



Food Security Monitoring Task Force
NATIONAL PLANNING COMMISSION
Government of Nepal

First Edition: July 2010

**Food Security Monitoring Task Force, National Planning
Commission, Government of Nepal**

ISBN 978-9937-2-2529-8

Information regarding content of this atlas should be referred to the Food Security Monitoring Task Force, National Planning Commission, Government of Nepal; or the Food Security Monitoring Analysis Unit, the United Nations World Food Programme, Nepal; or the Nepal Development Research Institute



World Food Programme

wfp.org



Nepal Development Research Institute



Food Security Monitoring Task Force

NATIONAL PLANNING COMMISSION
Government of Nepal

The Food Security Atlas of Nepal

List of maps



Map title	Source	Page no.	Map title	Source	Page no.
Sub regional hunger index	WFP, 2009a	2	Potential HIV/AIDS hotspots	WFP/NDRI, 2008	20
Food Security Phase Classification map, Summer 2008-2009	WFP, 2010	4	Population infected with diarrhoea	NDHS, 2006	20
Food Security Phase Classification map, Winter 2008-2009	WFP, 2010	4	Population infected with malaria	NDHS, 2006	20
Population density, 2009 projected	CBS, 2002	5	Children below 5 years of age infected with ARI	NDHS, 2006	20
Area of landholding per person	CBS, 2002	5	Population infected with TB	NDHS, 2006	20
Major caste and ethnicity of Nepal	CBS, 2004	6	Stunting	NDHS, 2006	21
Net enrollment rate and drop out rate at primary level	GoN, 2009	6	Wasting	NDHS, 2006	21
Gender-related development status	UNDP, 2009	7	Under weight	NDHS, 2006	21
Adult female literacy rate and gap between adult female and male literacy rate	CBS, 2002	7	BMI	NDHS, 2006	21
Female headed households 2003-2004	CBS, 2004	8	Prevalence of stunting	WFP/CBS/WB, 2006	22
Food sufficiency status	WFP, 2009	13	Prevalence of wasting	WFP/CBS/WB, 2006	22
Agriculture production of paddy	MoAC, 2007	13	Prevalence of underweight	WFP/CBS/WB, 2006	22
Agriculture production of wheat	MoAC, 2007	13	Areas affected by high crop loss caused by drought	WFP, 2009	23
Agriculture production of Barley	MoAC, 2007	13	Flood affected areas	WFP, 2008	23
Agriculture production of pulses	MoAC, 2007	13	Districts affected by landslides	WFP, 2008	24
Agriculture production of maize	MoAC, 2007	13	Earthquake epicentres	NSET, 2009	24
Agriculture production of potato	MoAC, 2007	13	Potentially dangerous glacial lakes	ICIMOD, 2007	24
Agriculture production of vegetables	MoAC, 2007	13	Presence of VDC secretary, 2006	WFP/OCHA, 2007	26
Agriculture production of fruit	MoAC, 2007	13	Areas of 'effective control' during conflict, 2006	WFP/OCHA, 2007	26
Population density by agriculture land	CBS, 2002	14	Conflict impact map, 2006	WFP/OCHA, 2007	26
Total irrigation and area of irrigated land	CBS, 2002	14	Presence of VDC secretary, 2010	WFP, 2010c	26
Mean annual precipitation	Department of hydrology and metrology, 2004	14	Access to basic services, 2010	WFP, 2010c	26
Road network	WFP, 2010	15	Political and civil instability map, 2010	WFP, 2010c	26
Transport cost	WFP/NDRI, 2008	16	Coping strategy – sale of productive assets including land	WFP, 2010	27
Food grain markets and flow of commodities	WFP/NDRI, 2008	16	Coping strategy – Borrow or buy on credit	WFP, 2010	27
Prevalence of poverty	WFP/CBS/WB, 2006	17	Food consumption	WFP, 2010	28
Poverty density	WFP/CBS/WB, 2006	17	Migration by district	CBS, 2002	29
Prevalence of calorie intake below the threshold	WFP/CBS/WB, 2006	18	Major migration routes	WFP/NDRI, 2008	30
Households with improved source of drinking water	CBS, 2002	19	NFC food distribution, 2008-2009	Nepal food corporation, 2010	31
Households with access to toilet facilities	VDC profile, 2008	19	WFP food distribution, 2008-2010	WFP, 2010	31
Health institution density	NDHS, 2006	19	Food security targeting areas	WFP, 2010	32

The production of the Atlas was funded by the Institutional Support Grant provided to the World Food Programme by the UK Department for International Development (UK AID). The printing cost was supported by the European Union food facility grant.



Since 1996 Nepal has made considerable progress in reducing extreme poverty and food insecurity. Social and human development indicators, such as life expectancy, infant and maternal mortality rates, poverty incidence and adult literacy, have improved and, despite a decade-long conflict, the country has made notable progress towards attaining the Millennium Development Goals (MDGs).

However, notwithstanding these encouraging trends, Nepal remains one of the poorest and most food insecure countries in Asia. In recent years, the effects of natural disasters, high food prices, and stagnation in economic growth have taken their toll and their combined impact is revealed in increased food insecurity of Nepal's most vulnerable population groups. It has especially impacted households in the remote districts of the Far and Mid-Western Hills and Mountains.

The population of Nepal is known for its resilience. Many people live in harsh and remote conditions. Knowing how to survive with limited resources, overcome disappointments such as crop and asset loss due to natural disasters, and deal with the uncertainty of whether or not there will be sufficient food is part of many people's daily life. The Nepalese have learned to cope through diversifying their livelihoods

and migrating out in search of employment during these times of distress.

This mind-set has contributed to a decline in poverty by 11 percent during the period 1995/96 to 2003/04. There are however a few caveats, I would like to point out. Firstly, population growth to some extent undermined the progress in poverty reduction. In absolute terms, the number of poor reduced by less than one million during this period. Secondly, the persistent high food prices since the end of 2007 may have reversed the positive trend in poverty reduction or, at best, slowed it down. Thirdly, inequality between the well-off and the poor has grown considerably. And lastly, the reduction in poverty was to a large extent driven by an increase in remittances. A sign that for many young Nepali men there is little economic potential at home, as reflected in high un- or underemployment, low wages, and food scarcity.

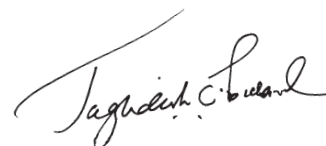
One of the main challenges for Nepal is the nutrition status of the population. Despite some improvements in nutrition indicators, Nepal still ranks among the top ten countries in the world in terms of prevalence rates of child stunting. Child wasting rates, a measure of acute food insecurity, are potentially on the rise. In addition, the progress in reducing malnutrition is too slow; given the

current annual rate of improvement it will take another 100 years to bring the incidence of malnutrition down to an acceptable level of five percent. Urgent action is therefore needed.

This Food Security Atlas of Nepal explores many of these issues. It provides an in-depth analysis of food security in Nepal, exposes underlying problems and illustrates these with the help of a series of thematic maps.

It shows where the issue of hunger is most pronounced, measures its severity through developing a hunger index and provides small area estimates of malnutrition and poverty. Underlying factors, such as limited growth in agricultural productivity, exposure to natural disasters and climate change, lack of market functioning, few livelihood opportunities, ongoing political instability and limited health care delivery are discussed and their geographic disparities uncovered.

In doing so, this excellent work will form a solid basis to develop a comprehensive national food security plan.



Dr Jagdish Chandra Pokharel
Honourable Vice Chairperson
National Planning Commission
Government of Nepal

Nepal - GEOGRAPHICALLY AND ADMINISTRATIVELY

Nepal is a landlocked country bordering India in the south, east and west and China in the north. Geographically Nepal is divided into three agro-ecological belts, Terai, Hills and Mountains, which run east-west and are vertically intersected by major, north to south flowing river systems.

Administratively Nepal is divided into 75 districts and five development regions: Far Western, Mid Western, Western, Central and Eastern. By intersecting the development regions with the agro-ecological belts, 15 sub-regions can be identified: Far Western- , Mid Western-, Western-, Central- and Eastern Mountains and the same for the Hills and Terai. Each district is divided into a number of Village Development Committees (VDC) and each VDC is divided into 9 wards or municipalities



Acknowledgement



This first edition of the Food Security Atlas of Nepal was produced jointly by the United Nations World Food Programme (WFP) and the Nepal Development Research Institute (NDRI) under the overall guidance and supervision of the Food Security Monitoring Task Force of the National Planning Commission (NPC).

The aim of the Food Security Atlas is to contribute to a better understanding of the spatial patterns of food security, poverty and malnutrition in Nepal in order to provide a solid basis for developing a comprehensive national food security plan. This is achieved through the mapping of a series of food security indicators and a spatial analysis of these data and indicators.

I would like to extend my sincere appreciation to the members of the Food Security Monitoring Task Force: the Secretary of the Ministry of Agriculture and Cooperatives, the Secretary of the Ministry of Health, and the Secretary of the Ministry of Local Development.

Siemon R. Hollema, Chief of the Food Security Monitoring and Analysis Unit of WFP in Nepal, was responsible for the overall co-ordination, writing and final editing of the Food Security Atlas.

Dr Punya Prasad Regmi of NDRI extended his cooperation in collecting data and information and compiling a first draft. Liv Pommer and Sara Dang (WFP) assisted in editing, writing, and formatting different sections of the Atlas.

Man Bahadur Kshetri of NDRI was responsible for the GIS analysis and preparation of thematic maps. He was assisted by Kiran K.C. (WFP consultant) and Monika Shrestha (WFP).

Dr Jagadish Chandra Pokharel (vice-chairmen NPC), Richard Ragan (Representative WFP) and Dr Nawa Raj Khatiwada (Executive Director NDRI) deserve special thanks for their encouragement and vision.

Other staff involved in the production of this Atlas include, Abesh KC, Krishna Pahari, Pushpa Shrestha, Mariko Kawabata of WFP, Dr Jagannath Adhikari of NDRI and Bhawa Krishna Bhattarai (joint secretary), Biju Kumar Shrestha (under secretary/programme director) and Neeta Pokharel (planning officer) of NPC.

Photographs were provided by Liv Pommer, Siemon Hollema and James Giambrone from WFP.

Pushpa Sunawar (WFP) was responsible for the translation in Nepali.

I sincerely hope that this Atlas will contribute to a better understanding of the food security problem in Nepal and lead to imminent action to combat the hunger and extreme poverty in the country.

Dr R.D. Singh
Honourable Member
Coordinator
Food Security Monitoring Task Force
National Planning Commission



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

Nepal's terrain and lack of infrastructure pose significant challenges to collecting and monitoring critical information on the food security situation of remote communities especially those in mountainous areas. Rural communities in Nepal can be as much as a five-day walk away from the nearest road or communication facility. Lack of reliable and timely information, particularly about emerging crises, can delay support to poor, vulnerable communities, threatening their lives and livelihoods. In order to overcome these difficulties, WFP has supported the development of the Nepal Food Security Monitoring System, in Nepali, *Nepal Khadya Surakshya Anugaman Pranali (NeKSAP)*. The system is being institutionalized within the Ministry of Agriculture and Cooperatives (MoAC) under the strategic guidance of the Food Security Monitoring Task Force established by the National Planning Commission.

The primary objective of the NeKSAP is to collect, consolidate and analyze food security data and to effectively communicate the results to decision makers in order to achieve coordinated, appropriate and timely action to prevent human suffering due to food insecurity.

The core of the NeKSAP is the District Food Security Networks which are formed by representatives from district-based organization including local government, NGOs and civil society. These networks monitor the food security situation in their respective district based on a standardized food security phase classification approach. Information gathered by the district food security networks is verified, analyzed and compiled into district food security bulletins.

In addition, WFP field monitors collect household level data to assess and track the food security situation at the household level. Market and price developments are monitored by making use of the price monitoring system of the Department of Agriculture and data from the Federation of Nepalese Chambers of Commerce and Industries. Crop and livestock status is monitored through the District Agriculture Development Offices and District Livestock Service Offices as well as twice-annual crop assessments conducted by the MoAC.

The NeKSAP produces a Food Security Bulletin, Crop situation Update, Market Watch and think-pieces on current affairs. It conducts detailed food security assessments and undertakes in-depth studies on issues related to food security. NeKSAP information products are disseminated through the following mailing group: <http://groups.google.com/group/NeKSAP?hl=en>.



		Page no.
Food Security	The concept of food security	1
	Hunger in Nepal	2
	Nepal food security map	3
Profile	Nepal's people	5
	Gender	7
	Terai	9
	Hills	10
	Mountains	11
	Karnali	12
Availability	Agriculture	13
Access	Infrastructure, markets and trade	15
Utilization	Poverty	17
	Health	19
	Nutrition	21
Vulnerability	Natural disasters and climate change	23
	Conflict and political instability	25
Resilience and Response	Coping	27
	Migration	29
	Addressing food security	31
	Literature list	33
	List of maps	34



The concept of food security



Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

World Food Summit (Rome, 1996)

Food security is a process that succeeds in producing and acquiring, distributing and accessing sufficient food that satisfies the nutritional need of every individual in a household. Food availability, access and utilization are the core elements of food security.

FOOD AVAILABILITY

Local or national agricultural production and the ability to trade and transport essential food supplies from surplus areas to deficit areas, including imports from third countries, determine food availability.

Until 1990, Nepal produced sufficient food to feed its population. In the years following, however, population growth outpaced food production. And it was not until 1999 that a boom in cereal crops allowed the country to once again become self-sufficient. Despite efforts to sustain the production levels of the late 1990s, the situation did not last. Adverse weather conditions and natural disasters predetermined Nepal's present food production course, which has been insufficient to meet the needs of the population since 2005.

Nepal is defined by three distinct ecological regions each with a different level of food availability. Minimal arable land and lack of roads and market infrastructure in the Hills and Mountains restricts food availability causing widespread food deficits in these regions.

FOOD ACCESS

Food accessibility is the ability of a household to acquire enough food to meet minimum consumption needs of its members.

Physical, financial and social barriers can constrain household food accessibility. These limitations can compromise home production, food stocks and household purchasing power. To cope under restricted access, households may barter or borrow, out-migrate in search of work, or look to gifts or external food assistance to meet their food needs.



FOOD UTILISATION

The selection, preparation and food distribution among household members outline the process of food utilization. Simultaneously, culture, gender, age and a general understanding of nutrition may influence intra-household food distribution. For instance, discriminatory feeding practices favouring male children and the custom of women eating only after the appetites of their male counterparts have been satisfied demonstrate distinctions in household food utilization.

Lack of appropriate health care, inappropriate sanitation and hygiene practices can raise the nutritional requirement of household members who fall sick and therefore are unable to absorb nutrients (WFP, 2006).

DURATION & SEVERITY

Depending on duration or recurrence, food insecurity can be classified as *chronic* or *transitory*.

Chronic food insecurity describes the inability to meet minimum nutrition and consumption needs over a sustained period of time. It often stems from extended periods of poverty, restricted resource access and limited or no assets. A phenomenon of chronic food insecurity is the hungry or agricultural lean season. In Nepal this is during the periods February-March and July-August. Due to longer gestation periods for crops at higher altitudes,

lean seasons last longer in the Hills and Mountains.

Seasonal food insecurity can compromise household food stocks, and the health and nutrition of family members beyond the season itself. In Nepal, to cope with seasonal food insecurities, many people—most of whom are men—out-migrate in search of income generating opportunities leaving families behind with little to eat.

Transitory food insecurity often results from sudden shocks to food production, which when severe can lead to famines. Nepal's recurrent natural disasters and their damaging impact on crop production, livestock and other productive and household assets, cause transitory food security, affecting large numbers of households across the country every year. In addition, political unrest, *bandhas* and strikes can also cause transitory food insecurity when it disrupts market supply chains for extended periods of time.

Transitory food insecurity can become chronic.

VULNERABILITY & COPING

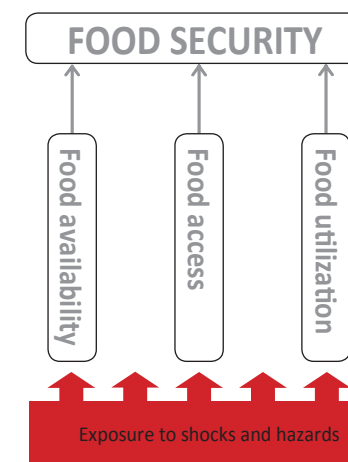
Vulnerability may exist in the presence of risk factors that jeopardize food and nutritional security, including those that affect coping abilities. Geographic, social, economic and cultural exclusion and inequalities can heighten vulnerability to food insecurity. Vulnerability to food

insecurity depends on the interplay of a household's exposure to risk and its ability to cope.

Risk factors include the occurrence of natural disasters, pest and diseases, as well as the risk of losing employment or the falling ill of a main income earner in a household.

Resilience is a household's ability to cope with the impact of the potential risk factor or hazard. Households faced with hunger resort to coping strategies in order to meet immediate needs. These range from borrowing and consuming seed stocks to taking children out of school and selling household and productive assets. Unlike the shock itself, recovery, if possible, can be slow and the household made more vulnerable in the process.

Pre-emptive strategies or interventions that reduce exposure to risks or that increase the ability to manage when confronted with risks are necessary for staving off future food insecurity.



HUNGER

Hunger has many dimensions and consequences. It is most directly caused by inadequate food intake. Over time it manifests itself in stunted and underweight children, especially in combination with low birth weights and high rates of infections. The most extreme manifestation of continued hunger and malnutrition is mortality.

Based on the 2008 Global Hunger Index (see box), Nepal ranks 57th out of 88 developing countries and countries in transition. With a Global Hunger Index (GHI) of 20.6, the severity of hunger in Nepal is alarming.

The prevalence of hunger varies substantially across the fifteen sub-regions of Nepal. The highest prevalence of hunger can be found in the Far-and Mid-Western Hill and Mountain regions. The hunger indices in these parts of the country are close to or above 30, pointing to an *extremely alarming* situation.

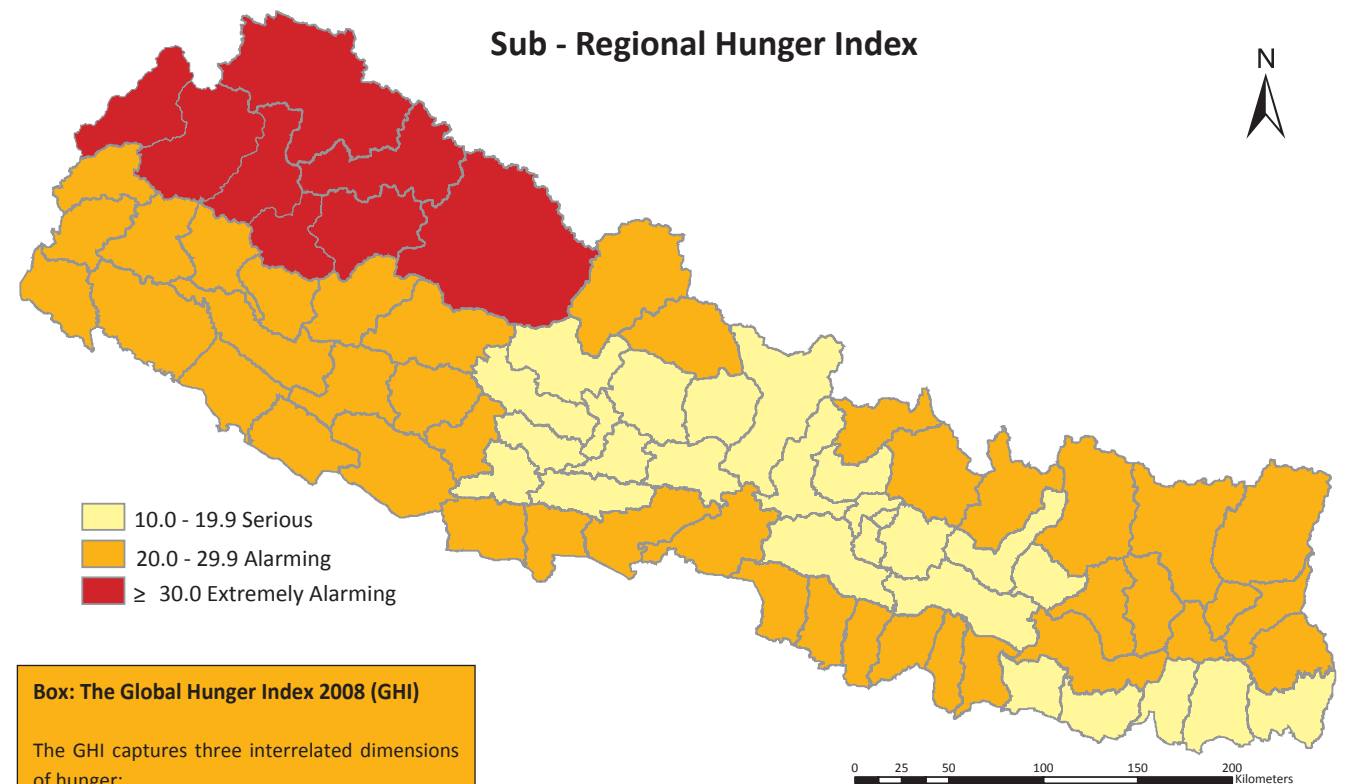
The majority of the fifteen sub-regions of Nepal fall within the alarming category with hunger indices ranging between 20.0 and 29.9. Three sub-regions (Central Hills, Western Hills and Eastern Terai) have hunger indices between 10.0 and 19.9 indicating a *serious* food insecurity situation. There is not a single sub-region in Nepal that falls within the moderate or *low hunger-categories*. This underscores the seriousness of the food security situation in Nepal (WFP, 2009a).

The differences in hunger scores between sub-regions are mostly due to the differences in prevalence of undernourishment and underweight; underweight being a more important contributor in the Terai whereas undernourishment (and thus chronic malnutrition) is more prevalent in the Hills and Mountains. In the Mountain zone, childhood mortality is extremely high.

In terms of hunger, most sub-regions in Nepal are comparable to countries such as India, Zimbabwe, Tanzania, Haiti, Bangladesh and Mali.

Most striking is that the Mid-Western Mountains ranks last among the 88 countries for which the 2008 Global Hunger Index was calculated, just above the Democratic Republic of Congo. This demonstrates the seriousness of the hunger situation in this specific part of the country. The Far-Western Mountains also does not fare well in comparison, with a ranking similar to Ethiopia's.

The best performing sub-regions, Central and Western Hills and Eastern Mountains, still rank below Myanmar, Cote d'Ivoire and Senegal.



Box: The Global Hunger Index 2008 (GHI)

The GHI captures three interrelated dimensions of hunger:

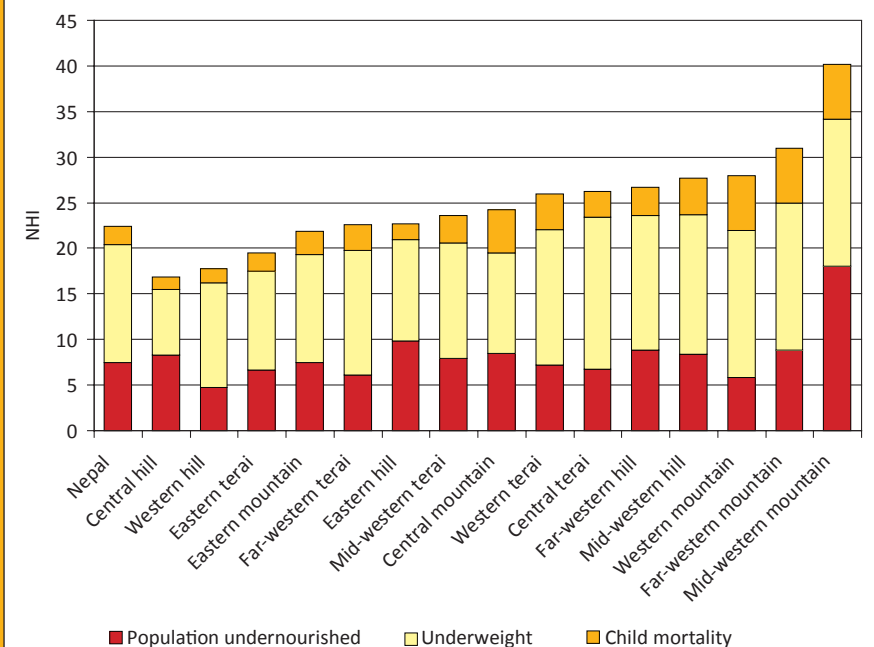
1. Insufficient availability of food, measured in *percentage of population undernourished*,
2. Shortfalls in the nutritional status of children, measured in *prevalence of underweight in children under the age of five*, and
3. Child mortality, measured as the *mortality rate of children under the age of five*.

The index is derived by simply taking the un-weighted average of these three interrelated indicators.

A higher index indicates a higher prevalence of hunger. The severity of hunger is determined using the following thresholds:

■ GHI ≤ 4.9	low
■ GHI 5.0-9.9	moderate
■ GHI 10.0-19.9	serious
■ GHI 20.0-29.9	alarming
■ GHI ≥ 30.0	extremely alarming

The Global Hunger Index is developed by the International Food Policy Research Institute (IFPRI).



Nepal food security map



Food security in Nepal is characterised by considerable regional variation which is also visualized by the hunger map. In order to capture this variation, monitor changes, and provide early warning, the Nepal Food Security Monitoring System (NeKSAP) uses the Food Security Phase Classification approach.

FOOD SECURITY PHASE CLASSIFICATION

The Nepal food security phase classification distinguishes five phases of food insecurity: (1) generally food secure, (2) moderately food insecure, (3) highly food insecure (starting affecting livelihood assets), (4) severely food insecure (acute food and livelihood crisis), and (5) humanitarian emergency/famine. A description of each phase is provided in the box below.

The food security phase classification is based on the food security conceptual framework. It takes into account the availability, access and utilization of food, the occurrence of shocks or

exposure to hazards, and the ability to cope. For each of the food security components, measurable and verifiable indicators were defined and threshold values determined. As such, twelve key indicators were selected as listed in the reference table on the right-hand side.

In the food security phase classification approach, each indicator is subsequently classified based on whether or not the available data and information indicate that its value is below or above the predetermined threshold. For example, in a particular area, crop losses of 50 percent would indicate a phase 3 situation while, in the same area, a sudden increase in food prices of 10 percent would indicate a phase 2 situation. The final assigned food security phase would depend on the indicative phases of all key indicators. Three principles guide the phase classification process: i. convergence of evidence, i.e. which food security phase do most indicators imply, ii.

assigned relative importance of each indicator, i.e. weightage given to each indicator in the decision process, and iii. consensus on the outcome by main stakeholders, i.e. do all stakeholders agree on the final classification.

FOOD SECURITY MAP

The Nepal food security phase classification maps (see next page) shows an average of the phases covering the summer period 2006-2009 and the winter period 2007-2009. The seasonal and geographical variation Nepal is experiencing with regard to food security is illustrated clearly by these maps. In general, the most crucial period with the highest food insecurity are experienced during summer period. Particularly the Mid and Far Western Hills and Mountains are experiencing a large increase in areas classified as *Highly Food Insecure* and *Moderately Food Insecure* during the summer period compared to the winter period. The Central Mountains and Hills are also experiencing an increase in *Moderately Food Insecure* areas during the summer month, however not as significant. The outlook in the period is improving due to upcoming maize harvest at the end of August. Few Terai districts are *Generally Food Secure* year round. In the Mid and Far Western Hills and Mountains reoccurrence of drought has a great impact on the food security situation whereas in the Central Hills and Mountains the food security situation seems to be more influenced by disruption of markets and price increases.

