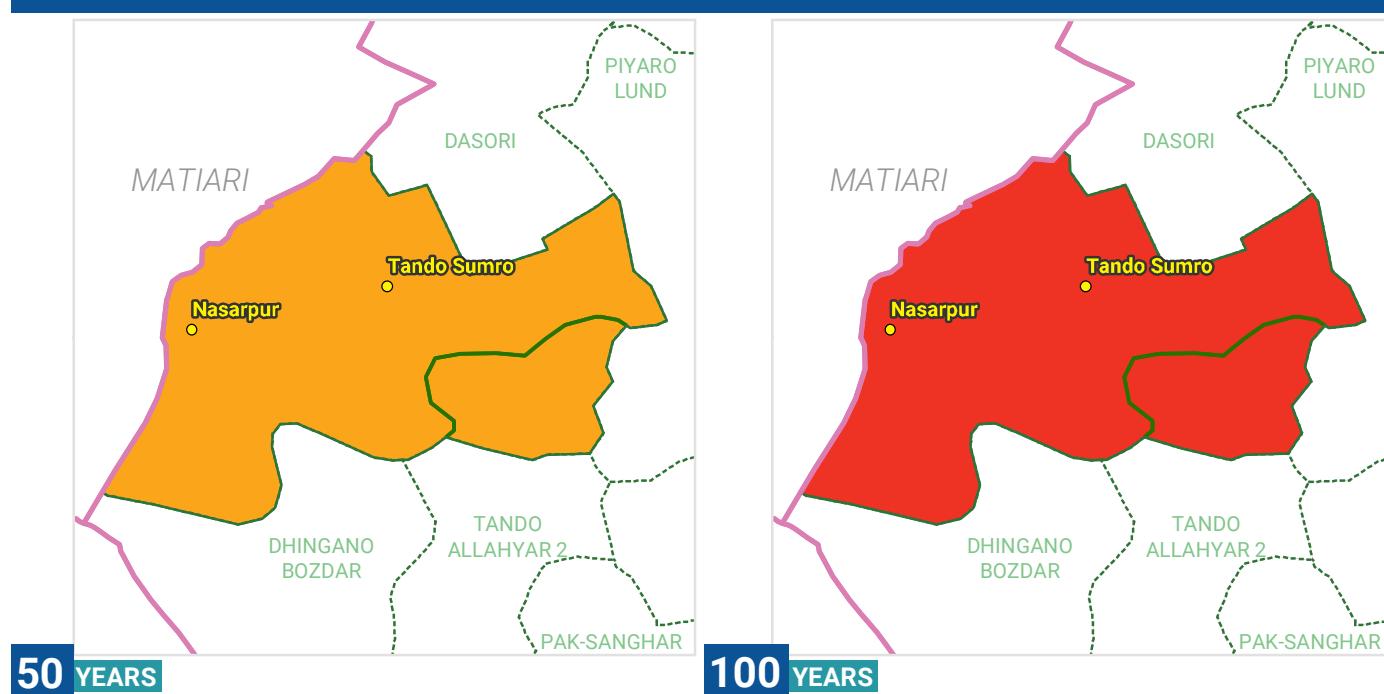
## HAZARD AT DIFFERENT RETURN PERIODS



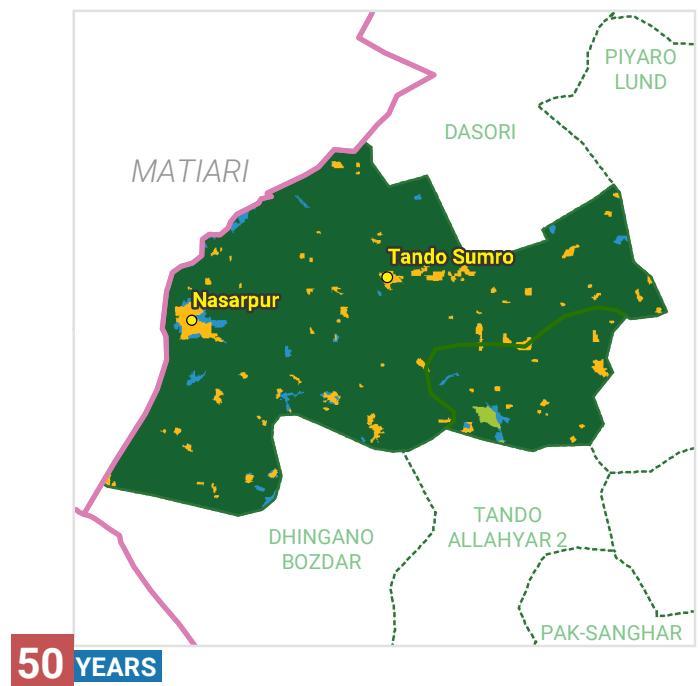
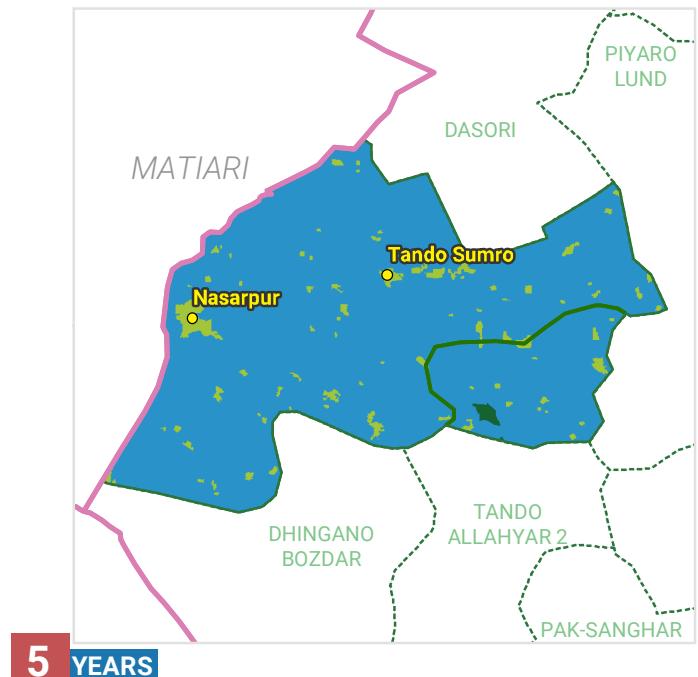
## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY



## RISK AT DIFFERENT RETURN PERIODS



## HAZARD

Normal	Moderate	High
Severe	Extreme	

## VULNERABILITY

None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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## RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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# HEATWAVE

