NEPAL

Terai Flood | August 2017

A REPORT ON FOOD SECURITY IMPACT OF 2017 FLOOD IN TERAI

Based on the results of ad hoc District Food Security Network (DFSN) meetings in 10 districts (23-29 August 2017)

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नेपाल खाद्य सुरक्षा अनुगमन प्रणाली
Nepal Khadhya Surakshya Anugaman Pranali (NeKSAP)
Nepal Food Security Monitoring System

Background

Heavy monsoon rainfall during 10-13 August 2017 triggered severe flash floods and landslides in 32 out of 75 districts in Nepal (see **Figures 1** and **2**). An Initial Rapid Assessment conducted in 28 districts revealed that floods and landslides claimed 141 lives, injured 117 persons, displaced 460,900 people, and left 24 missing. Damage to houses, infrastructures, and productive resources was severe; roughly 65,000 houses were completely destroyed and 120,100 houses were partially damaged (Nepal Red Cross Society, IRA Compilation Report, 20 August 2017).

The southern Terai plains were critically affected by the floods and experienced severe humanitarian implications in terms of damage to houses, displacement, food security, health and sanitation, access to basic services, and losses in agricultural production. The Ministry of Agricultural Development (MoAD) has estimated 57 million USD in losses of major crops in 30 districts, of which approximately 56.7 million USD in losses occurred in Terai districts. A quick nutrition assessment conducted by the Nutrition Cluster and District Public Health Offices reported high levels of undernutrition (wasting) in the flood-affected Terai districts.

NeKSAP undertook a 72-hour assessment of the flood using satellite images, the IRA, secondary data, and field information. The results indicated that Saptari, Rautahat, Mahottari, Bardiya and Banke were most flood-affected districts, followed by Sarlahi, Siraha, Parsa and Dhanusha (Nepal Terai Flood Update Version 2.0).

NeKSAP also undertook a detailed assessment of the flood impacts on food security through ad hoc DFSN meetings in 10 flood affected districts (Banke, Bardiya, Rautahat, Sarlahi, Mahottari, Dhanusa, Siraha, Saptari, Sunsari, and Morang) during 23-29 August 2017. This report presents the results of ad hoc DFSN meetings.

Map 1: Coverage of ad hoc DFSN meetings (23-29 August 2017)

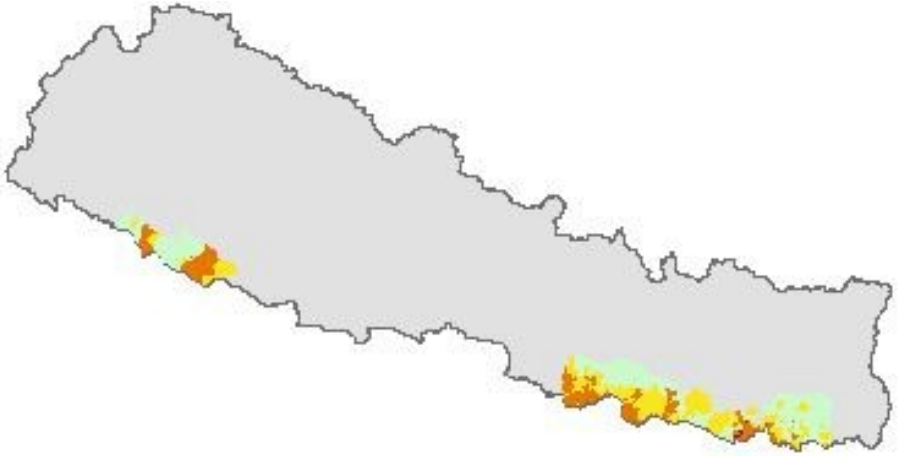


Figure 1: Water level of Babai river at Chepang. Source: DHM

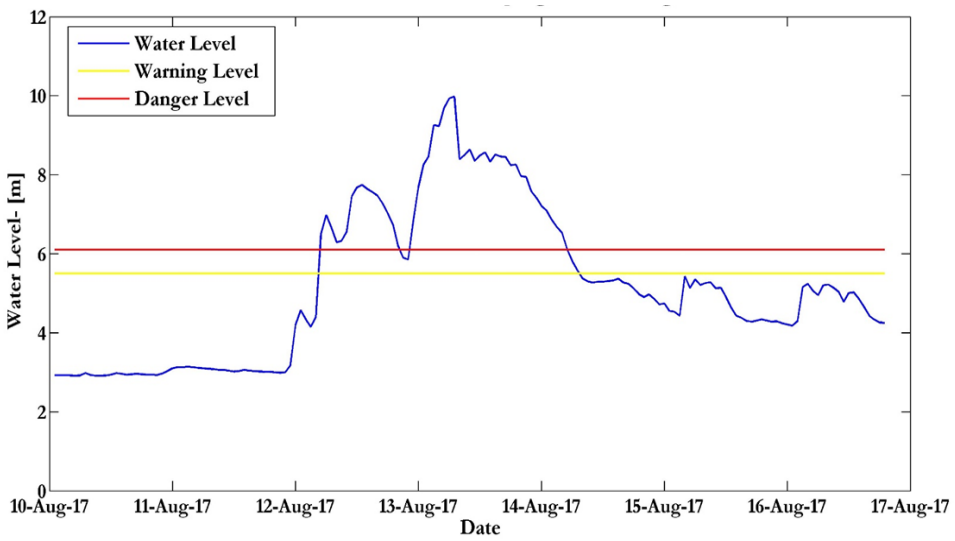
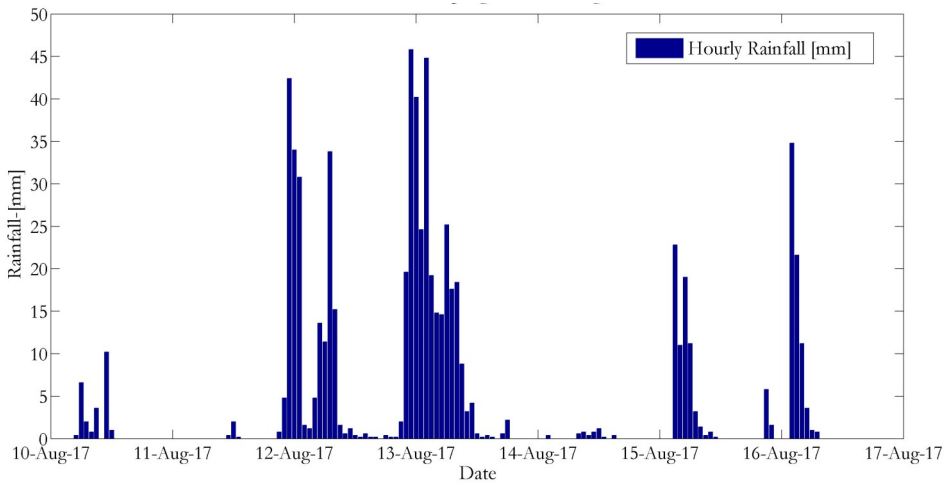


Figure 2: Rainfall recorded in Chepang station*. Source: DHM



* Warning level for rainfall: 60 mm in 1 hour, 80 mm in 3 hours, 100 mm in 6 hours, 120 mm in hrs, and 140 mm in 24 hours. Source: DHM www.hydrology.gov.np

Highlights

Based on the post-flood situation, the ad hoc DFSN meetings in 10 Terai districts classified each VDC/municipality as minimally food insecure (Phase 1), moderately food insecure (Phase 2), highly food insecure (Phase 3), or severely food insecure (Phase 4). None of the VDCs/municipalities were classified as a humanitarian emergency (Phase 5) situation.