Reference indicators / threshold values		phase 1 Generally Food secure	phase 2 Moderately food insecure	phase 3 Highly food insecure (starting affecting livelihood assets)	phase 4 Severely food insecure (acute food and livelihood crisis)	phase 5 Humanitarian emergency/famine	Remarks
Food availability	1. Crop production /situation	T: up to 10-20% less than normal M+H: up to 10% less than normal	T: 20-40 % less than normal M+H: 10-30% less than normal	T: 40-60% less than normal M+H: 30-50% less than normal	T: 60-80 % less than normal M+H: 50-70% less than normal	T: >80 % less than normal M+H: >70% less than normal	Normal yield is based on 5 years average in the district (M=Mountains, H=Hills, T=Terai)
	2. Household food stocks	> 50% HHs with more than 3 months food stocks	T: > 50% HHs with 1-3 months food stocks M+H: > 50% HHs with 2-3 months food stocks	T: > 30% HHs with < 1 month food stocks M+H: > 30% HHs with 1-2 months food stocks	T: 30-50% HHs with depleted food stocks M+H: 30-50% HHs with < 1 month food stocks	>50% HHs have depleted food stocks	HH= household
	3. Stock of main staples in key markets	Stocks are at normal level (reserves levels are good and supply is sufficient to meet demand)	Stocks are reducing but still sufficient to meet demand	Very low stock levels, partially able to meet demand	Stocks depleted	stocks depleted / markets not functioning	In phase 2 and 3 it is also possible to quantify the % reduction of stocks (i.e. up to 40% lower and more than 40% lower)
Food access	4. Wage employment opportunities within district	As per normal situation	10-30 % fewer opportunities compared to normal situation	30 - 50 % fewer opportunities compared to normal situation	Opportunities decreased by > 50 % or no opportunities	No opportunities	Normal employment condition is based on people's perception
	5. Sale of NTFF, cash crops and other agriculture products	Income as per normal situation	Income decreased by up to 30 % compared to normal situation	Income decreased by 30 - 60 % compared to normal situation	Income decreased by > 60 %	No sales	Normal income earnings are based on people's perception
	6. Market price of rice	Decreased, constant or up to 10% of normal price	Increased by 10- 20% of normal price	Increased by 20- 40% of normal price	Increased by more than 40-80% of normal price	Increased by more than 80% of normal price	Compared to average price during same period last 5 years
Food utilization	7. Acute child (<5 years) malnutrition			10-15%	> 15%	>30%	To measure and consider only if the other indicators give evidence of being in phase 3, 4 or 5 (random measurement of MUAC by FMs)
	8. Disease	No significant cases of disease	Significant cases of diseases under control	Epidemic outbreak; increasing	Pandemic outbreak	Pandemic outbreak	
Shocks/hazards	9. Natural disasters	No natural disasters or occurrence causing <20 % loss of food stocks and assets	Occurrence of natural disaster causing 20-30 % loss of food stocks and assets	Occurrence of natural disaster causing 30-50 % loss of food stocks/assets and human casualties	Occurrence of natural disaster causing >50% loss of stocks and assets and human casualties	Occurrence of large scale devastating natural disasters (i.e. earthquake) causing complete destruction, significant human casualties, displacement	Assets include land, agricultural tools, cattle, houses etc.
	10. Civil security	General peaceful situation	Security situation deteriorating (bandhs and roadblocks 7-15 consecutive days /3 months)	Movement restricted (bandhs and roadblocks 15- 30 consecutive days / 3 months)	Movement restricted (bandhs and roadblocks > 30 consecutive days / 3 months)	High intensity conflict situation, displacement	
Coping	11. Coping	Traditional coping mechanisms that are part of livelihood strategy (migration, wage labour, sell NTFF, consumption of wild food)	Change in regular food habits (reduce quantity food, less preferred food), borrowing food/ money, selling of non-productive assets	HHs adopt irreversible coping strategies (selling of productive assets - livestock, land, seed) and skipping meals	HHs adopt a high level of irreversible coping strategies including, increased sale of productive assets, looting, and high dependence on wild foods	No more coping mechanisms, starvation and death	
	12. Out-migration	Up to 10% increase of traditional seasonal out migration	10-20% increase of traditional seasonal out-migration	Up to 20-40% increase of traditional seasonal out-migration	>40% increase of traditional seasonal out-migration	Large scale out migration	Traditional seasonal out migration is based on people's perception

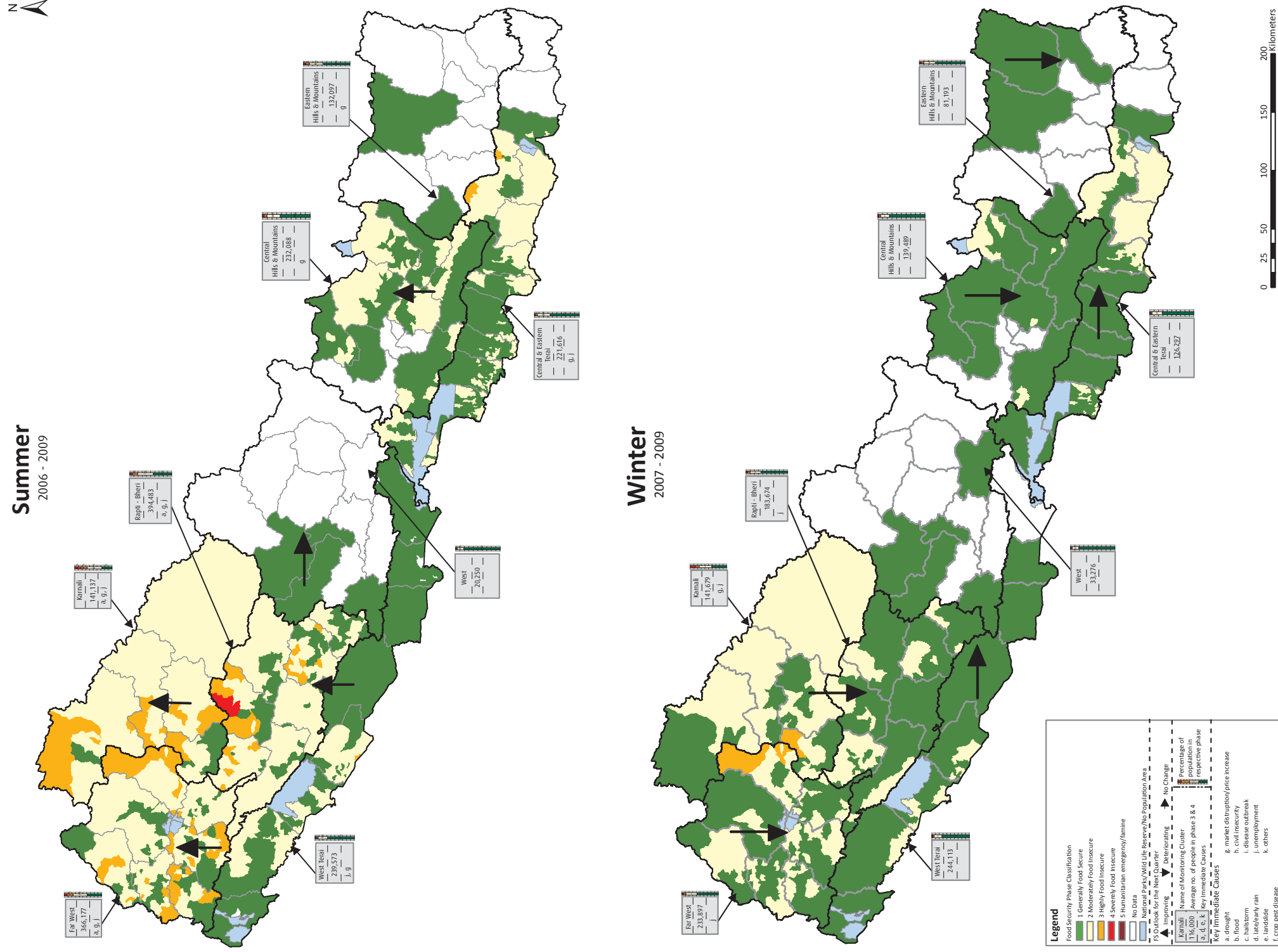


Box: Food security phase classification

■ Phase 1	Generally food secure	Household has secure access to food
■ Phase 2	Moderately food insecure	Household members have reduced their consumption. Calorie and nutrient intake of household members is borderline sufficient. In addition, the household is undertaking coping mechanisms such as borrowing money and selling non productive assets.
■ Phase 3	Highly food insecure (starting to affect livelihood assets)	Household members have significantly reduced their consumption. Calorie and nutrient intake is highly deficient. In addition the household is undertaking irreversible coping mechanisms such as selling productive assets and taking children out of school.
■ Phase 4	Severely food insecure (acute food and livelihood crisis)	Household members have significantly reduced their consumption. Calorie and nutrient intake is highly deficient. The household has limited coping mechanisms left and is likely to be selling final assets/land.
■ Phase 5	Humanitarian emergency/famine	There is no opportunity for the household to gain access to food, leading to starvation if no intervention is made.

Food security phase classification map

Nepal food security map



Nepal's people



Nepal is one of the least developed countries in the world; ranking 142 out of 177 countries on the 2008 Human Development Index (UNDP, 2009). Its per capita Gross Domestic Product (GDP) is \$470 which is one of the lowest in South Asia.

Nepal is a landlocked country which is commonly divided into three ecological belts: the Mountains, Hills, and Terai. These run east-west and are vertically intersected by Nepal's major, north to south flowing river systems (CIA, 2009). Nepal is a multi-ethnic, multi-cultural, multi-lingual country with over 100 ethnic groups and 92 languages. It has two predominant religions: Hinduism and Buddhism (CBS, 2002; WB, 2010).

POPULATION GROWTH

Nepal's population is characterized by a high birth rate (30 per thousand), a declining death rate (8.7 per thousand), high infant mortality (48 per thousand live births), a high total fertility rate (3.1), high dependency ratio (87.1) and a low life expectancy (63 years). It has a very young population, with 43.1 percent below 14 years of age.

The Mountains cover 35.2 percent of the country's total area, but is home to fewer than 7.8 percent of its population. The Hills (41.7 percent of total area) account for 45.5 percent of the population while the Terai accommodates 46.7 percent of the population in just 23.1 percent of the area.



Nepal's total population is estimated at over 28 million and it is growing at the rate of 2.25% per year. This means that by 2040 the population will have doubled in size.

The Terai has the highest population growth rate and density.

Population growth rates

Region	1971-81	1981-91	1991-01
Nepal	2.62	2.08	2.25
Mountain	1.35	1.02	1.57
Hill	1.65	1.61	1.97
Terai	4.11	2.75	2.62

One of the major consequences of rapid population growth in Nepal has been progressive deterioration of the ratio of people to land. This is having a critical effect on household food security.

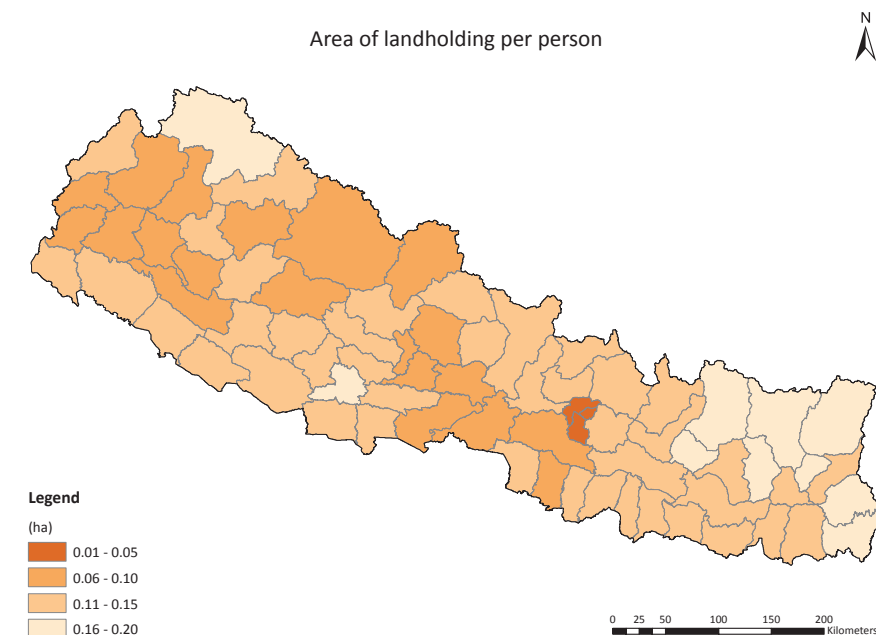
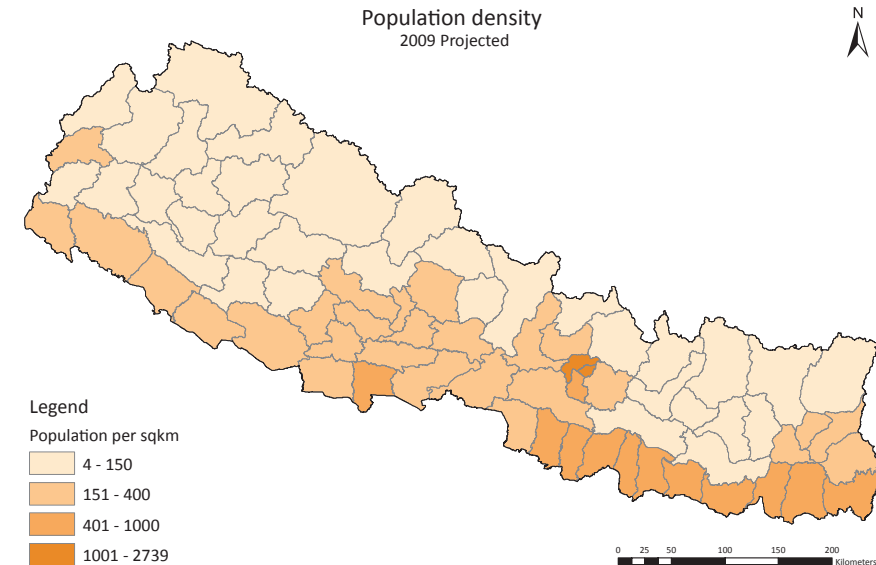
Landholdings are particularly small in the Far and Mid-West and Central and Western Hills.

PEOPLE AND ETHNIC GROUPS

Nepal knows a diversity of ethnic groups and languages. A diversity that is characterised by a history that has generally seen ethnic and religious groups co-existing peacefully.

The caste system has been and remains strong. It often defines access to resources and opportunities. Upward mobility within the caste system is extremely limited. Women generally (but not always) occupy a lower position in the social hierarchy than men. Nearly 30 percent of Nepal's population belongs to either the Chhettri or the Brahmin caste. Magar, Tharu, Tamang and Newar come next, accounting for approximately 20 percent of the population. The remaining 50 percent falls into various castes and a small percentage are also of non-Nepali ethnicity (CBS, 2004).

Ethnic groups	%
Chhettri	15.8
Brahman – Hill	12.7
Magar	7.1
Tharu	6.8
Tamang	5.6
Newar	5.5
Muslim	4.3
Kami	3.9
Yadav	2.8
Gurung	2.8



EDUCATION

In 2001 nearly half of the adult population was illiterate (44 percent). Since then, improvements in physical access have contributed to an increased primary school enrolment rate. However, only 51 percent of children from the lowest income-quintile attend primary school, compared to 87 percent from the richest income-quintile (SSRP, 2009; WB, 2009).

The areas of highest concern with regard to primary education are the Central and Eastern Terai where the lowest enrolment rates and the highest drop-out rates are observed. This is also the area where disparity between boys and girls school attendance is the highest.

Primary school Indicators	%
Net enrolment rate	92
Drop-out rate	38
Class repeaters	18
Completion rate (SLC)	62
Pupil – teacher ratio	43

Source: SSRP, 2009

EMPLOYMENT

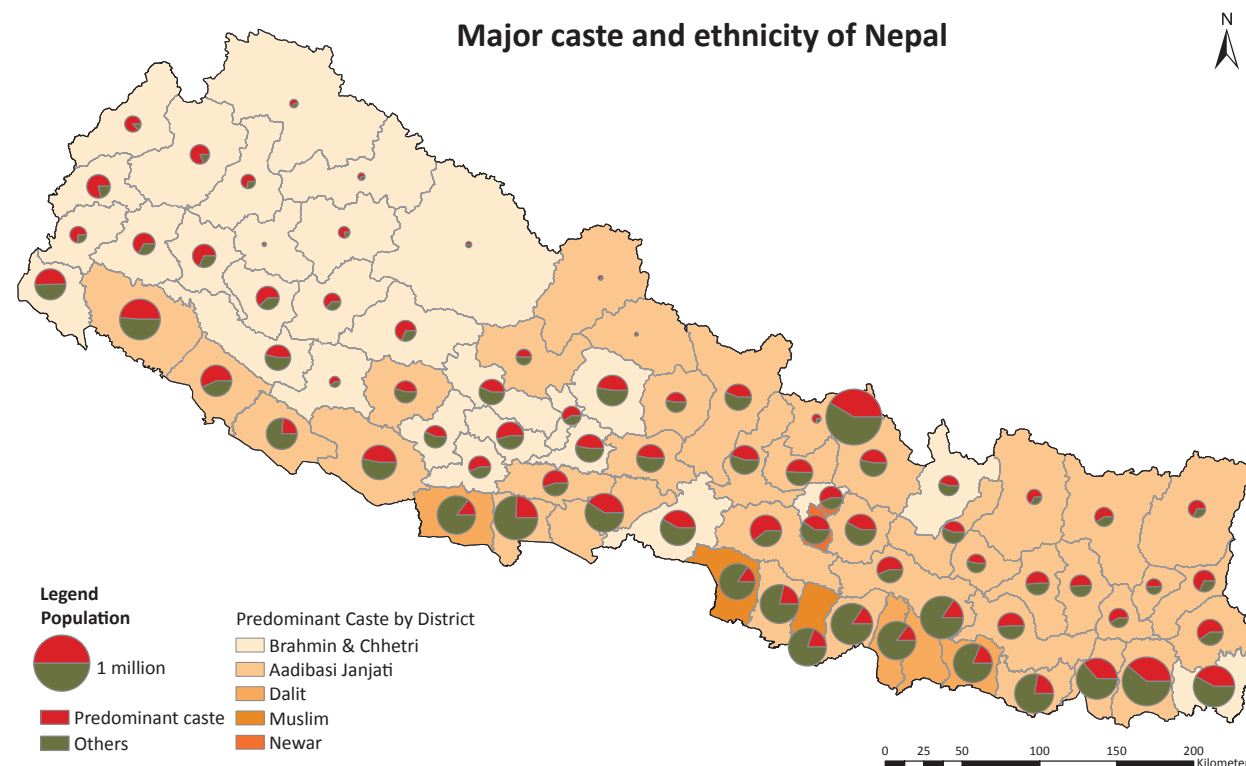
Nepal's economy is dominated by agriculture. More than three-quarters of the country's households are agricultural. Due to the fast growing population the average size of holdings has reduced in recent years and un- and underemployment is an increasing problem in Nepal with an increase from 42 percent in 2004 to 46 percent in 2008 (CIA, 2009 and WB, 2009). The non-farm economy has seen a steady rise with increased trade leading the way.

Manufacturing and services, including tourism, are also significant. However, demand for labour in these sectors is insufficient to absorb the excess.

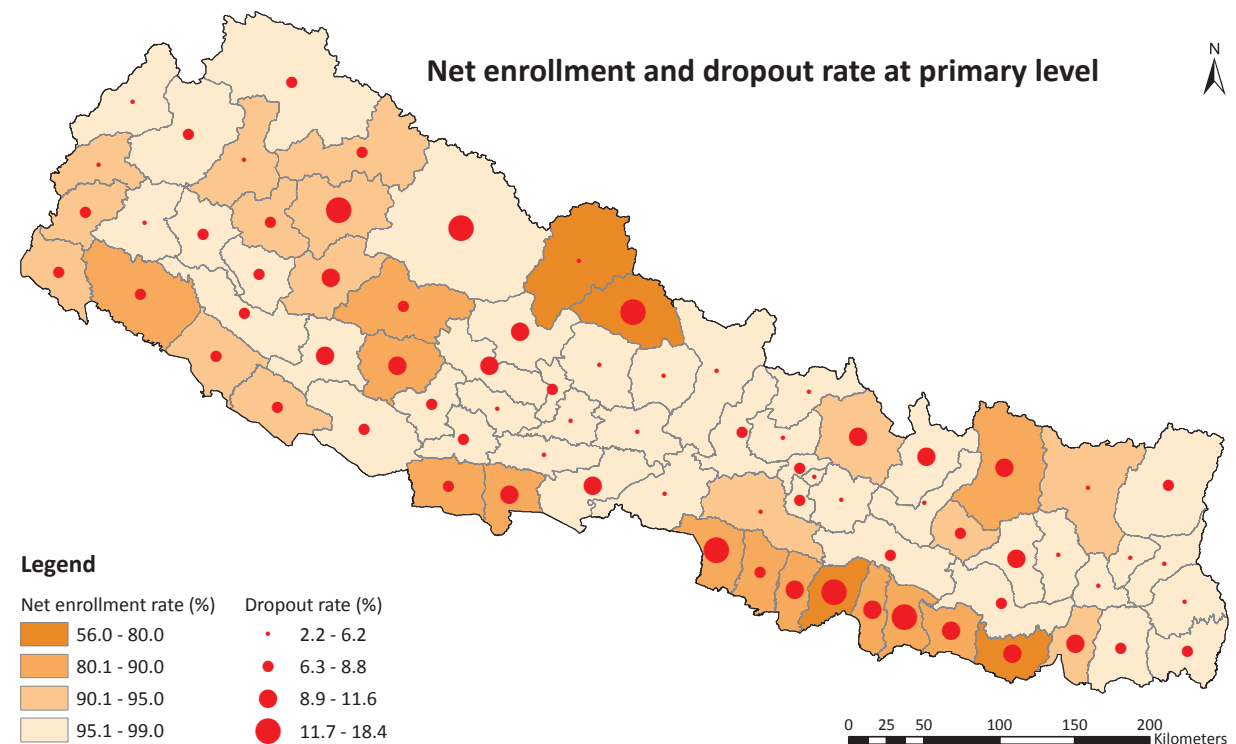
As a result, the number of migrants leaving Nepal has grown tremendously in recent years. The remittance earned by the Nepalese workforce employed overseas is one of the greatest drivers of national economic growth (UNDP, 2009).



Major caste and ethnicity of Nepal



Net enrollment and dropout rate at primary level



Gender



Food insecurity affects women and men differently. Due to cultural and ingrained practices women have different responsibilities and authority than men when it comes to food production, acquisition and consumption. In Nepal, this is reflected in their limited control over household decision-making, their primary responsibility for childcare, agricultural activities and domestic chores, their constrained employment opportunities outside agriculture, as well as the general undervaluation of their education and their more difficult access to health care services. Due to this, women are more vulnerable during periods of food shortages and bear the brunt of its impact while many husbands and sons migrate elsewhere in search of alternative employment.

GENDER DISPARITY

The Gender-related Development Index (GDI) value for Nepal is 0.545,

ranking number 119 out of 155 countries (UN, 2010). This places Nepal in-between Pakistan (116) and Bangladesh (123).

The difference in GDI value between urban and rural areas (13.2 percent) indicates that the gender division is significantly more pronounced in rural areas than in urban areas (SIRF, 2007). This manifests itself by poorer access to education, health care, and income earning opportunities by rural women. In addition, rural women participate less in politics compared to urban women.

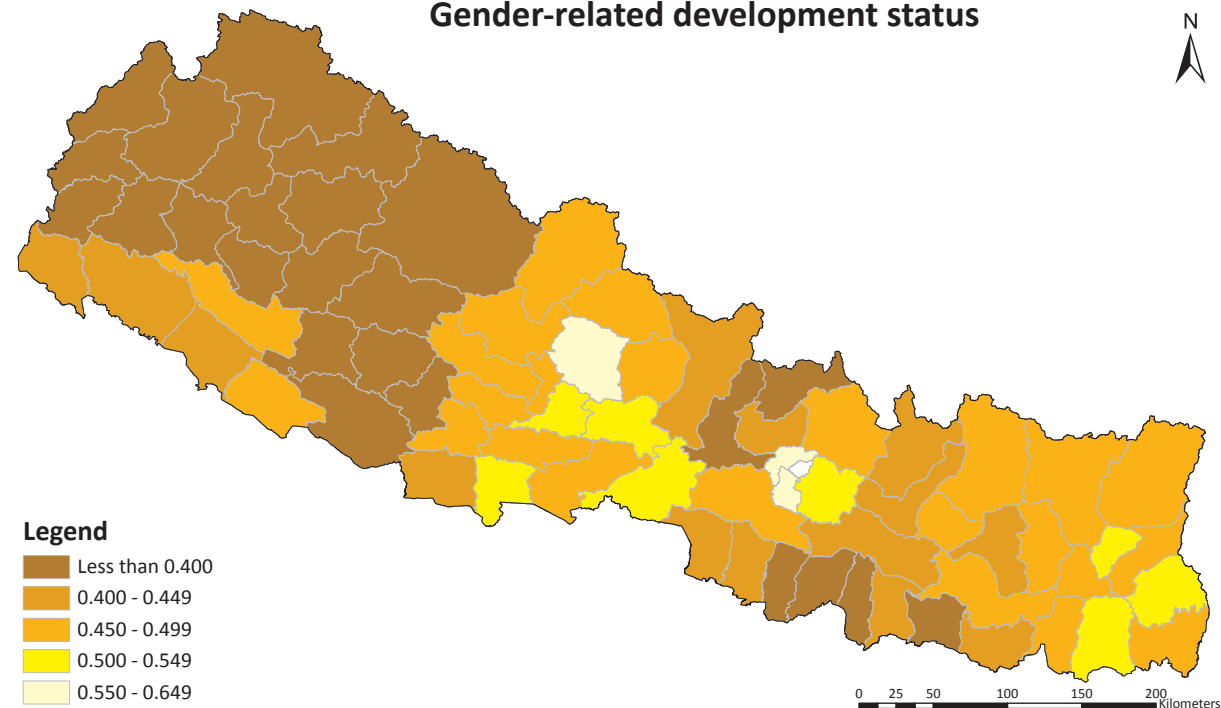
Districts in the Far and Mid-Western Mountains and Hills lack furthest behind with GDI values below 0.4 (SIRF, 2007; DFID/WB, 2006).