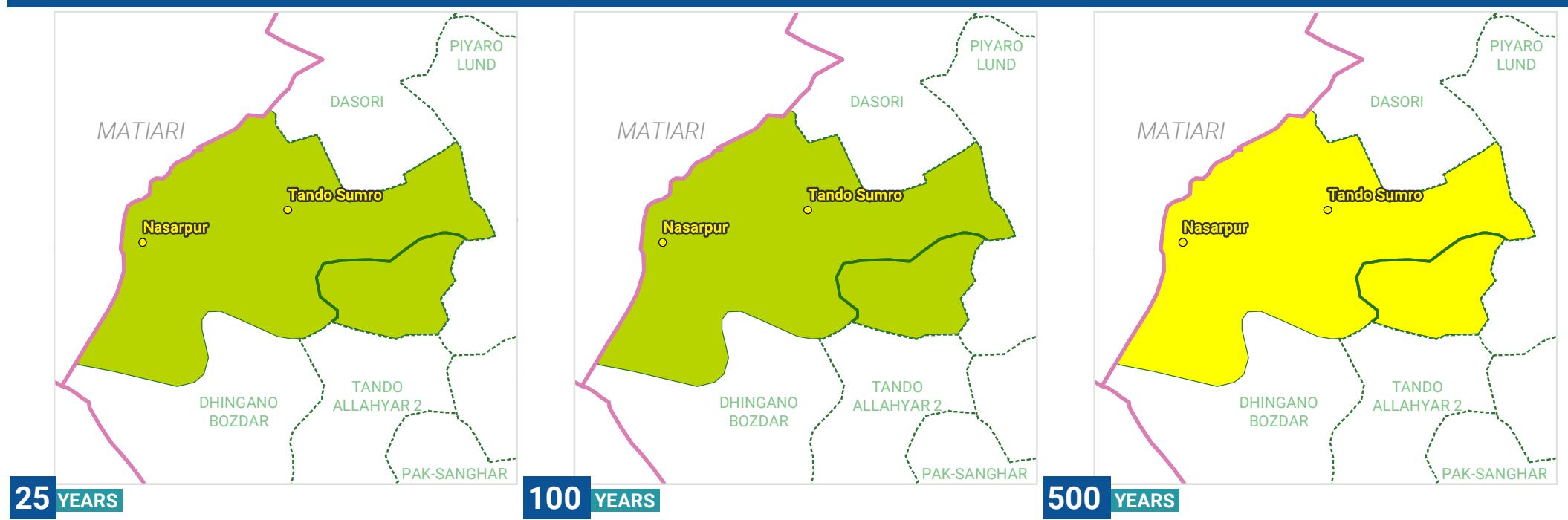
## ELEMENTS AT RISK

(BASED ON 50 YEARS RETURN PERIOD)

112	17844	88383	129.93	0	0.39	4.96
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)	PAKKA - UNPLANNED AREA (SQ. KM)

