



### Food security impact of the flood:

Nepal was hit by the worst rains in 15 years that started on 11 August 2017. It caused severe flooding in the Terai with huge impacts on livelihoods, food security and nutrition due to losses in lives, assets, housing, infrastructure including water and sanitation, food stocks and agricultural production. The full impact is still unknown, but the NeKSAP estimates that more than 0.94 million people in impacted areas are currently food insecure. Almost 300,000 people or 58,300 households would need food assistance on a priority basis. Based on evidence from previous flood disasters, the risk of acute malnutrition will be hugely magnified. Prevention is therefore key. Within the identified priority one areas, the number of children under the age of five is approximately 190,000 and there are 84,000 pregnant or lactating women.

Six district were most affected including Saptari, Siraha, Mahottari, Rautahat, Banke and Bardiya. This report will provide further breakdown for these districts (see Annex 1 and 2).



### Food insecure population

Total food insecure 942,400

Priority 3 81,700

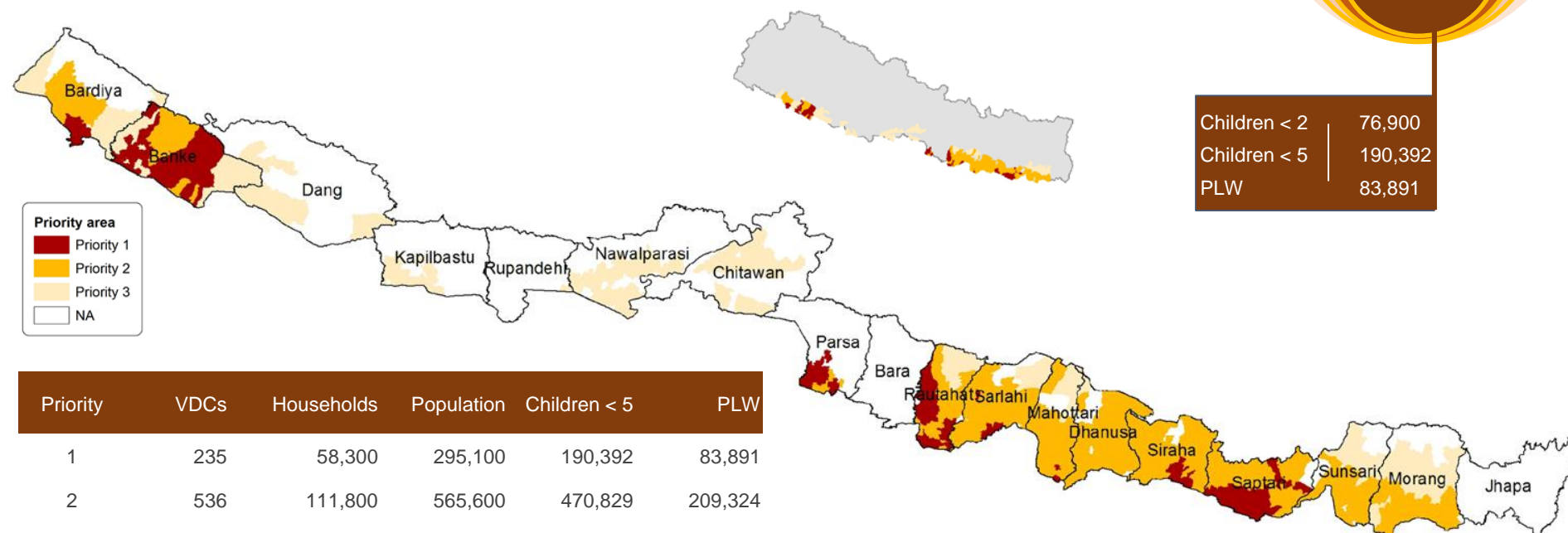
Priority 2 565,600

Priority 1 295,100

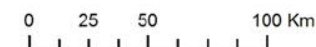
Children < 2 76,900

Children < 5 190,392

PLW 83,891



Priority	VDCs	Households	Population	Children < 5	PLW
1	235	58,300	295,100	190,392	83,891
2	536	111,800	565,600	470,829	209,324
3	128	16,200	81,700	182,782	105,923
Total	899	186,300	942,400	844,003	399,138





# Overview

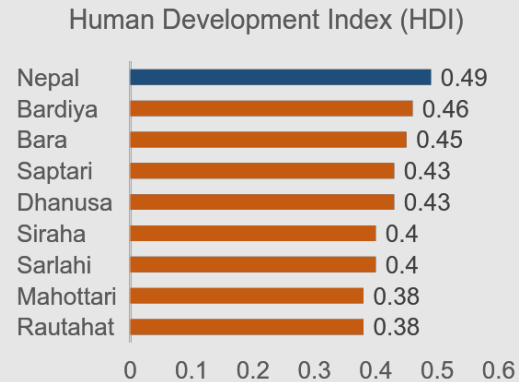
## Resilience profile

**Most of the districts in Terai rate relatively low as measured by the Human Development Index (HDI):** Rautahat, Mahottari, Saptari, Sarlahi, Siraha and Dhanusa are among the 25 districts in Nepal with the lowest HDI rating.

**Population living in poverty:** more than 20 percent of the population in Kailali, Kapilvastu, Mahottari, Bara, Bardiya, Dang, Parsa, Rautahat, and Sarlahi live below the poverty line. The poorest will be hardest hit by the flood.

**Housing conditions are poor:** 60-70 percent of households in Jhapa, Morang, Sunsari, Siraha, Saptari, Dhanusa, Mahottari, Sarlahi, and Rautahat; 50-60 percent in Bara and Parsa; and 20-40 percent in Nawalparasi, Banke, Bardiya and Dang live in poor housing structures unable to withstand flooding.

**Illiteracy among population >5 years is high:** More than 50 percent in Mahottari, Sarlahi and Rautahat; 30-50 percent in Sunsari, Saptari, Siraha, Dhanusa, Bara, Parsa, Kapilvastu, Banke, Bardiya, and Kailali are illiterate.



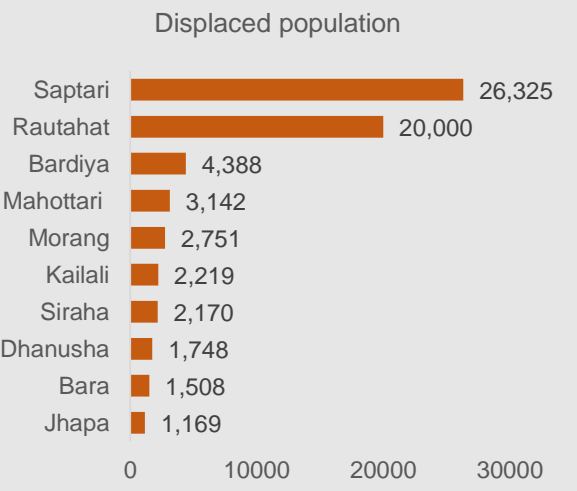
Source: NHDR 2014, CBS 2011

## Shelter and displacement

Immediately after the flood, many of the affected households initially took shelter in schools, community and government buildings located at higher altitudes with little belongings they could carry. They were supported by local agencies and their relatives.

**Displaced families continue to return:** At present, most of the displaced families have returned back to their homes. Households whose homes were destroyed or have become unlivable or those whose homes are still under water remain in temporary shelters.

**Around 67,000 persons are still estimated to be displaced:** There are still about 26,000 persons staying in temporary shelters in Saptari and 20,000 persons in Rautahat.