EDUCATION

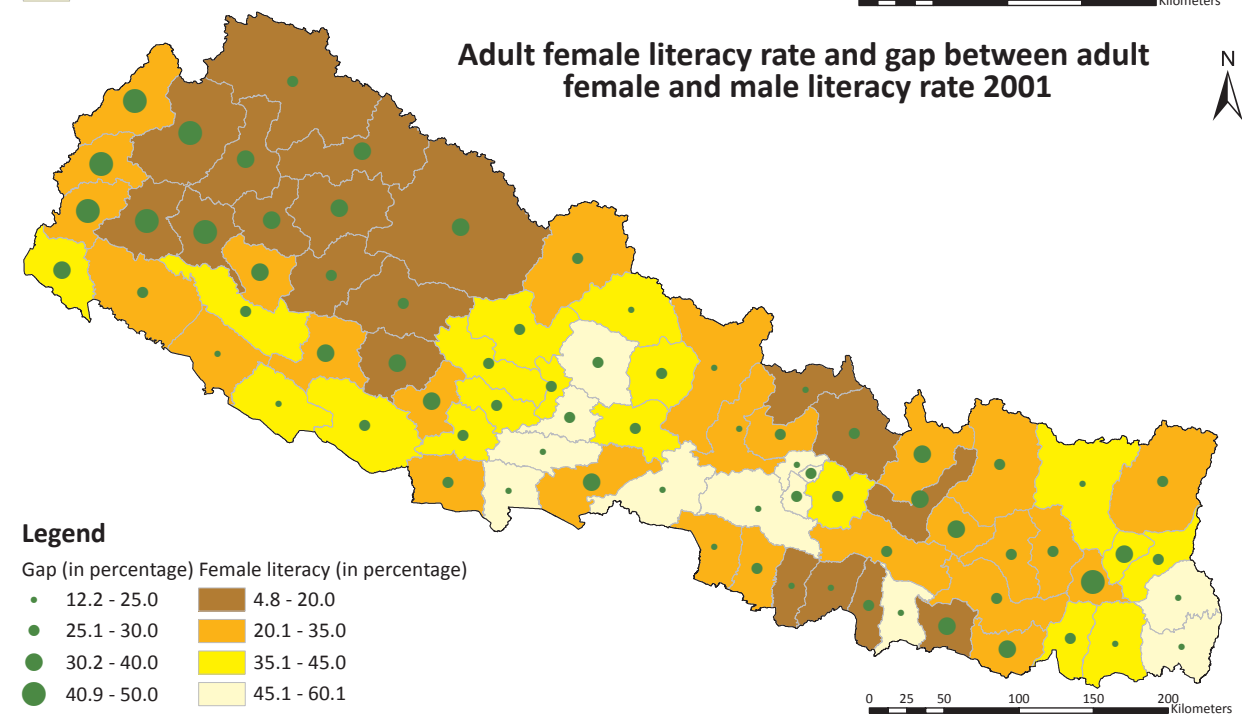
Females are often the last family members to be enrolled in primary school and the first ones to be taken out during crises and shocks. However, over the past ten years the net enrolment for girls in the age



Gender-related development status



Adult female literacy rate and gap between adult female and male literacy rate 2001





group 6-10 has risen by 44 percent. This puts Nepal on track to meet the MDG target on universal primary education.

In some rural areas 49 percent females are illiterate compared to 21 percent males. Based on data from the 2001 population census (note that much improvement in literacy has been made since then), female illiteracy is especially high in the Mid- and Far Western Hills and Mountains. In these areas, the literacy gap between female and male is also the highest.

FEMALE CITIZENSHIP AND OWNERSHIP

The Interim constitution of Nepal 2008-2010 (GoN, 2007) grants the right to citizenship to every person whose father or mother is a citizen of Nepal at his or her birth. Prior to this, women in Nepal could not pass on citizenship rights to their children. Also, in many cases, proof of landownership was required when applying for citizenship (DFID/WB, 2006). This excluded many women and landless *Dalits* and *Janajatis* from the basic rights and protection of citizenship. Proper implementation of the interim constitution should improve this situation.

Female entitlements are limited. In the 2001 population census only 0.8 percent of females owned a house, 5.4 percent owned livestock and 5.3 percent owned land (CBS, 2002).

Consequently women face greater vulnerability since their entitlements are indirect and for a large extent dependent on their relationship as a daughter, wife or mother of a landowning male.

EMPLOYMENT

The economically active population age ten years and above consist of 48.9 percent females and 67.6 percent males. Most women continue to be confined to unpaid family labour. 72 percent of the economic active females work in agriculture versus 48 percent of men. Only 6 percent of them work in the non-agricultural sector compared to 21 percent of men.

Wage disparity is a crucial issue with men earning up to twice as much as women for unskilled labour.

Wage disparity		
Sector/ Nrs per day	Female	Male
Agricultural	47	63
Non-skilled and non-agricultural	54	104
Skilled non-agricultural	126	315

HEALTH AND NUTRITION

The Nepali society is patriarchal and the son preference is one of the highest in South Asia. Sons continue the family name, can perform funeral rituals and are expected to provide support in old age. Because of this, women are discouraged from

practicing contraception until they have a son (Leone *et al.*, 2003).

Infant and under-five mortality rates for girls are persistently higher than for boys. However, anecdotal evidence in conservative areas in the Far-West seem to indicate the opposite. This may have to do with improper caring practices which for cultural reasons are followed more strictly for boys than for girls, e.g. women in the first 42 days after giving birth are only suppose to eat rice and salt (Guiraud, 2007).

The under-five mortality rates as well as malnutrition rates are worse for children of uneducated women compared to children of educated women.

In the past 10 years, there has been a dramatic increase in the suicide rate of women of reproductive age; from 10 percent in 1998 to 16 percent in 2008. This makes suicide the leading single cause of death among women. Relationship, marriage and family issues as well as mental health problems are key contributing factors (MMMS, 2009).

In many areas in the Far- and Mid-West it is common for women to live outside their house during their monthly menstruation, often lacking adequate shelter, access to sanitation and food.

Women eat last in the household, often leaving them without sufficient



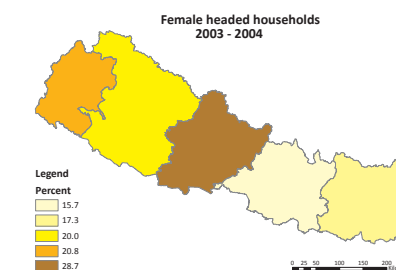
food. Consequently, low body mass and anemia are common among women (see section on nutrition).

COPING

The most commonly used coping strategy as a response to food insecurity is reduced food intake (see section on coping). It is the woman that reduces her food consumption first, then the female children and lastly the males. It is mainly the men of the household who migrate during times of distress, leaving the women and children at home to cope with limited access to food and resources. In addition the women's workload increases substantially during absenteeism of male household members with bearings on child care and social participation (WFP/NDRI, 2008).

WOMEN IN NEPAL

Female headed households are among the most poor and vulnerable. Widows can be exposed to stigma and exclusion. The highest prevalence of female headed households can be found in Western and Far-Western Nepal. However this is mainly caused by high out-migration of males.



Given the significant gender gap in educational achievements, employment and earning opportunities, asset ownership and role in decision-making, women are highly vulnerable to food insecurity. This will need to be recognized in any programme or policy designed to address food insecurity.

Terai



Twenty districts compose the Terai. Long ago, the southern belt was a thick forest and malaria was rife. A malaria eradication and resettlement programme launched after the 1950s cleared the forests and converted the Terai into habitable and cultivated land. Since then, the Eastern Terai has become the most densely populated area after the Kathmandu Valley.

Tharus, Yadavs, Magars, Muslims, Kamis, Tamangs and Brahmans are found across the belt. There are also *Chhetris, Yadavs, Rais, Limbus, Talis, Newars* and *Dalits* in smaller scattered settlements.

NATURAL RESOURCES

The elevation of the Terai begins at 60m and meets the Hills at 700m above sea level. The land consists of plains, valleys and hills. The climate varies from tropical to temperate

and temperatures range from 17°C in January to above 40°C in April/May. The annual precipitation is between 1776 and 1935 millimeters.

The climate and agricultural conditions are favourable for agriculture, but the Terai is prone to drought and flooding.

AVAILABILITY

The Terai is the most fertile part of the country. Known as the 'granary of Nepal', it produces more than 55 percent of the national food grain supply (AICC, 2005).

The major cereal crops are rice, maize, and wheat. The major cash crops include mustard, oilseed, lentils, chickpeas and sugarcane. In addition, jute, tobacco and tea are grown in the East.

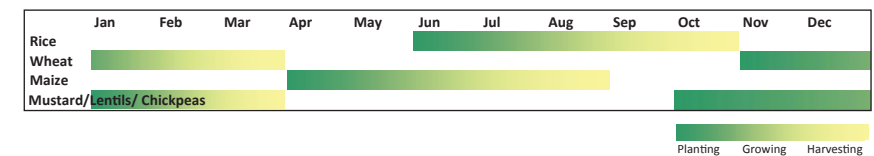
Farming systems in the East are more diversified and commercialized than those in the West.

Because it lines the border with India, both formal and informal imports supply the belt.



ACCESS

Road and market infrastructure in the Terai is significantly more developed than in the Hills and Mountains. In fact, the Eastern Region is considered the most developed after the Kathmandu Valley. There are several regional market hubs and large consumer centres, including Nepalgunj, Birgunj, Janakpur and Biratnagar. Wage labour, farming, fishing and forestry are the major occupations in all the districts. Remittances are also important. Agricultural labour households can be bonded labourers with long-term contractual agreements, daily wage labourers or specialized wage labourers on short-term contracts.



The agricultural wage rate is around Nrs 80-120 per working day (WFP, 2010).

The incidence of poverty is especially high in the Mid- and Far- West but improves in the Central and Eastern Terai. The concentration of poverty is extremely high in VDCs alongside the Indian border.

UTILISATION

Malnutrition is a concern. Wasting rates among children under five are the highest in the country. In the Central Terai, every other child is underweight and stunting rates are particularly high among lower castes and the northern Terai tribes.

The adult literacy rate (61.7 percent) is higher than the national average (NDHS, 2006). Comparatively there are more health institutions located in the Terai districts, particularly in the Eastern and Central Regions.

The diet varies slightly in the Terai compared to the Hills and Mountains. Marginal farm and agricultural labour households typically consume rice, pulses and vegetables. They also consume maize, millet and wheat.

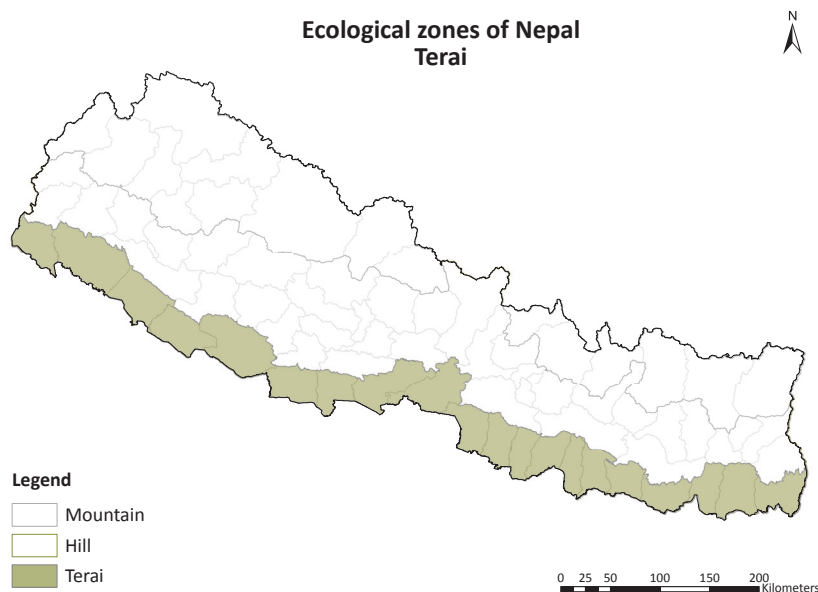
Tube-well is the main source of water and access to adequate sanitation is limited; most of the Terai population defecate in the open field (IRIN, 2007).

VULNERABILITY & COPING

The main natural disaster risks are flooding and insufficient or erratic rainfall. Civil and political unrest have a large impact on life in the Terai, particularly in the East. The majority of the lower castes have almost no access to land which makes them vulnerable to high food prices. They can spend up to 80 percent of their income on food.

February and July are the main hunger months which fall before the harvesting periods of wheat and maize. Seasonal migration to India is a key livelihood strategy, as is sale of firewood, borrowing and day labour.

Food Security Indicators		
Resources	• Population growth rate	2.62%
	• Adult literacy rate	61.7%
	• Deforestation rate	1.3%
Availability	• Average self-sufficiency (months)	5 - 8
	• Population/Agricultural land (Person per ha.)	6.6
Access	• Poverty (headcount)	27.6%
	• Land ownership	87.1%
	• Average travel distance to road head market (hour)	0.9
Utilization	• Share of expenditure on food	55.62%
	• Under nourishment	38.4%
Vulnerability & Coping	• Acceptable food consumption (% poor/borderline/acceptable)	5/36/59
	• Percentage of migrant households	42.3%
	• Coping strategy index (Average for Nepal 17.19)	16.8





About 10 million people, 43 percent of Nepal's population, live in the 39 Hill districts. The population of Kathmandu and Pokhara contribute to this figure, but most Hill inhabitants are agrarian.

The ethnic composition of the districts changes from east to west. *Limbu* and *Rais* live close to the Indian border in the east, and *Tamangs* slightly further west. *Gurungs* and *Magars* become more prominent from the Central to the Western Regions. *Chhetris* are spread throughout the Hills and they form the majority in the Mid- and Far-West. *Hill Brahmins* are found mostly in the Central and Western Hills and *Newars* are concentrated in the Kathmandu valley. The *Dalit* population is higher in the western and eastern Hills than in the middle Hills.

Endowed with historical, religious and cultural sites surrounded by stunning settings, the Eastern, Central and

Western Hills have become important tourism sites.

NATURAL RESOURCES

The Hills begin at 700m and rise up to around 4000m. The climate varies from tropical to alpine, with temperatures ranging from 4°C in January and February to above 30°C in April and May and the annual precipitation varies between 1697 and 2255 millimetres. The east is generally wetter than the west. Major rivers, including the Koshi, Bheri, Karnali and Seti, flow through the Hills.

AVAILABILITY

The Hills' main cereal crops are maize, rice, millet, wheat and barley. Cash crops include potato, sugar cane and oilseed (FAO, 2001). Some Western districts produce coffee and tea is a major commercial crop in the Eastern Districts. Some farm households in

the Eastern and Central Regions are more diversified and produce high value crops including cardamom, ginger, broom grass and mandarins (FAO, 2004).

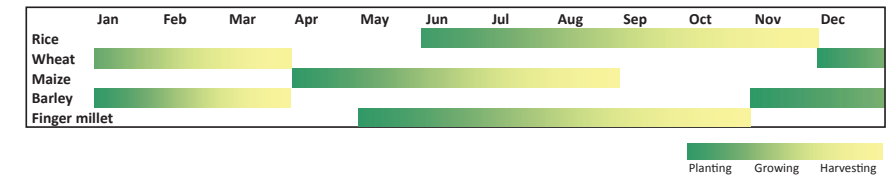
Most Hill districts are food deficient, and even in the districts registering a surplus, a significant share of households only produce a supply sufficient for three months (FAO, 2004).



ACCESS

The Central and Western Hills have a relatively good network of roads and infrastructure, due to the Prithivi and Siddhartha Highways which connect the regions to Kathmandu and India. The East is not as well developed and worst are the Far- and Mid-Western regions. Weekly agricultural markets (*hatia*) operate only in the Central and Eastern districts.

Wage labour, farming, livestock and forestry are the major occupations. Women raise livestock or gather fuel wood and remittances are an important income source. The daily agricultural wage rate ranges between 100 to 180 rupees (WFP, 2010). The incidence of poverty is



very high, particularly in the districts of Rolpa, Jajarkot, Dailekh, Achham, Rukum and Baitadi.

UTILISATION

The Mid-Western Hills have among the highest stunting and underweight prevalence in Nepal. The prevalence of wasting in the Central Hills is the lowest in the country.

The adult literacy rate is highest in the Western Region, while the Far- and Mid-Western Hills have the lowest number of literate adults. The distribution of health institutions varies. There are more located in Khotang, Kavre, Kathmandu, Gulmi and Achham than in the remaining Hill districts. HIV/AIDS is a serious public health threat in areas characterized by high seasonal out-migration, especially in Achham and Dailekh.

Households usually consume rice and pulses (*dal bhat*), but there are minor variations in preparation among castes and ethnic groups and according to availability. Consumption of *dhido* and *aato* which is made from millet and maize flour, is also common in many households.

VULNERABILITY & COPING

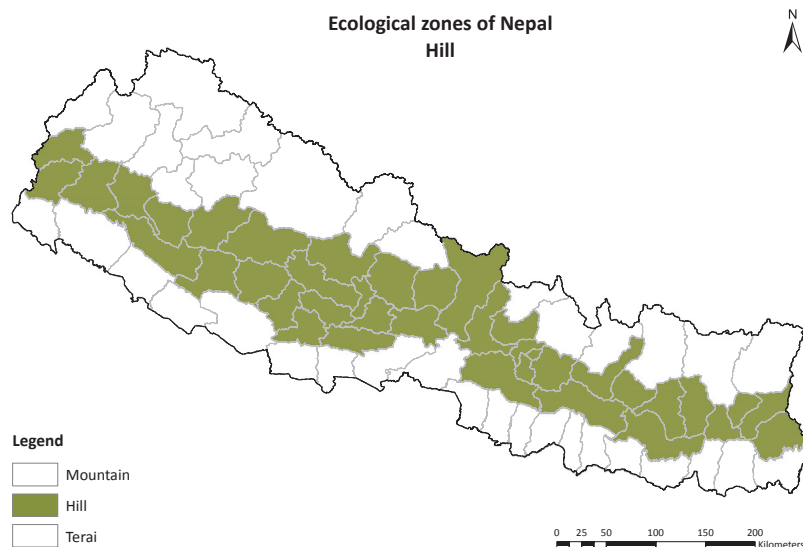
Main hazards include landslide, flash flood, drought, hail storms, pest and diseases. In addition, market prices

can fluctuate drastically in Hill markets due to disruptions in supply. Marginal farm households, ethnic minorities (*Janajatis*) and landless are among the most vulnerable and many of the landless households are *Dalits*.

There are two hunger seasons, February to March and July to August. Seasonal migration is one of the main survival strategies of the Hill population, especially in the Far- and Mid-West where remittances make up a substantial part of many household's annual income. During the agricultural lean season household income is further supplemented by conducting portering, collecting fuel wood and medicinal herbs and undertaking construction work.

Food Security Indicators

Resources	• Population growth rate	1.97%
	• Adult literacy rate	76.0%
	• Deforestation rate	2.3%
Availability	• Average self-sufficiency (months)	3 - 6
	• Population/Agricultural land (Person per ha.)	9,5
	• Poverty (headcount)	34.5%
Access	• Land ownership	95.4%
	• Average travel distance to road head market (hour)	2.2
	• Share of expenditure on food	68.25%
Utilization	• Under nourishment	41.8%
	• Acceptable food consumption (% poor/borderline/acceptable)	12/28/60
Vulnerability & Coping	• Percentage of migrant households	48.6%
	• Coping strategy index (Average for Nepal 17.19)	21.7



Mountain



The Mountains consist of sixteen districts, lining the border with Tibet. The Mid- Western Mountains, known as the Karnali, are the most underdeveloped despite the presence of ‘high’ caste *Brahmans* and *Chhetris* (see next section for a detailed profile of the Karnali). The districts home to the Annapurna and Everest mountain ranges have prospered with the influx of tourists, trekkers and climbers.

There is a wide range of caste and ethnic groups. *Brahmin* and *Chhetris* are present in every district. Taplejung is the *Limbu's* main region. Rais are found in Solukhumbu and Sankhuwasabha. *Tamang* are mostly concentrated in Rasuwa and Dhading and *Gurungs* are present in the Western Mountains. In addition, there are also *Thakuris*, *Magars*, *Bhotes*, *Sherpas*, *Kamis*, *Damais*, *Sarkis*, *Sanyasis* and *Byangshis*

represented in the Mountain districts.

NATURAL RESOURCES

The Mountains are classified as high Himalayas, mountains, mid-mountains, hills and valleys. Altitude begins at 2500m and rises to 8850m, the summit of Mount Everest. The climate varies from tropical to alpine, hottest in May and coldest in January/February. The soil is less fertile and although the Central and Eastern Regions receive a share of rain every year, the Mid-Western Mountain is the driest part of the country, often subjected to droughts.

AVAILABILITY

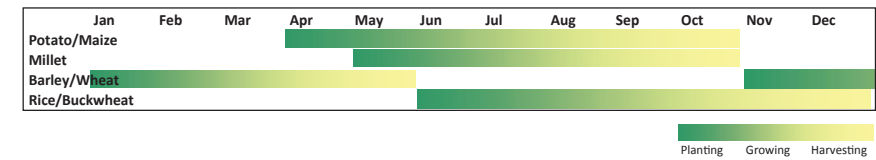
Potato, a cash crop, is one of the main crops in most Mountain districts, but they also produce maize, millet, wheat, barley, buckwheat, and to a lesser extent rice. In addition, cash crops including

apple, oilseed, mushroom, bean, pea and lentil are produced. Agricultural yields are low and often only a single crop is produced in a year. All districts towards the west are deficient in food production. On average, food production supplies Mountain households for only 3 months. People in the Mountains also rear goats, sheep, buffalo, pig, fowl and duck, horses, mules, and chauri and yaks.



ACCESS

Due to insufficient production, food is brought in from the Terai, but with difficulty. Taplejung, Sindhupalchowk, Dolakha, Rasuwa, Mustang, Jumla, Kalikot, Bajhang and Darchula are the only Mountain districts with road access. Some of the food is flown in to districts with airports, which raises transportation and thereby food costs significantly. Food is mostly transported to village markets by porters, mules or yaks. These markets can still be days away from rural households. Compared to the Hills and Terai, agricultural wages are higher (between 150 – 250 rupees) and food can cost up to three times as much as in



the Terai (WFP, 2010). Agriculture is the primary occupation, but many men also work as porters. Poverty is extremely high; up to 80 percent in some areas of the Far and Mid-West.

UTILISATION

The prevalence of stunted and underweight children under five is severe. The caloric intake in the Mountain districts is among the lowest in the country (see section on poverty). The diet of marginal farm households and landless labour families is monotonous and lacking in green vegetables. Rice and pulses (*dal bhat*) are considered a luxury for many households. Their diet consist of maize, millet and buckwheat (WFP, 2010).

Malnutrition affects more than 65 percent of the members of these households. Households in the north-western Mountains often face famines. The Karnali region suffers the most, with fewer health institutions and schools, and alarming stunting and literacy rates. Sindhupalchowk, Dolakha and Taplejung are slightly better equipped in terms of these social services.

VULNERABILITY & COPING

Natural disasters in the Mountains include drought, hailstorm, heavy snowfall and landslides. Food prices are

high and vary significantly. Food is often not available due to disruptions in supply. The hunger seasons from February to April and July to September are longer and more intense. Most vulnerable are the landless, marginal famers, and *Dalit* populations. The harvest normally only supplies food for a few months of the year. Many spend up to 80 percent of their earnings on food and borrow money and then sell assets to repay loans. As an extra income and food source, many own livestock and collect and sell forest products (mushroom and medicinal plants).

Many in the Far and Mid West rely heavily on government and international institutions for food assistance. Migration to the Terai and India is a commonly used coping strategy.



Food Security Indicators		
Resources	• Population growth rate	1.57%
	• Adult literacy rate	62%
	• Deforestation rate	0.1%
Availability	• Average self-sufficiency (months)	3 - 6
	• Population/Agricultural land (Person per ha.)	8.8
Access	• Poverty (headcount)	32.6%
	• Land ownership	94.2%
	• Average travel distance to road head market (hour)	2.9
Utilization	• Share of expenditure on food	56.5%
	• Under nourishment	46.3%
	• Food consumption score (% poor/borderline/acceptable)	7/39/52
Vulnerability & Coping	• Percentage of migrant households	24.7%
	• Coping strategy index (Average for Nepal 17.19)	20.03

KARNALI

Once prosperous, these days Karnali is considered as the poorest and most food insecure region of Nepal. It is situated in the Mid-Western Development Region and includes the districts Humla, Jumla, Mugu, Kalikot and Dolpa. Its location on the trade route between Nepal and Tibet ensured its earlier prosperity. Salt from the high Tibetan lakes was traded with grains from Nepal. The collapse of the salt trade, combined with decreasing farm productivity and rising population, has resulted in high levels of food insecurity and an increasing need on external food assistance (KIRDARC, 2002).

Karnali is dominated by caste structures and discrimination between castes is high (Adhikari, 2009). About

three quarters are *Brahmin/Chhetri* and the remaining are *Dalit* or *Janajati*.

NATURAL RESOURCES

The terrain varies from the high Himalaya to river valleys cutting through lower mountainous terrain. Cultivable land is minimal, soils are poor and semi-arid. The rainfall pattern has been changing, possibly due to climate change, but has always been unpredictable. Population density is low and areas in the high Himalaya are only habitable during the summer months.

AVAILABILITY

Food production is sufficient for 3 to 6 months of the year only (WFP, 2010). At higher altitudes only one crop a year is possible. Except for

Jumla district, irrigation is almost non-existent.

Rice, maize and millet are sown as summer crops while wheat and barley are planted as winter crops. Traditional crops are also important e.g. *kodo* and *Chinu* (minor millet varieties) and *jau* (oats).



ACCESS

The Karnali region is dependent on transport of goods from other parts of the country. In 2007, the Karnali highway opened to connect the region with the Terai. Most of the road is a single dirt track and in the rainy season, landslides often block the road for several months (WFP, 2010a).

Despite these conditions, the road has caused food prices in Jumla and

Kalikot to decline. In other Karnali districts, food is portered, packed on mules, goats or yaks or flown in. The price of food grain is largely determined by sale of subsidized rice through the Nepal Food Corporation.

Karnali households depend on a mix of their own agricultural production (of a variety of crops), harvesting timber and non-timber forestry products (e.g. herbs, mushrooms), daily wage labour (farm and off-farm, e.g. construction, portering), seasonal migration, and government or international support through food subsidies, public works projects and/or food assistance.

During May to July, as the snow begins to melt, people from Karnali throng to collect *Yarchagumba* (caterpillar fungus used in Chinese medicine) in places 4000m above sea level. Their annual collection results in a significant source of cash income.

UTILIZATION

Almost seventy percent of children under the age of five suffer from stunting and almost every other child is underweight; malnutrition figures by far the highest in Nepal.

Life expectancy is low at, for example in Mugu, 44.1 and the disease load is high. WFP's household monitoring data commonly finds about one third of the children suffering from diarrhoea and even more from cough or fever. Hygiene practices are inadequate.

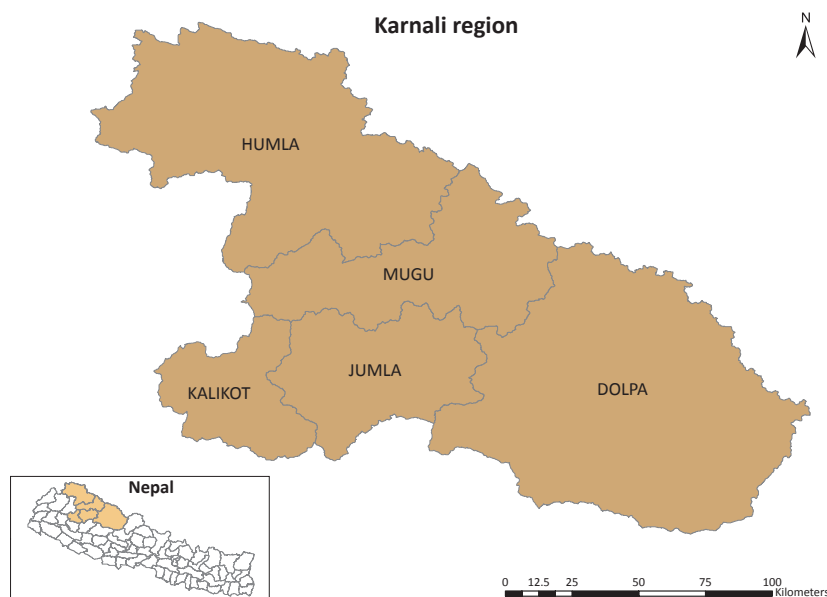
Roti (bread) and rice form the staple in Karnali. Different types of roti are prepared depending on what is available. Rice, although not part of the traditional diet, is increasingly taking over as the main staple.

