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Bellmon Estimation Studies
for Title II (USAID-BEST)

USAID OFFICE OF FOOD FOR PEACE

NEPAL USAID-BEST ANALYSIS

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fintrac

1400 16th NW, Suite 400
Washington, DC 20036 USA
Tel: (202) 742-1055
www.usaidbest.org
infobest@fintrac.com

3077 Kronprindsens Gade 72
St. Thomas, USVI 00802
Tel: (340) 776-7600

Front cover: (Left) Terraced rice fields are a common sight in the ecological belt known as the Hills. Elsewhere, rice production in the Terai occurs on flat, marshlands. Doti District, Nepal, July 2013. (Right) Health and nutrition training was an integral part of the Action Against Malnutrition through Agriculture (AAMA) project and will continue in the successive Suaahara project (the Global Health Initiative). This mother reported that via the program she has learned appropriate post-natal care and how to provide her son a more balanced diet. Kailali District, Nepal, July 2013.
Back cover: For landless or poorer households in need of cash, temporary day jobs provide a source of income. At this labor market, these formerly bonded laborers are hoping to negotiate daily work. Nepalgunj, Nepal, July 2013.

Photos by Fintrac Inc.

PREFACE

During the months of July-August 2013, the Bellmon Estimation Studies for Title II (USAID-BEST) team undertook a study of the current state of agricultural markets in Nepal to inform USAID food assistance programming decisions.

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ACRONYMS AND NOTES

ADB	Asian Development Bank
ADS	Agricultural Development Strategy
BEST	Bellmon Estimation Studies for Title II
CBS	Central Bureau of Statistics
CDSO	Crude Degummed Soybean Oil
CFA	cash-for-asset
CFSAM	Crop and Food Security Assessment Mission
CFSVA + N	Comprehensive Food and Nutrition Security and Vulnerability Analysis
CFW	cash-for-work
CIF	Cost, Insurance, Freight
CIMMYT	International Maize and Wheat Improvement Center (Centro Internacional de Mejoramiento de Maiz y Trigo)
COMTRADE	Commodity Trade Statistics Database
CP	Country Programme
CRSP	Collaborative Research Support Program
CSB	Corn Soy Blend
CSI	Coping Strategy Index
DADO	District Agricultural Development Office
DDC	District Development Committee
DEPROSC	Development Project Service Center
DFID	Department for International Development
DHS	Demographic and Health Survey
DRR	Disaster Risk Reduction
EU	European Union
FAO	Food and Agriculture Organization
FCHV	Female Community Health Volunteers
FCS	Food Consumption Score
FFA	food-for-asset
FFE	Food for Education
FFP	Food for Peace
FFW	food-for-work
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
FOB	Free on Board
FSTP	Food Security Thematic Programme
FTF	Feed the Future
FY	Fiscal Year
GAFSP	Global Agriculture Food Security Project
G/C	General Cargo
GDP	Gross Domestic Product
GIZ	German Society for International Cooperation
GoI	Government of India
GoN	Government of Nepal
GMO	Genetically Modified Organism
ha	hectares
HDC	Haldia Dock Complex
HH	household
HRW	Hard Red Winter
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
INR	Indian Rupees
IPP	Import Parity Price
JICA	Japan International Cooperation Agency
kcal	kilocalories
KDS	Kolkata Dock System

kg	kilograms
KISAN	Knowledge-based Integrated Sustainable Agriculture and Nutrition Project
kl	kiloliters
km	kilometers
KoPT	Port of Kolkata
KPD	Kidderpore Dock
LRP	Local and Regional Procurement
MCHN	Maternal and Child Health and Nutrition
MDG	Millennium Development Goal
MDI	Manahari Development Institute
MoAC	Ministry of Agriculture and Cooperatives
MoAD	Ministry of Agricultural Development
MT	Metric Tons
NAFSP	Nepal Agriculture and Food Security Project
NeKSAP	Nepal Food Security Monitoring System
NFC	Nepal Food Corporation
NFY	Nepalese Fiscal Year
NGO	Non-governmental Organization
NLSS	Nepal Living Standards Survey
NPR	Nepalese Rupee
NSD	Netaji Subhas Dock
OFDA	Office of US Foreign Disaster Assistance
PACT	Project for Agriculture Commercialization and Trade
PAF	Poverty Alleviation Fund
PLW	Pregnant and lactating women
PM2A	Preventing Malnutrition in Children Under 2 Approach
PPP	Purchasing Parity Power
PRRO	Protracted Relief and Recovery Operation
PSC	Phytosanitary Certificate
RAP	Rural Access Programme
RCIW	Rural Community Infrastructure Works
SAARC	South Asian Association for Regional Cooperation
SAPPROS	Support Activities for Poor Producers of Nepal
SAE	Small Area Estimation
SBICD	Sirsiya-Birgunj Internal Clearance Depot
SDC	Swiss Agency for Development and Cooperation
sq. m	square meters
SRN	Strategic Road Network
TEU	Twenty-Foot Equivalent Units
U2	Children under two years of age
U5	Children under five years of age
UN	United Nations
UNICEF	United Nations Children's Fund
US$	United States Dollar
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government
VAM	Vulnerability Analysis and Mapping
VAT	Value Added Tax
VDC	Village Development Committee
VSL	Village Savings and Loan
WASH	Water, Sanitation, and Hygiene
WB	World Bank
WFP	World Food Programme
WSB	Wheat Soy Blend

Exchange Rate: US$1 = NPR 93 as of July 2013

Notes: 1 crore = 10 million (10 lakh)

1 lakh = 100,000

CHAPTER 1
EXECUTIVE SUMMARY

Most rice farmers in Nepal use labor-intensive transplanting techniques. During the rice planting season, households who can afford to hire extra labor will bring in workers from around the community or India. En route from Nepalgunj to Surkhet, Nepal, July 2013.

Photo by Fintrac Inc.

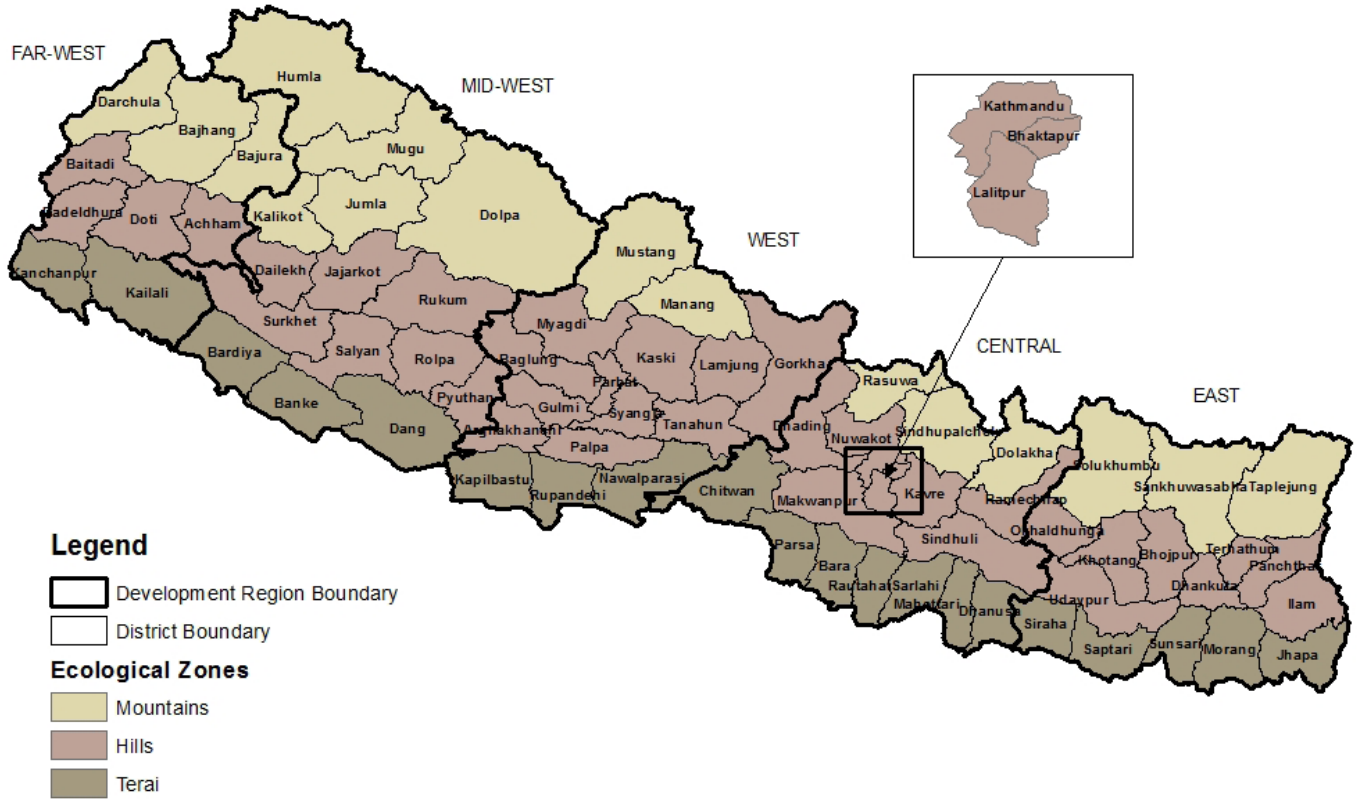
1.1. INTRODUCTION

This executive summary is a synopsis of the full USAID-BEST Analysis, which provides an overview of local markets, food security programs, recommendations for program design, and the adequacy of ports, transport, and storage. The executive summary is a condensed version of these topics as detailed findings from research and field work are covered in subsequent chapters.

GEOGRAPHY

Nepal has three ecological belts: Terai (productive, flat plains along the border with India), Hills (mountainous area north of the Terai and south of the Mountains), and Mountains (high-altitude mountains in the north). Additionally, the country falls into 14 zones and five development regions known as the Far-West, Mid-West, West, Central, and East. Administratively, there are 75 districts each with a district headquarter (DHQ). The DHQ manages the municipalities and village district committees (VDCs) within its boundaries. VDCs further break down into smaller units called wards. Each VDC has nine wards while municipalities have 9-35 wards. Finally, a ward consists of one or more settlements, depending on the geography and number of households (HHs).

Figure 1. Map of Nepal



Source: Created by USAID-BEST.

1.2. OVERVIEW OF LOCAL MARKETS

The Bellmon Amendment requires that donations of US food aid avoid harming local markets in recipient countries. The following synopsis of Chapter 2 provides an overview of local markets in Nepal including the structural food deficits, local food deficits, and the structure, conduct, and performance of major staple food markets: rice, maize, wheat, millets, buckwheat, barley, potatoes, pulses, and edible oil.

1.2.1 National Food Deficits

To a great extent, food insecurity due to availability and access constraints is highly correlated with residence. The three ecological belts -- Mountains, Hills, and Terai -- run east to west and, in broad terms, largely determine production potential and labor opportunities as well as vulnerability to disaster. Although nationally, the main cereals -- rice, wheat, maize, millet, barley, and buckwheat -- are the staples for Nepal's 26.5 million[1] people, surpluses tend to be concentrated in the southern 1/3 of the country.

In good years, Nepal produces almost enough food grains to cover national requirements. However, the harsh terrain and lack of road networks in the Hills and Mountains limit the movement of marketed food from surplus areas elsewhere, and greatly increase the cost to consumers.

The isolation of most communities outside of the accessible Terai region demands food self-sufficiency, but as population increases, incomes improve, and new road networks open, more consumers now rely on markets and, in particular, imports. Specifically, market surveys indicate a shift in food consumption patterns of grains as Nepali are demanding more and better quality rice, but this shift appears to be primarily fueled by increases in remittances.

1.2.2 Local Food Deficits

A mapping of district-wise cereal production against population requirements provides an informative picture of the cereal self-sufficiency (and lack thereof) on a national scale. With few exceptions, the districts able to produce a surplus of more than 10 percent of requirement are geographically concentrated along the Terai and in the Western and Eastern Hills. Districts with severe cereal deficits (more than 30 percent below requirement) are concentrated in the Hills and Mountains and urban centers. Food shortages are not only highly localized, but they also tend to fluctuate seasonally.

Households (HHs) in deficit districts are much more likely to depend on traders bringing marketed surpluses from the Terai

1 GoN, 2012, *National Population and Housing Census 2011*.

or other areas to fill food gaps. Yet, nationally, nearly 1/3 of Nepali fall below the national poverty line. Many of the deficit districts in the Mid- and Far-West are among the poorest because of localized availability issues and problems with access, but even in the relatively more accessible Terai, there are many poverty pockets.[2]

1.2.3 Structure, Conduct, and Performance of Food Markets

Guided by the structure, conduct, and performance framework, this examination aims to 1) explain the ability of the private sector to meet food needs through production and marketing alone, without the support of donors; and 2) assist decision makers in understanding the likely effect (positive, negative, or neutral) of food aid on local markets.