Source: DDRC, NRCS, NeKSAP

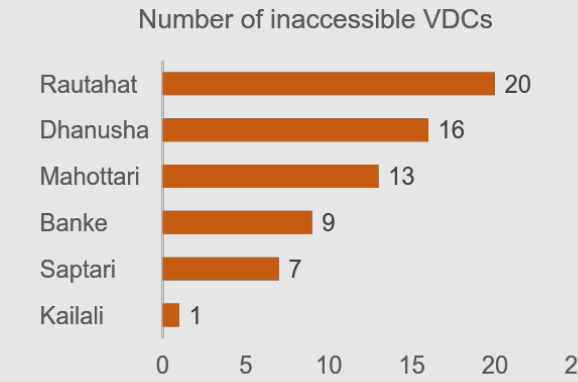
## Accessibility

Currently, 66 VDCs are still physically inaccessible from Nepal side due to destruction of roads and bridges. Rautahat, Mahottari and Dhanusha are the most affected districts in terms of physical access, with 20, 13 and 16 inaccessible VDCs respectively (See Annex 6 and 7).

In Rautahat, many of the road links are non-functional and bridges have been damaged or are unsafe. The highway is partially damaged and traffic is being diverted.

In Dhanusha and Mahottari, several road sections are damaged. Smaller district roads in the central and southern parts of the district are also damaged and are only partially functional. VDCs adjacent to Indian borders can be reached via India.

Most of the areas in the rest of the districts in Terai are accessible.



Source: DDRC, NRCS, NeKSAP



# Overview

## Livelihoods

The main livelihoods in Terai are agriculture including livestock and fisheries and various forms of wage labour activities.

Flood has severely impacted the agriculture sector, especially vegetables and fisheries. Initial estimate of the Ministry of Agricultural Development (MoAD) reports losses in fishery of about NPR 2.76 billion and losses in vegetable about NPR 1.64 billion. MoAD estimates that 47,100 hectares of paddy land was inundated. Ministry of Livestock Development (MoLD) estimated a loss of NPR 3.87 billion due to damage of livestock and livestock products.

Inundation is gradually receding and industries have started to resume operation in the main industrial districts of Morang, Sunsari, Bara and Parsa.

Inaccessible road network and interrupted transportation services are expected to create problem for wage labourers in the coming days.

### Food security

August/September is a relatively lean period for rural Terai populations. Wheat is harvested in March/April and the main cereal crop, paddy, is harvested in October/November. Crop losses will further compromise food security in the Terai with the build up in farm credit, families possibly resorting to destructive coping mechanisms, losses in agricultural employment and slower recovery from asset loss.

Households have lost food stocks in most of the flooded areas. People are now depending on relief food distributed by the government and INGOs. Relief supports have not been sufficient to meet the their basic needs and many are forced to borrow money to feed themselves.

NeKSAP estimates that 58,300 households in 235 VDCs need food assistance on a priority basis.

## Nutrition

The flood emergency has caused an additional risk of deterioration in the nutritional status of the already very vulnerable (child) population. Acute malnutrition as measured through wasting prevalence among children under the age of 5 in the flood affected Terai districts is 12.2 percent (DHS, 2016). An assessment undertaken by UNICEF in 2014 after flooding in Western Terai (Surkhet, Banke, Bardiya and Dang) showed that wasting among children under 5 increased to as high as 25.3 percent in the months following the flood. This significant increase in the risk of acute malnutrition is a huge cause of concern and prevention of acute malnutrition is therefore of the highest priority.

In the identified priority 1 VDCs the number of children and pregnant and lactating women are as follow:

Children < 2	76,900
Children < 5	190,392
PLW	83,891

See also maps in Annex 9 - 11

## WASH

In the Terai, tube well is the main source of drinking water which has been highly impacted by the flood.

Affected households and their family are using water purification tablets and liquids like, Aqua and Piyush provided by UNICEF, DWSOs, and DHOs.

Sewage and drinking water pipes are either swept away, or broken; toilets are massively damaged in affected areas. Open defecation has been widely reported. This could result in outbreak diarrhea and other waterborne illnesses.

As the main source of fuel for cooking is firewood, the affected population are reported to be having difficulty cooking their meals since the firewood are soaked with water.

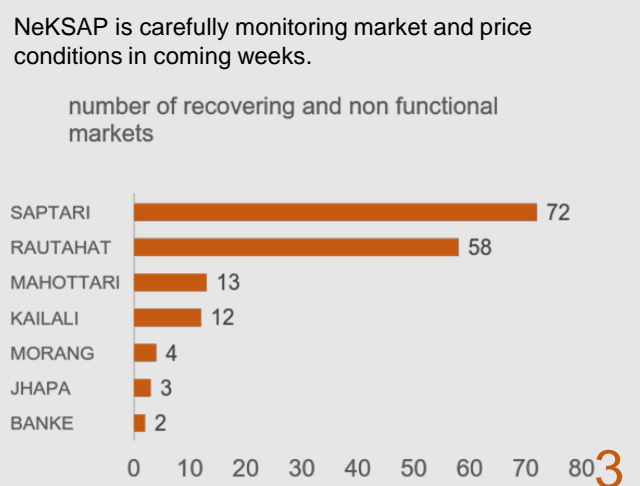
## Markets

Immediately after the floods, market places were reported to be completely inundated mainly in the central and western Terai districts, causing damage to stockpiled foods and other goods in stores and warehouses.

Transportation services were also interrupted due to damage of roads. As a result, market functionality is currently limited in areas that remain inundated. However, the situation is expected to recover over the coming days (see Map in Annex 4 and 5).

Key supply routes from India and major wholesale markets in Terai have also started to reconnect with the major and regional markets in the Terai.

The food availability in the major district and regional markets is sufficient and prices are stable. Food supply from wholesalers to retailers in most of the flood affected markets is functioning albeit with some delays depending on the damage to road infrastructure. Although some VDCs are physically inaccessible from the Nepal side, many VDCs adjacent to Indian border are accessible from Indian border markets.





## Estimation of food insecure populations

Satellite data of inundated surface area was overlaid with settlement data to derive an initial estimate of the affected population. This estimate was adjusted based on information received from direct field reports. Subsequently, the estimates of affected population was overlaid with ilaka level small area estimates of undernutrition (wasting) to derive a prioritization for each flood impacted VDC. As a last step, small area estimates of food poverty were used to calculate the number of food insecure people. Current estimates are based on the information available from 16 districts of Eastern, Central, Western and Mid Western Terai.

## Acknowledgement

UK aid funding from the UK government has remained critical for backstopping the capacity of Nepal Food Security Monitoring system (NeKSAP). Capacity of NeKSAP was utilized to produce this 72hour assessment. NeKSAP is operated by the Ministry of Agricultural Development (MoAD) with the strategic guidance of the National Planning Commission (NPC). WFP provides technical assistance.

ICIMOD provided Sentinel-1 radar image, which was used to estimate inundation surface in the flood affected areas across the Terai districts.





## Food insecure population for the most affected districts

### Saptari

Priority	VDCs	HHs	Popn	<2 yrs	<5 yrs	PLW
1	53	12,300	62,100	14,300	32,500	15,600
2	62	11,800	59,800	15,500	35,000	17,000
3	-	-	-	-	-	-
<b>Total</b>	<b>115</b>	<b>24,100</b>	<b>121,900</b>	<b>29,800</b>	<b>67,500</b>	<b>32,600</b>

### Siraha

Priority	VDCs	HHs	Popn	<2 yrs	<5 yrs	PLW
1	13	1,500	7,600	3,000	7,600	3,300
2	90	13,800	69,900	25,600	63,800	27,900
3	-	-	-	-	-	-
<b>Total</b>	<b>103</b>	<b>15,300</b>	<b>77,500</b>	<b>28,600</b>	<b>71,400</b>	<b>31,200</b>

### Mahottari

Priority	VDCs	HHs	Popn	<2 yrs	<5 yrs	PLW
1	3	800	3,900	800	1,800	800
2	64	16,700	84,700	24,800	65,900	27,100
3	5	400	2,100	2,100	4,500	2,300
<b>Total</b>	<b>72</b>	<b>17,900</b>	<b>90,700</b>	<b>27,700</b>	<b>72,200</b>	<b>30,200</b>