VULNERABILITY

The main hazard is drought or irregular rain- and snowfall. At the household level it is often illness of the main income earner that poses a real threat to food security.

Coping strategies include borrowing, foraging for wild foods, migration, and sale of assets and livestock. In recent years, food assistance has become an important life-saver (WFP, 2010).

Food Security Indicators	
Resources	• Population growth rate 1.9%
	• Adult literacy rate 31.8%
	• Deforestation rate 0.1%
Availability	• Average self-sufficiency (months) 3 - 6
	• Population/Agricultural land (Person per ha.) 4.3
	• Poverty (headcount) 54.5%
Access	• Land ownership 91 %
	• Average travel distance to road head market (hour) 37
	• Share of expenditure on food 67.12%
Utilization	• Undernourishment 48%
	• Acceptable food consumption (5/49/46% (%poor/borderline/acceptable))
Vulnerability & Coping	• Percentage of migrant households 11.2%
	• Coping strategy index (Average for Nepal 17.19) 20.06



Agriculture



Nepal's agricultural production has barely kept up with the demands of its growing population over the past decade. Following a Malthusian scenario, overall cereal output increased by 15.9 percent, whereas the consumption requirement increased by more than 20.8 percent (MoAC, 2009).

If current production growth rates remain constant and requirement continues to increase, it is likely that in the next 3-5 years Nepal will become consistently food deficit at the national level even in times of 'normal harvest' (WFP, 2009).

Sixteen percent of land in Nepal is agriculture land (CIA, 2009). Agriculture makes up 35 percent of Nepal's GDP and absorbs 76 percent of the labour force.

PRODUCTION DISPARITY

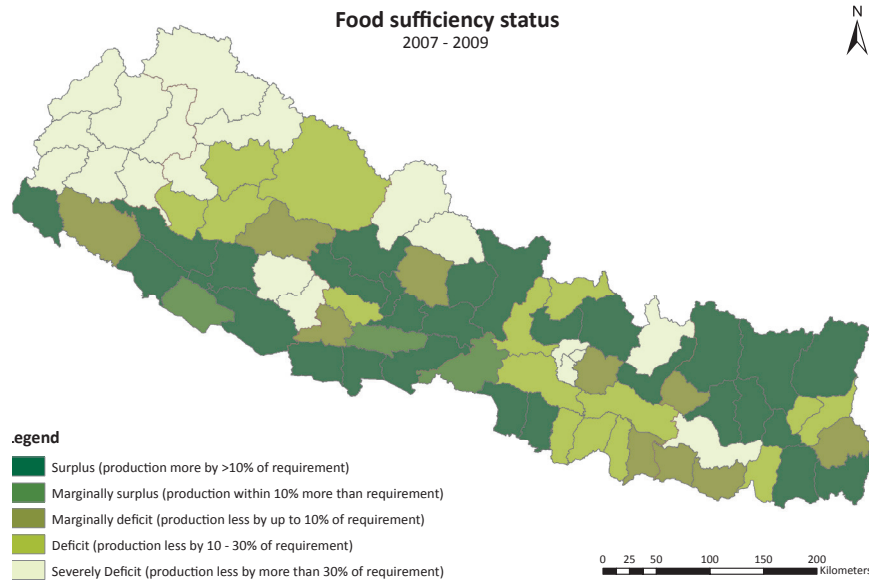
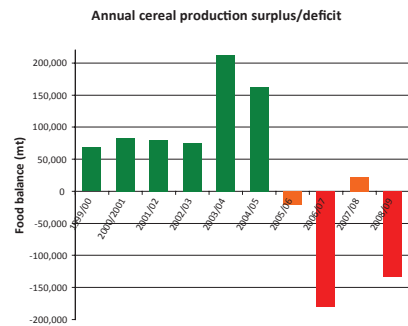
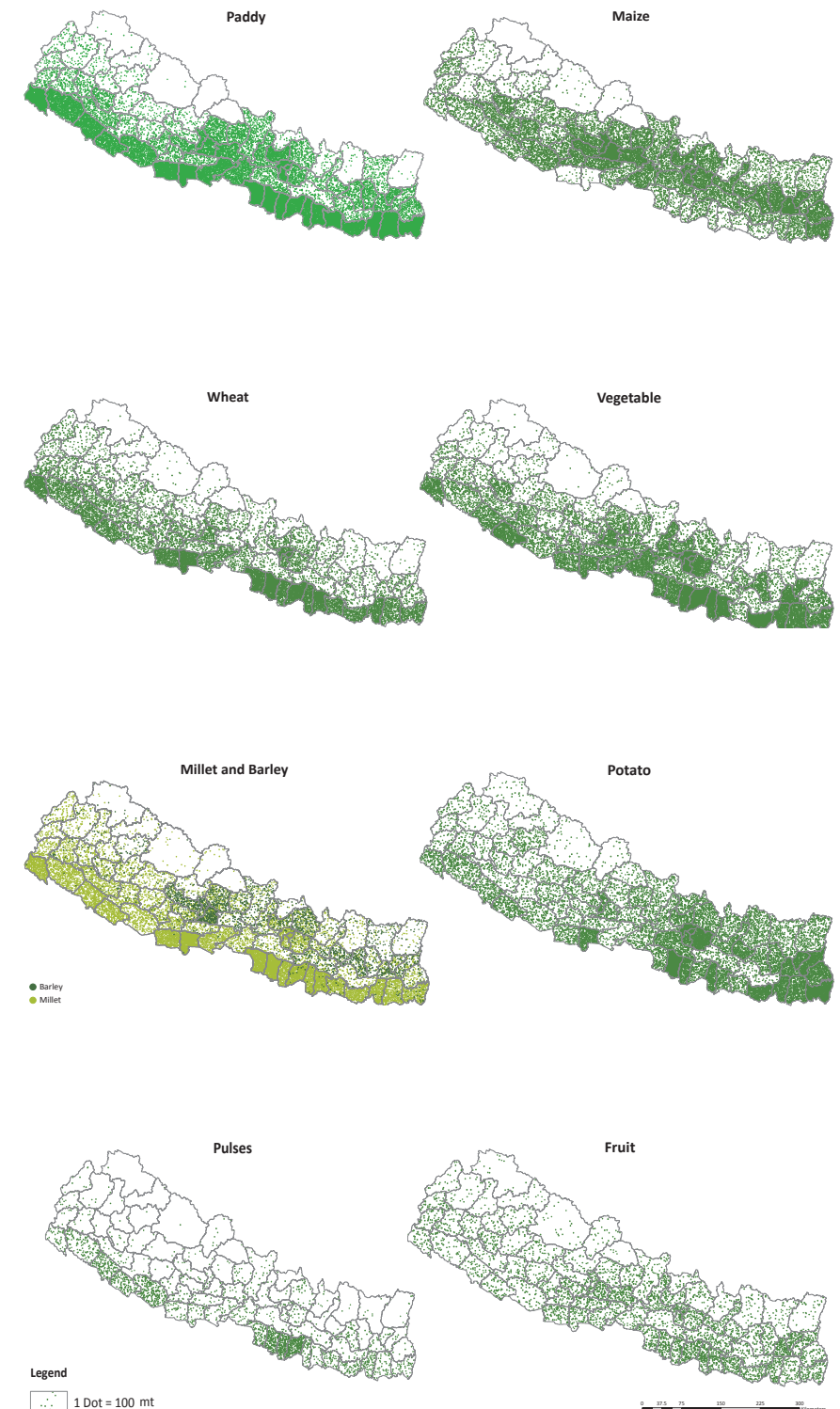
The Terai dominates national agricultural production. However, several of the Eastern Terai districts have become deficient in food production in recent years. Hill agriculture is concentrated in a few fertile valleys that together account

for ten percent of cultivated land. The Himalayas to the north face an enormous food production challenge and just two percent of the land is suitable for cultivation. The Hill and Mountain districts of the Far- and Mid West have the biggest shortfalls, producing less than 30 percent of the requirement (CBS, 2002).

Paddy is the main crop in the Terai and in several Hill districts. Maize is the main crop in almost all Hill districts as well as in the Eastern Mountain districts. Wheat is the main crop in the Far-Western districts but the bulk is produced in the Terai during the winter season. Millet is the most important crop in Humla and Baglung. Most of the millet is produced in the Western Hills. Barley is a minor crop but it constitutes the main crop in Manang. Potato, pulses, fruit and vegetables are grown in most of the Terai and Hills, and in some of the Mountain districts. Their production is especially high in the Eastern Terai. Potato has become a key crop for most Mountain districts.

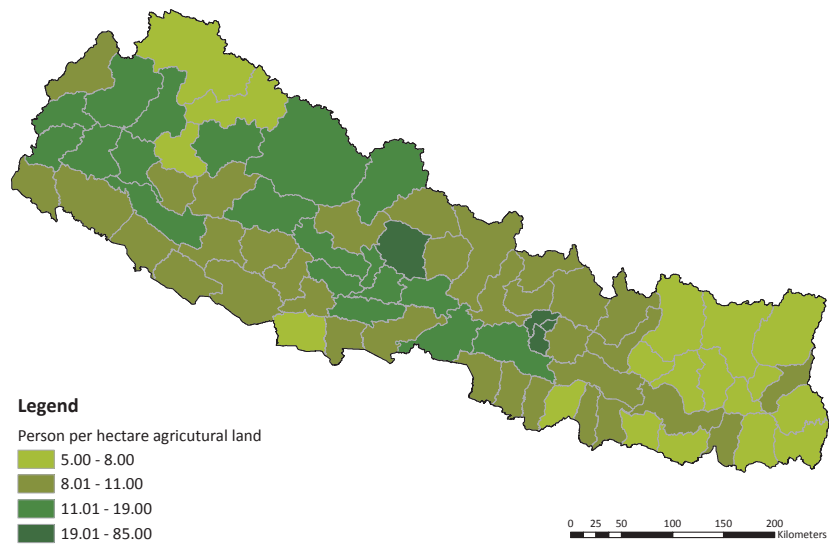
HOUSEHOLD PRODUCTION

On average, households own 0.83 hectares of land (CBS, 2004), but the majority (45 percent) owns less than 0.5 hectares. Given average yields, a farm household would need at least 0.64 ha of land in the Mountains, 0.52 ha in the Hills and 0.42 ha in the Terai to be able to produce a food surplus. One of the major consequences of rapid





Population density by agricultural land



population growth is the progressive deterioration of the ratio of people to agriculture land. Land shortage greatly affects Nepal's predominantly agrarian society. The population density per hectare of agriculture land in 1981 was 6.1. Today it is 6.6 in the Terai, 9.6 in the Hills and 8.8 in the Mountains. In some places it has reached saturation (FAO, 2004; WFP/FAO, 2007). Population pressure is especially high in the Far-Western Hills. Landlessness is highest in the Terai with 12.5 percent compared to 3.5 and 2 percent in the Hills and Mountains (CBS, 2004).

BARRIERS TO PRODUCTION

Lack of irrigation, soil erosion, limited mechanisation and poor usage of improved seeds, fertilizers and pesticides are the main barriers to Nepal's agriculture. Only 31 percent

of Nepal's agricultural land is irrigated (CBS, 2002). Even less irrigable land has access to water year round. As a result, agricultural production is highly dependable on favourable weather conditions and output varies from year to year.

Steep mountain slopes and heavy monsoons as well as human impacts, including deforestation, improper use of agro-chemicals, overgrazing by farm animals and overly intensive use of small agricultural plots have promoted



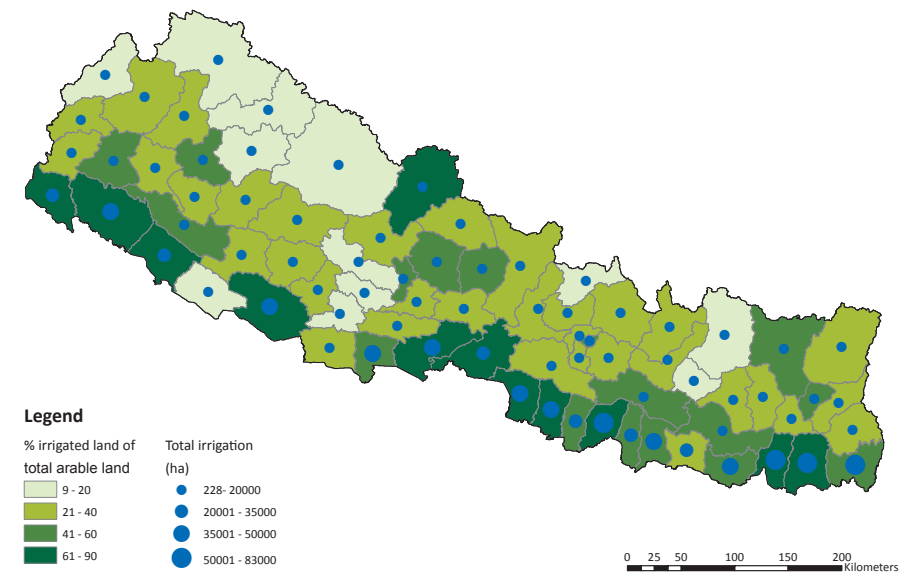
soil degradation. This has long term consequences for agricultural yields. Farmers lack agricultural inputs. The use of improved seeds is very low, particularly for paddy (5.4 percent) and wheat (5.6 percent). Two out of three farmers use fertilizers for paddy production and about one in two use fertilizers for wheat. The majority of farmers use locally made agricultural tools: threshers, tractors or power tillers are found in less than one percent of agricultural households, and water pumps in less than three percent.

Only 32 percent of households can reach an agricultural service centre within 30 minutes. Cooperatives, which supply farming inputs (like fertilizers and seeds), are accessible within half an hour to only 25 percent of rural households and banks, for agricultural credit, are within a 30 minute reach for only 28 percent of households.

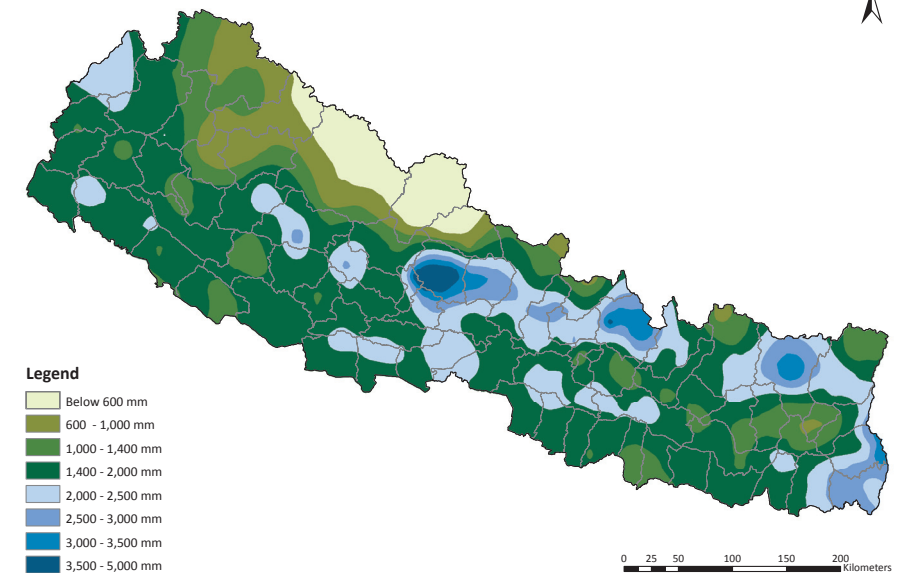
RAINFALL

Agricultural production depends greatly on the monsoon's timing and sufficiency. The mean annual precipitation varies within the country. The northern parts of the Mid-Western Region receive little rain throughout the year. Precipitation increase from the Western to the Eastern Development Regions and agricultural production is often better in these parts of the country than in the Far- and Mid- Western Regions. A late or erratic monsoon quickly translates into crop losses and subsequent food insecurity.

Total irrigation and area of irrigated land



Mean annual precipitation



Infrastructure, markets and trade



Markets are of importance for food security. Most landholdings in Nepal do not produce a sufficient amount of food and therefore most agriculture households are dependent on markets. Rice, cooking oil, salt and sugar are the most important commodities (WFP/NDRI, 2008). The households' food access within the market depends on their income and pricing.

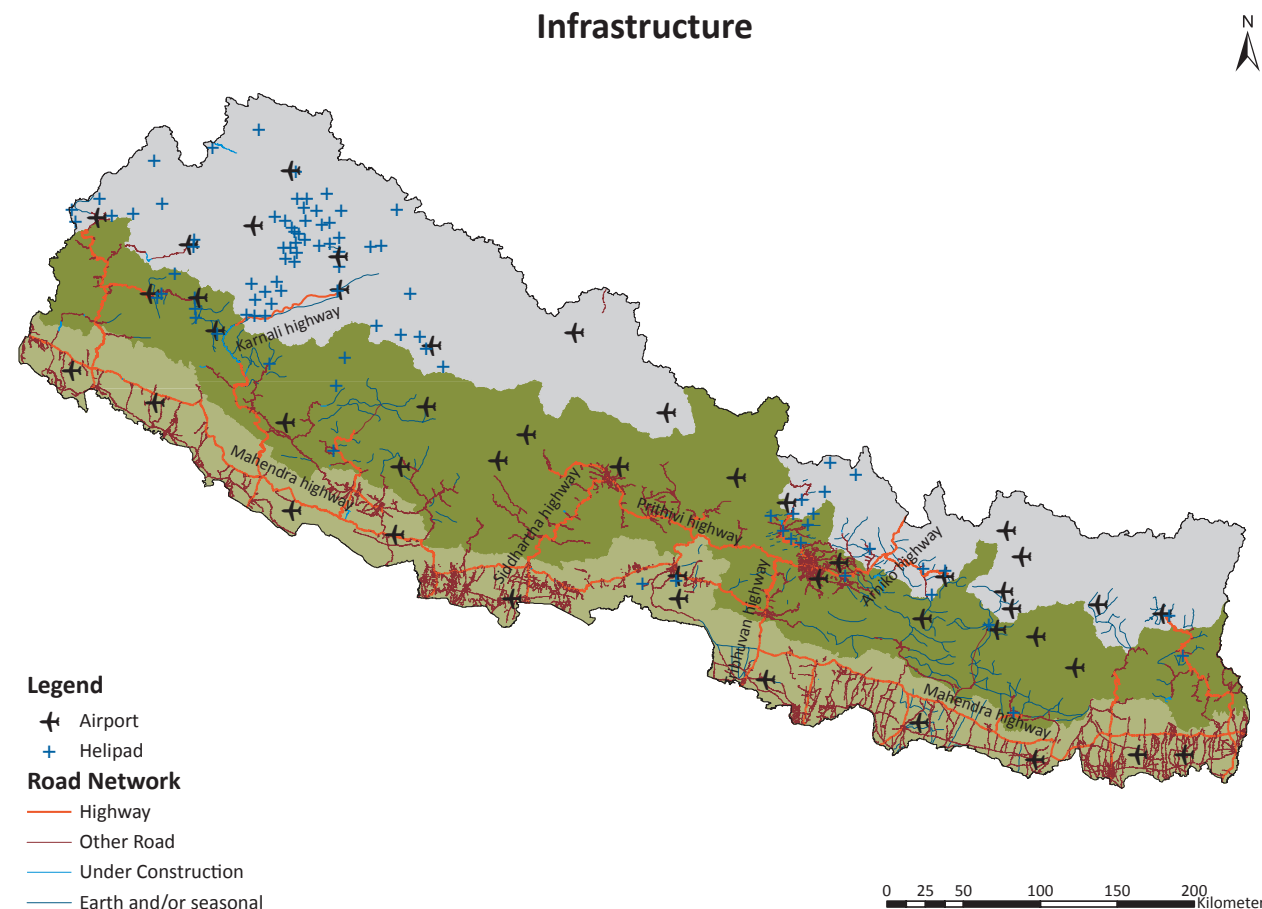
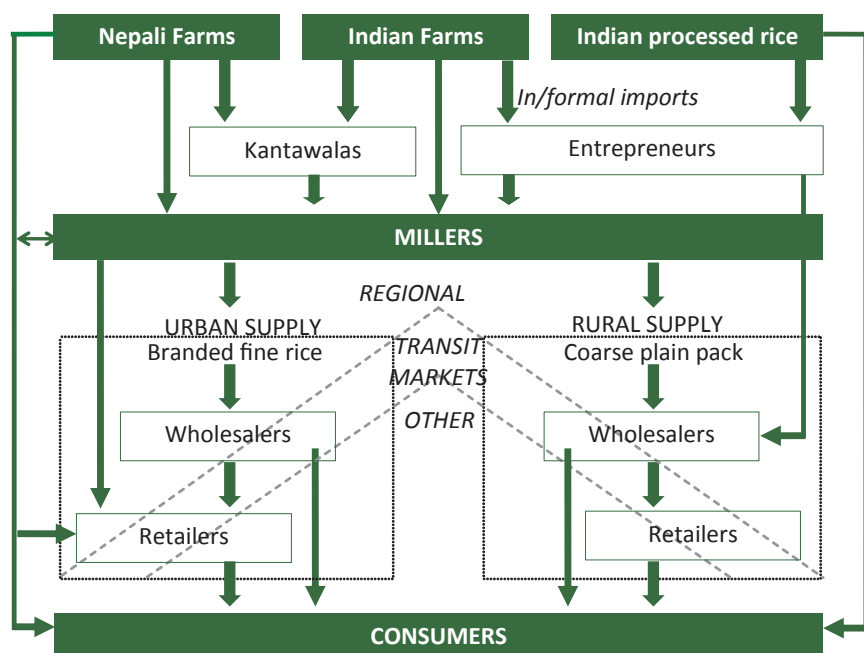
THE MARKET NETWORK

The sources supplying Nepal's markets are illustrated in the diagram below. Entrepreneurs import food both formally and informally along the Indian border. They supply mills or wholesalers directly. *Kantawalas* (mobile traders) transport grains produced by Nepali and Indian farmers to the mill.

Nepali farmers also sell their surplus directly to millers, retailers and consumers; however only few farmers are able to produce surplus. Wholesalers sell to other wholesalers or to retailers while retailers sell to the general public.

INTERNATIONAL IMPORTS

India is Nepal's main agricultural trade partner. It accounts for 80 percent of Nepal's exports and 36 percent of its imports. Estimates of Nepal's rice imports vary immensely. Official imports in 2007 were according to FAOSTAT (2010) 156,000mt but informal imports across the Nepal-India border account for 30 to 70 percent or more of the official imports (WFP, 2007). Most formal imports of



rice go through Biratnagar, Birgunj, Nepalgunj and Bhairahawa. Nepal's rice exports are negligible.

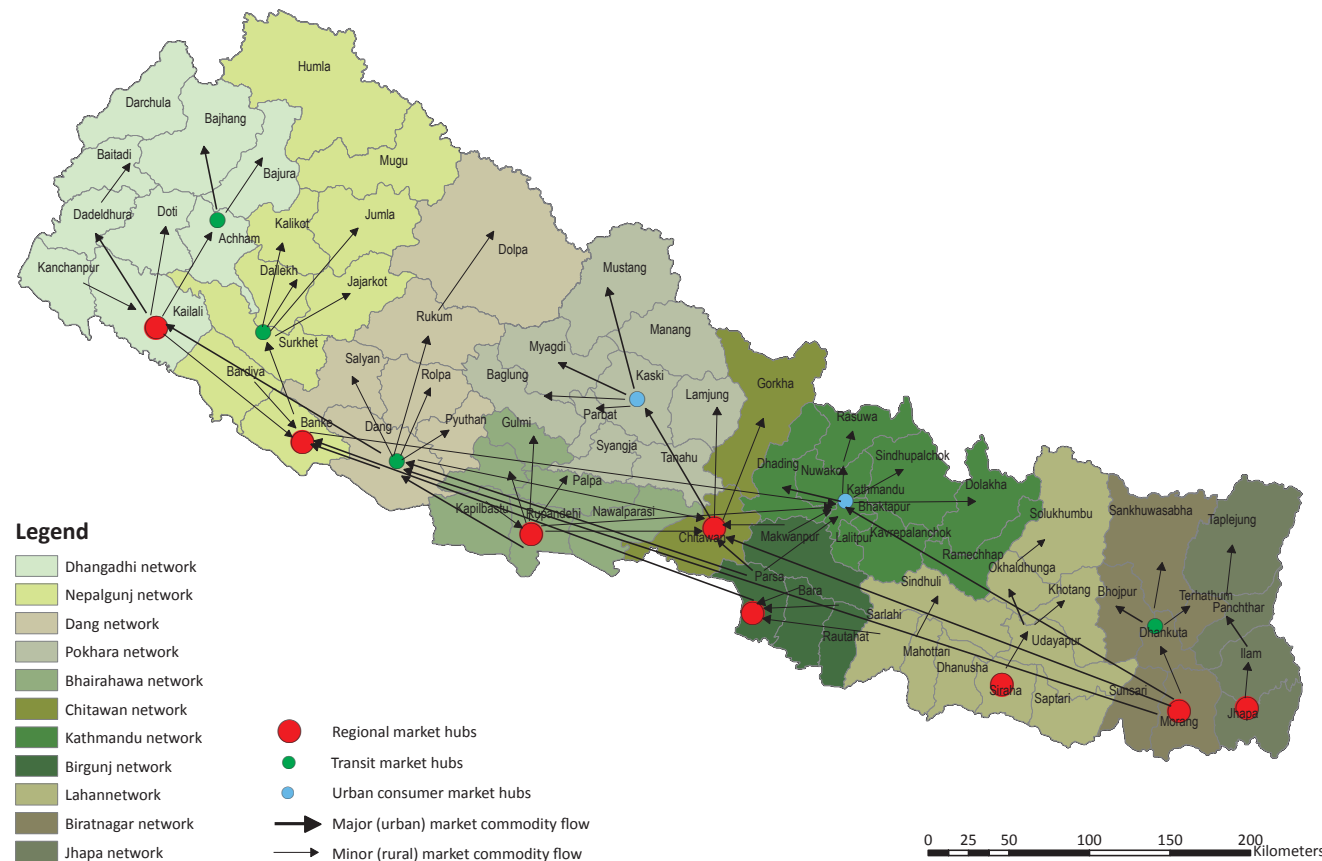
ROADS SUPPLYING MARKET

Roads are essential for market development. Without roads, high transportation costs prohibit market development. If transportation costs are equivalent or higher to daily wages, people tend to travel to access cheaper markets (WFP, 2010a). On average, rural households require over two hours to reach their

nearest market center (CBS, 2004) whereas urban households often only require 20 minutes. Market and road infrastructure is the least developed in Mountain districts where it takes on average a full day to reach the nearest market. Over 60 percent of the road infrastructure is located in the Terai and some 10 districts are still not connected to any motorable road. In many places, roads end at the district headquarters. The Karnali highway which opened in 2007 connects the Mid-Western

Mountains to the Terai. Supply uncertainties due to road closures necessitate pre-positioning supplies before the rainy season, but varying market prices can leave traders exposed to losses. In addition, storage facilities are inadequate and food grains are susceptible to decay especially during the monsoon. Therefore, many traders adopt a risk adverse stocking strategy which leaves supply particularly low during the end of monsoon (WFP, 2010a).