Rice. Rice is the most highly preferred staple in Nepal and faces a huge and growing demand. Additionally, rice plays a role in important religious festivals in the former Hindu kingdom and is positively associated with wealth and a high social status. All socio-economic classes consume rice, though the volume, frequency, and quality varies according to income. Those who can afford rice eat it regularly at the highest quality they can afford; those who are poorer will eat rice whenever they have sufficient money; very poor HHs will generally only consume rice from their own production during harvest season and then switch to a less preferred staple (e.g., wheat, maize, millet, buckwheat).

Photo by Fintrac Inc.

With piles of rice stacked behind them – most of it imported from India – this man and his son pose in front of their store, the only wholesale outlet in the area. Chinchu, Nepal, July 2013.

Market interviews across the Terai and Hills reveal increased demand for rice, and higher quality varieties, in rice-deficit areas in the Hills and Mountains. While demand has been slowly growing over the last decades, more recent jumps in HH income in some Hill and Mountain communities appears to have allowed a greater shift towards the most prestigious and easiest to prepare staple. Additionally, a rising selling price for non-timber forest products,[3] remittances, and tourism have increased incomes.

Production. Rice is produced across the country, and up to an altitude of about 2,500 m. above sea level; however, the Terai remains the undisputed rice belt. Only about 15 percent of rice is cultivated under irrigation, while 85 percent remains monsoon dependent.

With average landholdings of 0.8 ha,[4] very few farmers have surplus rice to sell. The 2010-11 Nepal Living Standards Survey found that only 22 percent of paddy production is sold. The same survey reported that even the most productive farm HHs depend on the market for at least 40 percent of their calories.[5]

Annual production was estimated at approximately 2,767,000 MT for Nepalese Fiscal Year (NFY) 11-12, a year in which locally produced rice contributed about 46 percent of the country's total cereal production.[6] The GoN recorded imports of nearly 400,000 MT in NFY11-12: 214,688 MT of paddy and 183,795 MT of milled/semi-milled rice (96 percent of which was from India).[7] GoN estimates of official exports for the same year were recorded as 338 MT.[8] Accurate import numbers are unavailable, primarily because there are reportedly large volumes of informal rice imports from India. GoN officials and Customs and Plant Quarantine Service working along the border report that informal imports are likely 50-60 percent of official imports.

GoN and Government of India domestic and bilateral trade policies also influence the relative rice production costs and therefore the availability and affordability of rice.

Food aid. At present, under a Protracted Recovery and Relief Operation (PRRO), WFP distributes rice to communities in Hill and Mountain districts where rice is not traditionally produced, or produced only in limited volumes and previously consumed mostly for special occasions. Rice constitutes just under 70 percent of the food WFP has procured, in volume terms, between 2009-13.[9] The bulk of the rice has been purchased from neighboring India.

Concerns have been voiced that direct distribution of rice has changed consumption habits/preferences of people in Hill and Mountain communities where other cereals are traditionally grown, thus increasing dependency on markets and possibly

2 GoN, 2010, *The Food Security Atlas of Nepal*.

3 Industrial processors are beginning to open facilities for drying and processing non-timber forest products. The team visited one large industrial complex (KL Dugar in Nepalgunj) where at least 50 herbs were being processed, many for export.

4 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

5 Table 37 and Figure 33 in GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

6 Table 11.7 in GoN, 2012, *Statistical Information on Nepalese Agriculture*.

7 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

8 Ibid.

9 WFP/Nepal. See Chapter 3, Section 3.6.1 for more details.

food aid. Many factors appear to have caused this shift away from certain traditional grains and towards milled rice. Though there may be some influence on beneficiary preferences through these rice distributions, evidence from market analysis suggests that those Hill and Mountain communities targeted have been gradually shifting towards rice as incomes rise and the road network extends further into once isolated areas. Determining whether a shift towards rice is a result of WFP distributions as opposed to rising incomes or a change in relative prices would require more in-depth quantitative and qualitative research than was possible during the team's rapid assessment.

The team is unaware of any past or current monetization of rice in Nepal.

Government policy. The GoN considers rice the most important staple to monitor, and regularly intervenes on the production and/or marketing side to ensure access for Nepali consumers.

The Nepal Food Corporation (NFC) holds a national grain reserve (currently all rice), under which GoN officials report 33,000 MT of rice are currently held; this volume includes a 8,000 MT South Asian Association for Regional Cooperation requirement.

The NFC provides transport-subsidized rice to 23 food-deficit districts in the Hills and Mountains. Notably, while this rice is intended to target the poor, there is widespread agreement among key stakeholders[10] that NFC rice fails to reach consumers outside of DHQs, and tends to be purchased by civil servants and military staff stationed in receiving DHQs.

The Nepal-India Trade Treaty allows for free trade in primary agricultural commodities between the two countries, meaning that goods are zero-rated for customs, and there are no quotas.[11] Despite the treaty, Nepal has typically levied other taxes on basic agricultural commodities, such as an agricultural development tax and a local development tax. Additionally, the GoN currently levies an agriculture tax of five percent on the import of both paddy and milled rice.[12] Such a policy affects the profitability of agroindustrial businesses and the ultimate retail price for Nepali consumers; these duties are also at cross purposes with efforts to support employment or value addition in country since it dissuades the importation of paddy by mills that, instead, would make greater profits by importing milled rice from India.

Marketing. If held to the standard of other countries, the rice marketing chain in Nepal does not appear organized, but this system is the most sophisticated when compared to the country's markets for other domestic and imported cereals. This observation is perhaps not surprising given that rice is the most preferred staple by all classes across the country.

10 Including GoN representatives, traders, rice millers, I/NGO staff, and consumers.

11 FAO/WFP, 2007, CFSAM.

12 Personal communication with GoN customs officials, July 2013.

According to rice industry informants and recent news articles,[13] the number of rice mills in the Terai has declined considerably in the last few years as Nepali millers struggle to compete with formal and informal imports from India; for those who remain, sales have dropped considerably.

Interventions from the Government of India affect the Indian rice market and these actions in turn influence the rice market in Nepal.

Photo by Fintrac Inc.

Women are typically responsible for firewood and fodder collection, and tend to carry heavy loads, often up and down steep mountain roads. Baitadi District, Nepal, July 2013.

Maize. Maize is second to rice as the most important crop in Nepal. Especially in the Hills, maize represents a significant food source. Roughly 80 percent of domestic maize goes into food, while the remaining 20 percent goes to feed according to industry experts.[14]

Maize is eaten as porridge (*makai ko khir),* grits (*makai ko dhido)*, roughly ground and steamed like rice, and bread (*roti, chapati*). Rural HHs and urban street vendors also roast maize on the cob. Wealthier HHs typically consume maize only as popcorn.

13 Personal communication with rice industry informants, July 2013; see also, for example, Himalayan Post, January 23, 2013, "Import of Indian rice puts Nepalese rice industry at risk." http://www.thehimalayantimes.com/fullNews.php?headline=Import+of+Indian+rice+puts+Nepalese+rice+industry+at+risk&NewsID=363045;" Bihar mill surge eating into Nepal rice industry" September 1, 2013 news article, http://www.ekantipur.com/2013/09/01/business/bihar-mill-surge-eating-into-nepal-rice-industry/377342.html; and "Rice imports hurt domestic mills," Kathmandu Post, August 18, 2013 http://www.ekantipur.com/the-kathmandu-post/2013/08/18/money/rice-imports-hurt-domestic-mills/252565.html.

14 Nepal Feed Industry Association 2013 calendar; Personal communication with maize and feed industry representatives, July 2013.

Across the country, maize-based beer is consumed during special occasions; most of the brewing occurs in the Hills.

People in the Mid-Hills and Mountains typically eat maize two meals a day at least, unless they can afford to buy rice. In these areas, people typically take roast maize (on the cob) as their snack. Poor people in the cities also eat maize when they cannot afford rice.

There is a large and growing demand for maize by the feed industry, primarily driven by the increase in poultry production. Industry informants estimate the requirement for feed is 407,525 MT per year, 60 percent of which is imported.[15]

Production. Maize is a smallholder crop in Nepal, primarily grown under rain fed conditions. There are no large scale commercial farms or contract farming operations.

Wheat. Wheat contributes to 25 percent of the total cereal requirement and may be considered the third most important food crop in Nepal.[16] Primarily, wheat grain is used to produce *atta* (whole wheat flour) and *maida* (refined flour) for *roti*, *chapati*, and *parantha*. Wheat flour can also be used for *suji*, the base for a porridge called *haluwa*.[17] Wealthier households eat *roti* or *chapati* with *dal* (lentil soup) or meat curry, while poorer households make due with *chapati*, salt, and hot pepper. Wheat is also processed into noodles and pasta, but this activity mostly involves imported wheat. Finally, wheat is used extensively by confectionary industries (cookies, donuts, etc.), all of which are consumed by wealthier consumers or during special occasions.

Wheat is most commonly eaten in the Terai, where it is grown in surplus, and to a lessor but still important extent in the Mid-Hills. Households typically consume wheat during the five-six months following harvest and before the summer rice crop becomes available.

Production. Wheat is a smallholder crop in Nepal, and can be grown from the Terai up to about 9,000 feet above sea level. The Terai accounts for most of the production (65 percent). Wheat is mostly rain fed, and there are no large-scale commercial farms nor are there contract farming operations. According to GoN statistics, wheat production has been slowly increasing, and stood at just over 1.45 million MT of grain for NFY11-12.[18]

Imports and exports. Shortfalls are quite easily made up through imports of wheat grain and wheat flour from India, which fill the gap during the three-month lean season in Nepal.[19] There are negligible recorded imports and exports of wheat or wheat flour (less than 7,000 MT and 2,300 MT in NFY2011/12, respectively).[20] However, given the porous borders with India, wheat and its byproducts (in particular, wheat bran for livestock feed) could occasionally be exported via informal channels, depending on relative prices. Officially recorded exports of wheat bran that same year were 7,038 MT.[21]

Food aid. USAID-BEST is unaware of any food assistance programs that provide wheat in either grain or processed form, or that monetize wheat or wheat flour. The WFP school feeding program previously provided locally produced wheat soy blend (WSB), called *unilito,* in distribution programs but ceased doing so with a shift in funding; at present, WFP provides CSB and no wheat-based products.

Marketing. There are hundreds of mills of varying sizes that process and specialize in wheat; four-five could be considered large industrial mills. Homestead/village-level mills use human power or water power. Medium-scale and large-scale industrial mills are typically located in DHQs or otherwise urban areas.

Regardless of mill size, farmers typically deliver wheat grain to the mill and are paid cash; however, occasionally, small collectors sometimes also aggregate and sell grain to traders or small-/medium-scale millers.

Barley. Barley is an important cereal crop in the Hills and Mountains where it is grown, and is one of the six cereals included in the national cereal balance calculation. Though not commonly consumed in grain form, barley is used for bread (*roti*), roasted barley powder (as a coffee substitute, mixed in tea or just swallowed with water), and alcohol. Depending on the season, barley may be eaten with potatoes, buckwheat, or meat.

HHs tend to consume their entire self-production, generally over a three-four month period following harvest. In the High-Mountains, consumers traditionally convert barley to alcohol so as to cope with the cold. People in the Terai and Foot-Hills infrequently consume barley in any form.

Production. Official statistics report that 11,856 MT of barley were produced in NFY11-12, with the relative majority grown in the Mid- and Far-West Mountains (56 percent of total production) and Mid- and Far-West Hills (20 percent of total production). A mere 5 percent of total production in this period occurred in the Terai.[22]

15 Personal communication with poultry feed industry representatives, July 2013.

16 According to GoN food availability and requirement figures for 2010/11.

17 *Haluwa* is made from coarse wheat flour mixed with ghee and roasted; over time it becomes a soft rich porridge to which sugar is added and often eaten as a breakfast food. The GoN and WFP serve a version of *haluwa* in the school meals program.

18 The same GoN dataset indicates production grew from 1,243,874 MT in 2009/10 to 1,399,970 MT in 2010/11. Data from FAO STAT and USDA PSD indicate wheat production has averaged more, just over 1.5 million MT per year during 2007-11.

19 Personal communications with wheat mill representatives, July 2013.

20 FAOSTAT indicates Nepal exported 43,950 MT of grain in 2009, but otherwise exports appear to be typically below 100 MT per year. In 2009, exports of wheat flour were recorded as 3,941 MT; flour exports other years also appear quote negligible (between 51 MT and 2,632 MT, against production of about 1.5 million MT.)

21 Ibid.

22 GoN, Agricultural Marketing Information Bulletin (Special Issue - 2012).

In the Hills, barley is grown as a winter crop, often followed by a summer crop of maize, rice, or buckwheat. In the Mountains, barley is planted in the spring, and takes up to ten months to mature before harvest. Barley straw is an important livestock feed and adds to the value of the crop, especially in those places where livestock feed is limited.[23]

Imports and exports. There are minimal recorded imports of barley (47 MT in FY11-12, all from India),[24] and no recently recorded exports of barley.