### Rautahat

Priority	VDCs	HHs	Popn	<2 yrs	<5 yrs	PLW
1	46	15,500	78,200	14,700	40,600	16,100
2	44	16,100	814,00	13,700	38,400	14,900
3	5	3,400	17,000	3,300	6,700	3,600
<b>Total</b>	<b>95</b>	<b>35,000</b>	<b>1766,00</b>	<b>31,700</b>	<b>85,700</b>	<b>34,600</b>

### Banke

Priority	VDCs	HHs	Popn	<2 yrs	<5 yrs	PLW
1	39	14,600	73,700	15,000	35,800	16,400
2	10	2,900	14,600	6,300	14,400	6,900
3	23	1,400	7,300	15,800	33,700	17,200
<b>Total</b>	<b>72</b>	<b>18,900</b>	<b>95,600</b>	<b>37,100</b>	<b>83,900</b>	<b>40,500</b>

### Bardiya

Priority	VDCs	HHs	Popn	<2 yrs	<5 yrs	PLW
1	2	4,600	23,100	3,100	6,800	3,400
2	12	7,500	38,200	7,400	15,900	8,100
3	18	1,300	6,300	9,300	18,700	10,100
<b>Total</b>	<b>32</b>	<b>13,400</b>	<b>67,600</b>	<b>19,800</b>	<b>41,400</b>	<b>21,600</b>

## Terai flood in 2007-historical perspective

Terai districts also experienced widespread flood in 2007. Almost half a million people were affected in Saptari, Siraha, Dhanusha, Mahottari, Sarlahi, Rautahat, Bara, Parsa, Nawalparasi, Rupandehi, Banke, Bardiya and Kailali districts. Around 25,300 households were severely affected, 40,000 were highly affected and 17,200 were moderately affected.

Flood had the biggest impact on the housing, particularly those of poor houses made of bamboo, straw and mud. More than 23,000 houses were completely damaged. Crop land near rivers and low-lying areas was heavily affected with high or total crop losses.

Flood emergency caused an additional risk of deterioration in the nutritional status of the already very vulnerable (child) population.

No epidemics were reported. The government health system was well prepared and was sending response teams to areas with diarrhea outbreaks to quickly contain further contamination.

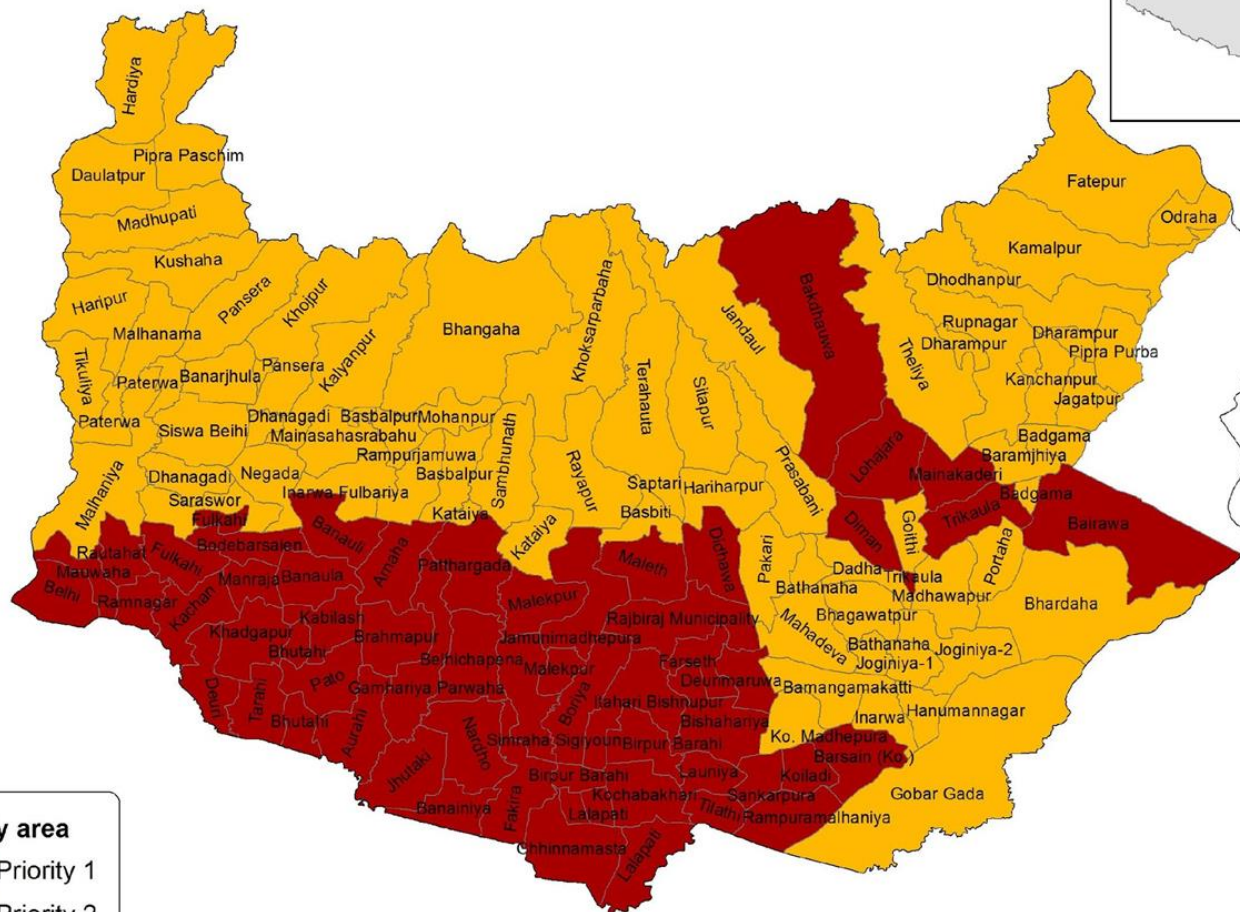
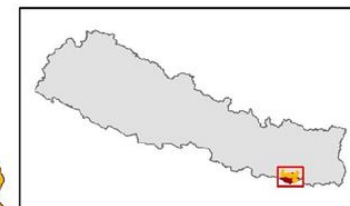
(Source: WFP/UNICEF/Save the Children Alliance, Interagency Rapid Flood Assessment, Nepal-August 2007)





## Priority Areas Based on Flood Affected Population and Prevalence of Wasting in Saptari District

(update as of 20 August 2017)



### Priority area

- Priority 1
- Priority 2
- Priority 3
- NA

0 4 8 16 Km

Data sources: Satellite image from ICIMOD acquired on 11-13 August 2017  
SAE CBS, WB, WFP, UNICEF 2014

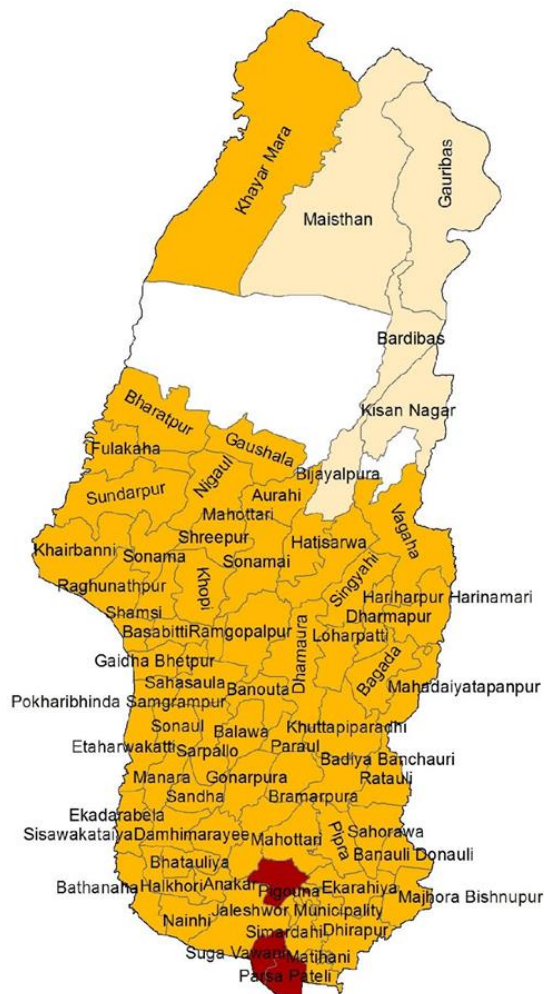
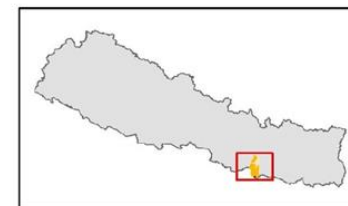
(update as of 20 August 2017)