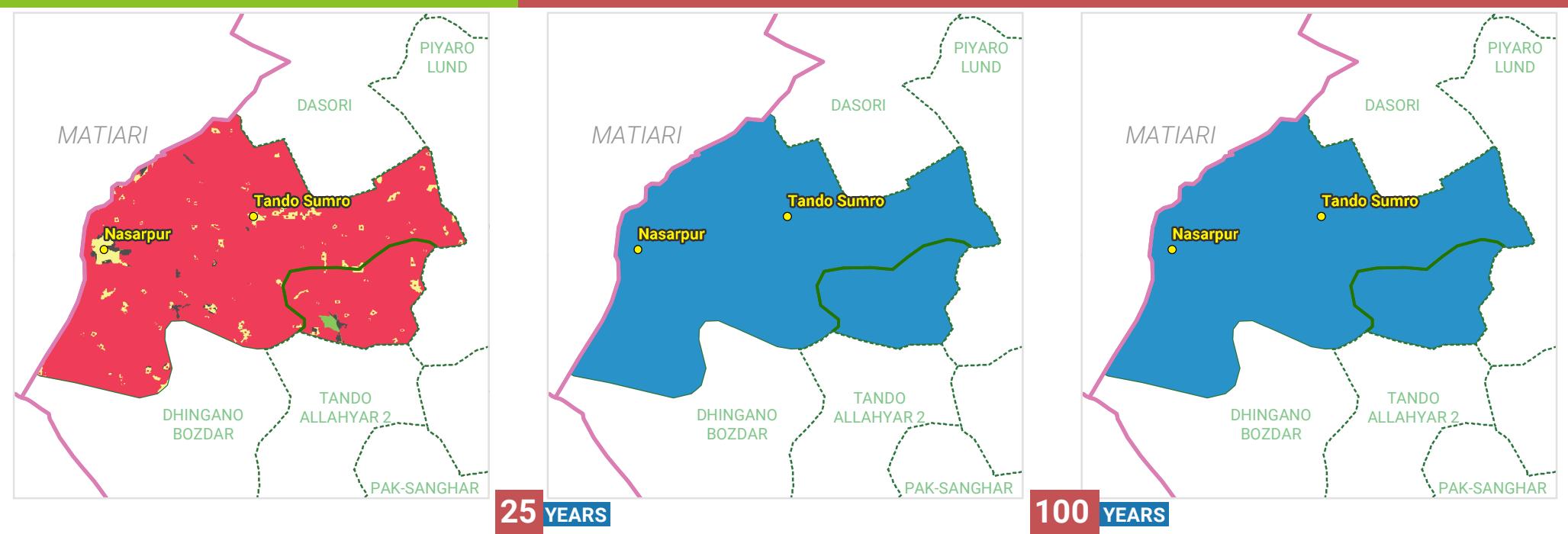
# CYCLONE

## HAZARD AT DIFFERENT RETURN PERIODS



## VULNERABILITY

## RISK AT DIFFERENT RETURN PERIODS



### HAZARD

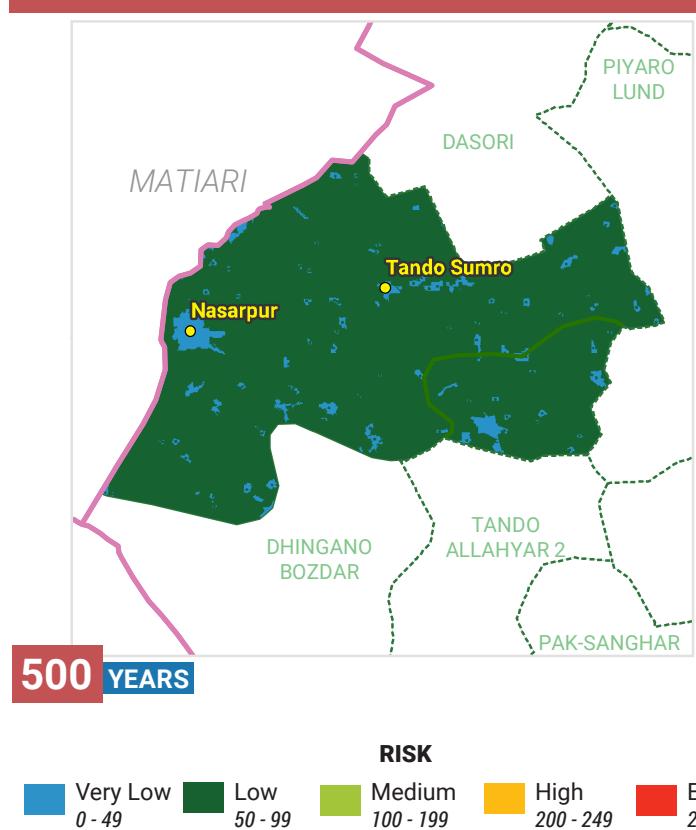
Calm Wind	Tropical Depression	Tropical Storm
Cat-1 TC	Cat-2 TC	Cat-3 TC