Food aid. No known food assistance programs include barley in a ration.

Marketing. Marketing of this commodity appears to be primarily local or regional, and therefore limited in geographic scope.

Millet. Millet is considered an important food security crop in Nepal, and is among the seven crops now included in the GoN cereal balance calculations.[25] There are two types of millet produced and consumed in Nepal: finger millet and foxtail millet.

Finger millet is cultivated primarily in the Terai Foot-Hills and Mid-Hills, either as a relay crop with maize or as a mono crop. Finger millet is a relatively expensive crop. As a high-energy food, finger millet is desirable in the Mid-Hills but it is eaten mostly by medium- and high-income groups. Not surprisingly, while it is grown for own consumption, finger millet is primarily viewed as a cash crop to meet strong demand.

Photo by Fintrac Inc.

In monsoon season, road transport is regularly disrupted. Here, after a causeway was washed out following a sudden downpour in the mountains, crowds of travelers were forced to wait for the floods to recede. Dang Valley, Nepal, July 2013.

Most finger millet (60-70 percent) goes into *raksi* (millet whiskey) and *tongba* (hot millet beer). However, finger millet is also used as flour for *roti* or as a thick porridge called *kodo ko dhido*.[26]

Foxtail millet is grown in the higher Mid-Hills (4,000 feet and above) and Mountain areas, and can be grown on poorer soil in harsher climates than many other cereals, including finger millet and barley.

Although the two millets can be prepared and consumed in the same manner, foxtail millet is considered a much less preferred cereal. Within production areas, poor households will consume foxtail millet during its harvest time.

Production. Millet production has remained very stable at an average of just over 236,000 MT per year. Unfortunately, available statistics do not distinguish between finger and foxtail millet, so it is unclear if production patterns for both are equally stable.

Finger millet is typically planted as a relay crop (mostly after maize) in the Hills. In the Mountains, foxtail millet is typically planted in the Mountains in April/May as a main summer crop, also harvested in October/November.

Imports and exports. Nepal formally imported 19,013 MT of millet in NFY11-12, all of which came from India.[27] Millet is not an important export crop. In FY11-12 for example, only 35 MT of millet was exported to Hong Kong. Based on interviews with border officials and commercial industry actors, USAID-BEST believes informal trade likely contributes to net imports of millet, but was unable to ascertain a possible volume.

Food aid. No known food assistance programs include millet in a ration.

Marketing. Marketing of both finger millet and foxtail millet appears to be primarily local or regional, and therefore limited in geographic scope. The two share similar marketing patterns. producers tend to locally mill their own millet for home use, or they will sell to collectors/traders who then sell to local mills. Products are then generally sold to traders/retailers who then reach consumers. As for brewing millet, this activity is only done at the household and village levels; there is no industrial brewing.

Buckwheat. Though buckwheat can grow nearly everywhere in Nepal and farmers do increase production with demand, it is most frequently grown and consumed in the High- Hills and Mountains. Producers are the main consumers of buckwheat (consuming 40 percent of total production), while the remaining 60 percent is marketed through small traders, some of whom export the grain to Asian neighbors. Some HHs in the Mid-Hills eat it sparingly.

Bitter buckwheat in the High-Hills grows wild while sweet buckwheat must be cultivated. HHs typically mix the two types

23 Riley and Singh, 1991, "Diversity and Stability of Barley in Nepal," accessible via http://idl-bnc.idrc.ca/dspace/bitstream/10625/6009/1/40369.pdf.

24 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

25 GoN, Agricultural Marketing Information Bulletin (Special Issue - 2012).

26 The porridge is typically eaten with curry; most local restaurants in the Kathmandu area appear to serve it with chicken curry.

27 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

to produce flour for bread, pancakes, and noodles. Wealthier HHs tend to eat buckwheat as pancakes or noodles.

According to GoN statistics, there was just over 7,200 MT of buckwheat produced in 2010-11. Much of this production was concentrated in the Mountains of the West, Mid-, and Far-West.

Imports and exports. Grain industry representatives report that occasional limited marketable surpluses are exported to Japan and/or Korea, where buckwheat is prized for its use in noodle (*soba*) production.[28] For 2011-12, only 680 MT of buckwheat was imported, which is less than 10 percent of domestic production volumes and almost all of these imports originate from India. That same year, official records show 527 MT of buckwheat was exported to India, leaving net trade closer to 150 MT, or just over 2 percent of domestic production.[29]

Food aid. No known food assistance programs include buckwheat in a ration, and the team is unaware of any monetizations involving buckwheat.

Marketing. Marketing of buckwheat appears to be primarily local or regional, or specifically for the direct export market.

Grain Legumes. Alongside rice, maize, or wheat, a multitude of grain legumes (e.g., pigeon peas, lentils, black grams, soybeans) make up the typical dish for many HHs across the country.

Many different types are grown in-country, and while HHs have preferences, they appear to easily substitute among them depending on relative prices. While figures are unavailable, it appears that most grain legumes are grown and consumed on the farm or within local areas, and that most marketed legumes are from imports, often from Australia, Turkey, and Ukraine, among other major exporters. Despite efforts to procure locally, WFP has been able to meet less than 5 percent of its requirements (less than 500 MT) within Nepal over the period 2009-13.

The marketing of domestic legumes is based on small-scale production and trading. Larger processors buy from collectors and provide minimal value-addition (cleaning, minimal grading, and bagging). Markets for these goods appear competitive. The market for imported legumes also seems competitive because actors of all sizes are able to enter and exit the business and access price information.

Inadequate controls at the borders may hurt farmers who are net-sellers of legumes. However, the availability of imports from many external markets to meet internal demand helps to both dampen and smooth seasonal fluctuations in market prices, which keeps price levels more affordable for consumers, including the many farmers who are net-buyers.

28 Personal communication with multiple grain industry representatives, July 2013.

29 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

Potatoes. Consumption of potatoes in Nepal is among the highest in the world, according to the International Potato Center.[30] Potatoes are a staple food crop in the High- Hills and Mountains, and a common ingredient in many side dishes (especially vegetable curries) throughout the rest of the country. Although potatoes are eaten nearly every day by all but the very poorest households, they are not included in the GoN food balance sheet calculation because they are not considered a staple/cereal.

Photo by Fintrac Inc.

Though pulses are widely available in markets across the country, most are imported, generally from Australia, India, Turkey, and Ukraine. Consumption of domestic pulses is limited in volume, and generally restricted to production areas. Kathmandu, Nepal, July 2013.

In the High-Hills, potatoes are often eaten boiled, baked, or roasted, and served as a rice substitute. Poor HHs may eat a potato with salt and chili powder as a meal while wealthier HHs may consume it fried or in a curry. In the Terai, people eat *parantha* (potatoes mixed with wheat bread), pan-fried potatoes, or *pokori* (potato mixed with vegetables and deep fried, a common snack food). HHs in the Hills commonly consume potato with meat, bread, and alcohol.

According to recent HH surveys, potato consumption has been increasing rapidly. The Nepal Thematic Report on Food Security and Nutrition 2013 reports a 40 percent increase in consumption between 2003-04 and 2010-11.[31]

Potatoes are grown fairly extensively throughout the country, and the ability to grow potatoes in all three agroecological zones and from east to west means that potatoes can be planted and harvested throughout the year. In the Terai and Foot-Hills potatoes are a winter crop, while in the High- Hills and Mountains it is a summer crop; they can be planted as a spring or autumn crop in the Mid-Hills.[32]

30 International Potato Center, 2006, World Potato Atlas. https://research.cip.cgiar.org/confluence/display/wpa/Nepal, accessed September 13 A.D.

31 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

32 International Potato Center, 2006, World Potato Atlas. https://research.cip.cgiar.org/confluence/display/wpa/Nepal, accessed September 13 A.D.

Edible Oils. Traditional tastes and increased health consciousness of wealthier consumers drive the edible oil market. The majority of Nepali, especially those in rural areas, appear to strongly prefer mustard oil for the preparation of traditional foods. In urban areas, consumers tend to purchase more expensive sunflower and soybean oils because of perceived health benefits, but maintain a fondness for mustard's pungent flavor. Imported palm oils provide a less expensive alternative for urban and rural consumers.

According to one market report, Nepal is now dependent on imports of soybean and palm oil to meet more than 3/4 of market demand.[33] Oil industry representatives indicate mustard oil may still hold more market share, though imported mustard seed has become relatively important. Regardless of individual oils' contribution to demand, overall consumption of oil and ghee (clarified butter) has increased nearly 100 percent in the last decade, according to survey findings from the NLSS.[34]

Photo by Fintrac Inc.

Many wholesalers have either electronic or manual scales, and a price board. Kathmandu, Nepal, July 2013.

1.2.4 Characteristics of Market Sites

USAID-BEST selected markets based on their size and the volume of major commodities (including rice, maize, wheat, grain legumes (lentils and pigeon peas), edible oil, and other important cereals (barley, buckwheat, and millet)) traded. The objective was to visit markets in a cross section of cereal surplus and deficit areas across Terai and Hills communities. In all, the team visited 15 markets across Nepal. Importantly, the team did not visit markets across the entire country (for example, there were no visits to Mountain communities because the field visit coincided with monsoon season). Readers should exercise appropriate caution when interpreting the findings herein.

From the markets observed in the field visit, USAID-BEST arrived at several conclusions: 1) Food supply appears adequate for imported and locally produced commodities even though the availability fluctuates greatly and market prices can be volatile; 2) Marketed supply tends to flow within development regions and there is often a segmentation of the national market into West, Central, and East; 3) Informal trade and unequal trade relations with India significantly affects the staple food market; 4) Local markets across the country are often situated in DHQs and are almost exclusively formal physical structures with signage and clear boundaries between vendors; and 5) There is widespread availability of credit at all levels of the marketing chain that is interest free for periods typically ranging from 15-60 days, but can go upwards to 90 days in more isolated areas.

1.3. OVERVIEW OF FOOD SECURITY PROGRAMS

This section summarizes in brief the existing major programs and projects as of July 2013 that target food insecurity and would be most relevant to inform a potential Title II program in Nepal. Chapter 3 presents further details on this topic.

1.3.1 Programming Trends

Donors and development actors follow numerous trends in the implementation and focus of their food security programs. These trends include: geographically targeting the Mid- and Far-West, shifting from subsidy-based transfers to awareness and capacity building, prioritizing programs that concentrate on building and rehabilitating infrastructure, focusing on advocating the right to food, using cash transfers in public works projects, and working through local organizations.

1.3.2 Donors

Currently, USAID supports a Feed the Future project, a Global Health Initiative, a Global Climate Change project and is designing a basic education program in Nepal. WFP is the only actor importing and transporting food aid. USDA is funding a McGovern-Dole International Food for Education and Child Nutrition award to WFP for school feeding. The GoN also runs a large public works project that compensates labor in food and cash. The World Bank, the UK Department for International Development, and the European Union (EU) are also funding agricultural development, infrastructure, and food security projects.

1.3.3 Local and Regional Procurement

WFP procures food aid both locally and regionally. WFP procures some pulses, ghee, rice, sugar, and vegetable oil from local suppliers. WFP was procuring a blended food (SuperCereal) from local processors for distribution in their Maternal Child Health and Nutrition (MCHN) and school meal programs but the procurement is currently on hold due to funding restrictions. WFP is purchasing numerous commodities

33 http://www.nepalsharemarket.com/Nepalsharemarket/Nepse/Analysis/news/news.aspx?news_id=NEW-005757.

34 Found in GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

from India (especially rice) and from other global exporting countries.

1.3.4 Cash Transfers

WFP has been implementing cash-for-asset (CFA) activities since 2007 in select areas. On average, each beneficiary receives US$2.50 per day for eight hours worked over a 60-day period in the lean season. The daily rate varies by district and year but it is theoretically based on 80 percent of the government-established daily rate for unskilled labor in that district. Additionally, the GoN public works project is now integrating cash transfers with the food transfers.

1.3.5 Vouchers

Vouchers have not been commonly used in Nepal. The EU funded one food voucher project in 2010-11. The vouchers were tied to rice, wheat, maize, oil, and/or salt. This project was not replicated or scaled up due to lack of funding at the time, but it does provide some lessons learned for future voucher-based schemes (discussed in Chapter 3).

1.4. RECOMMENDATIONS FOR PROGRAM DESIGN

The following summary of Chapter 4 presents recommendations for the design of a potential Title II program. Food insecurity in Nepal is the result of a growing population, stagnant agricultural production, poverty, frequent environmental challenges, poor sanitation and hygiene, and poor feeding practices.

1.4.1 Seasonal Targeting

Nepal has two agricultural lean periods per year: a summer lean period (July-August) and a winter lean period (February-April) with some variation depending on location.[35] The lean periods are the months when it is most appropriate to implement FFA/CFA projects because labor is available, prices are relatively high, and the transfers may discourage out migration.