## Priority Areas Based on Flood Affected Population and Prevalence of Wasting in Mahottari District

(update as of 20 August 2017)



### Priority area

- Priority 1
- Priority 2
- Priority 3
- NA

0 4 8 16 Km

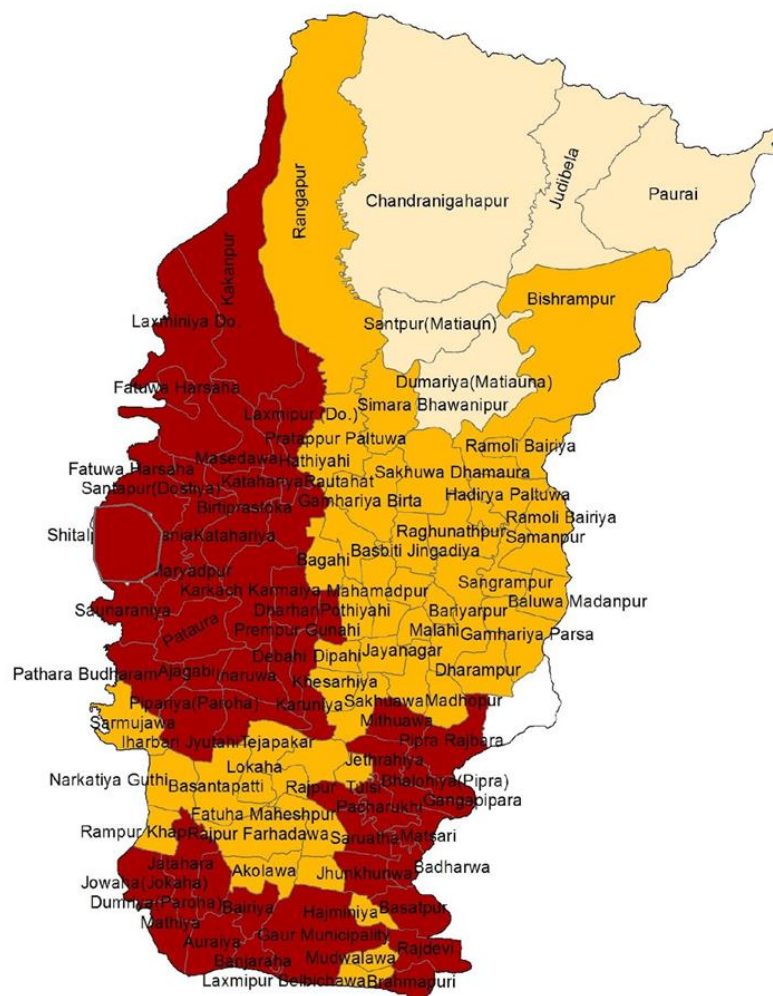
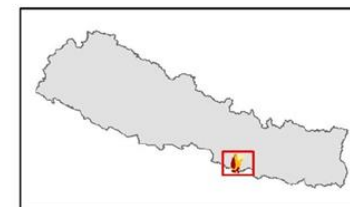
Data sources: Satellite image from ICIMOD acquired on 11-13 August 2017  
SAE CBS, WB, WFP, UNICEF 2014



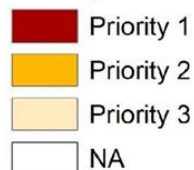


## Priority Areas Based on Flood Affected Population and Prevalence of Wasting in Rautahat District

(update as of 20 August 2017)



### Priority area



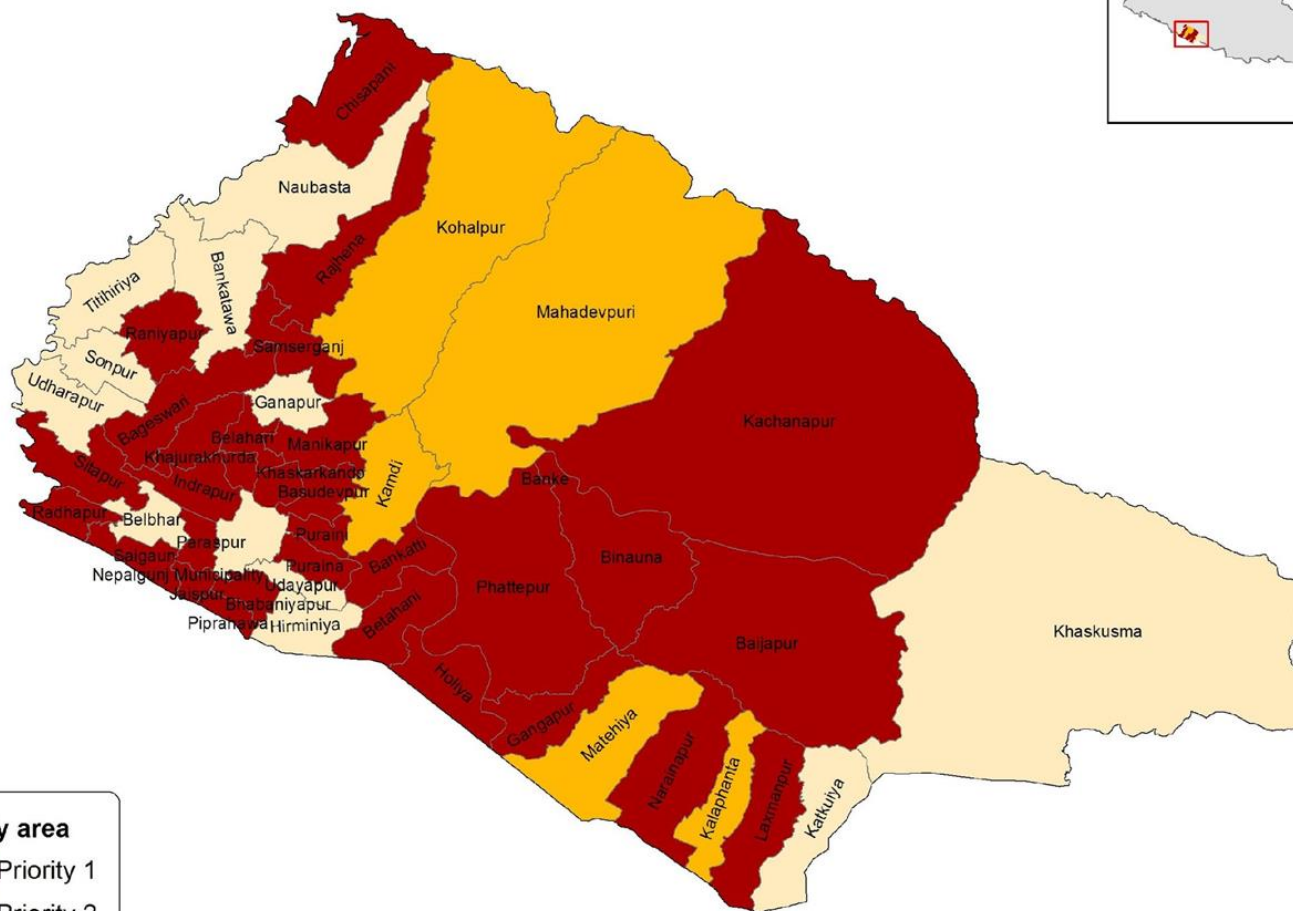
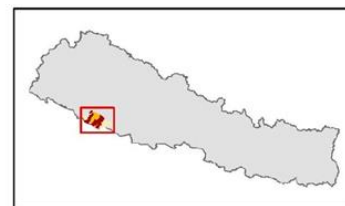
0 4 8 16 Km