DFSNs classified 504 VDCs/municipalities (nearly 70 percent of 727 VDCs/municipalities) as moderately food insecure or worse in 10 Terai districts (see **Map 2**). The breakdown of the DFSN classifications are as follows:

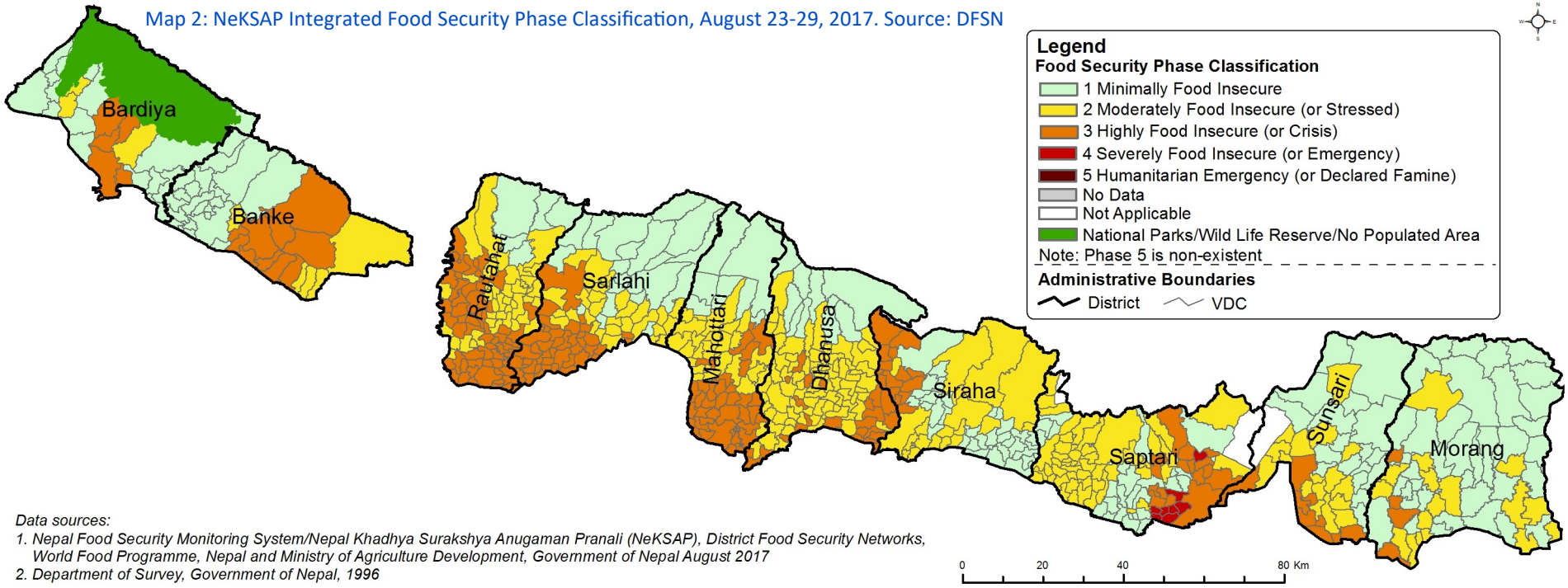
- 8 VDCs of Saptari as severely food insecure (Phase 4)
- 215 VDCs and municipalities as highly food insecure (Phase 3)
- 281 VDCs and municipalities as moderately food insecure (Phase 2)
- 233 VDCs and municipalities as minimally food insecure (Phase 1)

Refer to **Annex 1** for district-wide food security phase maps and affected populations for the 10 Terai districts.

The latest round of regularly conducted DFSN meetings (held every four months) in July 2017 classified all Terai districts as minimally food insecure, or Phase 1 (see **Annex 2**).

DFSNs estimated that roughly **709,500 people** were in Phase 3 and Phase 4 VDCs, and required external assistance to meet food and non-food needs. This is about **42 percent** of the total population in the flood-affected areas and 10 percent of the total district population. The next round of DFSN meetings will be held in mid-November. Until then, DFSNs anticipate that the food security situation will improve in Sarlahi and Rautahat, but continue in the current food security state in the remaining 8 districts if affected households do not receive external assistance.

Map 2: NeKSAP Integrated Food Security Phase Classification, August 23-29, 2017. Source: DFSN



Data sources:

1. *Nepal Food Security Monitoring System/Nepal Khadhya Surakshya Anugaman Pranali (NeKSAP), District Food Security Networks, World Food Programme, Nepal and Ministry of Agriculture Development, Government of Nepal August 2017*
2. *Department of Survey, Government of Nepal, 1996*

Table 1: Number of VDCs and municipalities in Phases 1-4 and the affected population*

SN	Districts	Total VDCs/ municipalities	Current situation (23-29 August, 2017)						Outlook (late August to mid-November 2017)		
			No of VDCs in Phase 1	No of VDCs in Phase 2	No of VDCs in Phase 3	Population in Phase 3	No of VDCs in Phase 4	Population in Phase 4	No of VDCs in Phase 1	No of VDCs in Phase 2	No of VDCs in Phase 3
1	Morang	66	43	19	4	23,600	0	Na	43	19	4
2	Sunsari	52	25	18	9	42,000	0	Na	25	18	9
3	Saptari	97	26	47	16	45,600	8	29,700	26	47	24
4	Siraha	70	34	21	15	50,000	0	Na	34	21	15
5	Dhanusa	102	8	66	28	54,200	0	Na	8	66	28
6	Mahottari	77	9	29	39	88,700	0	Na	9	29	39
7	Sarlahi	100	29	31	40	107,700	0	Na	29	56	15
8	Rautahat	96	5	42	49	163,200	0	Na	5	69	22
9	Banke	35	20	5	10	45,300	0	Na	20	5	10
10	Bardiya	32	24	3	5	59,500	0	Na	24	3	5
Total		**727**	**223**	**281**	**215**	**679,800**	**8**	**29,700**	**223**	**333**	**171**

* Affected population is estimated as the population in Phase 3 and Phase 4.

Population in Phase 3 — 679,800

Population in Phase 4 – 29,700

Affected population – 709,500

Key contributing factors

Most of the houses in the affected areas were made of poor structural materials, such as unbaked brick and bamboo, which were not capable of withstanding floods. The 2011 National Population and Housing Census reported that 60-70 percent of houses in Morang, Sunsari, Siraha, Saptari, Dhanusha, Mahottari, Sarlahi and Rautahat, and 20-40 percent of houses in Banke and Bardiya were built with poor structural materials. These houses in particular were destroyed and/or damaged due to floods.

Wheat, the major winter crop in the Terai, was harvested in April/May. The floods damaged household food stocks, which comprise the major source of food consumption in the Terai. DFSNs reported that, on average, 30-60 percent of the household food stocks were completely lost and/or rotten in most places. The situation was even worse in the 8 VDCs of Saptari classified as Phase 4, where more than 80 percent of households lost their entire food stocks.

The next major cereal harvest of paddy will take place in November/December. With food stocks destroyed by floods, affected families are expected to face food consumption gaps. The situation will be even more precarious during the Dashain/Tihar festival (in October), during which food consumption is typically high.