### VULNERABILITY

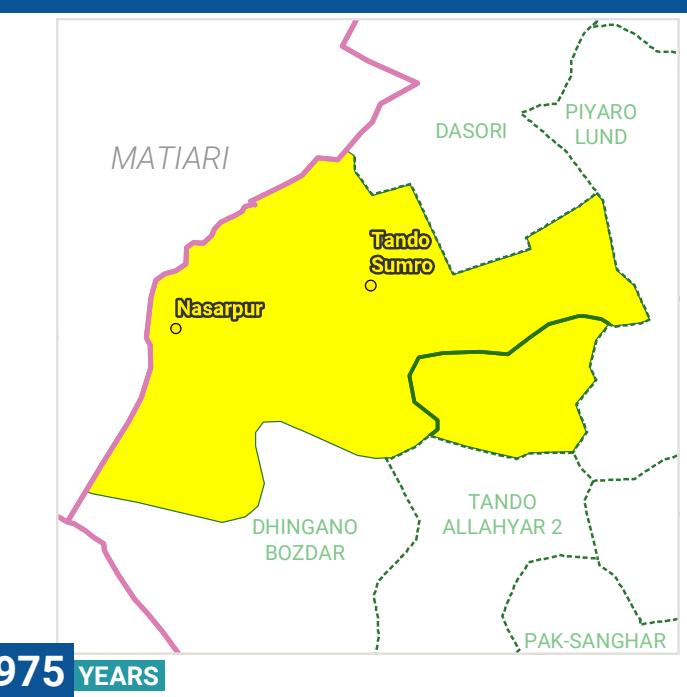
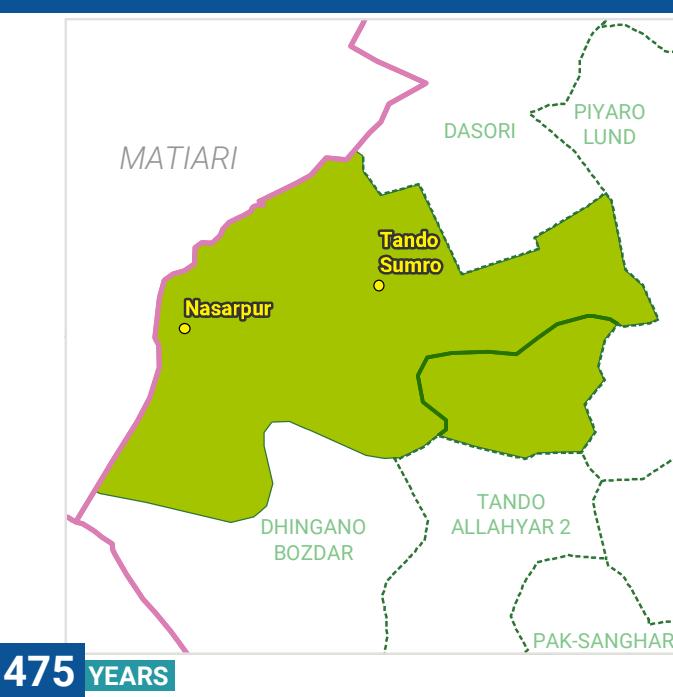
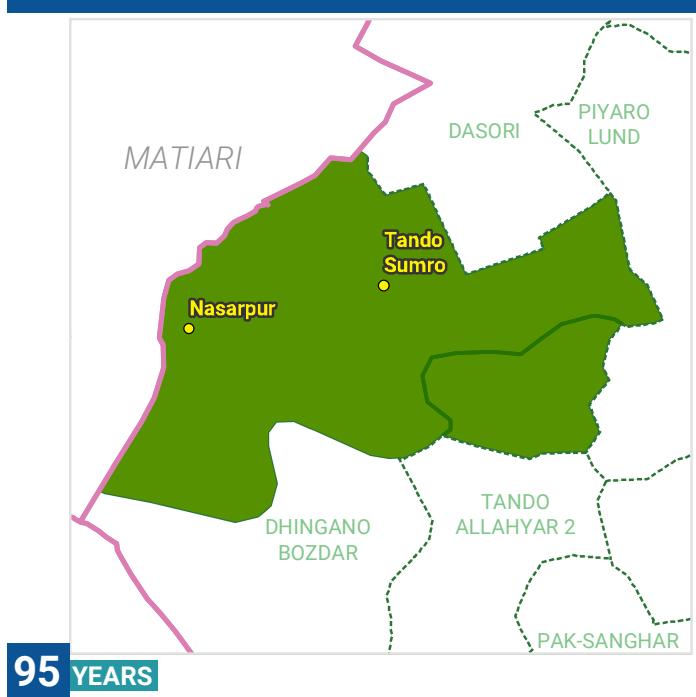
None 0 - 25	Low 26 - 50	Medium 51 - 75	High 76 - 100
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### RISK