Data sources: Satellite image from ICIMOD acquired on 11-13 August 2017  
SAE CBS, WB, WFP, UNICEF 2014



## Priority Areas Based on Flood Affected Population and Prevalence of Wasting in Banke District

(update as of 20 August 2017)



### Priority area

- Priority 1
- Priority 2
- Priority 3
- NA

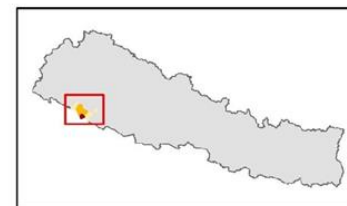
0 4 8 16 Km

Data sources: Satellite image from ICIMOD acquired on 11-13 August 2017  
SAE CBS, WB, WFP, UNICEF 2014



## Priority Areas Based on Flood Affected Population and Prevalence of Wasting in Bardiya District

(update as of 20 August 2017)



### Priority area

- Priority 1
- Priority 2
- Priority 3
- NA

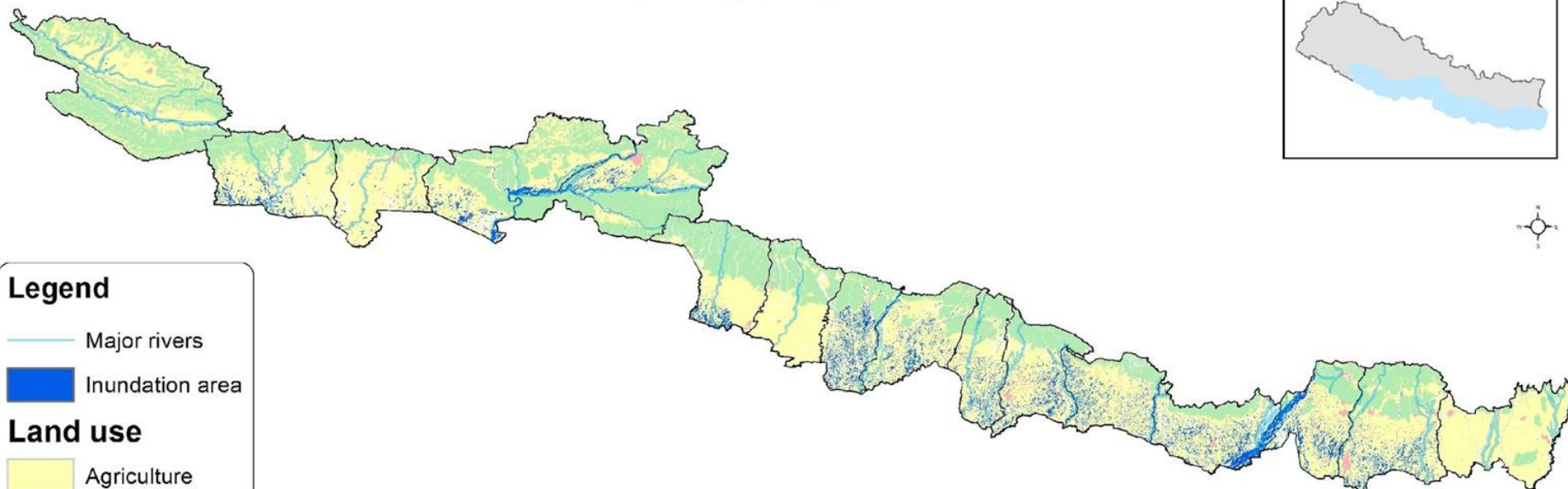
0 4 8 16 Km

Data sources: Satellite image from ICIMOD acquired on 11-13 August 2017  
SAE CBS, WB, WFP, UNICEF 2014



## Flood inundation Area

(11 - 13 August 2017)



### Legend

- Major rivers
- Inundation area

### Land use

- Agriculture
- Bare area
- Forest
- Builtup area
- Grassland
- Waterbodies
- Snow/glacier