Standing crops (paddy and vegetable) and fish ponds have been severely damaged and/or wiped away. MoAD's latest estimates report crop (including fish) damage of 44.4 million USD, of which 12.4 million USD, 9.0 million USD, and 12.08 million USD in damage is attributed to paddy, vegetable and fish, respectively.

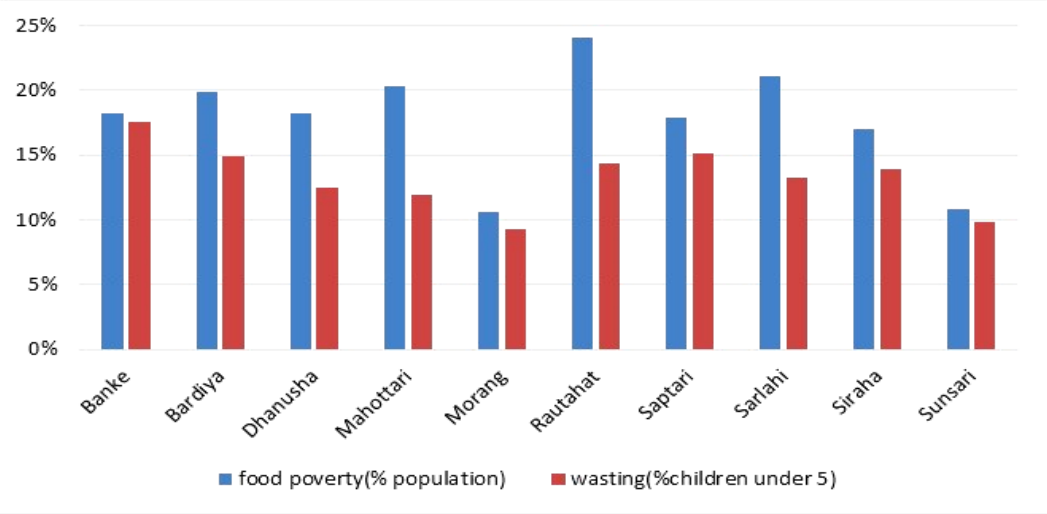
Despite the high initial damage to market infrastructures, markets quickly resumed functioning. As of 28 August 2017, 481 markets were fully functioning and 77 markets were recovering. Some 40 VDCs were inaccessible in flood-affected districts, including 16 in Dhanusha, 13 in Mahottari, 6 in Rautahat, 1 in Saptari, and 3 in Banke. However, in the wholesale and Indian border markets, food and non-food commodities were available and prices were stable (Terai Flood Update Version 2.0, NeKSAP, 28 August 2017).

DFSNs reported a food price increase of 15-20 percent, largely due to supply chain offsets. Prices of vegetables were reported to have increased by about 5 times because of the large-scale damage caused during the harvesting period.

The nutrition, health and sanitation situation in the post-flood period was reported as poor. The MUAC assessment of 10,257 children between 6-59 months of age undertaken by the Nutrition Cluster in 18 flood-affected districts showed high rates of acute child malnutrition. Average rates of Severe Acute Malnutrition (SAM), Moderate Acute Malnutrition (MAM), Global Acute Malnutrition (GAM) in the flood-affected districts were 6.0 percent, 17.1 percent and 23.1 percent, respectively, while the national averages were 1.8 percent, 7.9 percent and 9.7 percent. The highest GAM rates were observed in Mahottari (14.7 percent), Rautahat (15 percent), Siraha (34.3 percent), Dhanusa (16.84 percent), and Saptari (35.7 percent) (Nutrition Cluster and District Public Health Offices).

Figure 3 shows the pre-flood prevalence of food poverty and wasting (children under 5 years of age) in the 10 flood-affected districts. As shown in the figure, food poverty and wasting rates were already high and the acute shock will further exacerbate the situation.

Figure 3: Prevalence of food poverty and wasting. Source: Small area estimate of food insecurity and undernutrition in Nepal, 2014



Outlook

District Food Security Networks, based on current conditions and future scenarios, have forecasted the likely food security situation for the period of late August to mid-November 2017.

Overall, DFSNs anticipate that the food security situation will improve in Sarlahi and Rautahat, but continue in the current food security state in the remaining 8 districts if affected households do not receive external assistance

DFSNs reported that the situation in severely food insecure (Phase 4) VDCs will slightly improve (to Phase 3), the number of highly food insecure (Phase 3) VDCs will decrease to 171 (from 215), and the number of moderately food insecure (Phase 2) VDCs will increase to 333 (from 281). The number of minimally food insecure VDCs will, however, remain as same.

DFSNs attributed the outlook largely to large-scale damage to assets, infrastructure and productive resources (e.g. crops, livestock, fish ponds, crop fields etc.), which require substantial time and resources to restore and recover.

August-November is typically a lean season period when no major cereal crops are harvested in the Terai. As previous household stocks of wheat (harvested in April/May) were washed away, households are expected to face severe food consumption gaps. Because of erratic rainfall during paddy transplantation (before 10 August) and damage caused to the standing crop, production prospect for paddy also appear bleak for 2017.

MoAD estimates (as of 1 August 2017) suggest average paddy transplantation rates of 62 percent in eastern Terai districts. The transplantation rates for Siraha, Dhanusha, Mahottari, Sarlahi, and Banke were reported to be worse, at 39 percent, 40 percent, 36 percent, 50 percent, and 30 percent, respectively.

Affected households are expected to rely on relief support, and make increasing use of remittances for consumption. Income for daily wages will also contribute to food security, but at a marginal level.

Methodology

DFSNs used the NeKSAP Integrated Food Security Phase Classification (IPC) exercise to classify each of the VDCs and municipalities into five different phases (see **Table 2** for the descriptions of phases).

Technical Working Group (TWG) meetings undertook preliminary analysis of the food security situation using 17 NeKSAP IPC indicators (3 outcome indicators and 14 contributing factors) to assign a phase classification to each VDC and municipality.

In addition to local expert knowledge, TWGs also referred to the Initial Rapid Response (IRA) during the phase classification exercise.