Very Low 0 - 49	Low 50 - 99	Medium 100 - 199	High 200 - 249	Extreme 250 - 300
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**RISK****ELEMENTS AT RISK**

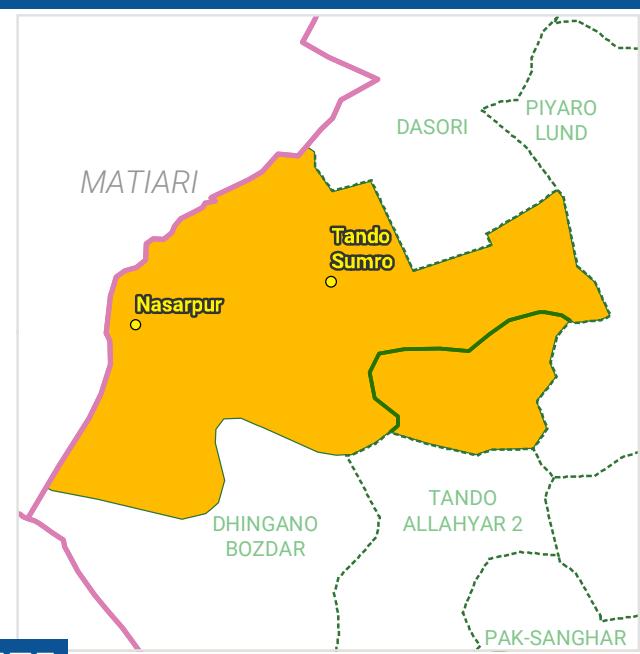
(BASED ON 100 YEARS RETURN PERIOD)

**NO ELEMENTS AT RISK FOR CYCLONE****STORM SURGE****NO HAZARD OF STORM SURGE IN UC****EARTHQUAKE****HAZARD AT DIFFERENT RETURN PERIODS****HAZARD**