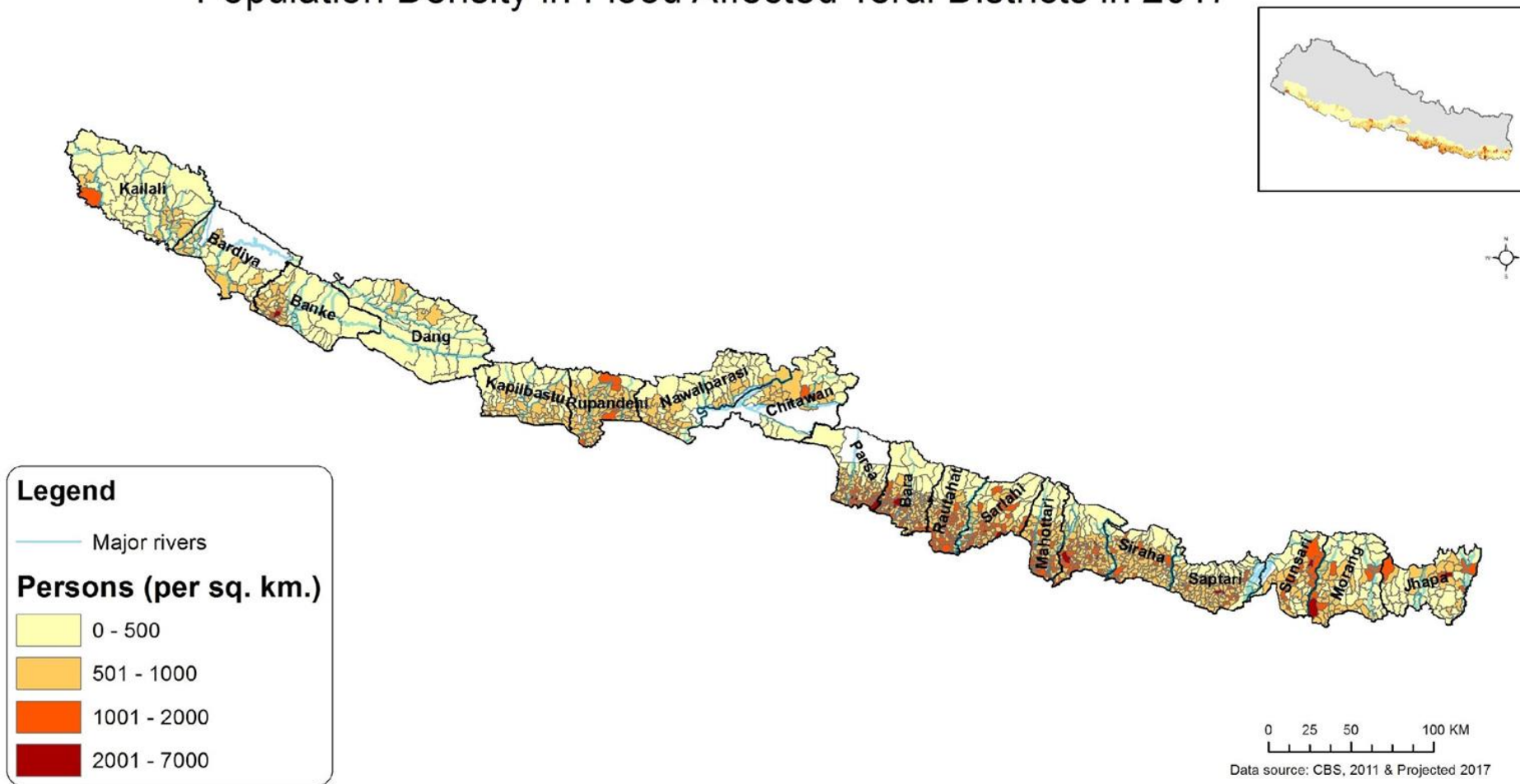
0 25 50 100 KM

Data source: ICIMOD, 15 August 2017





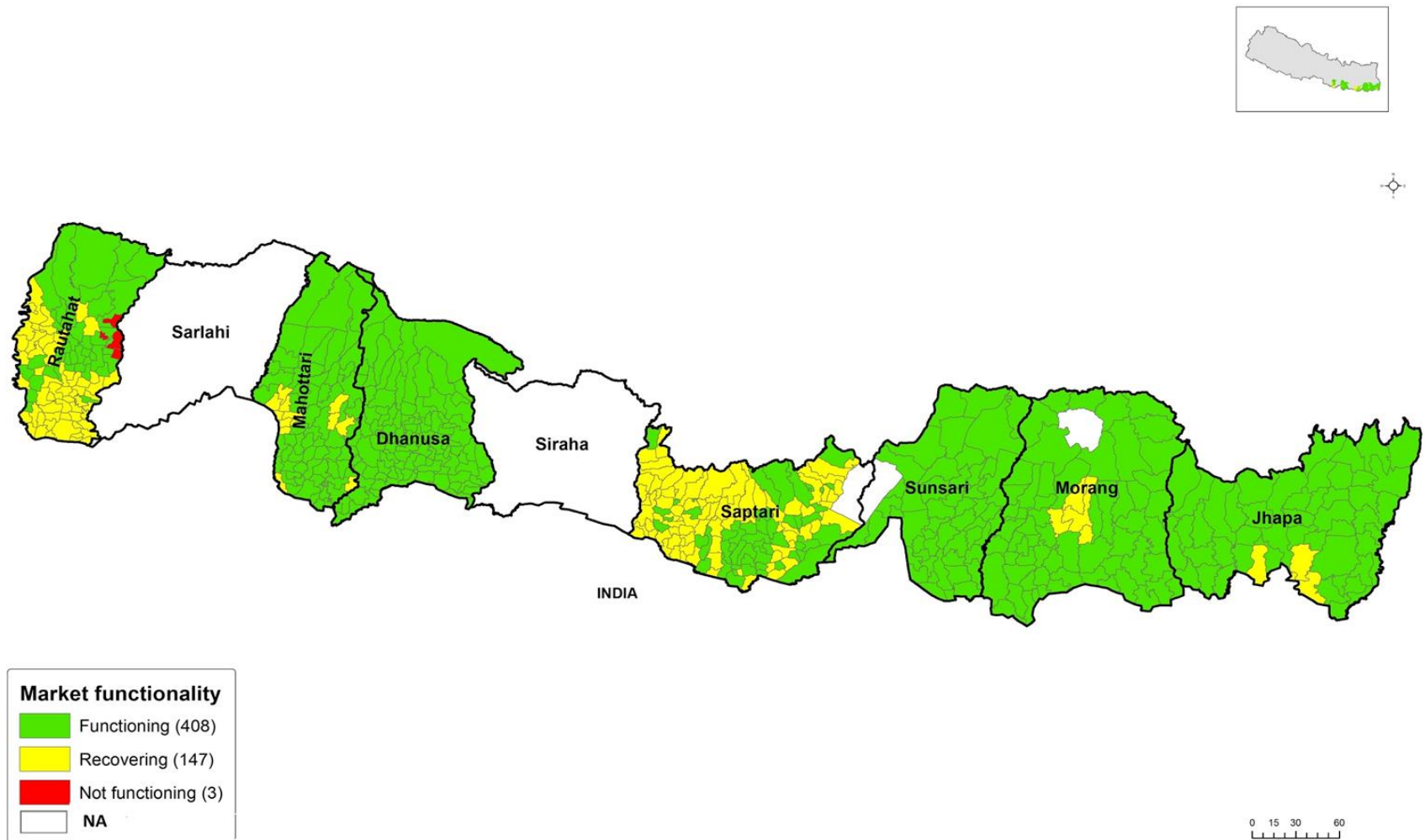
## Population Density in Flood Affected Terai Districts in 2017





## Market Functionality in Eastern and Central Flood Affected Terai Districts

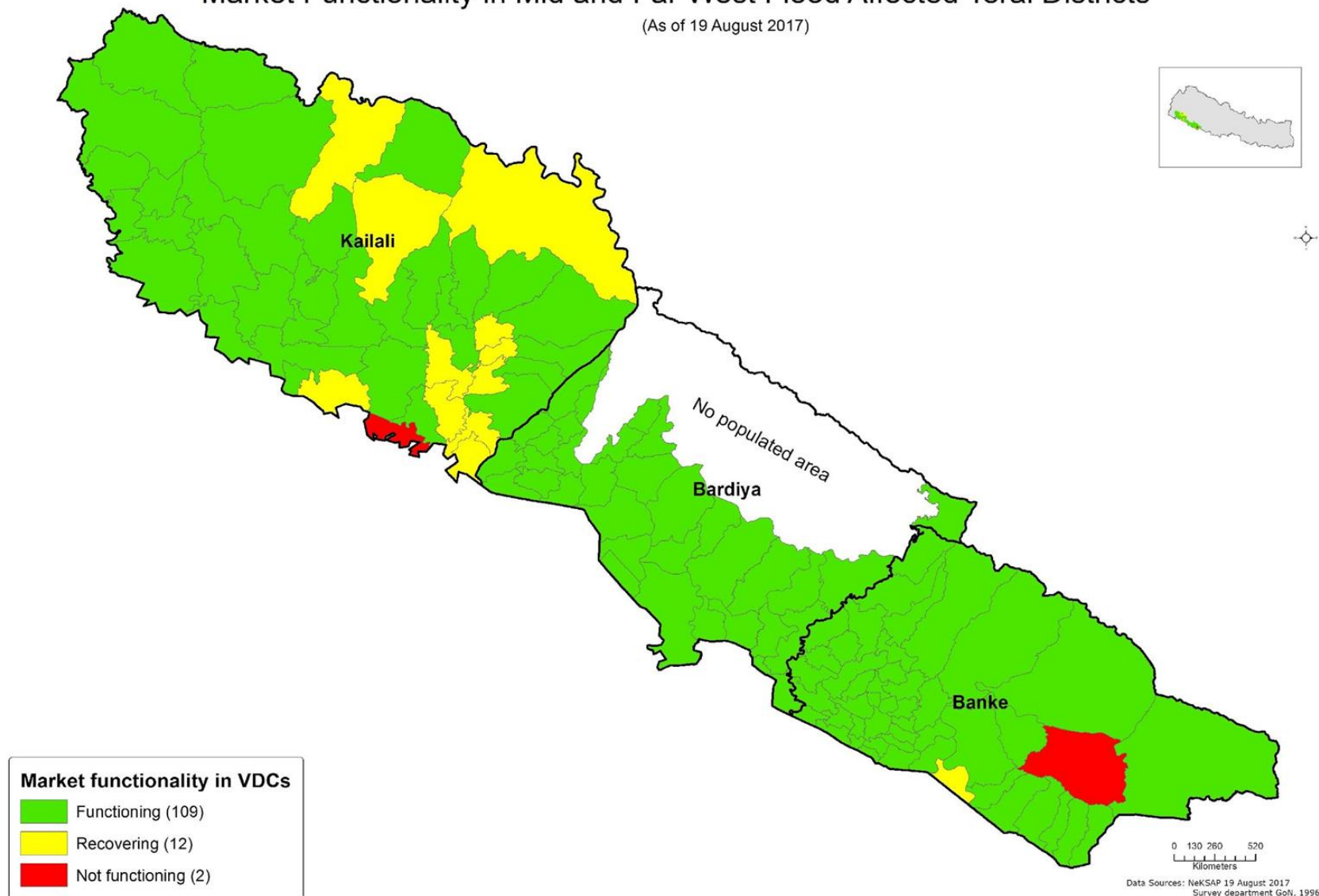
(As of 19 August 2017)