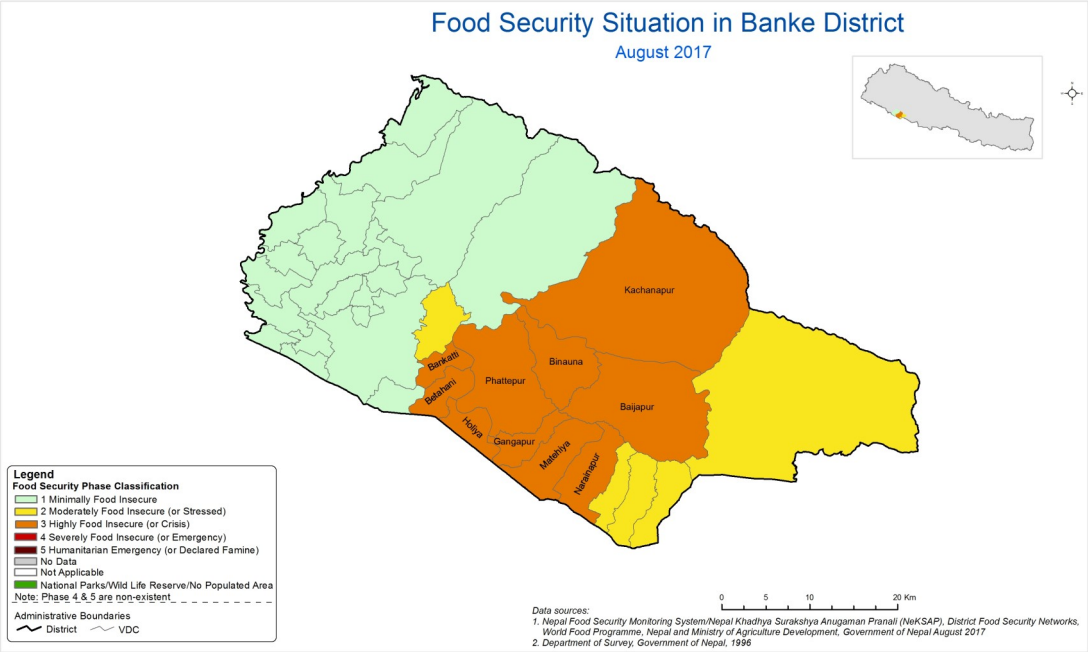
Results of the phase classification exercise were shared at the DFSN meeting for further scrutiny, validation and endorsement.

Table 2: Description of NeKSAP IPC Phases

Phase	NeKSAP Phases	Equivalent phases IPC v2	Description
1	Minimally Food Insecure	Minimal	Households with secure food and non-food needs without shifting or changing livelihood strategies. These households are capable of adjusting to small scale stresses caused by hazards, disasters, shocks, epidemics and conflicts or violence by means of existing social, natural and economic capital.
2	Moderately Food Insecure (or Stressed)	Stressed	Households meet minimal food needs with traditional coping strategies, but are unable to afford some essential non-food expenditures without engaging in irreversible coping strategies.
3	Highly Food Insecure (or Crisis)	Crisis	Households experience food consumption gaps and high or above usual acute malnutrition, or meet minimal food needs only with accelerated depletion of livelihood assets - leading to food consumption gaps.
4	Severely Food Insecure (or Emergency)	Emergency	Households unable to meet food and non-food needs without losing livelihood assets. This induces very high acute malnutrition leading to high morbidity, mortality and shortened life expectancy. Probable high level of violence and movement restriction due to conflict. Some immediate interventions and assistance required.
5	Humanitarian Emergency (or Declared Famine)	Famine	Almost all households have an extreme lack of food and other basic needs where starvation, destitution, irreversible loss of capital resources and loss of lives are evident. Households of the whole areas are challenged by acute shortage of food and other basic needs - hazards, disasters, epidemics or destruction of infrastructure, disturbances of services. Immediate humanitarian assistance required.

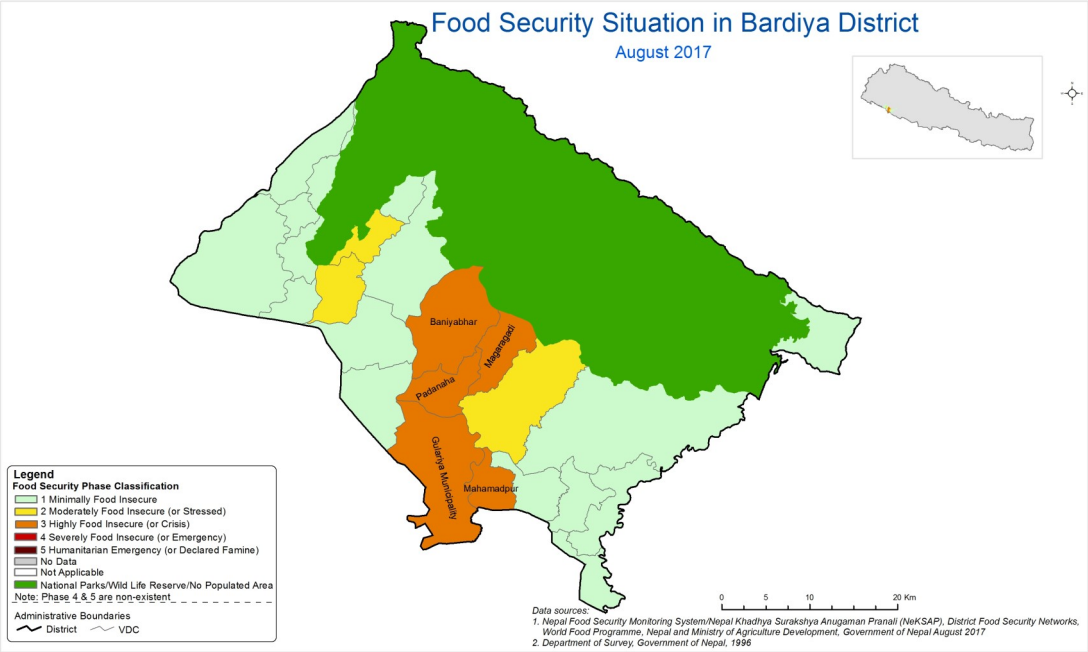
Annex 1: District-wise phase maps and affected population

BANKE	**PAGE 8**
BARDIYA	**PAGE 8**
DHANUSA	**PAGE 9**
MAHOTTARI	**PAGE 9**
SAPTARI	**PAGE 10**
SIRAHA	**PAGE 10**
RAUTAHAT	**PAGE 11**
MORANG	**PAGE 11**
SARLAHI	**PAGE 12**
SUNSARI	**PAGE 12**