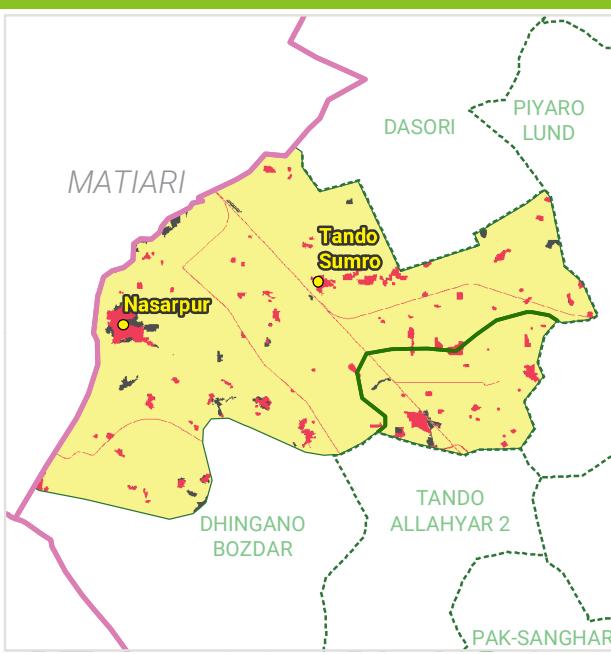
Zone 1	Zone 2 A	Zone 2 B	Zone 3	Zone 4	Zone 5	Zone 6
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## EARTHQUAKE