Food grain markets and flow of commodities



Nepal's supplies flow east-west along the Mahendra highway and north-south along the Tribhuvan highway to Kathmandu. From there a few roads branch out to supply other Terai and Hill districts. Goods generally travel from a supply point to a destination that is a day away, tracing a pattern of hubs and spokes. This system reduces handling costs, loss, pilferage, and allows traders to keep the inventory minimal, as stocks can be replenished within a

day. In districts without roads, food is transported by plane, porter or mule (WFP/FAO, 2007).

MARKET PROFILES

There are eight regional market hubs, located in the Terai, that service four transit markets where food is transferred further afield to remote Hill and Mountain districts. Two urban consumption center markets serve Kathmandu and Pokhara. Catchment areas serviced by these market hubs

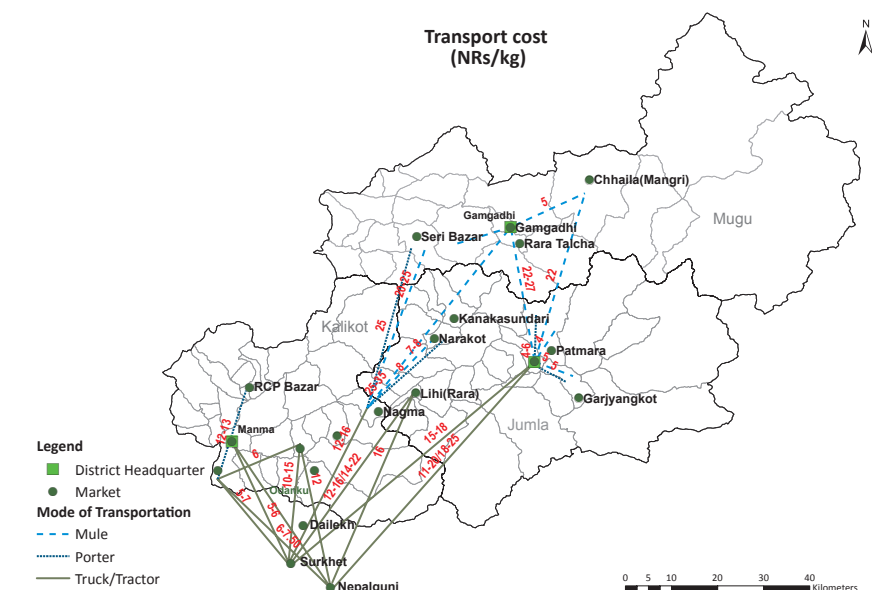
are determined by the road network. Markets are not well integrated and food prices in the Mountains can be up to three times more expensive than in source markets in the Terai. Prices in Hill and Mountain markets can vary substantially depending on accessibility, local crop conditions and available stocks. Since the end of 2007, food prices have been increasing in Nepal, driven by poor domestic production, food price

inflation in India, high fuel cost, and political unrest (WFP/NDRI, 2008a).

To a large extent food prices in Nepal's Hill and Mountain districts are determined by transportation costs, which in turn are determined by mode of transport. Helicopter transport is most expensive but has the advantage of being able to carry three to four times as much as an aeroplane and land at postage stamp size landing patches in remote mountainous terrain. Trucks carry 7-10mt per load but require reasonably paved roads. Portering and mule transport is expensive and carrying capacity is about 50kg only. On many Hill and Mountain 'highways' including the Karnali highway the main mode of transport is by tractor which can carry around 3mt (WFP, 2010a; WFP/FAO (2007a).

MARKET DEMAND

Incomes are generally low and often about 60 percent of a households' income is spent on food. The poorest households allocate almost three quarters of their income to food. Subsequently, many households buy food on credit and in small quantities to help them through the lean season. In many Hill and Mountain areas, lack of demand due to low purchasing power mean that only small food markets can be sustained. Women decide on daily household purchases in 36 percent of all households, men in 16 percent, both in 21 percent and someone else in 27 percent of the total households in Nepal (NDHS, 2006).



Poverty



Poverty refers to the condition of not having the means to afford basic human needs such as clean water, nutrition, health care, education, clothing and shelter. This is also referred to as absolute poverty or destitution.

Poverty can be measured in a number of ways. The most common is the cost-of-basic-needs (CBN) approach in which a poverty line is established that represents the level of per capita expenditure required to meet basic needs. In the case of Nepal the poverty line is Nrs 7,696 per person per year (in average 2003 rupees).

The direct calorie intake method provides an alternative measurement of poverty and is based on the number of people that consume less than the established minimum calorie requirement. For Nepal, this requirement has been set at 2144 kilocalories per person per day (CBS, 2004).

In Nepal poverty is widespread with an estimated 31 percent of the population living below the national poverty line and 41 percent consuming less than the minimum calorie requirement.

Poverty is not evenly spread across the country. Factors such as differences

in geography – agricultural potential, remoteness, lack of infrastructure, and market facilities – as well as political, institutional and cultural factors, such as access to health facilities and schooling, hygiene and caring practices, employment opportunities and migration flows, provide possible explanations for this.



COST OF BASIC NEEDS

The map on the right-hand side of this page presents the incidence of poverty using the CBN approach.

As expected, poverty levels vary extensively across the country. Areas of intense poverty can be observed in the Hills and Terai of the Far and Mid-Western Development Regions as well as in Hills and Mountains of the Eastern Development Region. In these areas, generally more than 50% of the population live in absolute poverty.

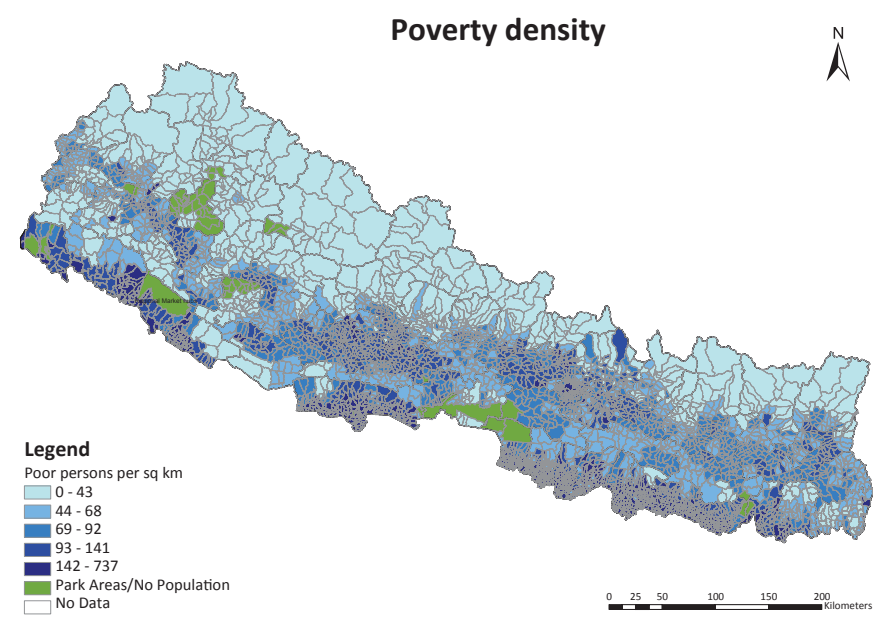
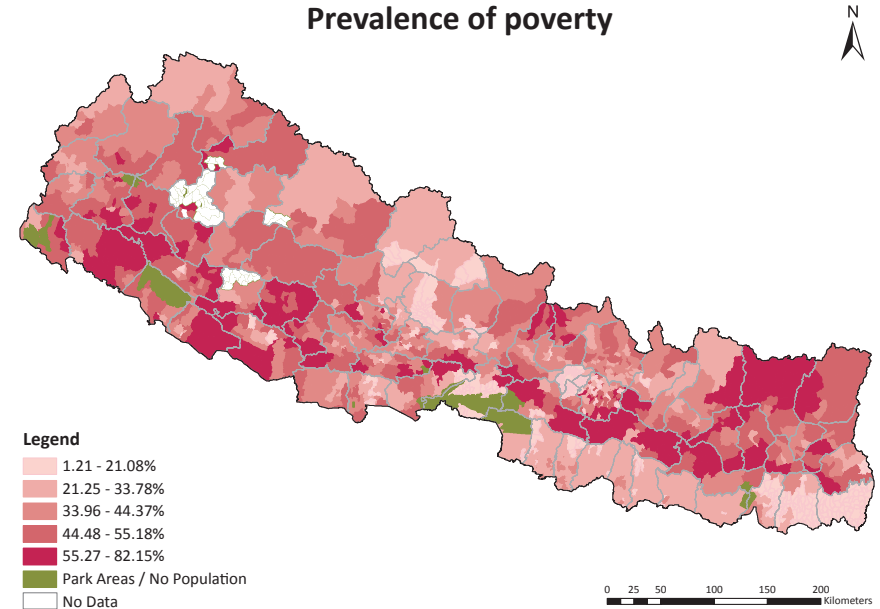
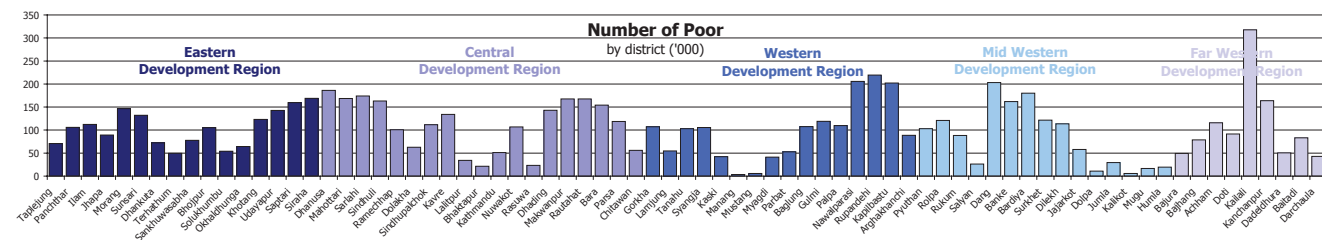
Nepal has approximately 7.6 million poor people. Kailali district has the highest number of poor people (approaching a total of 318,000), followed by Rupandehi, Dang Nawalparasi and Kapilbastu (which have poor populations above 200,000) in the Western Terai.

The number of poor people per square kilometer is plotted on the map on the bottom right. High concentrations of poverty are found in the Terai due to a much higher population density compared to the Hills and Mountains (WFP/CBS/WB, 2006).

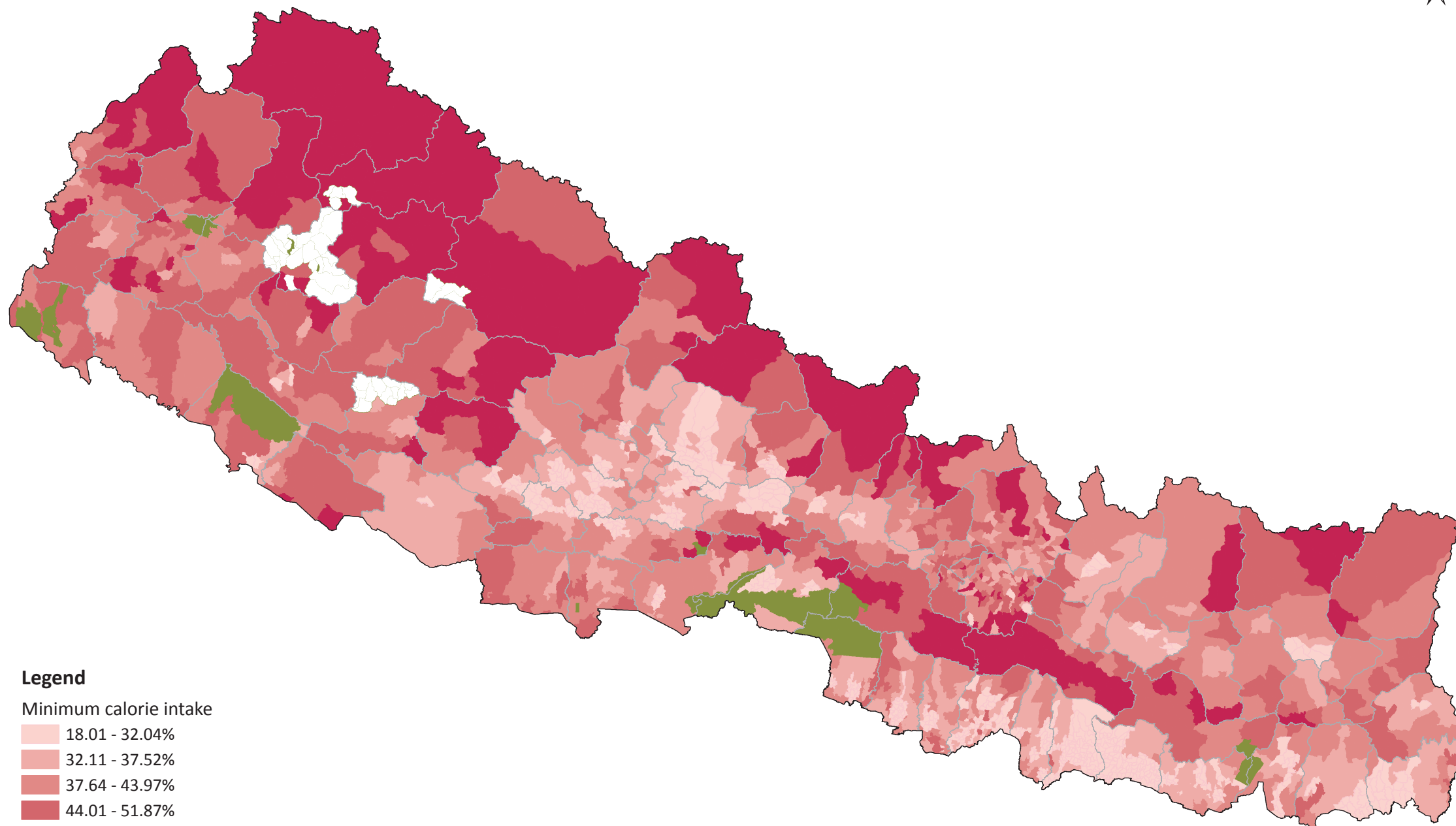
CALORIE INTAKE

Estimates of the prevalence of calorie intake below the threshold level are presented in the map on the following page. The map clearly shows that the lack of food intake is most profound in the mountain areas of the Far and Mid-Western Development Regions.

Poverty causes food insecurity as people lack the means to produce sufficient food or purchase food in the market. Food insecurity can also lead to poverty when people have to borrow or sell assets in order to buy food.



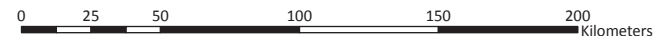
Prevalence of calorie intake below the threshold



Legend

Minimum calorie intake

- 18.01 - 32.04%
- 32.11 - 37.52%
- 37.64 - 43.97%
- 44.01 - 51.87%
- 52.04 - 75.82%
- Park Areas / No Population
- No Data



Health



Food may be utilized differently depending on nutritional habits, access to food, and the health of household members.

Ill health affects the body's ability to absorb nutrients. Increased energy consumption is required during infections, including HIV, tuberculosis (TB) and malaria to activate and sustain immune responses.

Chronic diseases can further raise household vulnerability to food insecurity by draining household finances with medical costs and lowering income by reducing working days. Illness of a household member is consistently reported as being one of the main shocks faced by rural households (NeKSAP).

Diarrhoea and acute respiratory infections (ARI) are major threats to child health in Nepal, while malaria, TB and HIV are more serious among adult populations. Access to adequate health, water and sanitation facilities

and appropriate caring and hygienic practices are essential in preventing disease and malnutrition.

NUTRITIONAL HABITS

The typical Nepali diet consists of *bhat* (rice), *dal* (lentils or legumes) and vegetables. Half of Nepalese households consume vegetables less than four days a week and never or rarely consume milk or curd. Terai households are more likely to consume rice, wheat, fish or poultry, whereas potato, maize, yam or taro is more common in the Mountains and Hills (WFP, 2007a). Only the wealthier homes eat meat, fish, eggs and fruit more than once a week. The diet of the poorest households often consists of rice, maize and millet only (WFP, 2007).

WATER, SANITATION AND HYGIENE

Over 80 percent of the total number of households have access to an improved source of drinking water, but only 15 percent of the households treat

water appropriately before drinking it (NDHS, 2006). This increases the risk to waterborne diseases including dysentery, cholera, typhoid and giardia. The areas with less access to improved water sources, i.e. the Terai and the Far and Mid-West Hills, pose the highest risk.

More than half of Nepal's households do not have any toilet facilities (NDHS, 2006) and among those who do, only one in five rural households compared to about two out of five urban households, have improved toilet facilities.

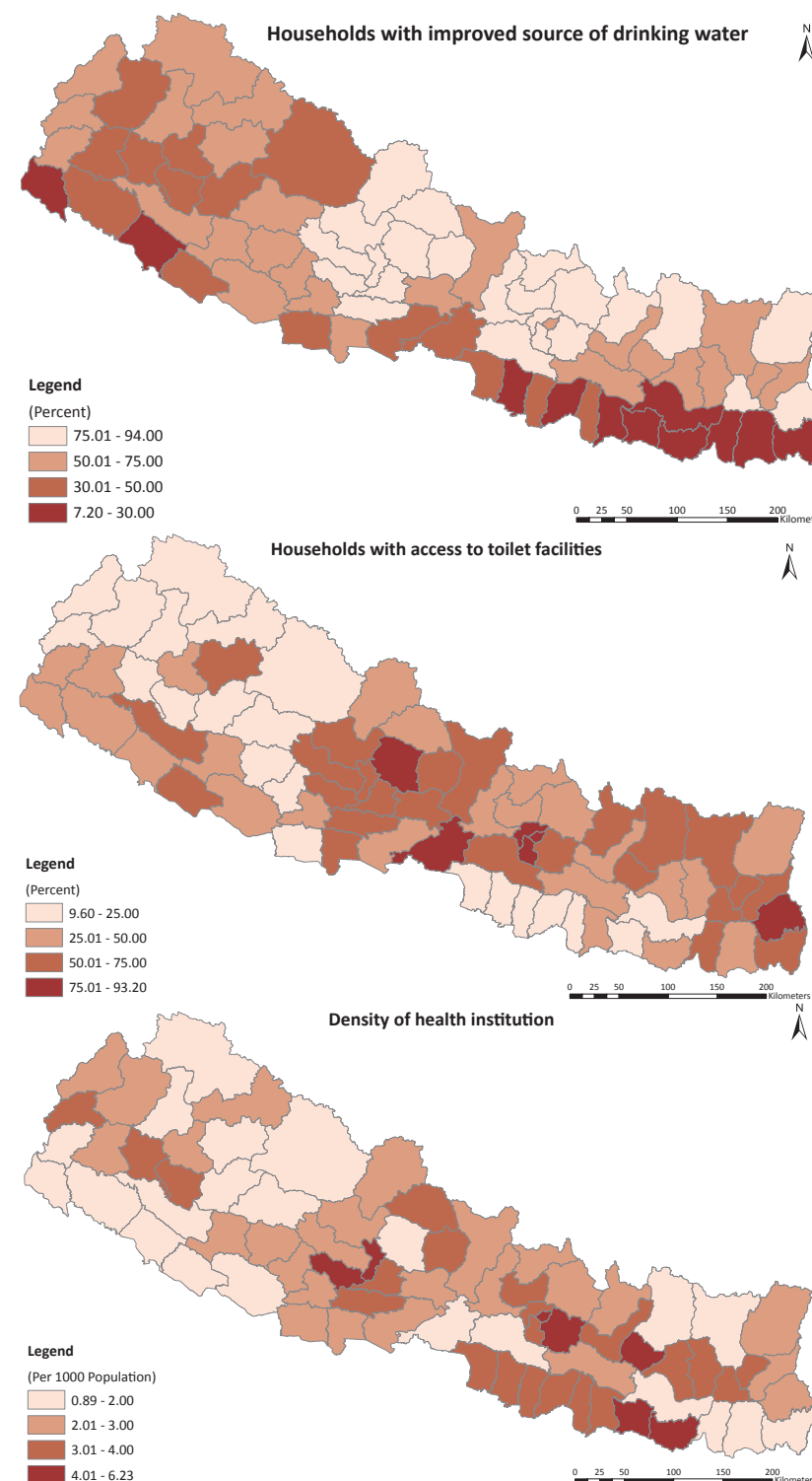
On average, women wash their hands just twice a day and only one in four use soap. Most households without soap consider it too expensive to buy (NDHS, 2006; WFP, 2007).

WHO attributes almost a tenth of the global disease burden to use of improper water sources, lack of sanitation facilities and insufficient hygiene (Fewtrell, 2007).

HEALTH FACILITIES

Nepal's health care structure consists of hospitals, primary care centers, health posts and sub-health posts. Only 62 percent of households can access health facilities within half an hour and only 14 percent of households rate health facilities as "good" (CBS, 2004). Access is poorest for rural households in the Far and Mid-Western Terai and in the Mid-Western Hills and Mountains.

The Central and Western Development regions have the highest number of health facilities.





DIARRHOEA

Dehydration from diarrhoea is a leading cause of death among young children, even though it can easily be treated with oral rehydration therapy. It is also life-threatening for people who are malnourished (WHO, 2008). The 2006 NDHS found that 12 percent of children had had diarrhoea in the weeks preceding the survey. However, diarrhoea varies seasonally and during pre- and monsoon period this percentage increases dramatically. The NeKSAP monitoring data generally finds that more than 30 percent of children are suffering from diarrhoea during this period. The district profiles (2007/08) found that up to 60 percent of children had been suffering from diarrhoea.

The Far and Mid-West Hills and Mountains and the Central and Eastern Terai show the highest incidence of diarrhoea. Less than a third of the children with diarrhoea are taken to a health care provider and receive oral rehydration therapy (NDHS, 2006).

ACUTE RESPIRATORY INFECTIONS

Acute respiratory infections (ARIs) are the leading cause of death for children under five. In 2005/06, the reported incidence was 405 per 1,000 children. The highest incidence was reported in the Eastern Terai (NDHS, 2006).

MALARIA AND KALA AZAR

Malaria affects Nepal's working age population. In 2003, 84 percent of reported cases of malaria were found

among those older than 14. The Terai is most prone to malaria. Kala azar - "black fever" in Hindi - is transmitted through a type of sand fly. Kala azar is a major problem in 12 of the Terai's central and eastern districts (NDHS, 2006; MSF-USA, 2008).

TUBERCULOSIS

About 45 percent of Nepal's population is a carrier of TB, and 60 percent of them are adults. Every year, an estimated 40,000 people develop TB (National Tuberculosis Center, 2008).

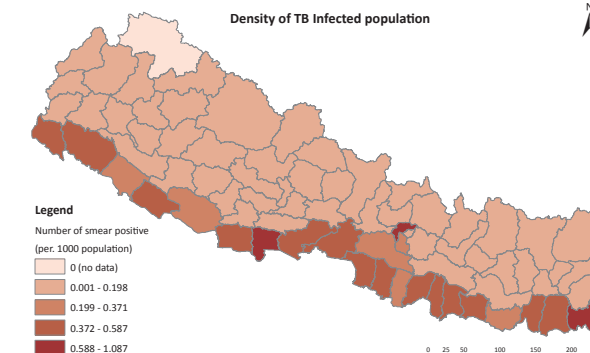
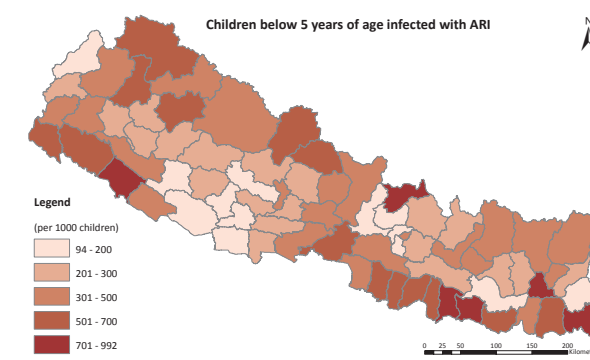
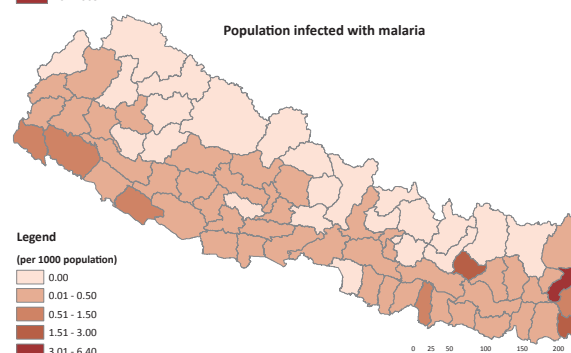
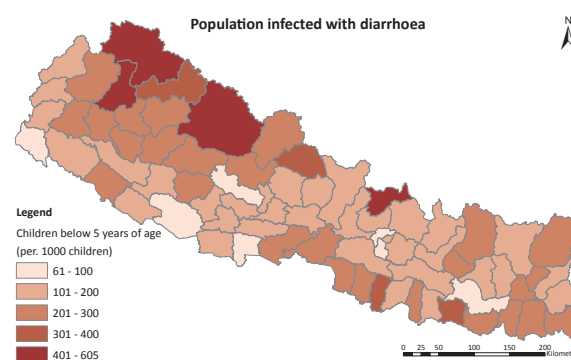
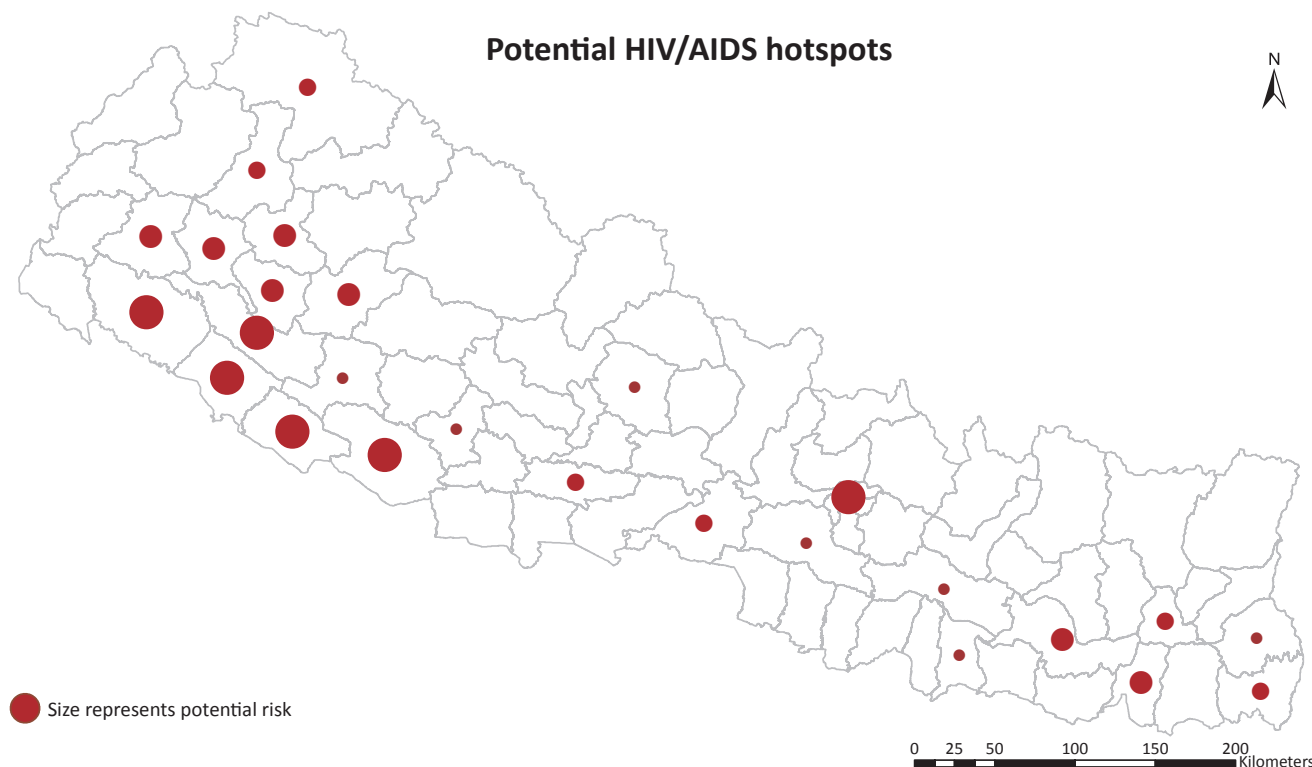
Research has shown that malnutrition increases the risk of acute TB (Cegielski, 2004). People living in the more densely populated Terai are most at risk.