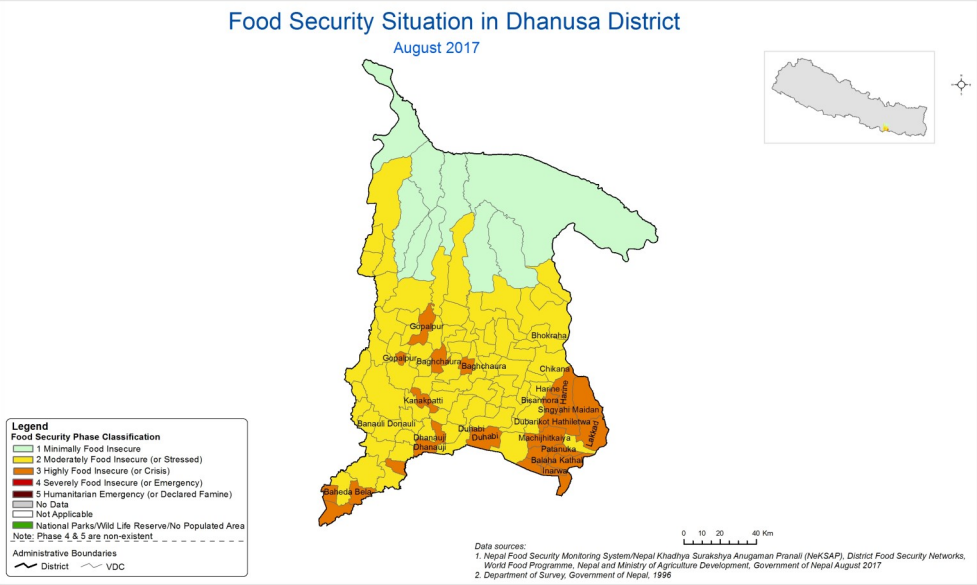
Banke

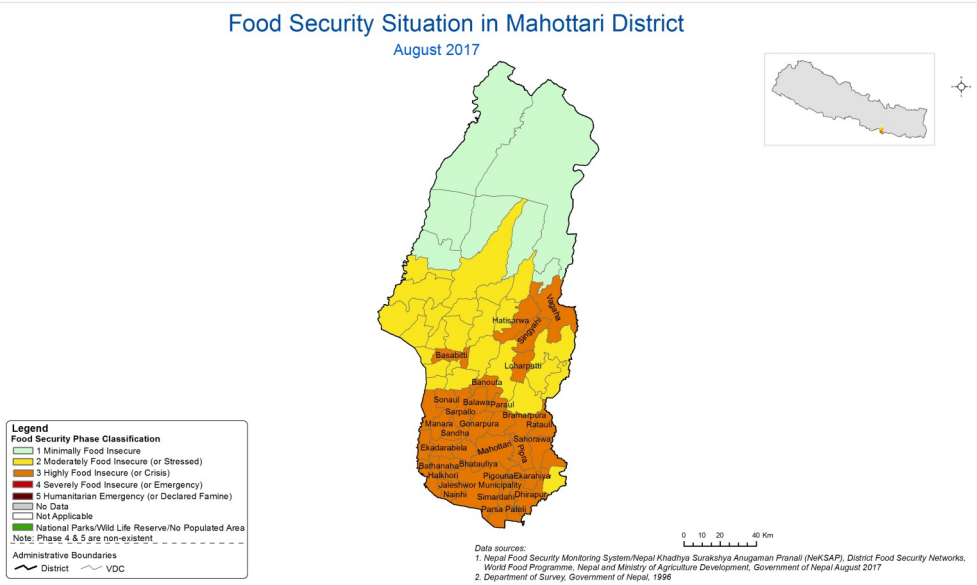
VDCs in Phase 3	2017 population (projected)	Population in Phase 3
Baijapur	13,052	6,500
Bankatti	6,619	3,300
Betahani	8,688	4,300
Binauna	7,825	3,900
Gangapur	6,585	3,300
Holiya	6,713	3,400
Kachanapur	9,453	4,700
Matehiya	8,260	4,100
Narainapur	5,449	2,700
Phattepur	18,107	9,100
TOTAL	**90,751**	**45,300**



Bardiya

VDCs in Phase 3	2017 population (projected)	Population in Phase 3
Baniyabhar	18,870	9,400
Gulariya municipality	59,494	29,700
Magaragadi	20,205	10,100
Mahamadpur	11,667	5,800
Padanaha	9,087	4,500
TOTAL	**119,323**	**59,500**



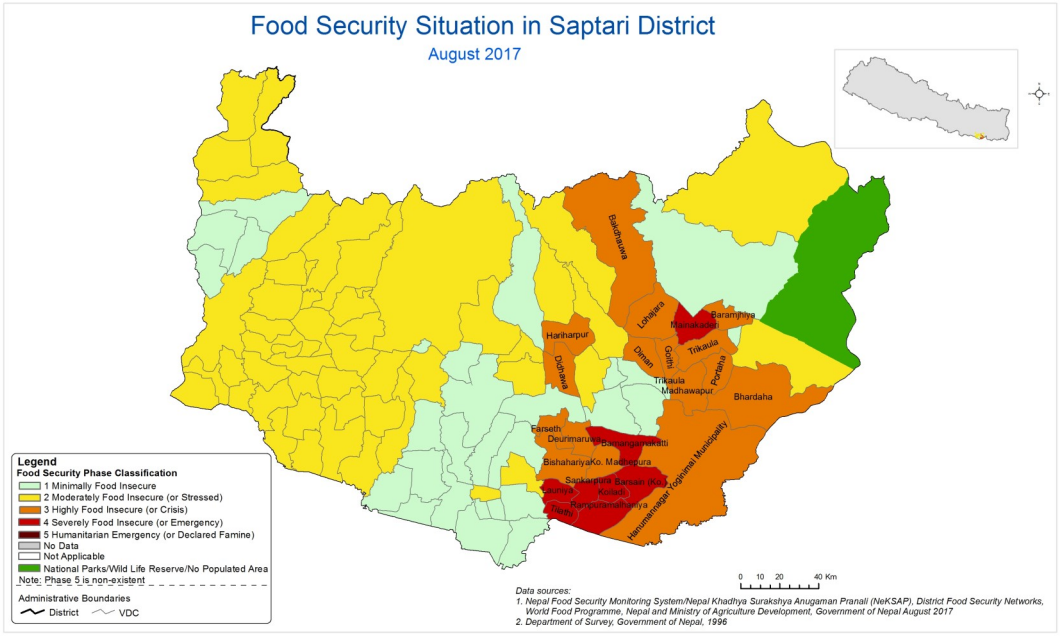


Dhanusa

VDCs in Phase 3	2017 population (projected)	Population in Phase 3
Mukhiyapatti Mu-	7849	4,700
Bisarmora	5237	2,100
Baheda Bela	7452	2,200
Lakkad	4366	1,800
Lagmagadhaguthi	5688	1,300
Dhanauji	9528	2,900
Inarwa	3561	1,100
Kanakpatti	5998	1,300
Mahuwa (Pra. Khe.)	5178	1,600
Khajuri Chanha	6376	1,900
Machijhitkaiya	9902	3,000
Patanuka	3721	900
Balaha Kathal	3634	900
Singyahi Maidan	9925	4,000
Harine	5390	1,600
Gopalpur	5409	1,400
Ballagoth	4571	1,600
Dubarikot Hathiletwa	7336	1,800
Baghchaura	6284	1,600
Duhabi	7493	2,300
Tulsiyahi Jabdi	4694	1,900
Thadi Jhija	7782	2,300
Nagaraeen	6613	1,500
Tulsiyahi Nikas	4694	1,200
Balaha Sadhara	4301	1,300
Deuri Parbaha	4598	1,600
Dhanusadham	9244	2,000
Dhanusha Go-	9442	2,400
TOTAL	**176,266**	**54,200**