1.4.2 Household / Individual Targeting

HH targeting in Nepal poses some challenges. One issue is that the overlap of donor projects, especially in the Mid- and Far-West leads to competition among the various donors. Consequently, some HHs may divert their time away from previous HH responsibilities. Moreover, some HHs may benefit twice while others none at all. Secondly, due to traditional social structures and systems in the communities, the selection of HHs by community groups and user committees does not guarantee inclusion of the most disadvantaged. Title II would have to invest financial resources in targeting to understand the poverty and food insecurity challenges by district, VDC, and HH level. Self-targeting can be an effective approach to target the poorest households when the food/cash is valued at an amount that would deter 'better off' HHs from participating.

1.4.3 Commodity Selection

USAID-BEST recommends against the inclusion of rice in a FFA or MCHN ration for a development food assistance program. Rather, these rations could include transoceanic wheat grain and pulses; transoceanic CSB or local WSB (*unilito*) would be appropriate as a monthly MCHN ration to pregnant and lactating women and children under two. Although USAID-BEST recommends against the inclusion of vegetable oil in a FFA ration, it could be considered for a MCHN ration as a nutritional supplement. USAID/Nepal notes that there may be political sensitivity to import of genetically modified organisms (GMO) products for use in food rations.

1.4.4 Local Procurement

Cash transfers and vouchers are feasible since there are functioning rural and urban markets, and so either would be a good option since food is available in the marketplace.

1.5. ADEQUACY OF PORTS, TRANSPORT, AND STORAGE

This section summarizes the main points later detailed in Chapter 5 on the adequacy of ports, transport, and storage for a potential Title II development program in Nepal.

Photo by Fintrac Inc.

This colorfully painted truck is one of the many 25-30 metric ton capacity vehicles that travel the roads daily to bring supplies from mills to markets across Nepal, or to exchange goods with India. Nepalgunj, Nepal, July 2013.

1.5.1 Ports

As Nepal is a landlocked country, transoceanic shipments typically arrive in-country via the Port of Kolkata (India). The Port of Kolkata appears to operate efficiently and on average it takes about three-four days for humanitarian cargo to receive clearance.

35 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

1.5.2 Transport

The limited road network in Nepal serves as the primary in-country transport for traders, but access to many Hill and most Mountain areas remains poor as there is often a lack of even the most basic earthen roads. During the monsoon season, heavy rains often wash out these roads and can delay traffic from a few hours to a few days. Additionally, routes in the Hills wind through narrow and mountainous terrain, and transporters face the possibility of landslides blocking traffic for several hours.

1.5.3 Storage

Although facilities at the Port of Kolkata are adequate for storing goods, key informants in the public and private sector reported that once commodities arrive in Nepal, storage poses the greatest challenge. The NFC, a government body, maintains the majority of domestic commercial storage units, with an estimated total of 164 warehouses across the country and a combined installed capacity of 99,310 MT. However, many of these storage sites are in poor condition and/or are located far from newly constructed roads.

1.5.4 Implications for Title II Programming

Ports. The Port of Kolkata is the only practical choice for transoceanic food aid destined for Nepal. According to WFP, the average cost for WFP to move goods from the Port of Kolkata to its main warehouse in Nepalgunj is US$110 per MT.

Transport. Title II awardees need to consider the limited transportation options due to poor road conditions, congestion, slow traffic, lack of railways, landslides, flooded roads due to heavy rains in the monsoon season, and the overall absence of roads in many parts of the country. Given the difficulties of inland transport, future Title II partners should consider entering into an arrangement with WFP whereby WFP would manage, on behalf of the awardees, the relationship and negotiation with private transporters. In this manner, a potential Title II program would be working with an experienced logistics partner knowledgeable of the various transport options needed for successful delivery of food aid.

Storage. Humanitarian aid organizations must rent space from commercial or government warehouses. GoN storage via the NFC could be rented but the poor quality of these facilities would require renovation. The process of procuring land to construct a new warehouse would be costly and the necessary paperwork could delay the implementation process for a new Title II program.

CHAPTER 2
OVERVIEW OF LOCAL MARKETS

A shopkeeper neatly displays a wide variety of goods for sale, including pulses, herbs, oils, spices, and rice. Nepalgunj, Nepal, 2013. Photo by Fintrac Inc.

2.1. INTRODUCTION

The Bellmon Amendment requires that donations of US food aid avoid harming local markets in recipient countries. This chapter provides an overview of local markets in Nepal so as to better enable US government (USG) representatives in making an informed Bellmon determination prior to a potential Title II program in the country.

To inform the analysis, USAID-BEST conducted desk research; interviewed key government, commercial, donor, and international/non-governmental organization (I/NGO) stakeholders; and visited local markets across the country during a July 2013 field visit.

The chapter first outlines the underlying causes of the structural food deficit in Nepal and examines the geographic distribution of the food deficit across the country. Then, the analysis turns to focus on the structure, conduct, and performance of major staple food markets: rice, maize, wheat, millets, buckwheat, barley, potatoes, pulses, and edible oil.

2.2. NATIONAL FOOD DEFICITS

This section provides an overview of Nepal's structural food deficit at the national level and discusses some of the important national food security trends: changing consumption patterns and an increasing reliance on imports.

2.2.1 Situational Overview

Nepal enjoys a diverse agroecology that allows production of many different cereals, legumes, vegetables, and oil crops. The Himalayan nation and former Hindu kingdom was largely food self-sufficient despite the prevalence of subsistence farming. In the last several decades, however, the country has become increasing reliant on imports to meet its food needs. A number of factors have caused this transition, including a reliance on rain-fed agriculture, harsh topography and geographically limited arable land, vulnerability to natural disasters (including floods, landslides, droughts, earthquakes, and crop disease), poor infrastructure (especially road networks and lack of storage), a growing population, small and fragmented landholdings, a decades long civil war, and ongoing weakness in political institutions. Lack of any manufacturing base, and only limited off-farm income opportunities, have created tremendous access issues. Millions of Nepalese have migrated to the Gulf states, Malaysia, or nearby India in search of work. The inflow of remittances (estimated at nearly 1/4 of GDP) has propped up the economy, particularly in recent years, but leaves Nepal extremely vulnerable to any economic or political shocks occurring in those countries.

To a great extent, food insecurity due to availability and access constraints is highly correlated with residence. The three ecological belts -- Mountains, Hills, and Terai -- run east to west and, in broad terms, largely determine production potential and labor opportunities as well as vulnerability to disaster. Although nationally, the main cereals -- rice, wheat, maize, and millet -- are

the staples for Nepal's 29 million people, surpluses tend to be concentrated in the southern 1/3 of the country. (Please refer to map and description of administration divisions at the beginning of Chapter 1.)

The fertile alluvial plains along the southern portion running east to west, known as the Terai, are home to 48 percent of the population. While the Terai represents just 23 percent of the area,[36] this ecological zone produces more than 50 percent of cereal production - including 70 percent of Nepal's rice and 69 percent of its wheat.[37]

The Mid- and High-Hills (300 - 5,000 meters (m.)), running in the center of the country from east to west, cover just under 42 percent of the surface area,[38] contribute about 42 percent of national cereal production,[39] and are home to about 46 percent of the Nepali population.[40] Here, maize and millet are relatively more important.

The Mountains along the north rise from approximately 5,000 m. to nearly 9,000 m. above sea level. Most of the high snow-capped mountains, including the world's highest peak and Nepal's big tourist draw, Mt. Everest (*Sagarmatha*) are located in this region. The Mountains constitute about six percent of surface area, contribute about seven percent of total cereal production, and are home to about seven percent of the nation's people.

In good years, Nepal produces almost enough food grains to cover national requirements. However, the harsh terrain and lack of road networks in the Hills and Mountains limit the movement of marketed food from surplus areas elsewhere, and greatly increase the cost to consumers.

2.2.2 Changing Consumption Patterns

Although rice is the predominant and most preferred staple across the country, other grains and foods are eaten according to ecological zones. In most households (HHs), there are two meals a day with a snack in the afternoon. The first meal, eaten around 9:00-10:00AM is usually rice, wheat, or maize bread (depending on income and region). A preferred typical Nepali dish consists of rice (*bhat*), lentils or legumes (*dal*), and vegetables. More affluent families will also consume a porridge of lentils and vegetables while poorer HHs usually eat a porridge of one or the other. However, 1/2 of Nepali HHs consume vegetables less than four days per week and those who cannot afford both lentils and vegetables choose one over the other.[41] HHs do not usually consume meat. Some communities, because of religious beliefs, keep animals but refrain from killing them for food. The average diet does not typically include any kind of milk or curd. To cope with food availability and access issues, Nepali HHs will alter their consumption habits.

While the isolation of most communities outside of the accessible Terai region demands food self-sufficiency, as incomes improve and new road networks open, there is a growing trend towards increased reliance on markets and imports in particular. Specifically, market surveys indicate a shift in food consumption patterns of grains; as incomes increase and new transport routes bring the cost of food down, Nepali HHs are increasing their demand for more and better quality rice.

2.2.3 Increasing Reliance on Imports

A review of production and trade data suggests the Government of Nepal (GoN) overestimates domestic production and underestimates imports. Therefore, the government fails to highlight Nepal's increasing reliance on imports to meet daily consumption needs of its citizenry.

The GoN food balance sheet for 2011-12 estimated 6,020,295 MT of total usable cereals (rice, maize, wheat, millet, barley or buckwheat) against a food requirement of 5,077,134 MT (using a population of 26,684,984). These numbers indicate a surplus of 943,161 MT.[42] That same year, official figures reported rice imports of approximately 382,000 MT. This disconnect between domestic production estimates and imports reveals a sizeable cereal deficit for that year, and the gap becomes more glaring if other official cereal imports, informal imports of rice and other cereals, and a more precise population figure are taken into account.[43]

For 2012-13, the GoN expects a 400,000 MT surplus, but market interviews suggest formal food imports will continue to rise. Moreover, depending on area, commercial actors and GoN officials estimate informal trade represents 50-100 percent of the formal trade volume.

Taken together, the evidence points to little marketable surplus in Nepal, and suggests a country becoming increasingly reliant on imports as incomes and population increase, and consumption patterns shift.

2.3. LOCAL FOOD DEFICITS

2.3.1 Introduction

While at the national level, Nepal is almost self-sufficient in food crop production, the country suffers local food shortages on a transitory but nearly annual basis. The following analysis briefly outlines some of the primary reasons for these local deficits.

36 GoN, 2010, *The Food Security Atlas of Nepal*.

37 GoN, 2012, Statistical Information on Nepalese Agriculture.

38 GoN, 2010, *The Food Security Atlas of Nepal*.

39 GoN, 2012, Statistical Information on Nepalese Agriculture.

40 GoN, 2010, *The Food Security Atlas of Nepal*.

41 Ibid.

42 The GoN currently relies on a 1992 survey that estimated cereal requirements in the three zones as: 191 kg in Mountains, 201 kg in mid Hills, and 181 kg in Terai.

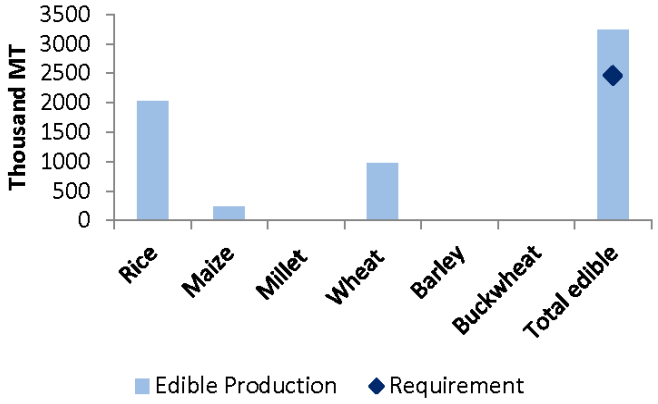
43 According to the most recent census, the population is estimated at 26.5 million, but some 1.9 million are believed to be outside the country, and so the requirement is presumably quite a bit lower than GoN figures suggest.

2.3.2 Availability

Spatial and temporal variation in food production affects food availability. The potential for surplus food production in Nepal is closely aligned with the three ecological zones (Terai, Hills, and Mountains).

Terai. The plains along the southern border with India are considered the agricultural breadbasket; the bulk of rice and wheat are produced in surplus in this zone. Despite population density, the Terai traditionally produces the surplus that feeds the Hills and Mountains. In 2011-12, for example, about 1/4 of its 3,241,000 MT of production was surplus (i.e., beyond the needs of the Terai population - see graph below).