HIV AND AIDS

The overall HIV prevalence is estimated at 0.49 percent, but Nepal's epidemic is concentrated among particular groups. The majority of people living with HIV are seasonal labour migrants (42 percent). Women account for 30 percent of those living with HIV. Geographically, about half of those living with HIV are in the Terai.

Based on migration routes and night stop locations, potential HIV/AIDS hotspots predominantly include districts in the Far and Mid-Western Terai and Hills. Nutrition is paramount for people living with HIV. It strengthens their resistance to opportunistic infections, delays the onset of AIDS, and allows them to lead productive lives.

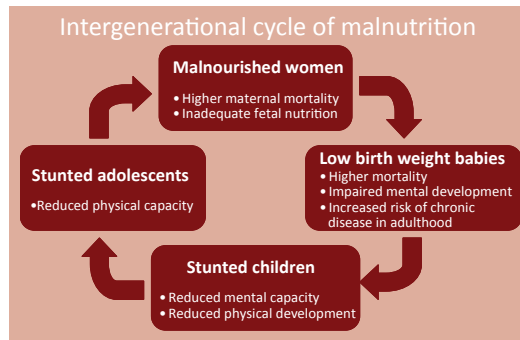
Potential HIV/AIDS hotspots



Nutrition



Malnutrition rates in Nepal are among the highest in the world. Almost half of the children under five are stunted, and more than 38 percent are underweight.



The nutrition status of the population not only reveals much about their history to date but also reflects its future potential and health status. A baby born by a mother who is undernourished will likely have a low birthweight. If the infant survives, her growth will more likely falter. A stunted child is constrained in her cognitive ability to learn at school. When she grows up, she will be more susceptible to communicable diseases and have lower productive and earning capacity. When she becomes pregnant, she will give birth to low-weight children and so the intergenerational cycle of poor nutrition and illness continues, putting a heavy burden on the society as a whole and restraining the country in achieving its growth potential.

Causes of child malnutrition

Malnutrition is determined by a set of factors at several levels other than sufficient access to food. The **immediate causes** of child malnutrition are poor diet and infections, and the interaction of the two. These immediate causes in turn are determined by the **underlying factors**, which can be classified into household food security, care and the health environment. At the root of the problem are the **basic causes**, such as power relationships and socioeconomic conditions that are not specific to nutrition but can have powerful impacts.

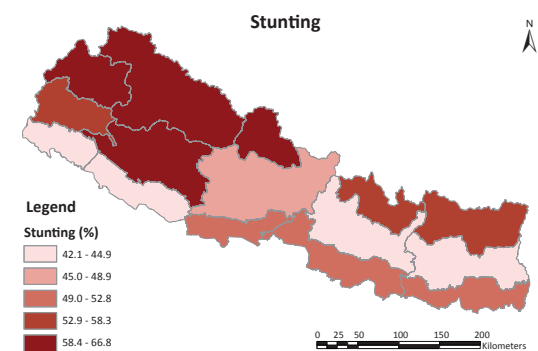
(UNICEF, 1998)

Malnutrition is not evenly spread throughout the country. Besides poverty and the ability of a household to access sufficient food, many other factors determine the malnutrition status of a child (NDHS, 2006).

STUNTING

Stunting, or low height-for-age, of children below the age of five is a measure of chronic malnutrition. Compared to a reference population of well nourished and healthy children, stunted children are too short for their age. Stunting develops over a long period of time as a result of inadequate nutrition, repeated infections, or both. Almost every second child under the age of five in Nepal is stunted.

As shown on the map below and on the following page prevalence of stunting is the highest in the Hill and Mountain areas of the Far and Mid Western Development Regions, where more than 60 percent of children are stunted. The Terai has the lowest incidence of stunting. At the district level, Humla has the highest prevalence of stunting, where 72 percent of children are estimated to be too short for their age (NDHS, 2006).

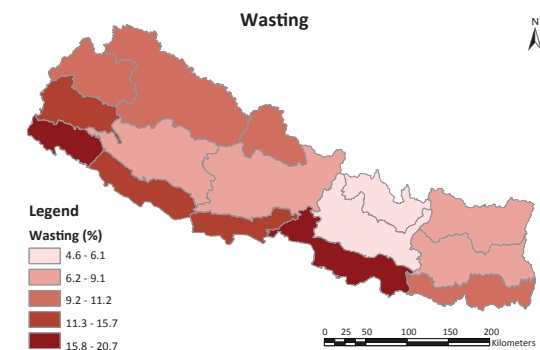


WASTING

Wasting, or low weight-for-height, of children under the age of five is a measurement of acute malnutrition. Wasted children are extremely thin compared to a well nourished and healthy reference

population. It is a result of recent rapid weight loss or a failure to gain weight, due to insufficient food intake, infections or both. Measurements of wasting are sensitive to seasonal variations.

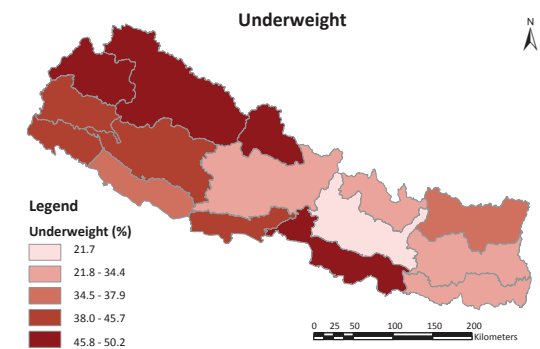
The incidence of wasting is extremely high in Nepal at 12.6 percent. In many areas of the Terai wasting is above the WHO defined emergency level, at an average of 17 percent. The Central and the Far Western Terai show a wasting prevalence of around 20 percent (NDHS, 2006).



UNDERWEIGHT

Underweight, or low weight-for-age, reflects chronic as well as acute malnutrition. This is a measurement of shortness or thinness of a child by comparing her to a reference population of well-nourished and healthy children.

The prevalence of underweight among children under the age of five is very high in Nepal at 38.6 percent.



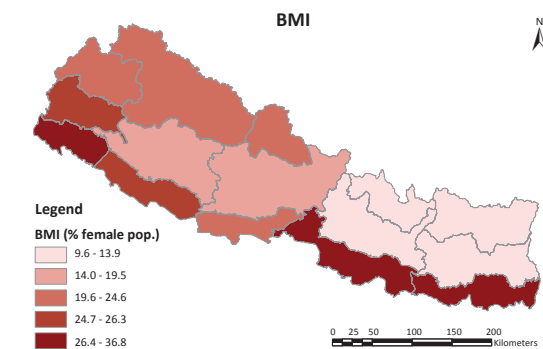
The highest percentages of underweight are recorded in the Hills of the Far and Mid-West and the Central Terai. In these areas, the prevalence of underweight among children under the age of five is generally above 50 percent (NDHS, 2006).

Region	Stunting	Wasting	Underweight	BMI
Nepal	51.3	12.2	39.3	23.7
Mountain	62.3	9.4	42.4	17.1
Hill	50.3	8.4	33.2	15.9
Terai	46.3	16.6	42.3	32.7
Eastern	40.3	10.1	32.9	25.3
Central	50.0	13.8	38.2	23.6
Western	50.4	10.9	38.5	19.5
Mid West	57.9	11.6	43.4	22.1
Far West	52.5	16.7	43.7	33.2

Source: NDHS, 2006

NUTRITIONAL STATUS OF WOMEN

A woman's nutrition status has important implications for her health as well as for the wellbeing of her children. One indication of poor nutritional status is a low Body Mass Index (BMI defined as weight divided by height squared), according to WHO, a prevalence of more than 20 percent of women with a BMI less than 18.5 indicates a serious public health problem. In Nepal this is the case for 24 percent of women. The situation is of particular concern in the Terai where 33 percent of women are undernourished.

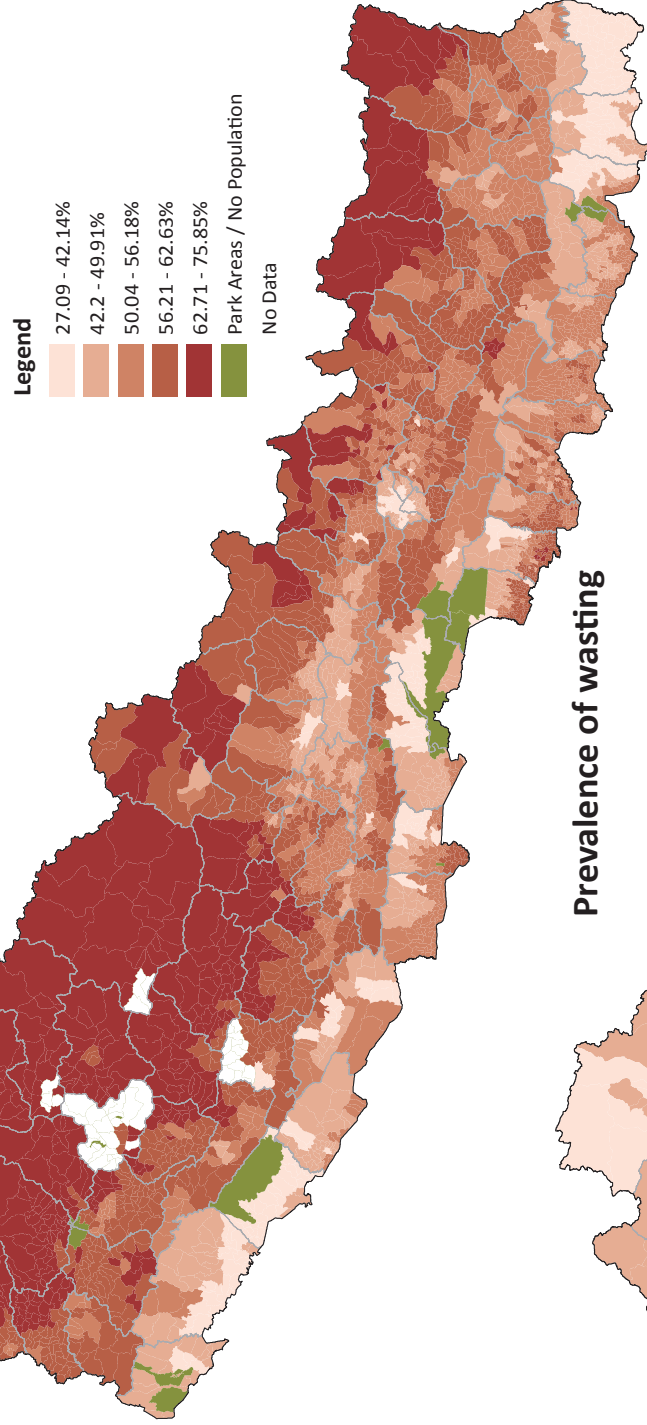




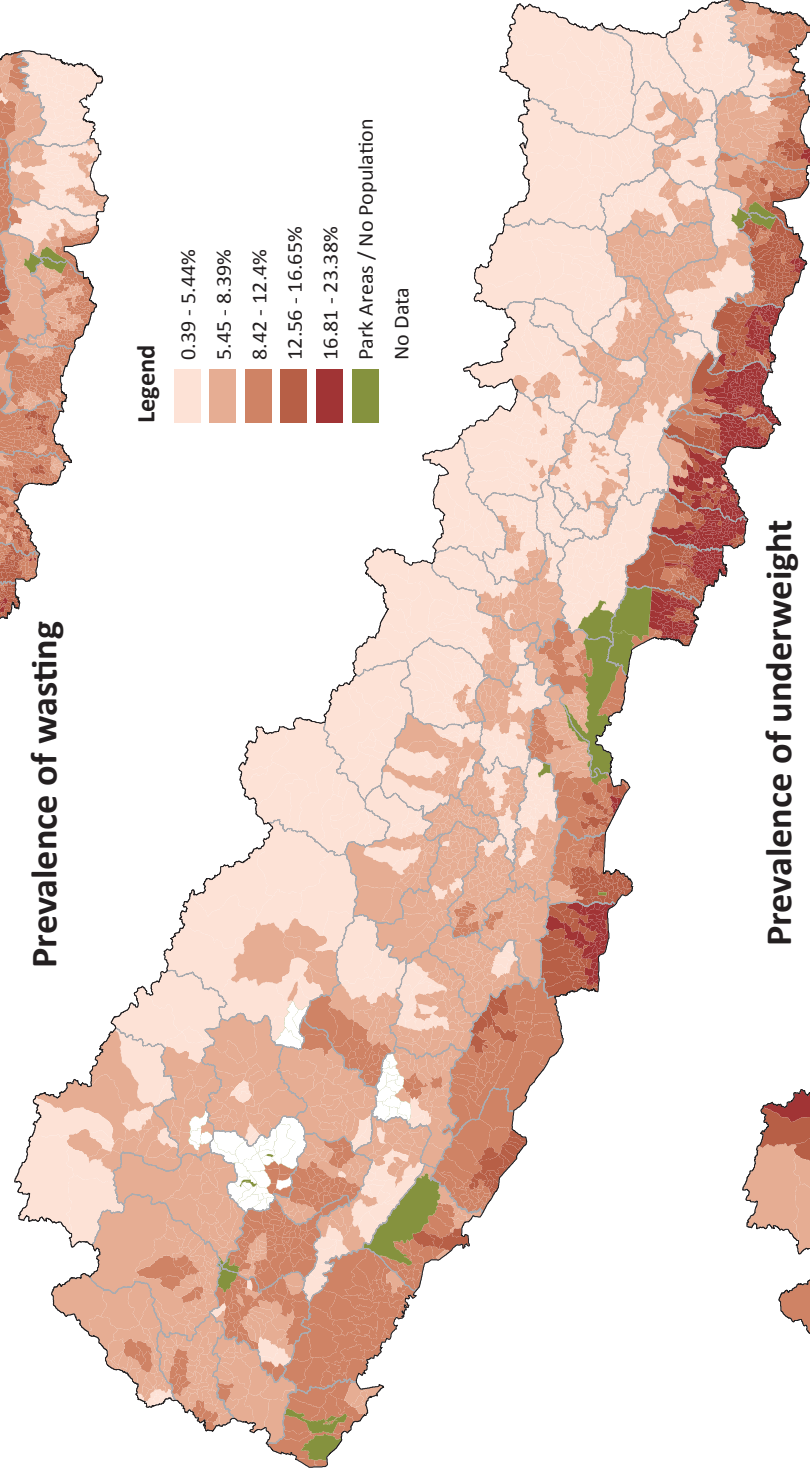
Nutrition



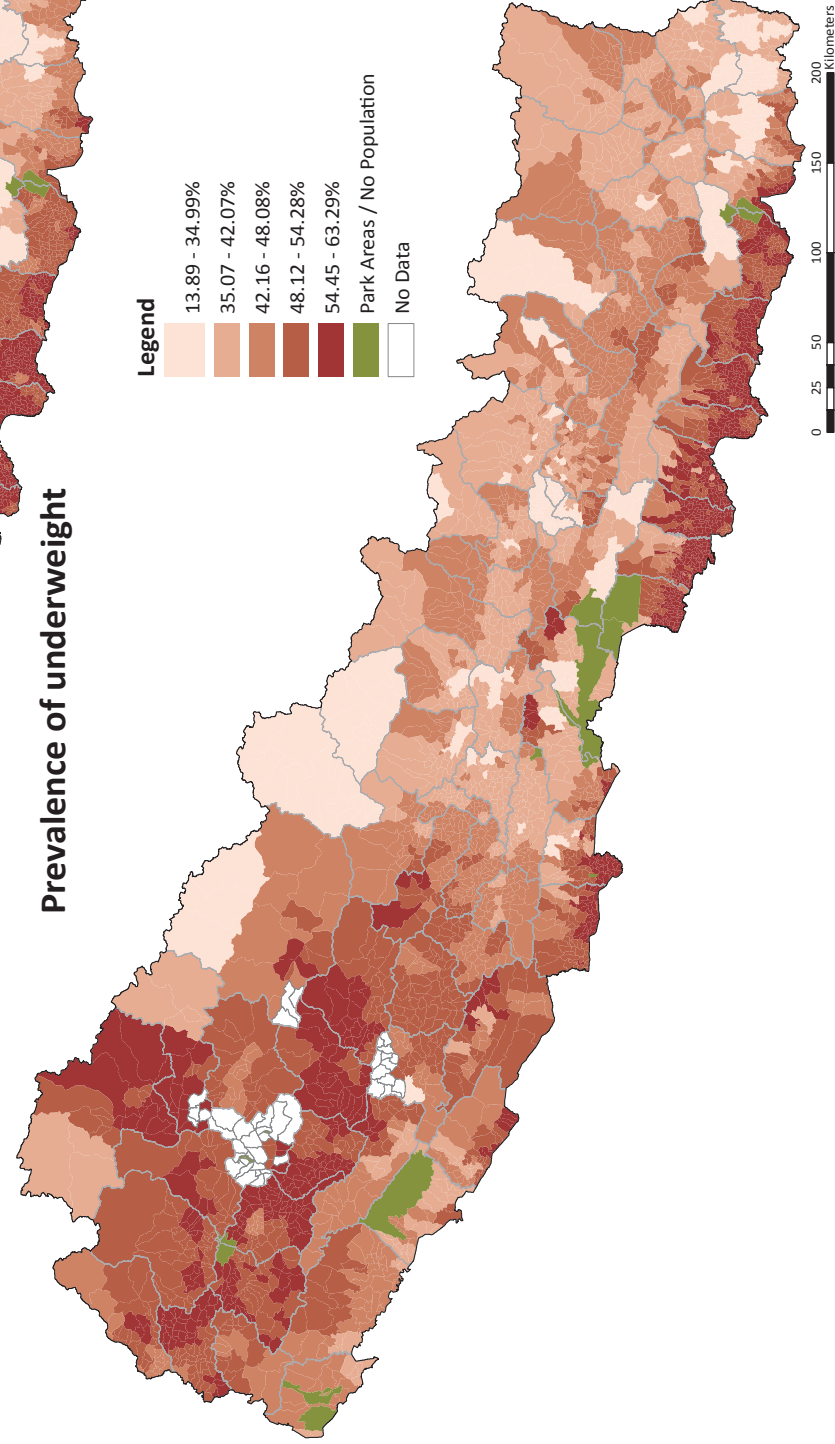
Prevalence of stunting



Prevalence of wasting



Prevalence of underweight



Natural disaster and climate change



Nepal is prone to many natural disasters, including floods, droughts, landslides, earthquakes, and glacial lake outbursts. In addition, windstorms, hailstorms and thunderbolts also have serious impacts on agricultural production and livelihoods. Increasingly, possibly due to climate change, weather patterns are unreliable, resulting in too little or too much rainfall and droughts or floods.

CLIMATE CHANGE

Nepal is regarded as a climate change hotspot despite the fact that its share of CO₂ emissions is negligible in the global context. Impacts include melting Himalayas and changing monsoon patterns thereby exacerbating food insecurity. There are strong indications that global climate is already having an adverse impact; the temperature has increased on average 0.6 degree

Celsius per decade between 1977 and 2000. In recent history Nepal is experiencing more frequent droughts and the prevalence of floods, hailstorms, landslides and crop disease appear to be increasing. Melting glaciers can alter the runoff of major rivers and lead to an increase risk of mass flooding from overflow (ICIMOD, 2007; DPTC, 1997).

FLOODS

During every monsoon of the last decade, floods have taken lives, destroyed homes and fields and displaced people. The threat of vector-borne diseases is also significant, as mosquitoes like to breed in stagnant waters.

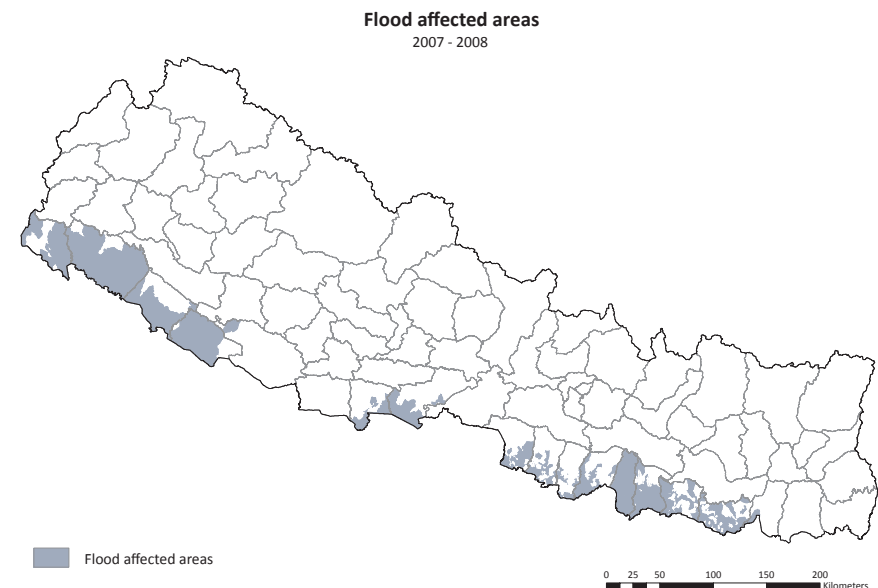
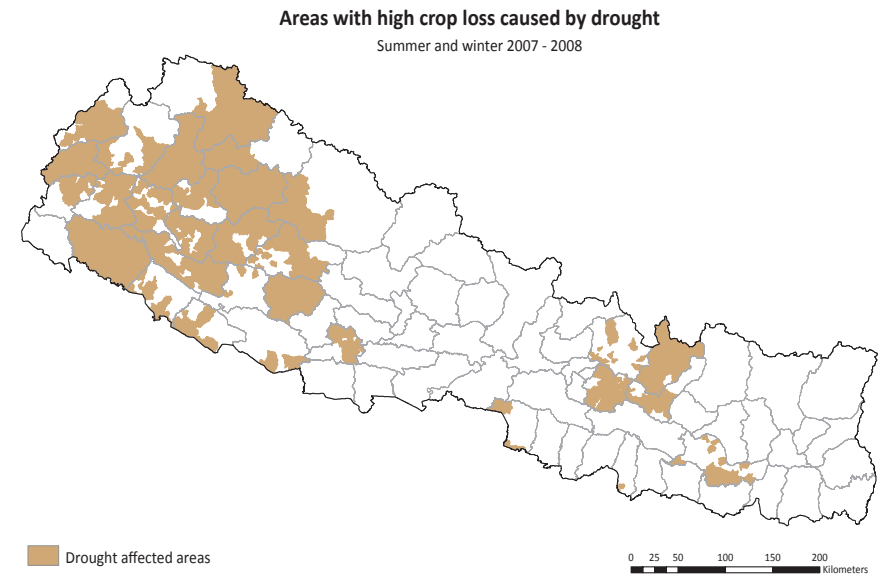
Floods are caused by monsoon rains and river sediments. River sediments, formed by natural erosion, clog lowland rivers, flood plains, reservoirs and irrigation channels, and alter the

flow of rivers. In 2008, the Koshi River burst its banks and displaced some 66,500 people in Nepal and many more in Bihar, India (WFP, 2008). Similarly in 2007, about half a million people in the Terai were affected by floods (WFP/UNICEF/SC Alliance, 2007). River bank erosion is a related problem affecting land and housing located near rivers.

The Terai is most at risk of flooding.

DROUGHTS

Insufficient and erratic rainfall or droughts are the leading cause of crop loss in Nepal and as such a key underlying factor causing food insecurity. Localized droughts are common, particularly in the Far and Mid-Western Regions. The monsoon which starts in June is important for the summer crops (paddy, maize and millet). It also affects the winter crops (wheat and barley), especially in the Terai by determining soil moisture at the time of sowing. Winter rains are essential at critical times during the crop's germination and growing stage. National cereal crop losses due to drought were specifically severe in 2006, 2008 and 2009.



Change in national cereal crop production compared to previous year (percent)		
Year	Summer crops	Winter crops
2005/06	-1.0	-3.4
2006/07	-7.2	8.5
2007/08	11.8	3.7
2008/09	4.3	-14.6
2009/10	-8.4	15.9 (est.)



Natural disaster and climate change

LANDSLIDES

Landslides – when earth debris is dislodged in a single action – are common in the Hills and Mountains, particularly in areas that are geologically active or receive a lot of precipitation. The rock type and weathering, the slope's steepness, the presence of fractures and shear stress are also important factors in the risk for landslides.

WINDSTORMS, HAILSTORMS AND THUNDERBOLTS

Windstorms, hailstorms and thunderbolts (lightening strikes) affect many areas of the country on a regular basis. Hailstorms in particular cause considerable damage to standing crops.