Mahottari

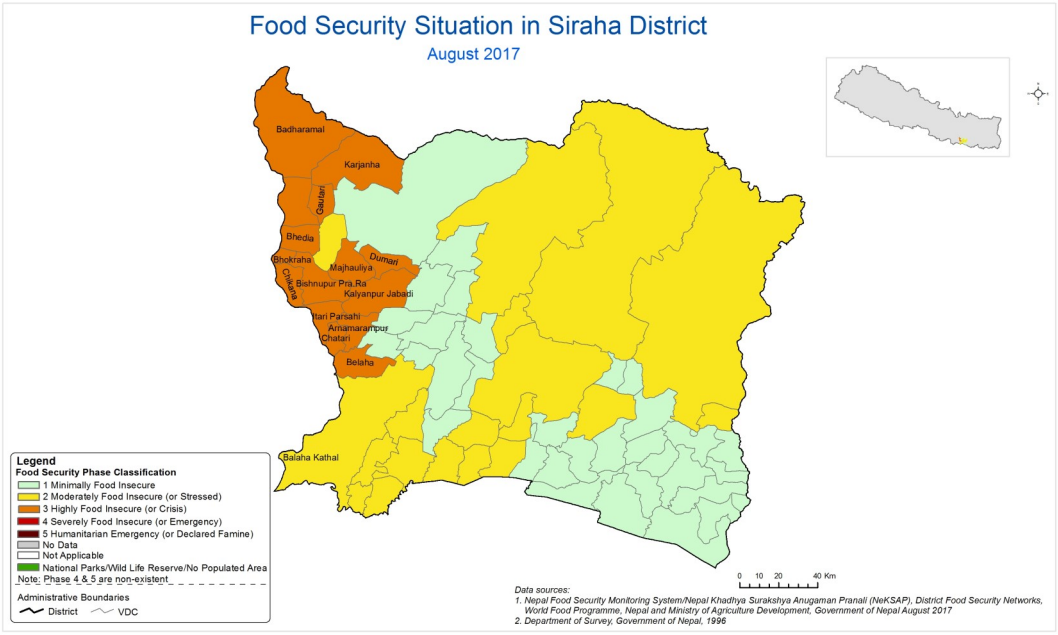
VDCs in Phase 3	2017 population (projected)	Population in Phase 3
Jaleshwor Municipality	25115	6,400
Ankar	6052	1,500
Suga-vawanipatti	7255	2,200
Fulhatta-Parikauli	6338	1,600
Parsa Pateli	3855	1,600
Simardahi	5482	1,400
Mahottari	11287	2,900
Nainhi	8968	2,300
Halkhori	6438	1,400
Bathanaha	10295	2,300
Sisawakataiya	8179	2,500
Ekadarabela	11003	3,400
Pipra	10003	2,600
Ekarahiya	10627	3,300
Bramarpura	10094	2,600
Badiya Banchauri	7222	2,200
Gonarpura	7637	2,300
Sandha	4784	1,200
Sarpallo	10540	3,200
Kolhuwa Bageya	8907	2,300
Manara	7390	1,700
Sonaul	4477	1,000
Balawa	8637	2,600
Paraul	7276	2,600
Banouta	6844	1,700
Damhimarayee	10350	2,600
Loharpatti	8800	2,200
Singyahi	8830	2,700
Hatisarwa	7287	2,200
Pigouna	3834	1,000
Bhatauliya	4937	1,500
Matihani	10314	3,200
Etaharwakatti	7366	1,500
Basabitti	6841	1,700
Vagaha	13960	4,300
Dhirapur	10192	2,600
Sahorawa	6156	1,600
Ratauli	6241	1,600
Banauli Donauli	4885	1,200
TOTAL	**324,698**	**88,700**



Saptari

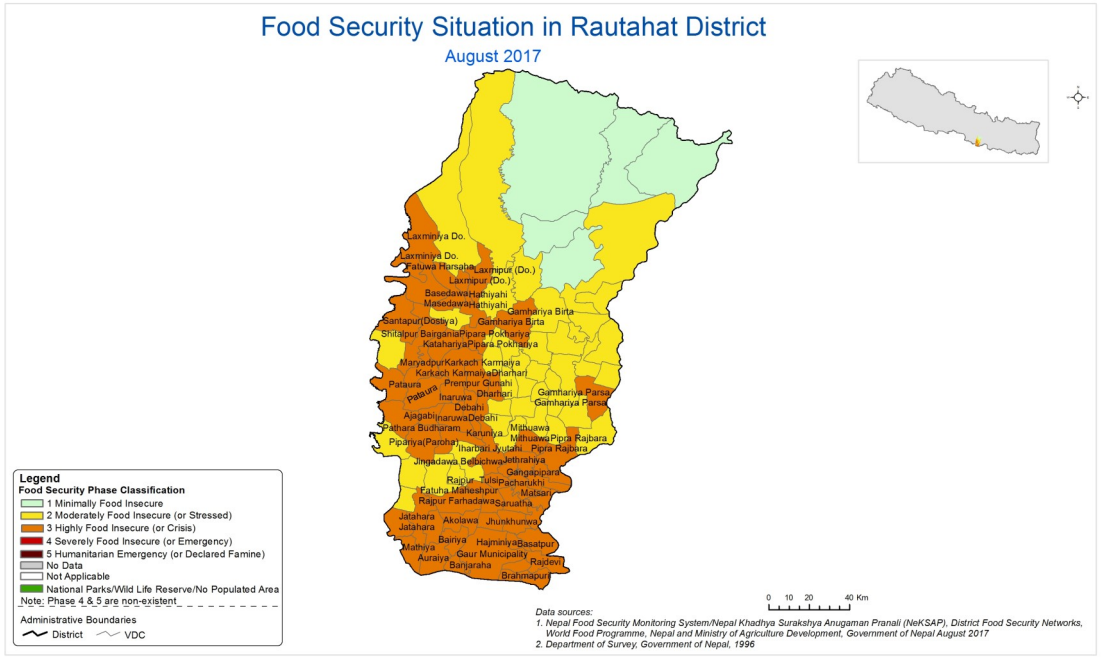
VDCs in Phase 4	2017 population (projected)	Population in Phase 4
Bamangamakatti	8,610	6,000
Barsain (Ko.)	5,825	4,100
Koiladi	5,040	3,500
Launiya	3,756	2,600
Mainakaderi	3,421	2,400
Sankarpura	4,673	3,300
Rampuramalhaniya	7,242	5,100
Tilathi	3,868	2,700
TOTAL	**42,435**	**29,700**

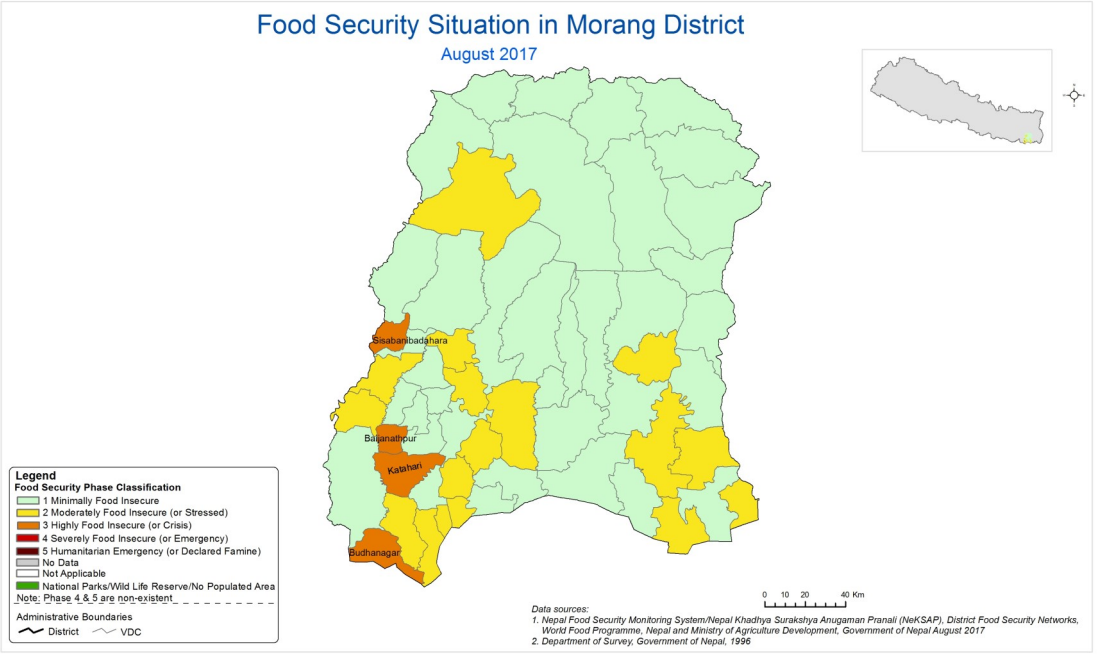
VDCs in Phase 3	2017 population	Population in Phase 3
Bakdhauwa	8,927	4,500
Baramjhiya	4,995	2,500
Bhardaha	7,603	3,800
Bishahariya	7,599	3,800
Deuri	5,056	2,500
Didhawa	4,535	2,300
Diman	4,571	2,300
Farseth	3,751	1,900
Goithi	4,003	2,000
Hanumannagar yoginimai municipality	22,321	3,300
Hariharpur	4,943	2,500
Ko. Madhepura	4,918	2,500
Lohajara	5,944	3,000
Portaha	5,527	2,800
Trikaula	5,549	2,800
Madhawapur	6,115	3,100
TOTAL	**106,357**	**45,600**