## Market Functionality in Mid and Far West Flood Affected Terai Districts

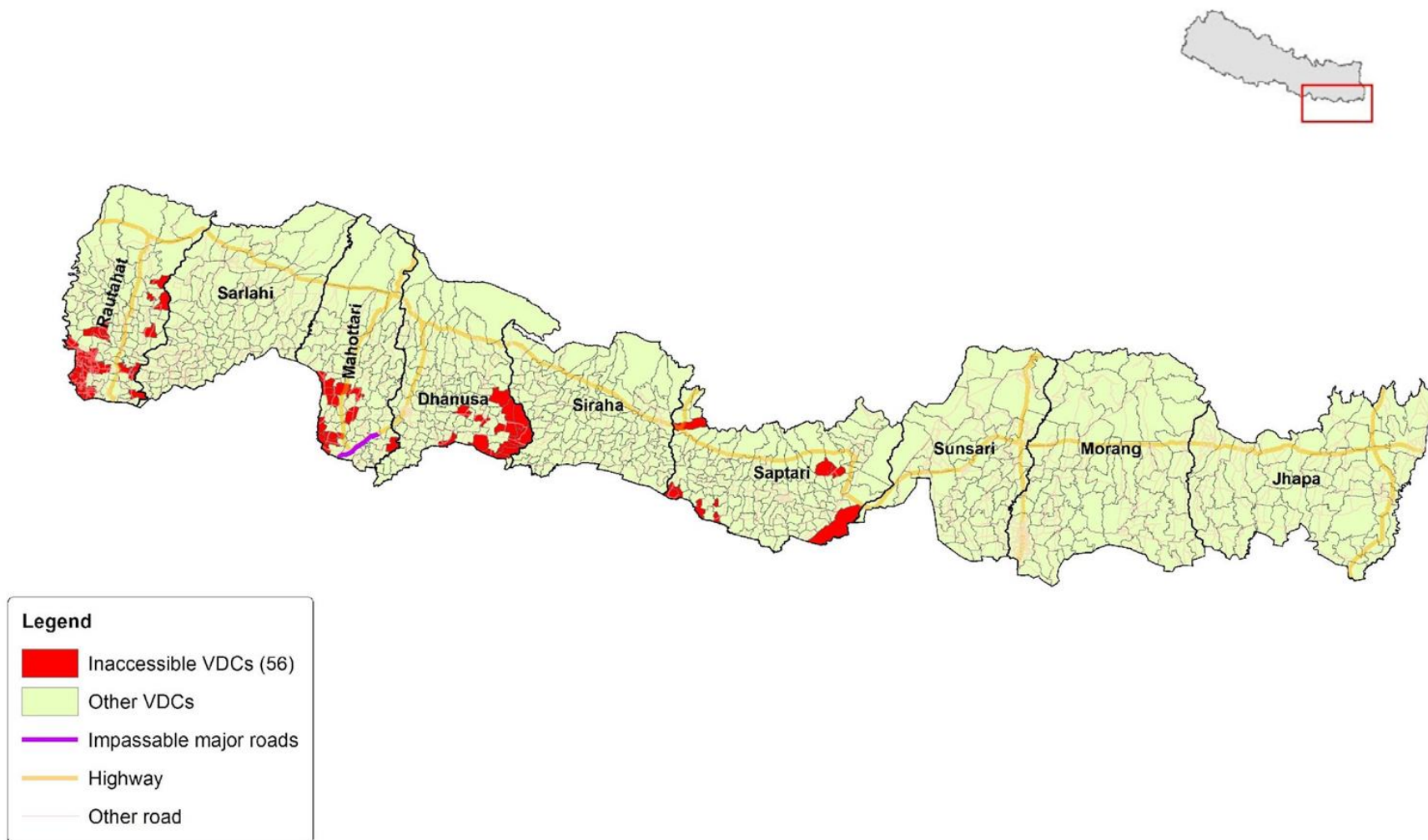
(As of 19 August 2017)





## Inaccessible VDCs in Eastern and Central Flood Affected Terai Districts

(As of 18 August 2017)