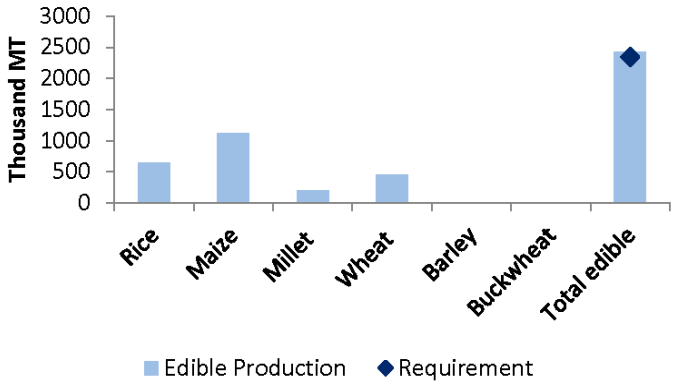
Figure 2. Terai Edible Grain Production and Requirement (thousand MT), 2011-12



Source: GoN, 2012, Statistical Information on Nepalese Agriculture 2011-12.

Hills. Food production potential in the Hills varies from east to west and depending on altitude; some districts are able to produce small surpluses while others are in severe deficit. Overall, the latest published figures indicate the Hills produce enough just to satisfy their own requirement (see chart below). Rural HHs in these regions usually consume local maize, wheat, and millet, along with local and Terai rice; in recent years, consumption habits have shifted and more food (especially rice) is imported.

Figure 3. Hills Edible Grain Production and Requirement (thousand MT), 2011-12

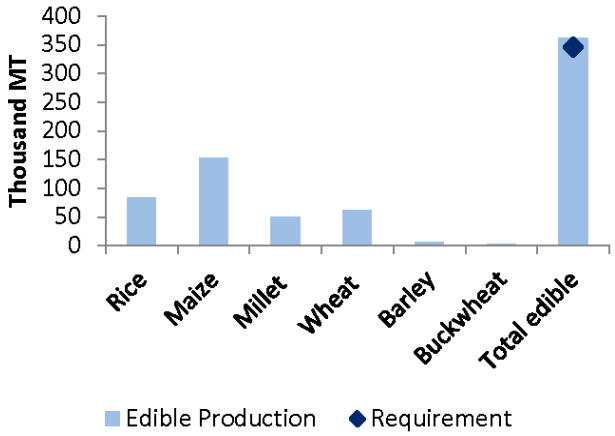


Source: GoN, 2012, Statistical Information on Nepalese Agriculture 2011-12.

Approximately 60 percent of the Mid-Hills (300-5,000 m.) is under irrigation using river diversion, which signifies an increased agriculture potential. However, in the High-Hills (5,000-9,000 m.), especially steep slopes and a large and growing population translate into ever shrinking plots, on less fertile and suitable land.

Mountains. In this zone, food requirements are considerably lower in volume terms because only about 7 percent of the population resides in this region. Local production of maize, millet, wheat, barley, and potatoes serve as the main staples grown and consumed. There is some red rice grown in the Mountains as well, but only in select areas (e.g., around Jumla). Although GoN data from 2011-12 indicate production balanced the requirements, there have been increasing imports into the Mountains due to rising incomes and evolving consumption patterns. Moreover, HHs in the Mountains are increasingly demanding white rice from either the Terai or India.

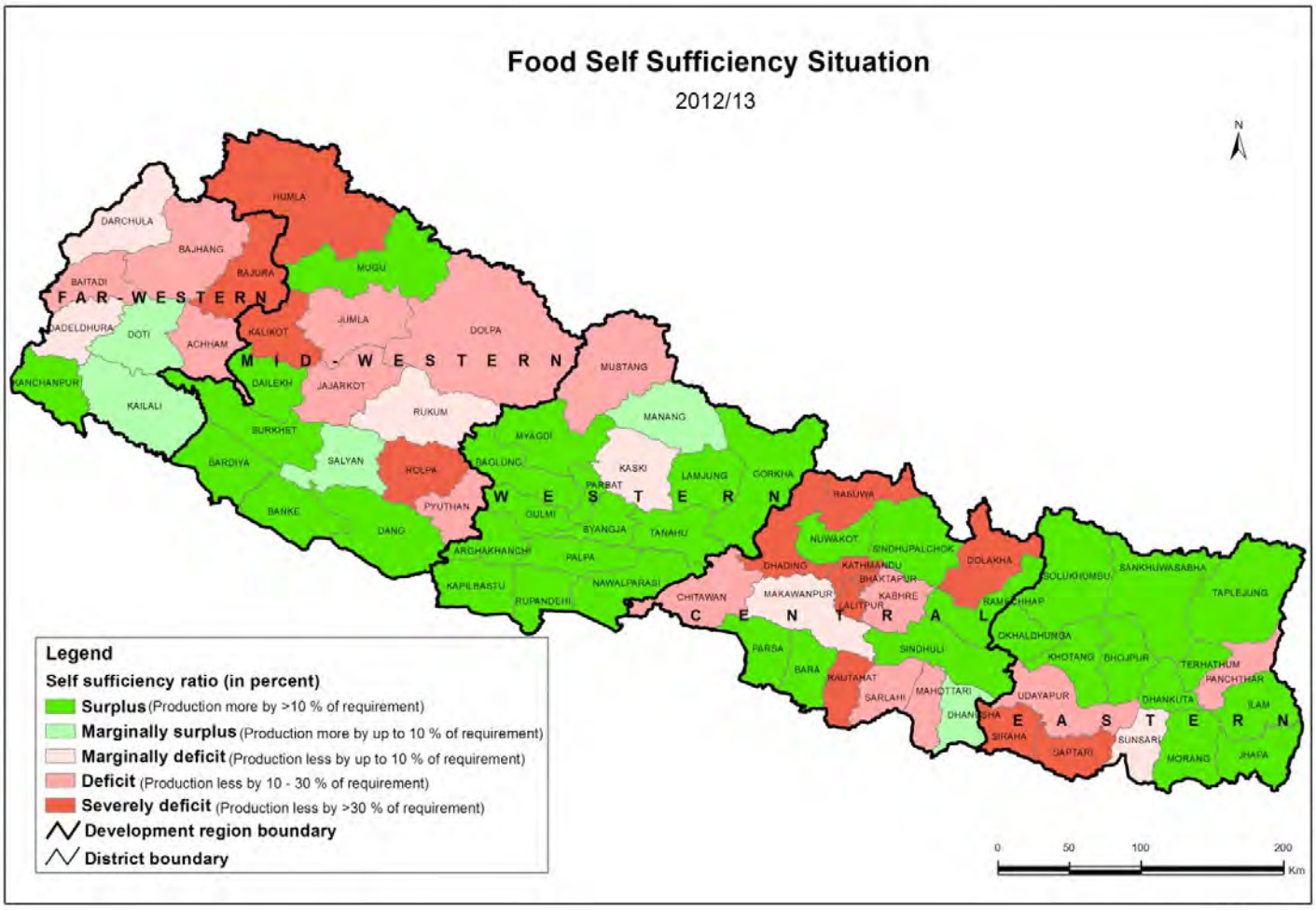
Figure 4. Mountain Edible Grain Production and Requirement (thousand MT), 2011-12



Source: GoN, 2012, Statistical Information on Nepalese Agriculture 2011-12.

A mapping of district-wide cereal production against population requirements provides an informative picture of the cereal self-sufficiency (and lack thereof) on a subnational level. With few exceptions, the districts able to produce a surplus of more than 10 percent of requirement are geographically concentrated along the Terai and in the Western and Eastern Hills, as illustrated in the map below (reproduced from WFP). Districts with severe cereal deficits (more than 30 percent below requirement) are concentrated in the Hills and Mountains and urban centers, as well as in some Terai districts in the Central and Eastern development regions.

Figure 5. Relative Cereal Self-Sufficiency By District, 2012/13



Source: WFP 2013.

Figure 6. Crop Calendar for Main Cereal Crops

Crop	Ecological Zones	Irrigation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Season
Paddy	Hills	Partially													Summer
		Year-round													Spring
	Terai	Rainfed													Summer
		Year-round													Spring
															Late summer*
Maize	Mountains	Irr./Rainfed													Summer
	Hills	Rainfed													Summer
		Irrigated													Spring
	Terai	Rainfed													Summer
		Year-round													Spring
															Winter
Millet	Mountains	Rainfed													Summer
	Hills	Rainfed													Summer
Wheat	Mountains	Rainfed													Winter
	Hills	Rainfed													Winter
	Terai	Rainfed**													Winter
Barley	Mountains	Rainfed													Winter
	Hills	Rainfed													Winter

Planting
Trans-Planting
Harvesting

* Recent option adopted by some farmers in the Eastern region, allowing two paddy crops a year.

** Supplemental irrigation is practiced in the east.

Note that the ecological zones do not fully reflect existing cropping patterns and the cropping calendar represents the most common practices within each zone. For instance, the lower parts of the Hills have similar cropping options as the adjacent Terai.

Note that for paddy, maize, and millet, the crop calendar is earlier in the Eastern region by approximately one month as compared to Far- and Mid-Western regions. Therefore, for the Eastern region the earlier dates presented in the crop calendar can be utilized while for the Far- and Mid-Western regions, the later dates are accurate. Wheat and barley are not affected.

Source: FAO/WFP, Special Report, FAO/WFP Food Security Assessment Mission to Nepal, July 2007.

Food shortages are not only highly localized, but they also tend to be highly seasonal as well. As the crop calendar below illustrates, in principle, the variation in agroecology and cropping patterns creates certain advantages because producers on one side of the country (East vs. West), or in one zone (e.g., Terai vs. Hills), can fill gaps caused by acute (lean season) shortages in other areas.

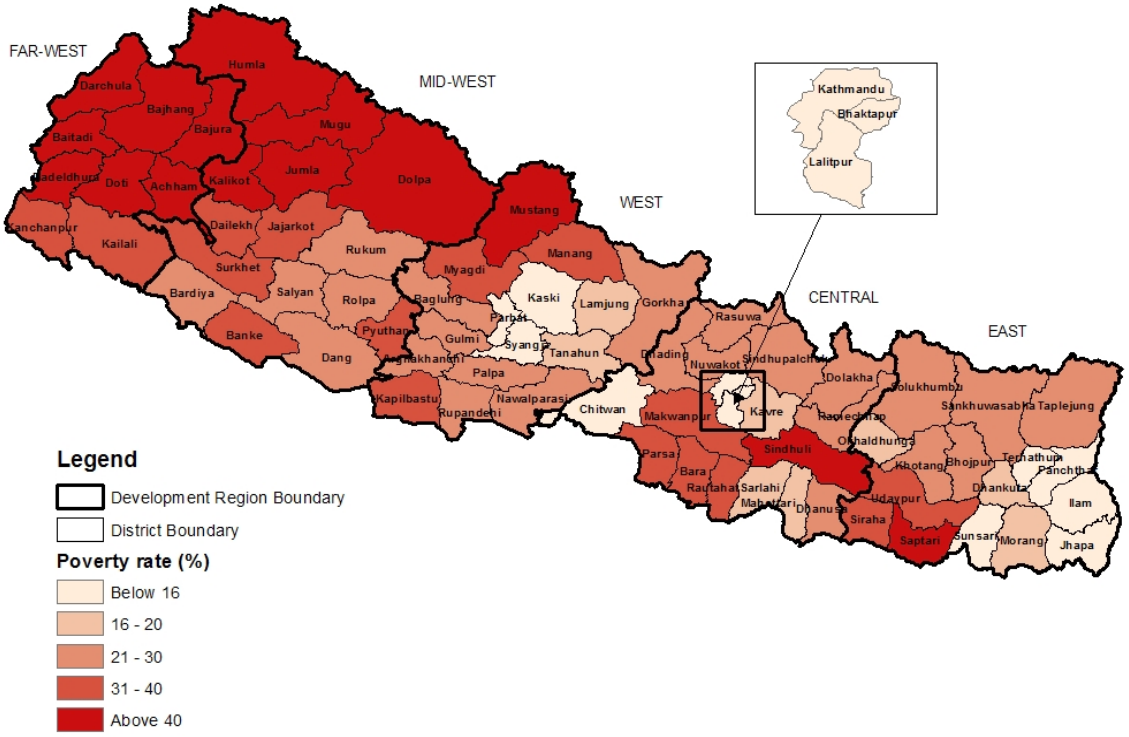
However, this type of domestic trade requires sufficient marketable surpluses, which are often hampered by frequent natural disasters (floods, droughts, hail storms, etc.) and crop disease. Economic access issues that restrict the flow of marketed foods from surplus to deficit areas compound these losses.

2.3.3 Access

HHs in deficit districts generally must depend on traders bringing marketed surpluses from the Terai or other areas to fill food gaps. Many of the HHs living in districts in the Central and Eastern Terai and Mid-Hills face lower prices due to greater physical accessibility to surplus areas, and thus lower transport costs. Yet, nationally, nearly 1/3 of Nepali HHs fall below the national poverty line. Many of the deficit districts in the Mid- and Far-West are among the poorest because of localized availability issues and problems with access, but even in the relatively more accessible Terai, there are many poverty pockets (see map on next page).[44]

44 GoN, 2010, *The Food Security Atlas of Nepal.*

Figure 7. Poverty Rate by District, 2011



Source: Created by USAID-BEST, using Central Bureau of Statistics of Nepal, Nepal Small Area Estimates of Poverty, 2011.