Siraha

VDCs in Phase 3	2017 population (projected)	Population in Phase 3
Arnamarampur	3,766	2,300
Belhi	6,659	2,600
Bhokraha	1,875	1,100
Bishnupur Pra.Ra	5,357	3,200
Chatari	2,893	1,700
Chikana	3,885	2,300
Dumari	4,111	2,500
Itari Parsahi	4,380	2,600
Kalyanpur Jabadi	10,228	6,100
Majhauliya	4,961	3,000
Bhedia	4,487	2,700
Badharamal	17,590	10,600
Gautari	3,937	2,400
Kalyanpurkalabanzar	3,553	2,100
Karjanha	7,969	4,800
TOTAL	**85,651**	**50,000**



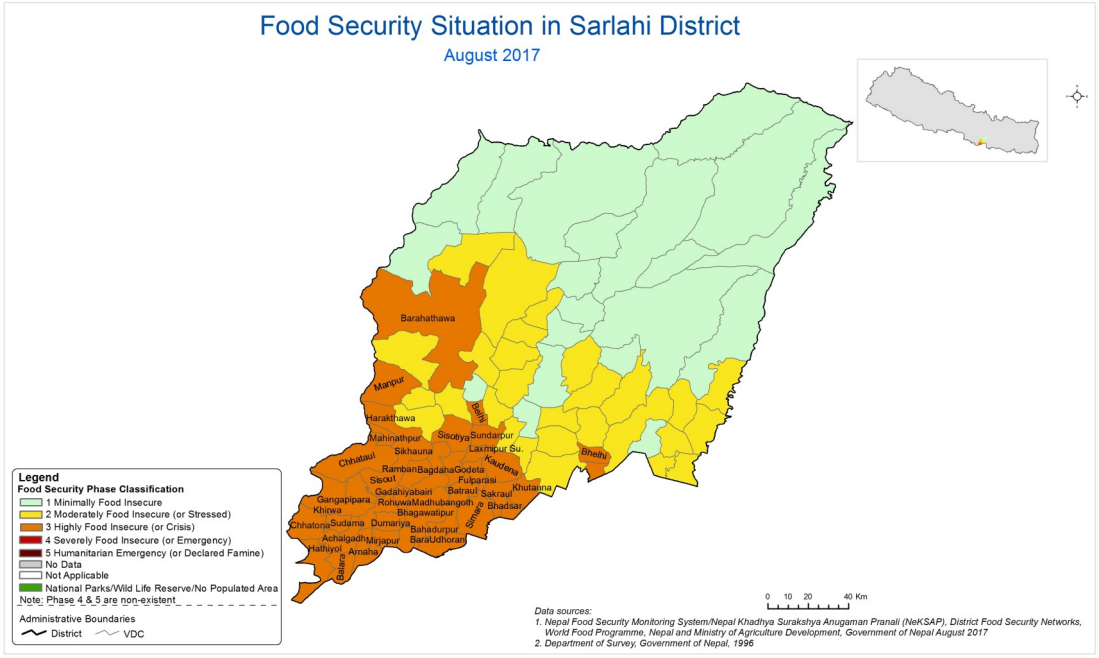


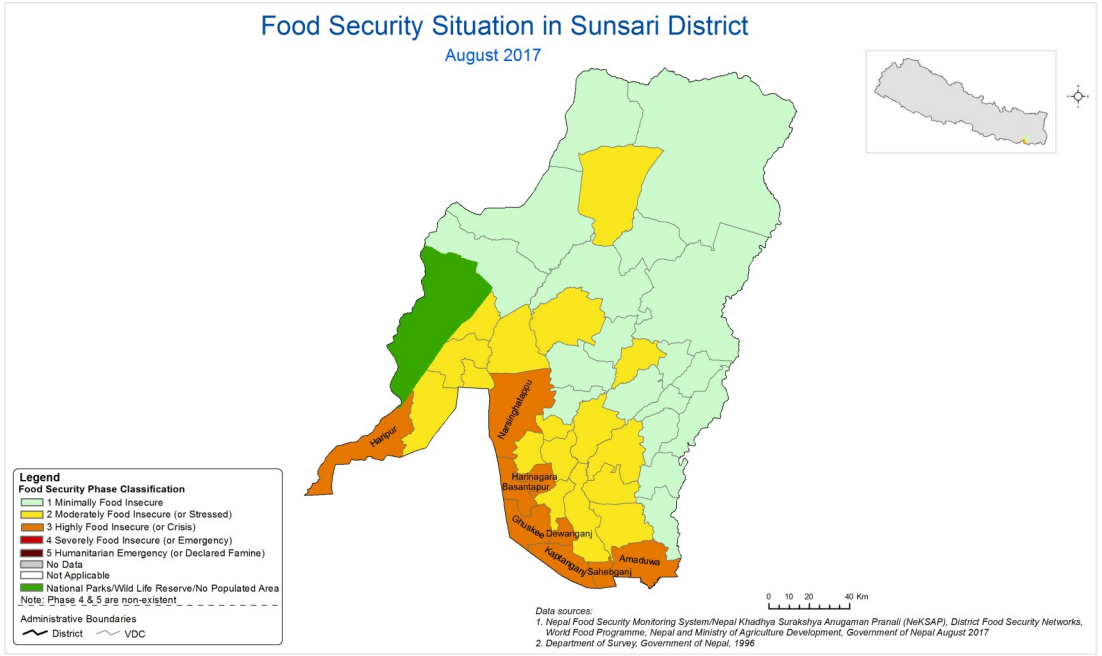
Rautahat

VDCs in Phase 3	2017 population	Population in Phase 3	VDCs in Phase 3	2017 population	Population in Phase 3
Auraiya	11,560	5,200	Inarbari Jyutahi	7,008	2,800
Ajagabi	4,039	1,800	Dharhari	3,034	1,400
Badharwa	5,282	3,700	Dumriya(Paroha)	4,632	1,900
Bairiya	5,441	2,700	Fatuwa Harsaha	4,488	1,300
Banjaraha	3,199	1,900	Jatahara	9,489	3,800
Basatpur	5,819	3,800	Jhunkhunwa	7,486	4,500
Bhalohiya(Pipra)	5,205	2,300	Jowaha(Jokaha)	8,923	2,700
Inaruwa	4,830	2,400	Karuniya	8,054	3,200
Brahmapuri	4,432	2,900	Mathiya	6,417	1,900
Debahi	7,391	5,200	Laxminiya Do.	12,109	3,600
Gangapipara	3,571	1,800	Laxmipur (Do.)	7,387	2,200
Gaur Municipality	37,285	22,400	Mithuawa	4,160	1,700
Jethrahiya	4,509	1,800	Pacharukhi	5,554	2,800
Karkach Karmaiya	8,071	5,700	Pathara Budharam	7,441	3,000
Katahariya	10,629	5,300	Pipara Pokhariya	6,826	2,000
Maryadpur	5,770	2,900	Pipariya(Paroha)	8,748	2,600
Basedawa	7,204	4,300	Pipra Rajbara	7,479	3,700
Matsari	4,614	2,800	Prempur Gunahi	7,752	2,300
Pataura	8,593	4,300	Shitalpur Bairgania	7,898	2,400
Rajdevi	4,718	3,100	Fatuha Maheshpur	4,914	2,900
Rajpur Tulsi	6,193	3,700	Jingadawa Belbichwa	6,588	2,600
Saunaraniya	6,396	3,800	Laxmipur Belbichawa	3,799	2,300
SantapurDostiya	7,907	2,400	Mudwalawa	4,604	2,300
Saruatha	7,951	3,200	Tengraha	6,347	2,200
Hathiyahi	5,652	1,700	**TOTAL**	**347,398**	**163,200**

Morang

VDCs in Phase 3	2017 population	Population in Phase 3	VDCs in Phase 3	2017 population	Population in Phase 3