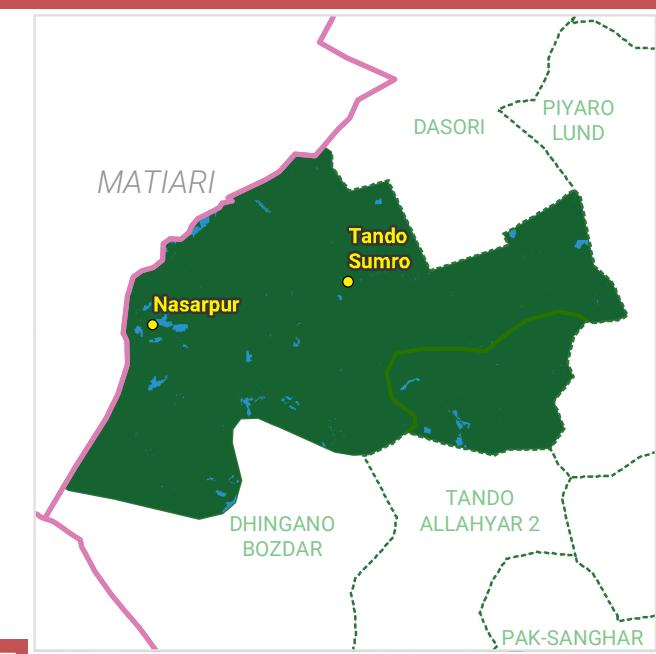
## HAZARD



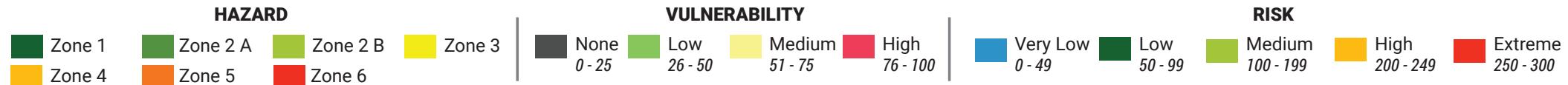
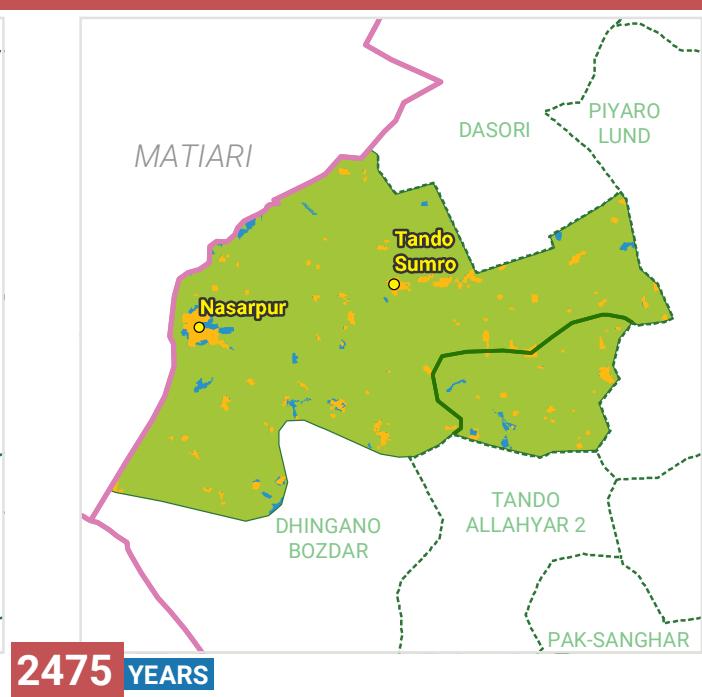
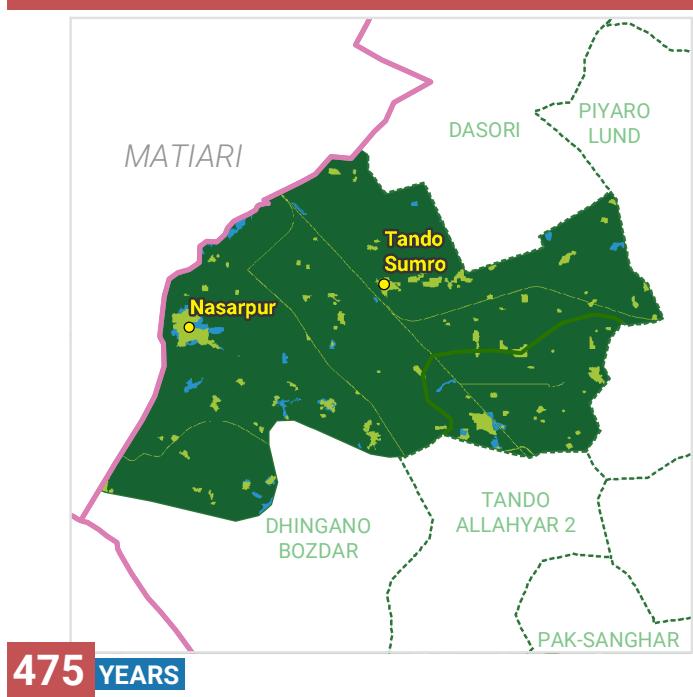
## VULNERABILITY



## RISK



## RISK AT DIFFERENT RETURN PERIODS



## ELEMENTS AT RISK

(BASED ON 95 YEARS RETURN PERIOD)

113	17790	88144	129.99	0	0	0	0.39
SETTLEMENTS	HOUSEHOLD	POPULATION	AGRICULTURE AREA (SQ. KM)	FOREST AREA (SQ. KM)	KACHCHA AREA (SQ. KM)	NATURAL VEGETATION IN WET AREAS (SQ. KM)	PAKKA - PLANNED AREA (SQ. KM)
4.95	0.03	219.85	0	43.45	0	3	0
PAKKA - UNPLANNED AREA (SQ. KM)	RANGE LAND (SQ. KM)	ROAD NETWORK (KM)	RAILWAY LINE (KM)	IRRIGATION AND DRAINAGE NETWORK (KM)	AMBULANCES	BRIDGES	BUS STOPS
92	0	0	0	3	1	4	2
EDUCATION FACILITIES	FIRE STATIONS	GRAIN MANDIES	GRID STATIONS	HEALTH FACILITIES	INDUSTRIES	MOBILE TOWERS	PETROL PUMPS
1	0	0	0	0	0		
POLICE STATIONS	POST OFFICES	POWER PLANTS / OIL DEPOTS	RAILWAY STATIONS	TOURIST PLACES	WELFARE TRUSTS		