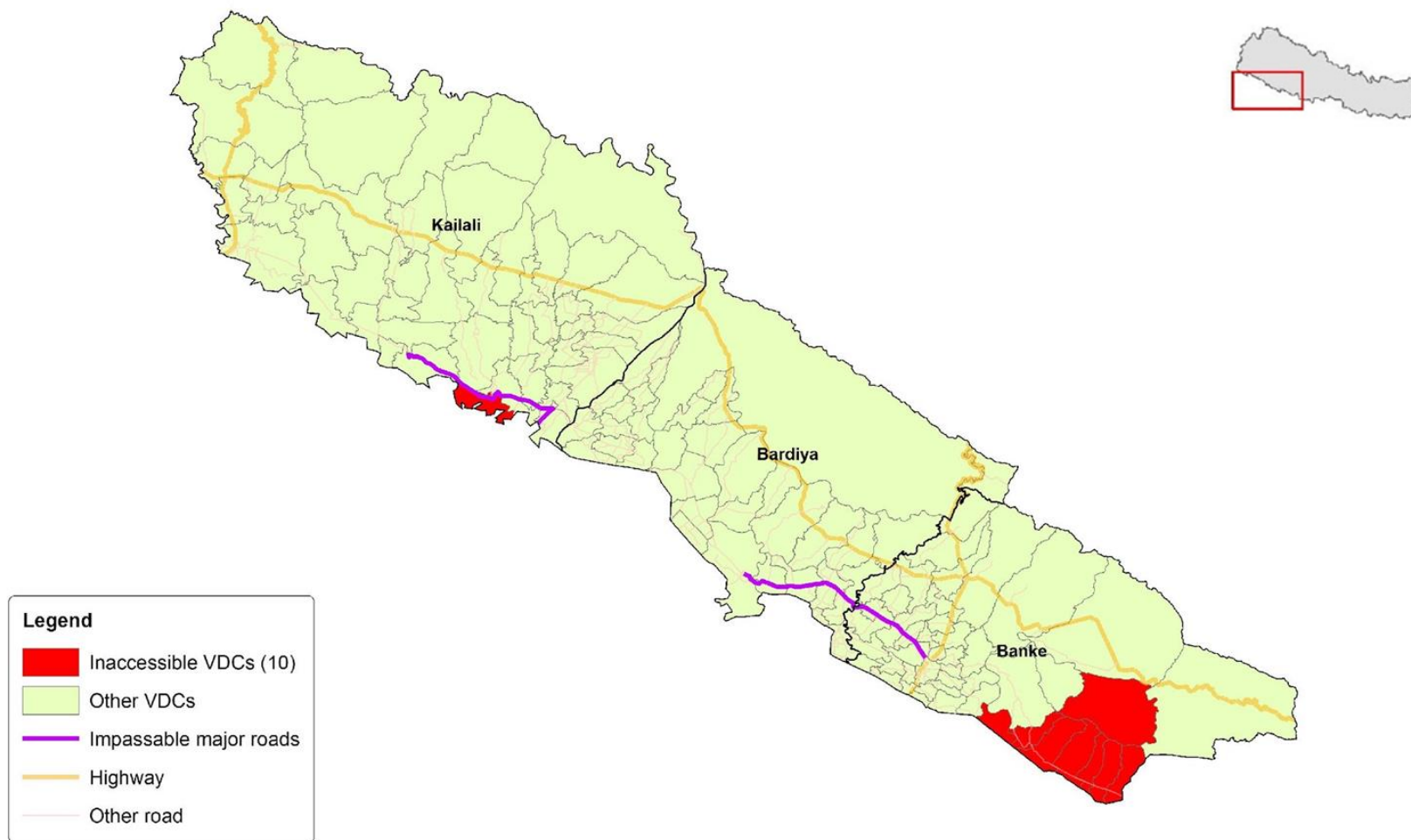






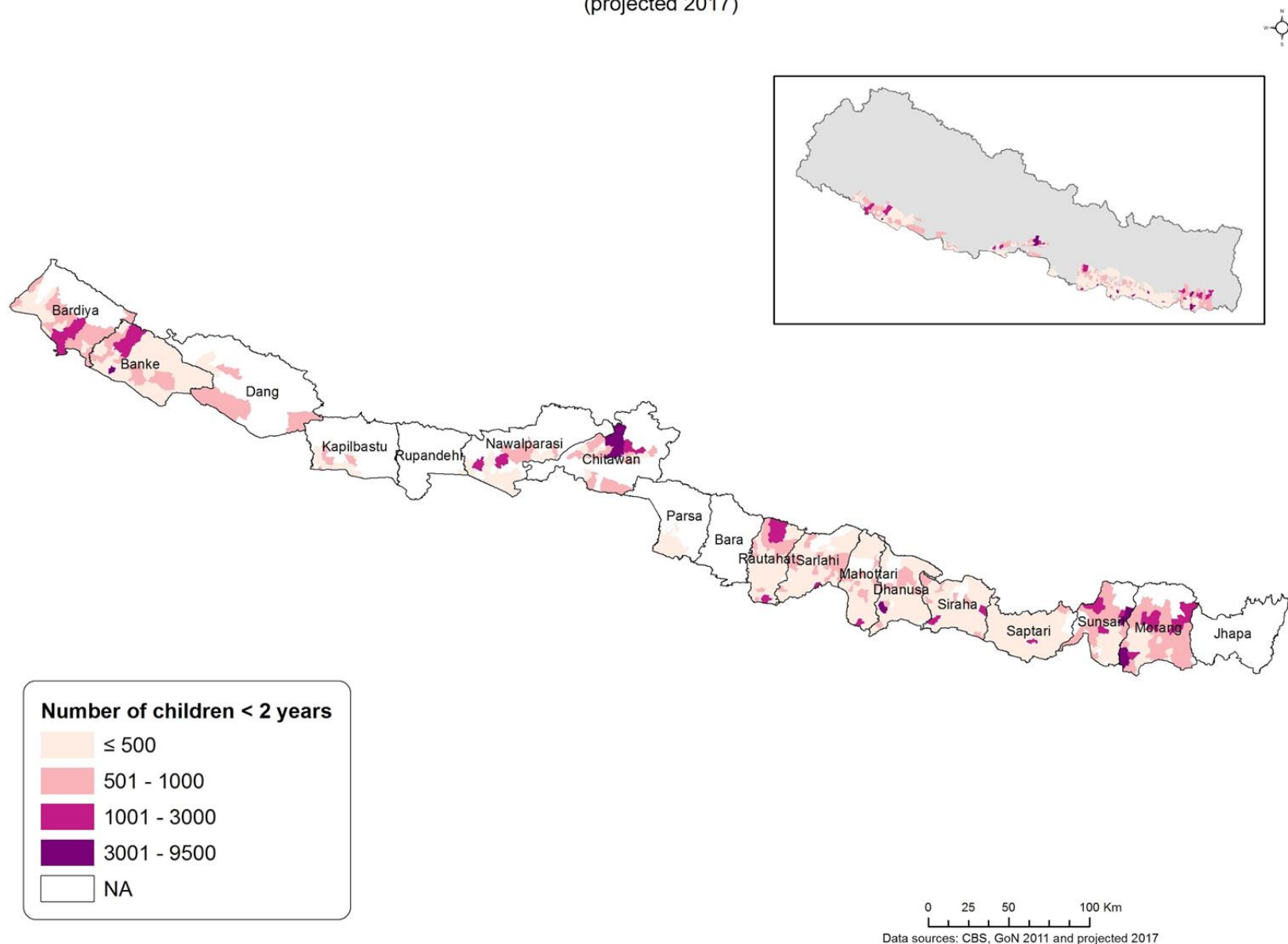
## Inaccessible VDCs in Mid and Far Western Flood Affected Terai Districts

(As of 18 August 2017)





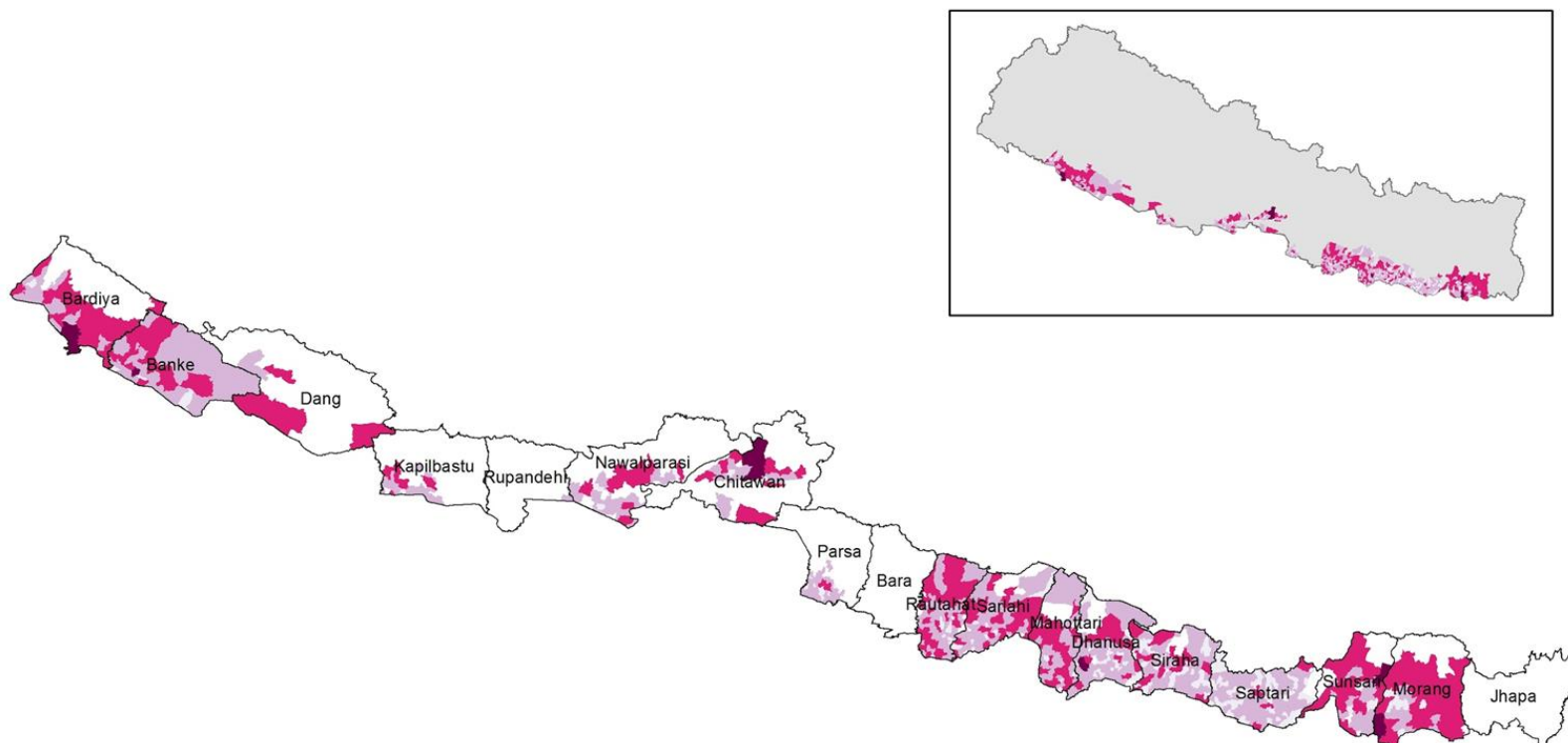
## Children less than 2 years (projected 2017)



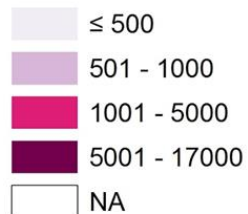


## Children less than 5 years

(projected 2017)



### Number of children < 5 years



0 25 50 100 Km  
Data sources: CBS, GoN 2011 and projected 2017



## Pregnant and lactating Women (projected 2017)