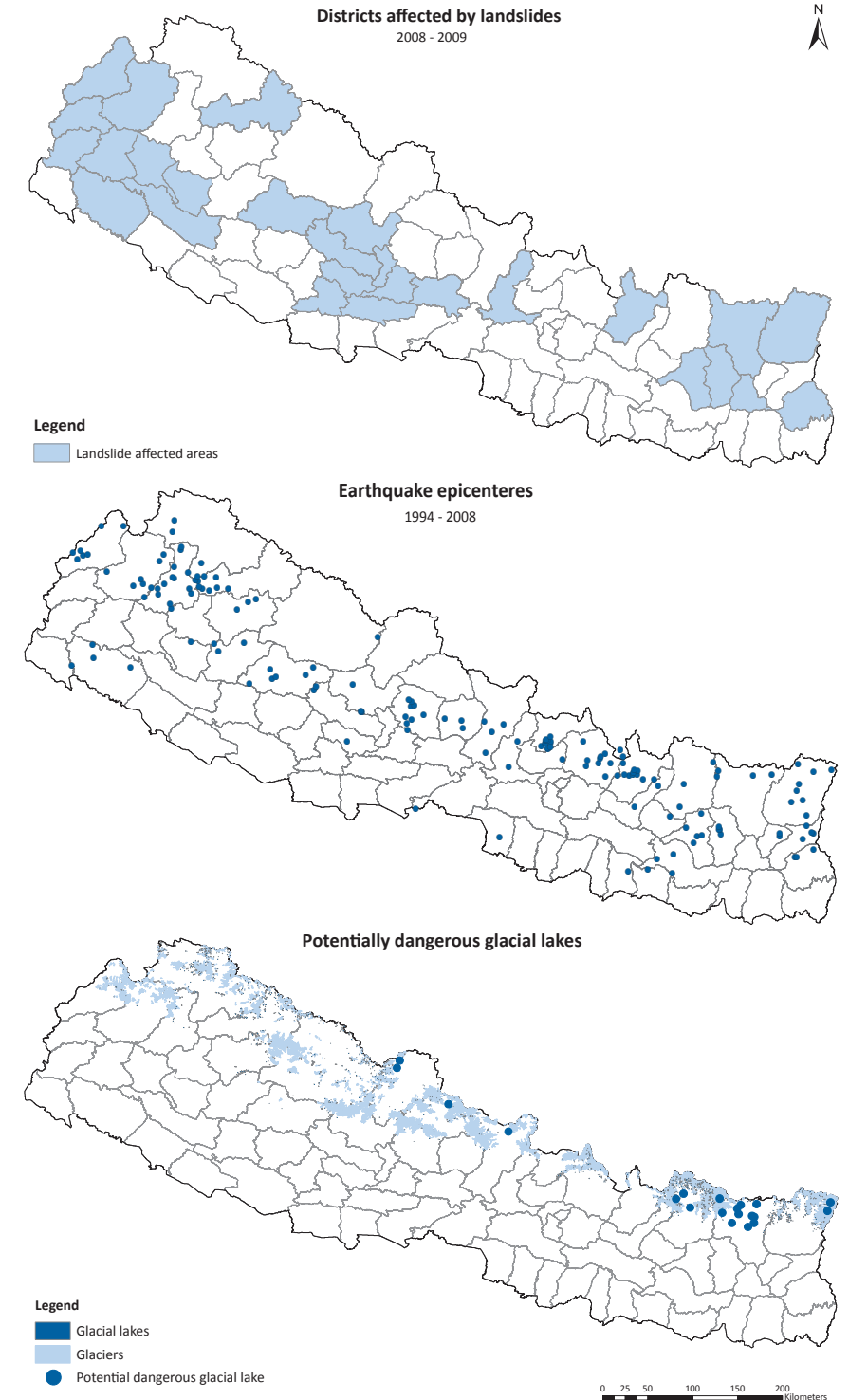
EARTHQUAKES

Nepal lies on a seismic zone and experiences tremors almost daily. Over a thousand earthquakes are recorded every year, ranging from two to five on the Richter scale. Large earthquakes are thought to occur every 74 years approximately. The last one occurred in 1934 and killed over 10,000 people in the Kathmandu valley. Earthquake epicenters between 1994 and 2008 were recorded across the country and are predominantly in the Hills and Mountains (NSET, 2009).

GLACIAL LAKE OUTBURSTS FLOOD

Global warming is increasing the number of glacial lakes made from melted glaciers. When the natural dams of till and rock break loose, the

glacial lakes are released. Earthquakes can entail outbursts. It is estimated that at present 345 glacial lakes are growing while 12 new glacial lakes are forming in Nepal. The most famous glacial lake outburst flood took place over 600 years ago, when a 10 square kilometer glacial lake burst behind Mt Machhapuchhre and poured into the Pokhara valley, filling it with five cubic kilometers of glacial debris. More recently, in 1985, a glacial lake in the Everest region burst and poured into the Bhoté Koshi River. The flash flood destroyed farmland, houses, bridges and a hydroelectric plant. There are about 20 glacial lakes that are considered to be potentially dangerous. Earthquakes pose a great risk in terms of damaging the side of lakes and causing glacial lake outbursts flood (WHO, 2005; ICIMOD, 2007).



Conflict and political instability



Nepal's past conflict, ignited by the Communist Party of Nepal/Maoist (CPN/M), began as a protest against the widespread poverty and discrimination that subjugated the lives of so many. Caste, ethnic, gender and regional inequalities fuelled the armed rebellion.

The signing of the Comprehensive Peace Agreement between the Seven Party Alliance and the CPN/M in November 2006 ended the decade of armed conflict. However, since then extortions, threats, business closures and vehicle bans (*bandhas*) have continued and in some areas even intensified.

The deliveries of social services have and are still suffering, as government personnel, health workers and teachers left or are leaving their posts. This was particularly the case in the Mid- and Far-Western Regions. Currently the most affected Region is the Eastern Terai.

CONFLICT IMPACT

Just before the end of the conflict in 2006, most of rural Nepal was under effective control of the CPN/M. In most districts government control was limited to district headquarters.

Eighty percent of VDCs in the Mid Western Hills and the Far Western Region was under effective control of the CPN/M. In the Central Terai and Central and Eastern Mountains this was much less at approximately 38 percent of the VDCs (WFP/OCHA, 2007).

In 2007, WFP and OCHA developed a conflict impact classification based on multiple indicators including food availability and livelihoods, access to markets and various services, and incidences of conflict (personal security, blockades and direct human impact of the conflict).

Based on these indicators, VDCs were classified into four levels of conflict impact:

- (1) *Not significantly affected* (no indications of global security problems and livelihood impacts were minimal)
- (2) *Moderately affected* (frequent insecurity with moderate impacts on livelihoods)
- (3) *Highly affected* (frequent insecurity with significant impacts on livelihoods)
- (4) *Severely affected* (acute crisis of civil insecurity and severe impacts on livelihoods).

For districts covered by the WFP/OCHA assessment (2007) the Far-Western Region was most severely impacted during the conflict, followed by the Mid-Western Region and the Eastern Terai Region. Districts in the Central and Eastern Mountain Regions and the Central Terai Region were least impacted.



CURRENT STABILITY

At the end of 2009, WFP undertook a follow-up assessment to map out the current political and civil stability across the country. VDCs were classified according to the frequency of *bandhas*, number of security incidences, presence of armed groups, presence of local governance and the law and order situation. The sum of the score given to each indicator determined the stability category. In doing so, most of the country appears relatively stable with a low instability score. The main issue is the frequent occurrence of *bandhas*, occasional security incidences, or absence of local governance. It is a different matter in the Central and Eastern Terai, where the security situation is of great concern due to high frequency of *bandhas*, serious security incidences, and in many VDCs complete absence of local governance and collapse of law and order.

BANDHAS OR GENERAL STRIKES

The Nepali word *bandha* or 'general strike' literally means to close, and when a *bandha* is called, this is what happens: markets are closed, businesses shut, roads are deserted, and students remain home from school. Participation is often enforced and those who refuse to comply can face serious property damage, injury and even death. The impact caused by *bandhas* on daily livelihoods and food security is immediate, and it is often the poorest populations who are worst hit. About a quarter of Nepal's population

spends almost three quarters of their income on food. When this population is prevented from earning a day's wage this often means missing a day's meal.

Bandhas affect the distribution of perishable farm products like fruit, poultry, eggs, meat, milk and vegetables. Farmers can neither meet traders nor sell their produce in the markets. Prices vary during *bandhas*, rising and falling depending on the items and locations (prices are low in production and collection centers and high in final market points). The Terai is most commonly impacted by *bandhas* (WFP, 2009).

BASIC SERVICE DELIVERY

In 2006, there was a clear correlation between the area under CPN/M control and the displacement of VDC secretaries. Currently a similar correlation can be observed in areas of political instability. Consequently, administrative functions provided by the VDC secretaries, such as legal documentation of birth, death, and marriage registration, land tax collection, VDC budgets and voter list management can not be performed.

The conflict stalled efforts to develop the agricultural sector. Programmes were stopped, irrigation systems were destroyed and many agricultural service centers, which provided technical advice and agricultural input to farmers, were physically damaged or abandoned by government staff (WFP/FAO, 2007).

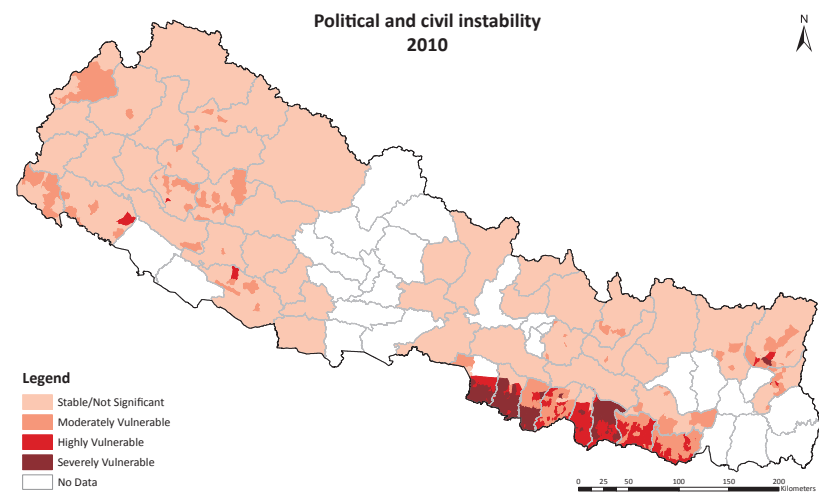
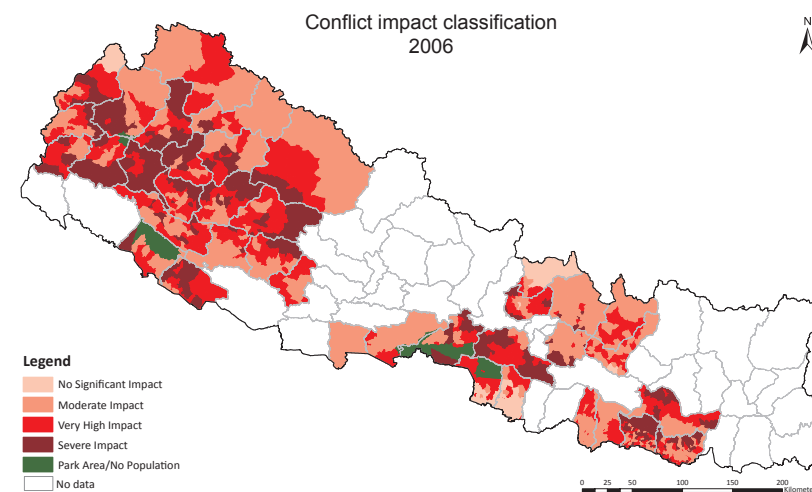
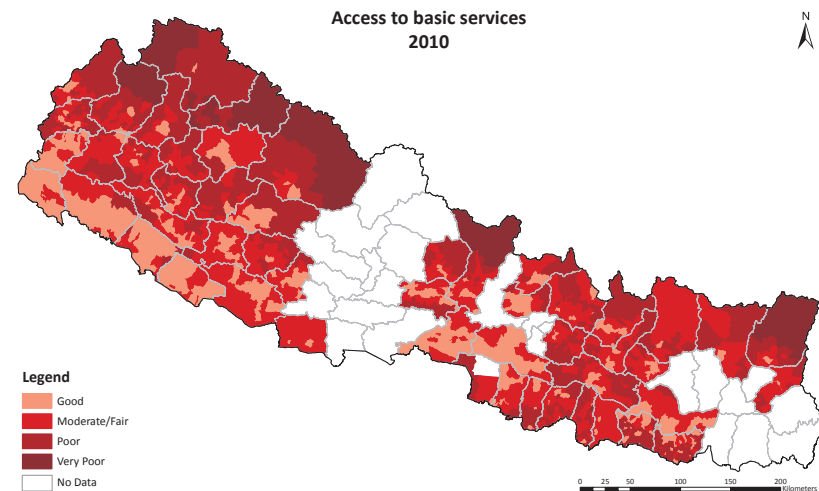
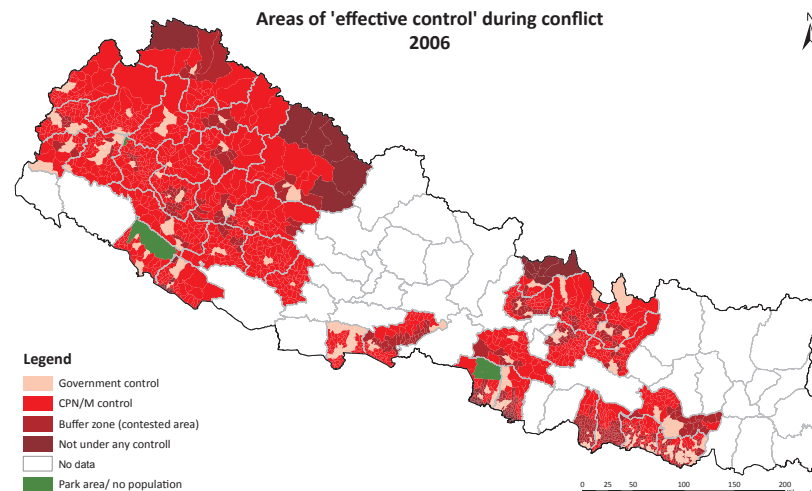
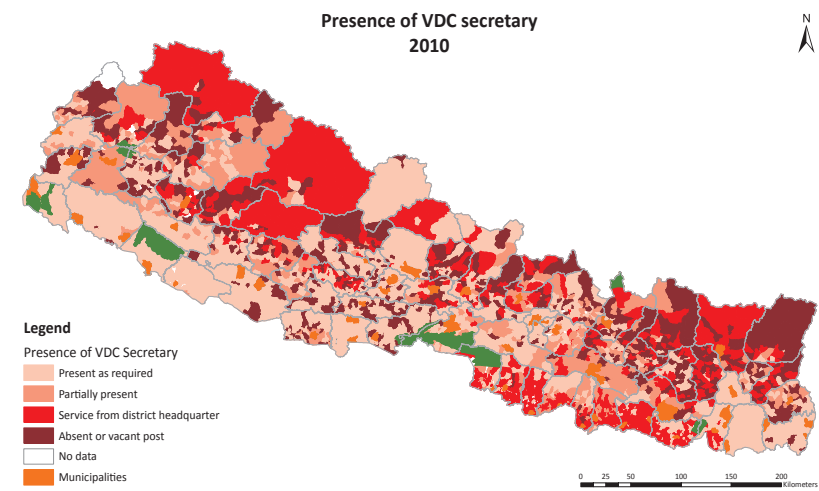
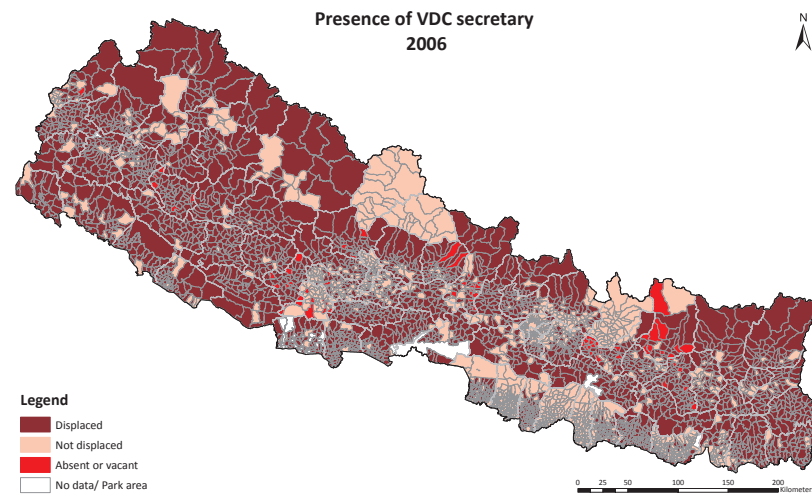
To gain insight into the overall service delivery in rural Nepal, WFP's field monitors through local consultations with key informants assessed each VDC in their coverage area with regard to the following indicators:

1. Access to and type of motorable road;
2. Presence of security services (access to police post);
3. Access to functioning health services;
4. Access to functioning agricultural extension services;
5. Access to primary and secondary education;
6. Presence of development activities;
7. Presence of VDC secretary; and
8. Access to telecommunication including landline, mobile telephone and internet services.

Each indicator was given a score ranging from one (*very good*) to four (*very poor*). For each VDC the basic service delivery score was calculated as the sum of the indicator scores and classified into four relative levels of basic service delivery: *good*, *moderate*, *poor*, and *very poor*. From this it is obvious that the main challenge for basic service delivery is in the Mountains and in particular those in the Mid-West. The delivery of basic services is however in general in a unsatisfactory state with most VDCs across the country scoring *moderate* to *poor*. Only in few VDCs, predominantly in the Terai and in the lower Hills, is the status of basic service delivery classified as *good* (WFP, 2010).



Conflict and political instability



Coping



Coping strategies are the ways a community, household or individual adjust their livelihood strategies in response to food insecurity. Coping strategies may involve short-term changes in behaviour such as consuming less expensive foods, serving smaller helpings, or buying food on credit.

When normal coping strategies are exhausted, households start using negative coping strategies such as selling household items, agricultural tools and livestock. Repeated and more frequent use of coping strategies can lead a household along a downward spiral towards chronic food insecurity and extreme deprivation.

COPING BEHAVIOUR

As a first response households typically switch to consuming cheaper but less

preferred food. This is immediately followed by borrowing money or buying food on credit as the most common form of coping. While giving the household immediate relief from hunger, the loans taken out may result in an unsustainable build up of debt which can leave the household with no other option than to take more drastic steps.



These include the distress sale of household assets including cooking utensils, jewellery and other household items or, even more severe, the selling of productive assets such as livestock, agricultural tools and consumption or sale of seed stocks. These negative coping strategies often go hand in hand with high debt burdens and depletion of savings. As a last resort households sell their land.

COPING INDEX

The use of coping strategies is a good indicator of food security. The more often and the more severe the strategies adopted the more distressed the household food security situation. The coping strategy index aims to measure this behaviour and as such is a proxy indicator of household food security.

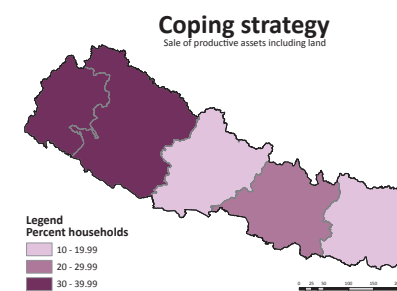
The NeKSAP collects data on coping strategies on a quarterly basis. The highest coping intensity can be found in the Hills. By sub-region, the Mid and Far-Western Hills and Mountains have the highest coping strategy index score. This is also the region with the highest food insecurity.

Coping strategy index

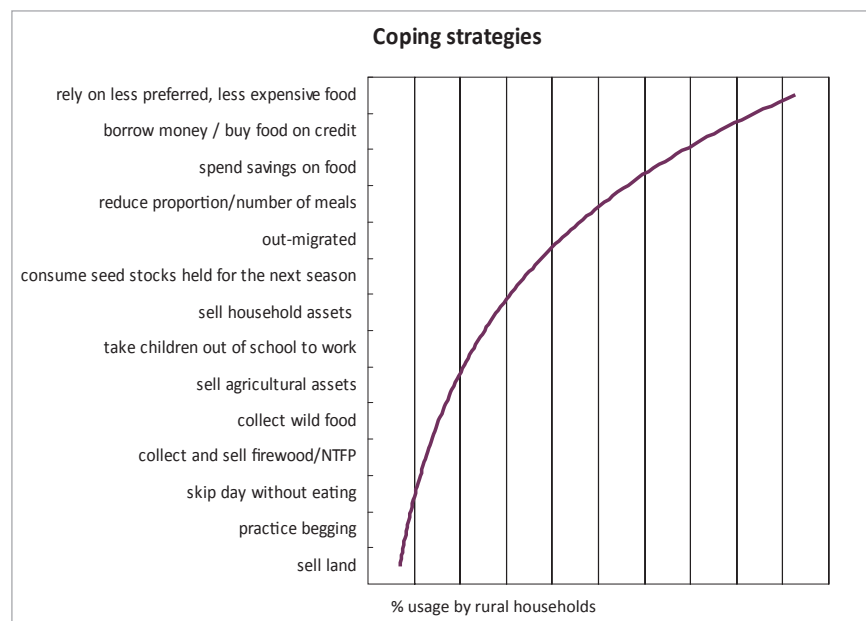
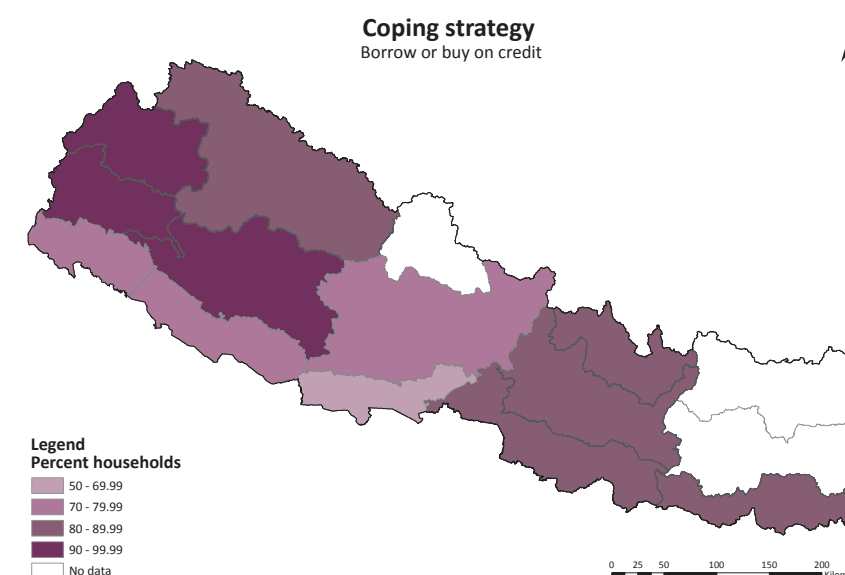
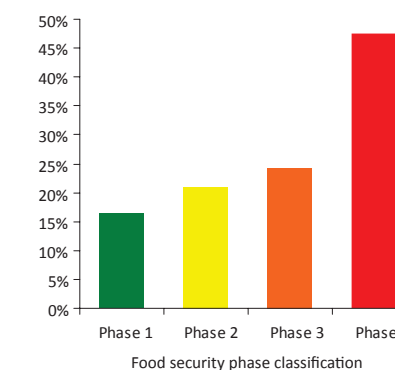
Region	2007	2008	2009
Nepal	17.5	21.8	21.1
Mountain	17.0	21.2	21.9
Hill	18.2	24.4	22.5
Terai	16.2	17.2	17.0

Coping is two to three times as high in severely and highly food insecure areas than in generally food secure areas as indicated in the phase classification map on page 4. This is mostly due to the use of more severe coping strategies such as sale of assets and heavy borrowing.

A worrying phenomenon is that coping has intensified during the past years and the effect was especially severe during the initial impact of the rise in food prices. During the lean period the use of coping strategies is higher than during the winter season (WFP, 2010).



Use of coping strategies



CONSUMPTION VARIETY

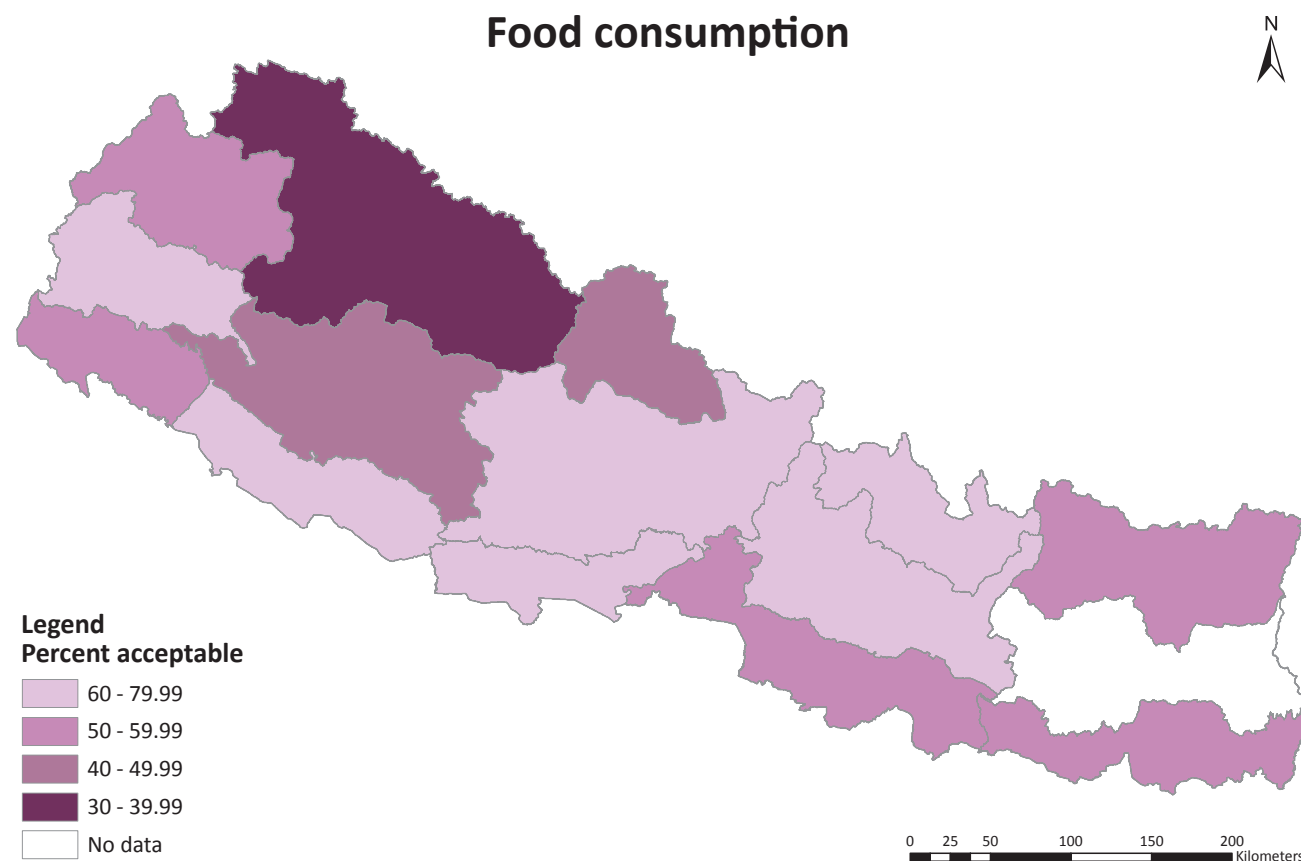
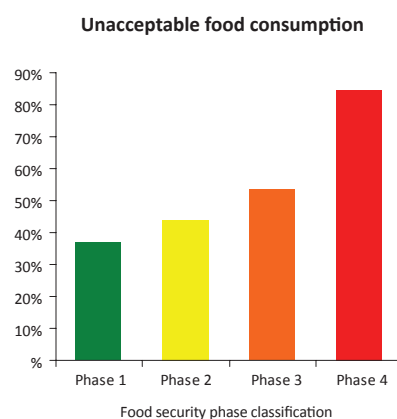
Change in diet is one of the first coping strategies that households adopt. They make adjustments in variety, quantity and frequency of items consumed. This can be measured by using the food consumption score. As such it can be a good indicator of food security (see Box below).

As expected, the food consumption score is the worst in the Mountain belt. This is where food availability and access is the biggest problem and less variety exist in food items available in the markets.

Consumption score

Region	Unacceptable consumption (%)
Mountain	54
Hill	47
Terai	42

In areas classified as highly and severely food insecure in the food security map on page 4, the incidence of households with unacceptable food consumption baskets is more than double that in generally food secure areas. The incidence of households with acceptable food consumption baskets has remained more or less stable since 2007. However, this has come at the expense of more intense use of coping strategies by poor households (WFP, 2010).