## TSUNAMI

NO HAZARD OF TSUNAMI IN UC

## RISK MATRIX

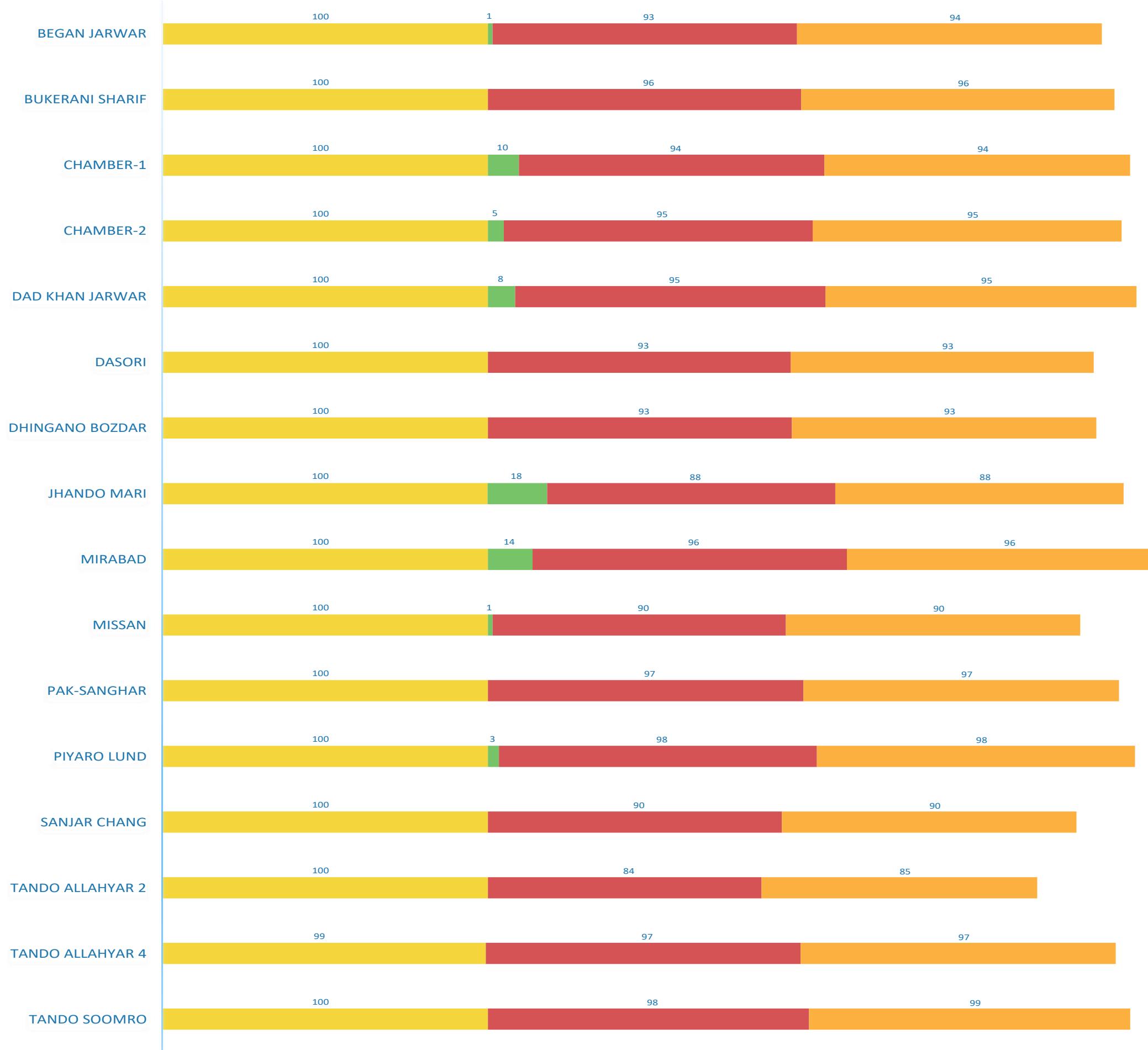
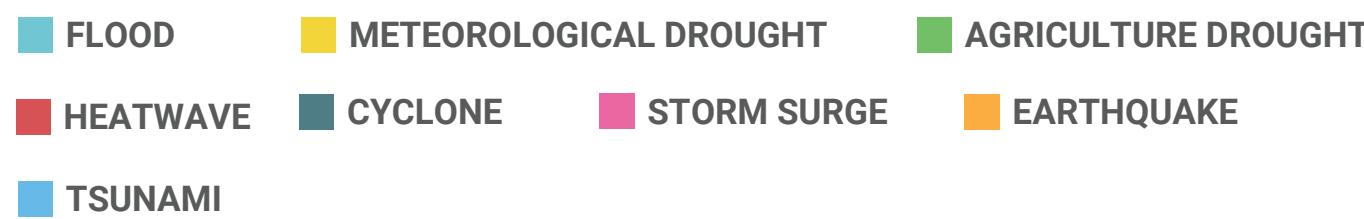


# MULTI-HAZARD RISK - DISTRICT TANDO ALLAHYAR

## AT DISTRICT LEVEL

**LEGEND**

PERCENTAGE OF AREA AT RISK







DEVELOPED BY  
**PDMA SINDH**

THROUGH  
**SUPARCO**

WITH THE SUPPORT OF