Baijanathpur	6,019	2,700	Katahari	26,035	11,100
Budhanagar	15,118	6,200	Sisawanijahada	8,786	3,600
		TOTAL		**55,958**	**23,600**





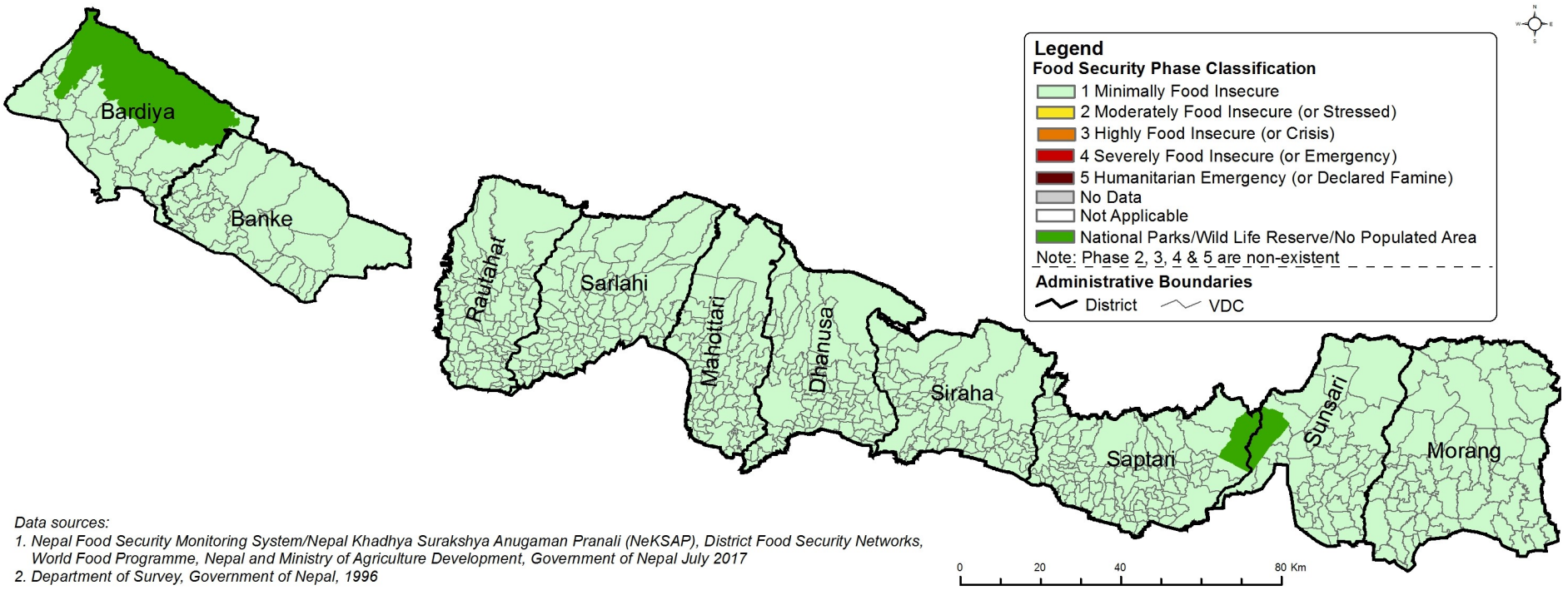
Sarlahi

VDCs in Phase 3	2017 population	Population in Phase 3	VDCs in Phase 3	2017 population	Population in Phase 3
Belhi	3,794	1,900	Barahathawa	19,371	5,800
Bhadsar	4,239	1,900	Belwa Jabdi	6,188	2,200
Bhelhi	4,892	2,500	Bhagawatipur	4,612	1,600
Chhataul	6,892	3,800	Chhatona	3,541	1,600
Godeta	7,129	3,200	Dumariya	4,971	1,700
Harakthawa	6,037	2,700	Kaudena	8,053	2,800
Hathiyol	9,135	5,000	Khutauna	5,222	1,600
Khirwa	12,613	6,900	Madhubangoth	6,341	2,200
Mahinathpur	3,829	2,100	Madhubani	4,544	1,600
Manpur	9,489	4,800	Rohuwa	3,310	1,200
Ramnagar Bahuarwa	7,118	3,900	Sikhauna	5,275	2,100
Sakraul	5,308	2,400	Sisotiya	10,422	4,200
Simara	9,525	4,300	Sisout	8,502	3,800
Sudama	4,469	2,000	Batraul	5,209	2,100
Sundarpur	8,060	3,200	Fulparasi	3,972	1,600
Achalgadh	4,130	1,700	Mirjapur	4,896	2,000
Arnaha	4,241	1,900	Ramban	5,283	1,800
Bagdaha	7,250	2,900	Gadahiyabairi	7,111	2,500
Bahadurpur	2,154	900	Tribhuwan	3,847	1,500
Balara	8,160	3,700			
Bara Udhoran	5,336	2,100	**TOTAL**	**254,470**	**107,700**

Sunsari

VDCs in Phase 3	2017 population (projected)	Population in Phase 3	VDCs in Phase 3	2017 population (projected)	Population in Phase 3
Amaduwa	9,835	4,000	Haripur	12,842	6,000
Basantapur	6,088	2,600	Kaptanganj	9,633	4,600
Dewanganj	7,987	3,700	Narsinghatappu	22,512	10,300
Ghuskee	11,666	5,200	Sahebganj	4,337	2,000
Harinagara	8,346	3,600	**TOTAL**	**93,246**	**42,000**

Annex 2: NeKSAP Integrated Food Security Phase Classification, July, 2017. Source: DFSN



Data sources:

1. *Nepal Food Security Monitoring System/Nepal Khadhya Surakshya Anugaman Pranali (NeKSAP), District Food Security Networks, World Food Programme, Nepal and Ministry of Agriculture Development, Government of Nepal July 2017*
2. *Department of Survey, Government of Nepal, 1996*