2.3.4 Summary

Availability and access contribute to local food deficits. Nepal's harsh topography and near complete lack of a road network in the Hills and Mountains demands greater self-sufficiency among the nearly 50 percent of Nepali who live in these areas. Even among those who are relatively closer to a market or road, poverty prevents HHs from being able to purchase sufficient food.

2.4. STRUCTURE, CONDUCT, AND PERFORMANCE OF FOOD MARKETS

Guided by the structure, conduct, and performance framework, this section describes the market for staple foods in Nepal. The analysis covers the major cereals (rice, maize, wheat, millet, buckwheat, and barley), potatoes, pulses, and edible oils. This examination aims to 1) explain the ability of the private sector to meet food needs through production and marketing alone, without the support of donors; and 2) assist decision makers in understanding the likely effect (positive, negative, or neutral) of food aid on local markets.

Each commodity market is organized in such a way as to describe the basic demand and supply characteristics of the market and the factors that influence market outcomes. Therefore, each section first starts by detailing the consumption patterns that influence demand; then follows a description of the domestic production, trade, and food aid that determine supply; the government policies that influence demand and supply; and finally the discussion concludes with some indicators of market performance.

2.4.1 Rice

Consumption. Rice is the most highly preferred staple in Nepal and faces a huge and growing demand. Additionally, rice plays a role in important religious festivals in the former Hindu kingdom and is positively associated with wealth and a high social status. On a national basis, per capita annual consumption is estimated at 120 kg.[45]

All socio-economic classes consume rice, though the volume, frequency, and quality varies according to income. Those who can afford rice eat it regularly at the highest quality they can afford; those who are poorer will eat rice whenever they have sufficient money; very poor HHs will generally only consume rice from their own production during harvest season and then switch to a less preferred staple (e.g., wheat, maize, millet, buckwheat) when the HH stock runs out.

Income permitting, the average HH typically eats two rice meals and one snack each day (often either rice, beaten rice, or roasted maize). Poorer HHs are more likely to eat one rice meal and a cheaper cereal for the second meal. Small broken rice is also made into flour from which people prepare bread-like pancakes or steamed rice dough, e.g., *dosa*, a pancake made out of rice flour and black gram flour; middle- and low-income classes eat these preparations.

45 Personal communication with industry representatives, July 2013.

STRUCTURE, CONDUCT, PERFORMANCE FRAMEWORK

One common way to frame a market analysis is by assessing the structure, conduct, and performance of the market. The Structure Conduct Performance (SCP)* framework recognizes links between the structure of a market (the number of buyers and sellers, the nature of the commodity, etc.), the conduct of participants (how prices are set, what rules are followed, etc.), and the eventual market performance that is judged by the degree to which the market meets a diverse set of goals. For example, a food marketing system may be considered as performing well if it is characterized by technical efficiency or affordable retail food prices. Market analysis using SCP can be well suited to low-cost, rapid appraisal techniques. For specific guidance on using an SCP framework in a food security analysis, please see FEWS NET's Market Guidance entitled Structure-Conduct-Performance and Food Security.

*Source: http://www.fews.net/docs/Publications/MT%20Guidance_S%20C%20P_No%202_En.pdf

Rice is almost always steamed. If in especially short supply, a thin gruel made out of coarse rice is prepared to allow everyone in the HH to have at least a small portion. Rice is most frequently eaten with a side of lentils (*dal*) in a popular dish called *dal bhat*;[46] this meal can also include meat or vegetable curry. Income permitting, people prefer a meal of rice, *dal*, and vegetables. In the Terai, many people eat rice with hot pepper and salt because they cannot afford *dal*. For some special occasions, people make a rice pudding (*kseer)* or *pulao* (rice mixed with vegetables, meat, nuts, and spices.)

Market interviews across the Terai and Hills reveal increased demand for rice, and higher quality varieties, in rice-deficit areas in the Hills and Mountains. While demand has been slowly growing over the last decades, more recent jumps in HH income in some Hill and Mountain communities appear to have allowed a greater shift towards the most prestigious and easiest to prepare staple. Additionally, a rising selling price for non-timber forest products,[47] remittances, and tourism have increased incomes in Hill and Mountain communities especially.

Production. Rice is produced across the country, and up to an altitude of about 2,500 m. above sea level; however, the Terai remains the undisputed rice belt. Only about 15 percent of rice is cultivated under irrigation, while 85 percent remains monsoon-dependent.

With average landholdings of less than 0.8 ha,[48] very few farmers have surplus rice to sell. The 2010-11 Nepal Living Standards Survey (NLSS) found that only 22 percent of paddy production is sold. The same survey reported that even the most productive farm HHs depend on the market for at least 40 percent of their calories.[49]

Rice-wheat production systems are common in the Terai, while rice-maize production systems are common in the Hills.

With some slight variation, monsoon rice is transplanted in June (East)/July (Mid- and Far-West), and harvested in September/October (East) or October/November (Mid- and Far-West). Irrigated rice in the Hills is planted about one month earlier and harvested slightly later (one-two months). In some parts of the Terai a second crop of irrigated rice follows the monsoon rice and is harvested in November/December.

Annual production was estimated at approximately 2,767,000 MT for Nepalese Fiscal Year (NFY) 11-12, a year in which locally produced rice contributed about 46 percent of the country's total cereal production.[50] Importantly, this production level compares to approximately 400,000 MT of official rice imports that same fiscal year; with the conservative assumption that informal imports represent another 50 percent of official imports, these volumes indicate that local rice production contributes closer to 40 percent of the country's total cereal supply.[51]

Nepali farmers grow more than 100 varieties, but traders generally group these varieties into about five categories and sell all rice under common names (see table below):

Table 1. Common Categories of Rice Marketed in Nepal

Name	Characteristic	Indicative Retail Price, July 2013 (NPR/kg)
Mota	Coarse rice	25-30
Sona Mansuli	Coarse, but finer than mota	35-45
Pokhreli Masino	Fine, long grain	55-60
Jeera Masino	Fine, short grain	65-70
Basmati	Fine, long grain	90-100

Source: USAID-BEST field research.

Rice cannot be grown at over 2,500 meters; at higher elevations in the mountainous Himalayas, farmers grow a long-grain red rice rather than the more popular varieties of white rice. Production is thus heavily concentrated along the southern plains, as shown in the map on next page.

46 In the Terai, rice is called *chamel* whether cooked or uncooked; in the Hills, rice is called *bhat* when cooked.

47 Industrial processors are beginning to open facilities for drying and processing non-timber forest products. The team visited one large industrial complex (KL Dugar in Nepalgunj) where at least 50 herbs were being processed, many for export.

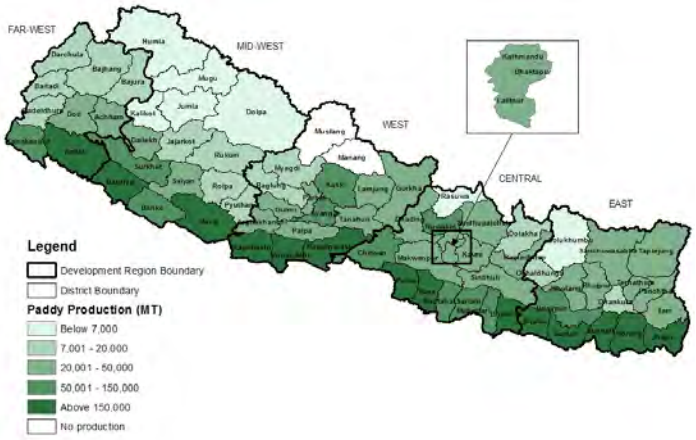
48 GoN, WFP, et al, 2013, Nepal Thematic Report on Food Security and Nutrition 2013.

49 Found in GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

50 Table 11.7 in GoN, 2012, *Statistical Information on Nepalese Agriculture*.

51 This calculation makes the simplifying assumption that no other cereal imports contribute to supply.

Figure 8. Paddy Production (MT), 2011-12



Source: Created by USAID-BEST, using data from Ministry of Agricultural Development (MoAD).

Imports and exports. The GoN recorded imports of nearly 400,000 MT in NFY11-12: 214,688 MT of paddy and 183,795 MT of milled/semi-milled rice (96 percent of which was from India).[52] GoN estimates of official exports for the same year were recorded as 338 MT.[53] Accurate import numbers are unavailable, primarily because there are reportedly large volumes of informal rice imports from India. GoN officials and Customs and Plant Quarantine Service staff working along the border report that informal imports are likely 50-60 percent of official imports.[54] GoN staff and commercial rice market actors both opined that Nepal depends on rice imports from India for six months of the year because domestic rice production is only sufficient to meet demand for six months.

According to GoN statistics, less than one MT of rice was exported in NFY11-12. However, according to news accounts, Nepal resumed rice exports in July last year after a reported "bumper harvest" which left the country with a surplus of 400-500,000 MT.[55]

GoN and Government of India domestic and bilateral trade policies also influence relative rice production costs and therefore the availability and affordability of rice in each country.

Food aid. WFP is the only agency that provides rice as in-kind food aid.

WFP has been distributing food aid in Nepal since 1964 and, up until recently, this food aid was distributed under emergency responses. At present, under a Protracted Recovery and Relief Operation (PRRO), WFP distributes rice to communities in Hill and Mountain districts where rice is not traditionally produced, or produced only in limited volumes and previously consumed mostly for special occasions. Rice constitutes just under 70 percent of the food WFP has procured, in volume terms, between 2009-13.[56] The bulk of the rice has been purchased from neighboring India.

Concerns have been voiced that direct distribution of rice has changed consumption habits/preferences of people in Hill and Mountain communities where other cereals are traditionally grown, thus increasing dependency on markets and possibly food aid. Many factors appear to have caused this shift away from certain traditional grains and towards milled rice. Though there may be some influence on beneficiary preferences through these rice distributions, evidence from market analysis suggests that those Hill and Mountain communities targeted have been gradually shifting towards rice as incomes rise and the road network extends further into once isolated areas. Determining whether a shift towards rice is a result of WFP distributions as opposed to rising incomes or a change in relative prices would require more in-depth quantitative and qualitative research than was possible during the team's rapid assessment.

The team is unaware of any past or current monetization of rice in Nepal.

Government policy. The GoN considers rice the most important staple to monitor, and regularly intervenes on the production and/or marketing side to ensure access for Nepali consumers.

The Nepal Food Corporation (NFC) holds a national grain reserve (currently all rice), under which GoN officials report 33,000 MT of rice are currently held; this volume includes a 8,000 MT South Asian Association for Regional Cooperation requirement.

The NFC provides transport-subsidized rice to 23 food-deficit districts. Notably, while this rice is intended to target the poor, there is widespread agreement among key stakeholders[57] that NFC rice fails to reach consumers outside of district headquarters (DHQ), and tends to be purchased by civil servants and military staff stationed in receiving DHQs.

The Japan International Cooperation Agency has reportedly donated to NFC some of the rice sold at subsidized prices by the NFC; this year, JICA reportedly donated 19,000 MT.[58]

The Nepal-India Trade Treaty allows for free trade in primary agricultural commodities between the two countries, meaning that goods are zero-rated for customs, and there are no quotas.[59] Despite the treaty, Nepal has typically levied other taxes on basic agricultural commodities, such as an agricultural development tax and a local development tax. Additionally, the GoN currently levies an agriculture tax of five percent on the

52 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

53 Ibid.

54 Personal communication with both GoN officials and commercial rice industry representatives, July 2013.

55 January 23, 2013 report http://oryza.com/content/nepal-rice-millers-demand-ban-rice-imports-india#sthash.VvMMEpRI.dpuf.

56 WFP/Nepal. See Chapter 3, Section 3.6.1 for more details.

57 Including GoN representatives, traders, rice millers, I/NGO staff, and consumers.

58 Personal communication with WFP/Nepal, July 2013.

59 WFP, 2007, FAO/WFP Food Security Assessment Mission to Nepal.

import of both paddy and milled rice.[60] Such a policy affects the profitability of agroindustrial businesses and the ultimate retail price for Nepali consumers; these duties are also at cross purposes with efforts to support employment or value addition in country since they dissuade the importation of paddy by mills that, due to GoN policies, make greater profits by importing milled rice from India rather than milling paddy from domestic or imported sources.

Photo by Fintrac Inc.

Wholesalers in Nepal often act as retailers, and supply rural markets. In their stores, like the one shown here, they also stock an assortment of items for daily household needs. Dadeldhura District, Nepal, July 2013.