Coping strategy index (CSI)

The CSI combines the frequency of the coping strategies with their severity. The frequency is measured by recalling the number of times the strategy was adopted in the past 7 days prior to the date of an interview with a particular household. The severity is a weight factor that is assigned to each coping strategy; the more severe the strategy, the higher the weight assigned to the strategy. The coping strategy index is then calculated for each household as the sum of the frequency times the severity of each adopted strategy.

Food consumption score (FCS)

The food consumption score measures the variety and frequency of different food items consumed by a household over a period of one week. These are classified into eight food groups. Weights have been assigned to each food group based on their relative nutritional importance. The food consumption score is then simply calculated as the frequency each food group has been consumed by the household times its relative weight as follows:

$$FCS = 2 \cdot (\text{cereals}) + 3 \cdot (\text{pulses}) + 4 \cdot (\text{poultry/meat/eggs}) + 0.5 \cdot (\text{oils/fats}) + 0.5 \cdot (\text{milk and milk products}) + 1 \cdot (\text{vegetables}) + 1 \cdot (\text{fruit}) + 0.5 \cdot (\text{sugar/sweets})$$

International cut-offs apply that divide households into three food consumption groups:

1. Poor food consumption: score is less than 21
2. Borderline food consumption: score is between 21.5 and 35
3. Acceptable food consumption: score is above 35.5

Migration



Migration to India, as well as to other parts of Nepal, is a long established practice that has allowed families to cope with transitory as well as chronic food insecurity. In recent years migration has increased dramatically with the growing demand for Nepali labour in Malaysia, South Korea, Qatar, Saudi Arabia and other countries in the Middle East.

LINK TO FOOD INSECURITY

Migrants from communities with an established tradition of migration cite insufficient access to food, lack of employment and high debt burden as the major reasons to migrate. Small landholdings are another explanatory factor for migration as not all family labour may be required for working the land.

The most food insecure months are March, July and August. Migrants tend to out-migrate prior to the start of these lean periods and generally return at the end when it is the time for harvesting and planting or before major festival periods. For many poor households labour migration is the only option available to provide for their basic sustenance during lean periods.

WHO MIGRATES?

Migration is so common, that even during the main harvest season, 44 percent of households across Nepal have one or more family members absent pursuing distant labour opportunities (WFP, 2006).

Almost all migrants abroad are men between the age of 15 to 44. The proportion of female migrants abroad is marginal (CBS, 2004).

Work migration is highest in the Western, Mid Western and Far Western Hills. The Eastern Hills has the lowest proportion of migrants. Migrants are more likely to come from Terai and Hills as compared to the Mountains.

DESTINATIONS

For the poor and food insecure, India is the most popular destination. The probability of going to India for migration increases if the head of the household is illiterate and the household is predominantly dependent on agricultural wage employment and have smaller land holdings (CBS, 2004). India has plenty of work opportunities for unskilled labour and is the cheapest destination.

The migrants' main destinations in India include Delhi, Mumbai, Gujrat, Uttranchal, Uttar Pradesh, Bihar and Kolkata (WFP/NDRI, 2008).

LIVING AWAY

Many migrants in India work as porters, drivers, agricultural labourers, factory workers or security guards. A migrant seeks to maximise his savings by minimising his expenses while abroad. For the poor and unskilled, this typically involves sharing cramped and unhygienic quarters with many co-workers or fellow migrants.

There are health risks involved in migration. In major urban centres, like Mumbai and Delhi, the risk of contagious diseases, including tuberculosis, is significant. Of the many challenges to the health of Nepali migrants in India, HIV is probably the most threatening, particularly since migrants are typically young, unaccompanied males with little knowledge of protection and the means of transmission of HIV (WFP/NDRI, 2008).

CONSEQUENCES AT HOME

When male migrants leave, women and children are often left to cope with limited access to food and resources. Until they receive the first remittance, finances are frequently stretched for migrant households as they have had to finance the journey from their own resources or through a loan. Often, wives take over their husbands' workloads and suffer

from the uncertainty of not knowing when and how much he will send in remittances and when and if he will return. Children attend school less frequently and their performance drops during a migrant's absence (WFP/NDRI, 2008).



REMITTANCES

The remittances received vary widely, both among households and between regions of Nepal.

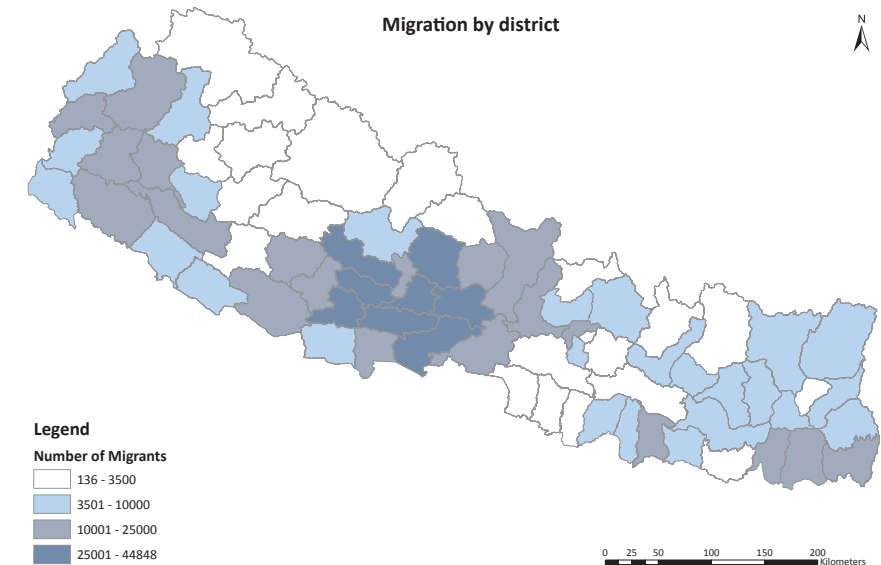
Average total annual remittances received from India come to approximately ten thousand rupees. Most of the remittances is hand-

carried from India and received during October. Remittances received by households are highest in the Eastern and Central Development Regions and lowest in the Mid and Far-Western Development Regions.

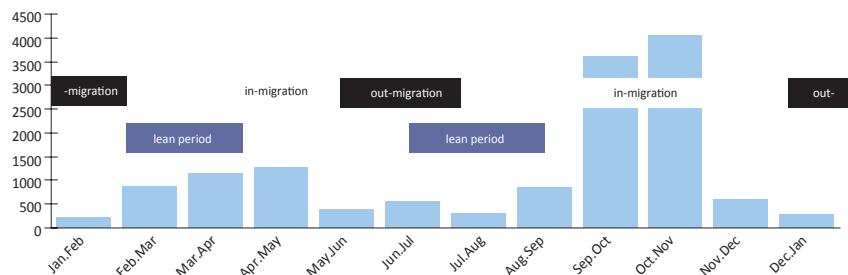
Poor households use remittances primarily for education and clothing, followed by food and loan repayment.

ADDRESSING MIGRATION

Migration remains an important livelihood strategy that has brought tangible benefits to many communities over a considerable period of time. But the financial benefits of seasonal migration to India are low and the associated (health) risks are high. Alternative employment, micro-credit, food- or cash-for-work programmes scheduled in accordance with anticipated periods of food insecurity could significantly reduce migration.

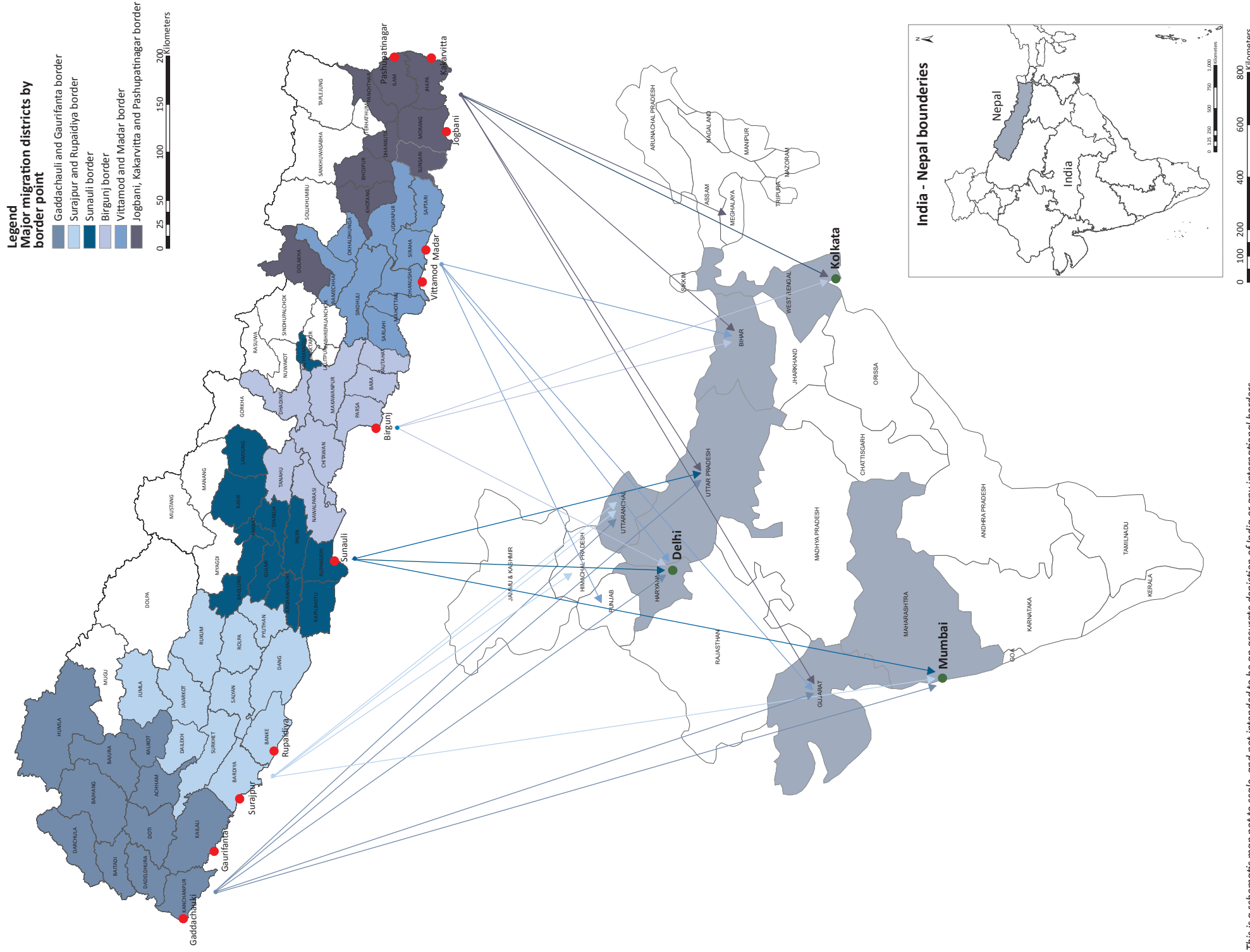


Remittances received by households from migrants in India (NRs)





Major migration routes



Addressing food security



Food security is a basic human right. This has been recognized by the government of Nepal who has given high importance to ensuring food security for all its citizens. Despite this, food security trends are declining: the national cereal deficit is widening, affects of climate change are uncertain but drought episodes and flooding are becoming more frequent, improvements in nutrition are insignificant and slow, and there is an increasing reliance on remittances as the main driver of economic growth.

In a country that has acknowledged the “right to food,” people suffering from hunger are entitled to protection. This can come in the form of food aid, cash transfers or other forms of social protection including free health care, shelter, food stamps, emergency assistance, and pensions.

Food assistance has been a part of Nepali society for many years. It began through the *Dharma Bhakari* (religious store) system which was based on voluntary contributions by households to an emergency food stock that could then be distributed in times of crisis.

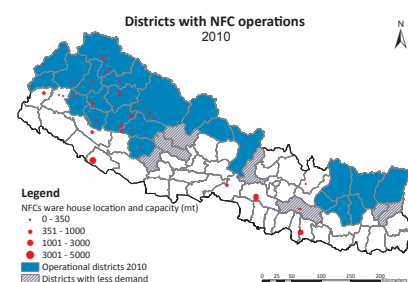
THE NEPAL FOOD CORPORATION

The Nepal Food Corporation (NFC) is the only government agency providing food assistance in food insecure regions. It does this through selling of rice below market prices.

At first, the NFC only operated during famines and food shortages. But after

responding to the 1972 famine in the Karnali region, it began supplying subsidized food on a continuous basis to remote food deficit areas, with quantities proportional to the scale of the food crisis. However, the budget available for the transportation of food severely limits the amount that the NFC can supply.

The NFC is present in 30 districts. Their main presence and capacity is in the Far and Mid-Western Hill and Mountains.



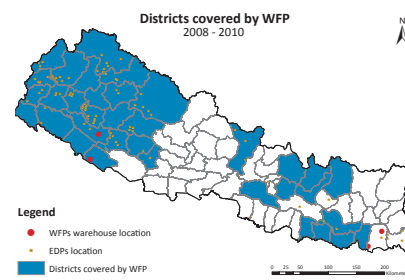
The Ministry of Agriculture and Cooperatives, the Ministry of Local Development, the Ministry of Health and the Ministry of Supply and Industries all play a substantial role in combating food insecurity.

WORLD FOOD PROGRAMME

The aim of the United Nations World Food Programme (WFP) in Nepal is to prevent irreversible human, economic and social damage due to hunger and malnutrition. This is achieved through providing strategically targeted food and cash assistance during critical moments of food insecurity.

WFP works with vulnerable populations, i.e. populations impacted by conflict, high food

prices and natural disasters, and marginalized groups such as landless, children, pregnant women and nursing mothers to prevent hunger and improve nutrition.



The strategic priorities of WFP aim to support the government of Nepal’s food security and development objectives in the context of the nation’s protracted peace and recovery process.

WFP country strategy 2010-2013 (2010b) identifies three priorities which guide the effort of WFP Nepal:

1. Provide a food security and nutrition safety net for the most vulnerable.
2. Foster improved national and community resilience to food insecurity and under nutrition.
3. Prepare for increased environmental disasters and respond to emergencies.

WFP primarily targets the most food insecure and hard to reach districts of the Far and Mid-West Hills and Mountains through a food for asset programme. Cash for asset interventions are implemented in areas with access to functioning food markets and relative stable prices.

Nutrition interventions are focused in the Hills and Terai to combat the high and increasing trend of wasting.

Besides WFP, other UN organisations including FAO, UNICEF and UNDP as well as I/NGOs such as Mercy Corps, GTZ, SNV, DEPROSC, SAPPROS, TMI amongst others, play a significant role in addressing food insecurity.

ADDRESSING FOOD INSECURITY AND MALNUTRITION

The underlying causes of food insecurity in Nepal are complex and so is the solution. This is particularly the case in the isolated regions of the Far and Mid- Western Hills and Mountains where the problem of food insecurity is most urgent. A thorough assessment of interventions that have worked and the development of a feasible development strategy for the region are of utmost importance.

The dismal state of malnutrition across the country requires urgent action. This requires a twin-track approach of direct and indirect interventions.

Direct interventions include ensuring access to sufficient food, improved water sources, adequate sanitation facilities and health centres, as well as the provision of supplementary foods or school meals, and the fortification of staple foods or provision of micro-nutrient supplements.

Indirect interventions focus on bringing about changes in hygiene and caring practices and increasing the general

nutrition and health awareness of the population.

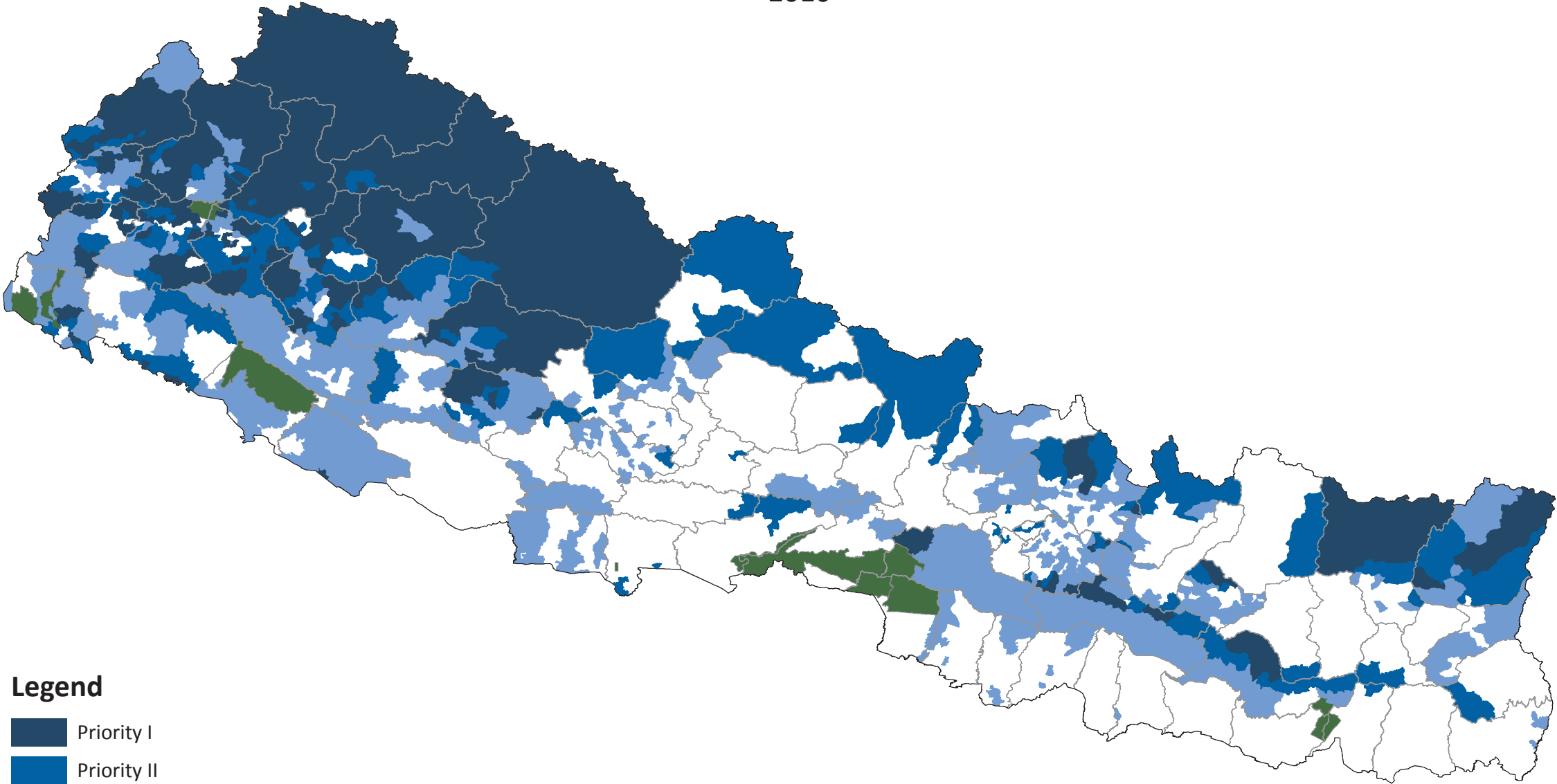
To overcome the challenges of food insecurity, four key areas should become the focus of a comprehensive long-term food security plan for Nepal (WFP, 2009):

1. **Agricultural production**, trade and marketing: to address Nepal’s low level of agriculture production and weak market functioning;
2. **Economic development**: to address poor economic growth, high rates of domestic unemployment/ underemployment, high levels of unskilled labour migration, and increasing economic disparity;
3. **Safety nests**: to address the prevailing food insecurity experienced by the poorest households, and by households impacted by shocks (natural disasters, food price and supply shocks, epidemics) leading to short-term food insecurity;
4. **Nutrition**: to address Nepal’s chronic malnutrition rates.








Food security targeting map

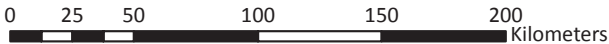
2010



Legend

-  Priority I
-  Priority II
-  Priority III
-  No priority
-  National Parks

The Food security targeting map is based on prevalence of calorie intake below the threshold and food security phase classifications.



Literature list



- Adhikari (2009): *Food crisis in Karnali, A historical and politico-economic perspective*, Martin Chautari, First Edition, 2008, Kathmandu, Nepal
- AICC (2005): *Edible Cereal grain Production and Requirement in Nepal 1994/95 - 2003/2004*, Available online at: <http://aicc.gov.np/>
- CBS (2004): *National living standard survey 2003/04*, Central bureau of statistic, Thapatali, Kathmandu, Nepal
- CBS (2002): *National Sample Census of Agriculture 2001/2002*, Central Bureau of Statistic, Thapatali, Kathmandu, Nepal
- Cegielski J.P. and McMurray D.N. (2004): *The relationship between malnutrition and tuberculosis*, The international journal on Tuberculosis and lung diseases, Vol. 8, no. 3, pp.286–298
- CIA (2009): *CIA World Fact book*, available online <https://www.cia.gov/library/publications/the-world-factbook/index.html>
- Department of hydrology and metrology (2004): *Annual precipitation data, Kathmandu*
- DFID/WB (2006): *Unequal citizens, Gender, Caste and Ethnic exclusion in Nepal*, Summary, DFID and WB, Kathmandu, Nepal
- DPTC (1997): *Data on disasters Disaster Prevention Training Center*, Kathmandu, Nepal
- FAOSTAT (2010): *Nepal's rice import*, Available online at: www.faostat.fao.org
- FAO (2004): *Food Insecurity and Vulnerability in Nepal: Profiles of Seven Vulnerable Groups*, Food Security and Agricultural Projects Analysis Service (ESAF) ESA Working Paper No. 04, Available online: www.fao.org/es/esa
- FAO (2001): *Crop diversification in the Asia –Pacific region*, FAO regional office for Asia and the Pacific, Bangkok, Thailand
- Fewtrell, M. S. (2007): *Session 6: Infant nutrition: future research developments in Europe*, EARNEST, Proceedings of the Nutrition Society 66:435-41
- GoN (2009): *Education data*, Ministry of Education, Kathmandu
- GoN (2007) *Interim constitution of Nepal*, Government of Nepal, 2063, Kathmandu
- Guiraud, M., (2007): *Child mortality presentation*, unpublished, Dadeladhura, Nepal
- ICIMOD (2007): *The melting Himalayas: Regional Challenges and Local Impact of Climate Change on Mountain Ecosystems and Livelihoods*, ICIMOD, Kathmandu, Available online at: <http://books.icimod.org/index.php/search/publication/286>
- IRIN (2007): *Lack of toilets, poor hygiene fuel water-borne diseases*, Available online at: <http://www.irinnews.org/Report.aspx?ReportId=75570>
- KIRDARC (2002): *GOVERNANCE IN THE KARNALI: AN EXPLORATORY STUDY*, Karnali Integrated Rural Development and Research Center, Jumla, August 2002
- Leone, Tiziana, Matthews, Zoë and Dalla Zuanna, Gianpiero (2003): *Impact and Determinants of Sex Preference in Nepal*, International Family Planning Perspectives Volume 29, Number 2, June 2003
- MMMS (2009): *Nepal Maternal Mortality and Morbidity Study*, summary of preliminary findings, Family Health Division, Department of Health Services, Government of Nepal; Teku, Kathmandu, Nepal
- MoAC (2009): *Statistical information on Nepalese agriculture 2008/2009*, Ministry of agriculture and Co-operatives, Agri-business promotion and statistics division. Government of Nepal, Kathmandu
- MoAC (2007) *Annual crop production*, Ministry of Agriculture and cooperatives, Government of Nepal, Kathmandu
- MSF-USA (2008): *All Content About Kala Azar*, Available online: <http://www.doctorswithoutborders.org/news/allcontent.cfm?id=88>
- National Tuberculosis Centre (2008): *Annual Report 2006/7*: National Tuberculosis Control Programme Nepal, Bhaktapur, Nepal
- NDHS (2006): *Nepal Demographic and Health Survey*, Population Division, Ministry of Health and Population, Government of Nepal and New ERA, Kathmandu, Nepal
- Nepal food corporation (2010): *District coverage data*, NFC, Kathmandu
- NSET (2009): *Earthquakes in Nepal*, Available online at: http://nset.org.np/nset/php/earthquakes_nepal.php
- SIRF (2007): *From Exclusion to Inclusion, Socio-Political Agenda for Nepal*, Social Inclusion Research Fund, 2007 Lalitpur, Nepal
- SSRP (2009): *School Sector Reform Plan 2009 – 2015*, Ministry of Education, Government of Nepal, Kathmandu, Nepal
- UN (2010): *UNDATA, a world of information*, Available online at: www.data.un.org
- UNDP (2009): *Nepal human development report 2009, State transformation and human development*, UNDP, Available online at: <http://hdr.undp.org/en/reports/nationalreports/asiathepacific/nepal/name,19112,en.html>
- UNICEF (1998): *The state of the World's children*, Available online at: <http://www.unicef.org/sowc98/>
- VDC profile (2008): *Village development committee profile of Nepal*, Intensive study and research centre, Kathmandu
- WB (2010): *Nepal – Data and statistics*, Available online at: <http://go.worldbank.org/X1EXSQ8Q70>
- WB (2009): *Nepal at a glance*, World Bank, Available online at: http://devdata.worldbank.org/AAG/npl_aag.pdf
- WFP (2010): *VAM household survey, March, June, October and December 2009*, Kathmandu, Nepal
- WFP (2010a): *More than roads: using markets to feed the hungry in Nepal*, Kathmandu, Nepal
- WFP (2010b): *WFP country strategy 2010 – 2013*, Kathmandu, Nepal
- WFP (2010c): *VAM data*, WFP, Kathmandu
- WFP (2010d): *NekSAP framework document*, the Government of Nepal, the UN World Food Programme and the Food and Agriculture Organization joint mission, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP (2009): *A Sub regional hunger index for Nepal*, WFP, Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP (2009a): *The cost of coping, A collision of crisis and the impact of sustained food security deterioration in Nepal*, WFP, Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP (2008): *Multi Agency Flood Impact Assessment, Koshi River Flood, Nepal*, IASC Emergency Preparedness and Response Cluster System, September 2008
- WFP (2007): *Market Watch 2*, May, UN World Food Programme, Food Security Monitoring and Analysis System. Lalitpur. Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP (2006): *Comprehensive Food Security and Vulnerability Analysis*, CFSVA, WFP, Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP/CBS/WB (2006): *Small area estimation of poverty, caloric intake and malnutrition in Nepal*, Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP/FAO (2007): *Food and agricultural markets in Nepal*, Kathmandu
- WFP/FAO (2007a): *Special Report: Food Security Assessment Mission to Nepal*, Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP/NDRI (2008): *Passage to India, Migration as a coping strategy in times of crisis in Nepal*, Implications for WFP responses, Kathmandu, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP/NDRI (2008a): *Market and price impact assessment*, Kathmandu, Nepal, Available online at: <http://groups.google.com/group/NeKSAP>
- WFP/OCHA (2007): *Impact of conflict and priorities for assistance*, August, Kathmandu, Nepal
- WFP/UNICEF/SC Alliance (2007): *Inter Agency Rapid Flood Assessment – Nepal*, Kathmandu, Nepal
- WHO (2008): *Diarrhoea*, Available online: <http://www.who.int/topics/diarrhoea/en/>
- WHO (2005): *Human Health Impacts from Climate Variability and Climate Change in the Hindu Kush-Himalaya Region: A Report of an Interregional Workshop*, India
- World Food Summit (1996): *World Food Summit, Rome*, Available online at: <http://www.fao.org/wfs/homepage.htm>