Marketing. If held to the standard of other countries, the rice marketing chain in Nepal does not appear organized, but this system is the most sophisticated when compared to the country's markets for other domestic and imported cereals. This observation is perhaps not surprising given that rice is the most preferred staple by all classes across the country.

There are thousands of mills throughout the country, but only four-five could be considered large industrial mills. According to rice industry informants and recent news articles,[61] the number of rice mills in the Terai has declined considerably in the last few years as Nepali millers struggle to compete with formal and informal imports from India; for those who remain, sales have dropped considerably.

60 Personal communication with GoN customs officials, July 2013.

61 Personal communication with rice industry informants, July 2013; see also, for example, "Import of Indian rice puts Nepalese rice industry at risk," Himalayan Post, January 23, 2013. http://www.thehimalayantimes.com/fullNews.php?headline=Import+of+Indian+rice+puts+Nepalese+rice+industry+at+risk&NewsID=363045;" Bihar mill surge eating into Nepal rice industry" September 1, 2013 news article, http://www.ekantipur.com/2013/09/01/business/bihar-mill-surge-eating-into-nepal-rice-industry/377342.html; and "Rice imports hurt domestic mills," Kathmandu Post, August 18, 2013 http://www.ekantipur.com/the-kathmandu-post/2013/08/18/money/rice-imports-hurt-domestic-mills/252565.html.

ILLUSTRATIVE MILLING COSTS

Small-scale village electric mill:

-Rice: 1.5 NPR/kg

-Maize/wheat/rice flour: 3 NPR/kg

-Turmeric/spices: 20 NPR/kg

Small-scale village water mill:

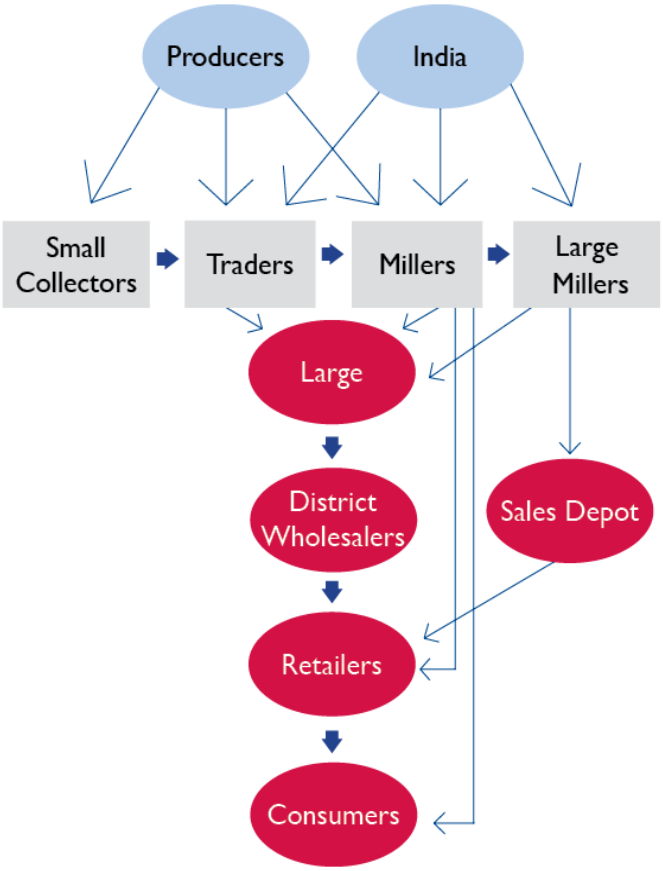
-Maize/wheat: 3 NPR/kg

-Can mill: 20 kg/hr wheat or15 kg/hr maize

Source: Interviews with mill operators during USAID-BEST field visit.

As illustrated below, producers sell to small collectors, traders, and millers who then sell to large wholesalers; these wholesalers on-sell to district wholesalers, retailers, and consumers. Large millers may sell to either district wholesalers or through their own sales depots (often located in DHQs) before reaching the retail market.

Figure 9. Rice Market Flow Chart



Source: Created by USAID-BEST.

Performance. Interventions from the Government of India affects the Indian rice market and these actions in turn influence the rice market in Nepal. Since the Indian government lifted an

export ban on rice in late 2011, traders have benefited from increased availability and lower prices in Nepal; however, Nepali rice producers and millers have suffered losses by these same imports because Indian rice receives huge production subsidies and therefore unfairly competes with Nepalese rice. In their research of the rice markets in Nepal and India, Sanogo and Amadou (2010) found that rice prices in the Terai respond to shocks in India as traders adjust their buying and selling practices in response to fluctuations in availability from Nepal's neighbor.[62]

Within the domestic market, Food and Agriculture Organization (FAO) researchers found that rice prices in the Terai and Hillls tend to be closely correlated. Given the terrain, the researchers found that rice prices in the Mountains "are consistently much higher, indicating the short supply and isolation of markets."[63]

2.4.2 Maize

Maize is second only to rice as the most important crop in Nepal. In the Hills especially, maize serves as a crucial food item. The Nepal Office of the International Maize and Wheat Improvement Center (CIMMYT, *Centro Internacional de Mejoramiento de Maiz y Trigo*) estimates average annual per capita consumption is 45.5 kg per person.[64]

HHs consume maize as porridge (*dhido),* grits (*makai ko*, roughly ground and steamed like rice), and bread (*roti, chapati*). Rural HHs and urban street vendors also commonly roast maize on the cob. Wealthier HHs typically consume maize only as popcorn. Across the country, maize-based beer is consumed during special occasions; the brewing is often done in the Hills.

People in the Mid-Hills and Mountains typically eat maize at least two meals a day unless they can afford to buy rice. In these areas, people typically take roast maize (on the cob) as their snack. Poorer people in the cities also eat maize when they cannot afford rice.

According to industry experts, roughly 80 percent of domestic maize goes into food while the remaining 20 percent goes to feed.[65] The increase in poultry production has led to a large and growing demand in the feed industry for maize, especially by producers concentrated in the Terai. Industry informants estimate that 50-60 percent of the requirement for feed (407,525 MT per year) is imported because of the more stringent specifications required for feed formulations.[66]

62 Sanogo and Amadou, 2010, "Rice market integration and food security in Nepal: The role of cross-border trade with India," Food Policy Volume 35, Issue 4, pp. 312–322.

63 WFP, 2007, FAO/WFP Food Security Assessment Mission to Nepal.

64 CIMMYT, 2011, Maize Value Chains in Nepal (slideshow: http://www.slideshare.net/CIMMYT/s73-maize-value-chains-in-nepal).

65 Nepal Feed Industry Association 2013 calendar; Personal communication with maize and feed industry representatives, July 2013.

66 Personal communication with poultry feed industry representatives, July 2013.

Production. Maize is a smallholder crop in Nepal, primarily grown under rain fed conditions. There are no large-scale commercial farms or contract farming operations. Annual production was estimated at approximately 1,503,091 MT for NFY11-12, a year in which locally produced maize contributed just under 25 percent of the country's total cereal production.[67]

In the Terai, farmers plant the majority of maize (dent) as a cash crop for sale to the feed industry. In the Hills and Mountains, HHs use the dominant flint maize as own-consumption.

Nearly 3/4 of maize across the country is planted in summer, with winter and spring maize contributing about 12 and 14 percent of maize planted, respectively.[68] Maize is planted as a summer crop in the Hills and Mountains, and as a spring or winter crop in the Terai/inner Terai. Where rice-maize production systems occur in the Hills, maize is planted in February/March and then harvested June/July.

Photo by Fintrac Inc.

Households tend to dry maize at home, either by hanging the cobs in front of their house or by drying the grain on the ground nearby. They later either sell the maize to a feed producer or retain it for their own livestock. Chitwan, Nepal, July 2013.

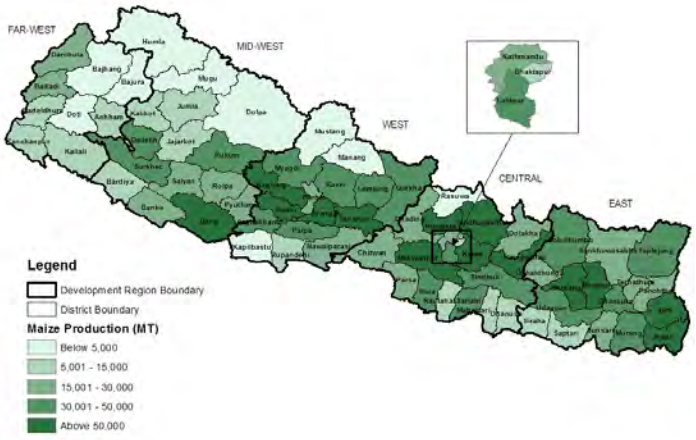
As illustrated in the production map below, maize is produced in nearly every district. However, in terms of volume produced, Hill districts are responsible for 70 percent of maize production according to a 2011 CIMMYT analysis.[69] This same study found 20 percent of production occurs in the Mountains and 10 percent in the Terai. These figures may be somewhat outdated as of September 2013 given the strong growth in the poultry industry over the last few years that has incentivized farmers to plant maize.

67 Table 11.7 in GoN, 2012, *Statistical Information on Nepalese Agriculture.*

68 CIMMYT, 2011, Maize Value Chains in Nepal (slideshow: http://www.slideshare.net/CIMMYT/s73-maize-value-chains-in-nepal).

69 Ibid.

Figure 10. Maize Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

According to the NLSS, maize grain production increased some 59 percent between 1995-96 and 2010-11, driven primarily by increases in productivity (yields increased an average of 35 percent) and greater area planted to maize.[70]

USAID and the Swiss Development Corporation are currently funding the CIMMYT Hill Maize Research Project to improve the availability of quality seeds.[71]

Imports and exports. Imports, mainly from India, serve about 15-20 percent of Nepal's total demand for maize and maize by-products.[72] While most of the maize produced in the Hills and Mountains is for own-consumption, marketed maize is channeled mostly to the feed industry. Poultry industry representatives report annual average imports of 244,515 MT for feed specifically -- this volume represents 60 percent of the feed industry's required 407,525 MT.[73]

GoN import figures for NFY11-12 report 204,000 MT of maize grain imports, with the bulk (98 percent) from India and the remainder (in descending order) from Argentina, Singapore, the United Arab Emirates, and China.[74]

Official exports of maize and its by-products are minimal. GoN figures indicate only about 83 MT of maize were exported in 2011, though about 170 MT of bran was exported during this period to Bangladesh and India.[75]

70 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

71 For details, see: http://hmrp.cimmyt.org/index.php/newsroom/news-releases/51-contract-maize-seed-production-started-in-nepal.

72 Personal communication with poultry industry representatives and GoN border officials, July 2013; CIMMYT, 2011, Maize Value Chains in Nepal (slideshow: http://www.slideshare.net/CIMMYT/s73-maize-value-chains-in-nepal)CIMMYT notes 16 percent of Nepal's maize supply in 2010 was imported. Interviews in July 2013 suggest reliance on imports has increased, especially to serve the feed industry.

73 Nepal Feed Industry Association 2013 calendar.

74 Sheet 55 in GoN, 2012, Statistical Information on Nepalese Agriculture.

75 Table 11.9 in GoN, 2012, Statistical Information on Nepalese Agriculture.

Food aid. The team is unaware of maize grain or unfortified maize flour distributed by any donor or I/NGO. At present, WFP provides US-produced Corn Soy Blend (CSB) to school feeding programs and previously to beneficiaries of maternal and child health programs.

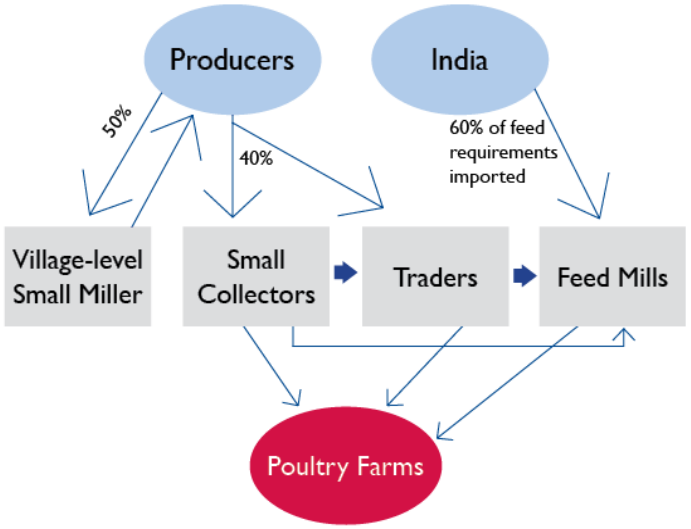
WFP previously procured a locally produced blended food initially composed of maize and wheat, but later changed the composition to solely wheat because of troubles with aflatoxins associated with the maize.

The team is unaware of any monetizations by any donor or agency involving any maize or maize-based products.

Marketing. Marketing of maize follows two quite distinct major marketing chains: domestic maize for human consumption, and domestic and imported maize for feed. Both appear competitive as supply and demand affect prices. In the Hills and Mountains, there are few actors with little organization. There, producers use village-level or other small millers to grind maize for own-consumption, or to sell within the local area. At the village level, there are water mills throughout the country, while in DHQs especially, electric crushing mills of various scales are available to convert grain into various flours.

Producers also sell to small-scale collectors, who sell directly to poultry farms or on to traders who then sell to poultry farms or to feed mills. In the Terai, there are many actors, including input suppliers, traders, collectors, feed mill producers, and poultry farmers. Along either chain, traders perform the function of drying and packaging grain in bulk for sale.

Figure 11. Maize Market Flow Chart



Source: Created by USAID-BEST.

As with other staple foods, maize market actors face a number of constraints to expanding production and processing, including inadequate supply of inputs (quality seed, fertilizer, etc.), disorganization among producers and traders, little consumer marketing, poor consumer protection/food safety, lack of

storage (and attendant high aflatoxin risk), limited GoN subsidies and/or crop insurance to support expansion of production, and inconsistent GoN trade and tax policies that disincentivize Nepali processors.

Government policy. As noted above, government policies inhibit commercial processing. Feed industry representatives, in particular, lament the lack of GoN support for feed and poultry industries. They highlight the tremendous growth in the poultry industry that has occurred despite the absence of supportive policies and note a more enabling policy environment would further increase value addition and add to employment in the sector.[76]

Nepal's biosafety laws prohibit genetically modified organisms (GMOs) in principle; however, industry representatives indicate that maize from genetically modified (GM) seeds are not a factor in their decision to import and, in practice, importers routinely import large volumes of grain without consideration for GM content.[77]

Performance. USAID-BEST could not conduct a price analysis to assess level of market integration because of insufficient available price data. However, from market observations, it appears that the maize market for food exhibits relatively poor performance while the maize market for feed performs relatively better.

Since smallholder farmers produce the bulk of maize grown in Nepal for their own consumption, maize marketing remains limited to those local areas; there are few actors, little organization of traders, and little spread of price information. Among maize traders and processers in the Terai, where maize is almost exclusively a cash crop destined for the feed industry, many more well-organized actors appear to access price information through business networks (e.g., cell phones and personal contacts).

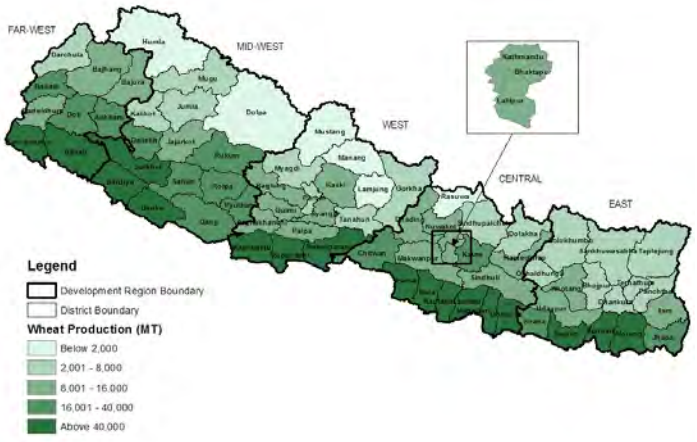
2.4.3 Wheat

Consumption. Wheat contributes to 25 percent of the total cereal requirement and may be considered the third most important food crop in Nepal.[78] Primarily, wheat grain is used to produce *atta* (whole wheat flour) and *maida* (refined flour) for *roti*, *chapati*, and *parantha*. Wheat flour can also be used for *suji*, the base for a porridge called *haluwa*.[79] Wealthier households eat *roti* or *chapati* with *dal* (lentil soup) or meat curry, while poorer households make due with *chapati*, salt, and hot pepper. Wheat is also processed into noodles and pasta, but this activity mostly involves imported wheat. Finally, wheat is used extensively by confectionary industries (cookies, donuts, etc.), all of which would be consumed by wealthier consumers or during special occasions.

Wheat is most commonly eaten in the Terai, where it is grown in surplus, and to a lessor but still important extent in the Mid-Hills. Households typically consume wheat during the five-six months following harvest and before the summer rice crop becomes available.

Production. Wheat is a smallholder crop in Nepal, and can be grown from the Terai up to about 9,000 feet above sea level. Wheat is mostly rain fed, and there are no large-scale commercial farms or contract farming operations. The Terai accounts for most of the production (65 percent, see map below). According to GoN statistics, wheat production has been slowly increasing, and stood at just over 1.45 million MT of grain for NFY11-12.[80]

Figure 12. Wheat Production



Source: Created by USAID-BEST, using data from MoAD.

Spring wheat is a very important winter crop in the Terai; approximately 60 percent of the Terai is planted with wheat in October/November and then harvested in March/April prior to planting the summer rice crop. In the Hills, the planting and harvesting takes place during the same period, though both take slightly longer (see crop calendar in Section 2.3). Above 9,000 feet, winter wheat apparently can be grown, but generally take six-seven months to mature and are less tolerant to weather conditions than barley and buckwheat.

Imports and exports. Shortfalls are quite easily made up through imports of wheat grain and wheat flour from India, which provided an estimated 300,000 MT last year according to industry informants.[81] There are negligible recorded exports of

76 Personal communication with GoN border officials and livestock feed and poultry sector representatives, July 2013.

77 Personal communication with livestock feed and poultry sector representatives, July 2013.

78 According to GoN food availability and requirement figures for 2010/11.

79 *Haluwa* is made from coarse wheat flour mixed with ghee and roasted; over time it becomes a soft rich porridge to which sugar is added and often eaten as a breakfast food. The GoN and WFP serve a version of *haluwa* in the school meals program.

80 The same GoN dataset indicates production grew from 1,243,874 MT in 2009/10 to 1,399,970 MT in 2010/11. Data from FAO STAT and USDA PSD indicate wheat production has averaged more, just over 1.5 million MT per year during 2007-11.

81 Personal communications with wheat mill representatives, July 2013.

wheat or wheat flour.[82] However, given the porous borders with India, wheat and its byproducts (in particular, wheat bran for livestock feed) could occasionally be exported via informal channels, depending on relative prices.

Food aid. USAID-BEST is unaware of any food assistance programs that provide wheat in either grain or processed form. The WFP school feeding program previously provided locally produced wheat soy blend (WSB) called *unilito*, but ceased doing so with a shift in funding; at present, WFP provides CSB and no wheat-based products.

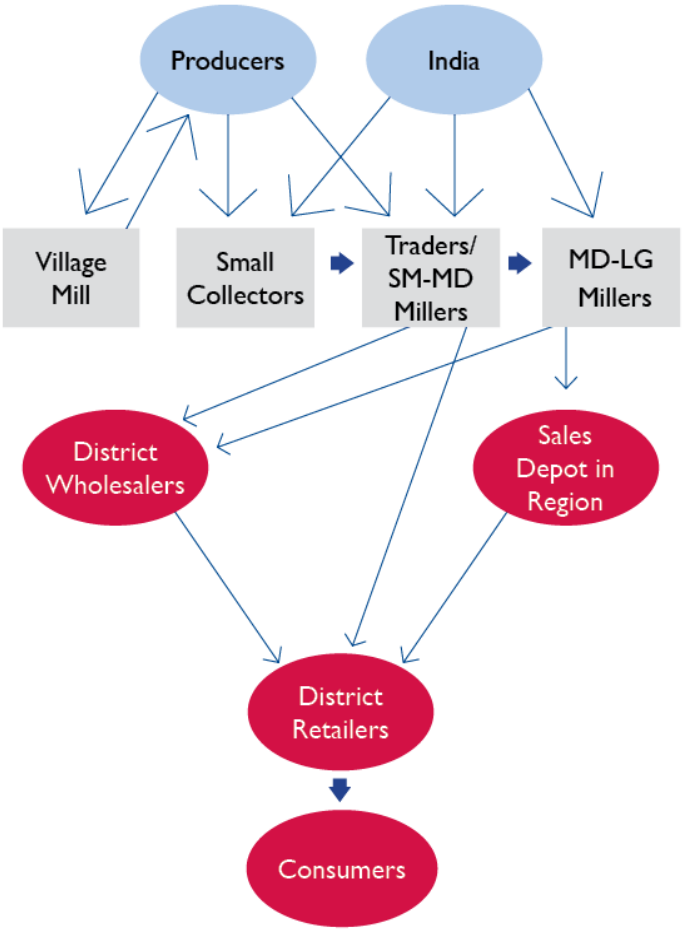
The team is unaware of any donor or NGO monetization of wheat or wheat-based products in Nepal.

Marketing. There are hundreds of mills of varying sizes that process and specialize in wheat; about 17 are large industrial mills.[83] Homestead/village-level mills use human power or water power. Medium-scale and large-scale industrial mills are typically located in district headquarters (DHQs) or otherwise urban areas. Regardless of mill size, farmers typically deliver wheat grain to the mill and are paid cash; however, occasionally, small collectors sometimes also aggregate and sell grain to traders or small-/medium-scale millers. As shown in the market flow map below, smaller and larger mills sell through district wholesalers and retailers while large mills sell through district wholesalers and their own regional sales depots.

Photo by Fintrac Inc.

An employee at Dugar mill, one of the largest operations in the country, holds out a sample of wheat grain that will be processed into different types of flour. Nepalgunj, Nepal, July 2013.

Figure 13. Wheat Market Flow Chart



Source: Created by USAID-BEST.

Typical wheat extraction rates are reported as 68 percent for human consumption (50 percent *maida*, 13 percent *atta*, and 5 percent *suji*), 30 percent for livestock feed (in the form of bran), and 2 percent loss.

Lack of reliable electricity and high labor costs pose major challenges for large-scale mills. Importantly, industry informants report that access to raw materials is not problematic because Indian imports easily fill the gap. Several large mills report that they buy mostly local wheat, except during the Nepalese lean season (April-June), when they sometimes buy from India.

2.4.4 Barley

Consumption. Barley is an important cereal crop in the Hills and Mountains where it is grown, and is one of the six cereals included in the national cereal balance calculation. Though not commonly consumed in grain form, barley is used for bread (*roti*), roasted barley powder (as a coffee substitute, mixed in tea or just swallowed with water), and alcohol. Depending on the season, barley may be eaten with potatoes, buckwheat, or meat.

82 FAOSTAT indicates Nepal exported 43,950 MT of grain in 2009, but otherwise exports appear to be typically below 100 MT per year. In 2009, exports of wheat flour were recorded as 3,941 MT; flour exports other years also appear quote negligible (between 51 MT and 2,632 MT, against production of about 1.5 million MT.)

83 Personal communication with wheat industry informants, July 2013.

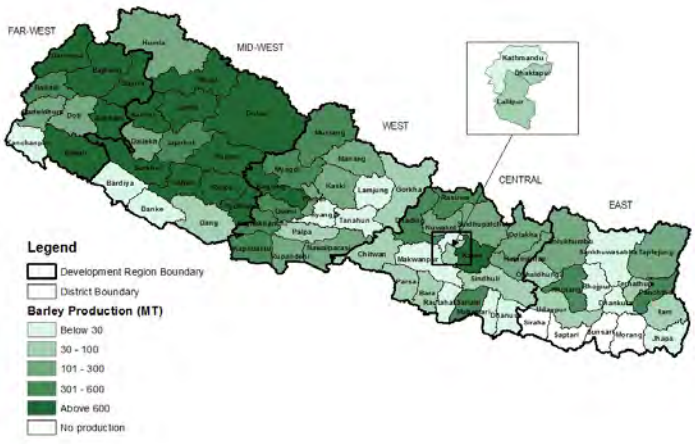
Barley is mostly consumed by relatively wealthier people in the Hills and Mountains. HHs tend to consume their entire self-production, generally over a three-four month period following harvest. In the High-Mountains, consumers traditionally convert barley to alcohol so as to cope with the cold. People in the Terai and Foot-Hills infrequently consume barley in any form.

Production. As noted above, barley is commonly grown in the High-Hills and Mountains by smallholders; husk barley (i.e., hulled barley) is grown in the Low-Mountains and High-Hills while naked barley (i.e., hulless barley) is grown in the High-Mountain areas because it does better in this weather.

The seasonality of barley depends on the specific agroecological condition in each production zone. In the Hills, barley is grown as a winter crop, often followed by a summer crop of maize, rice, or buckwheat. In the Mountains, barley is planted in the spring, and takes up to ten months to mature before harvest. Barley straw is an important livestock feed and adds to the value of the crop, especially in those places where livestock feed is limited.[84]

Official statistics report that 11,856 MT of barley were produced in NFY11-12, with the relative majority grown in the Mid- and Far-West Mountains (56 percent of total production) and Mid- and Far-West Hills (20 percent of total production). A mere 5 percent of total production in this period occurred in the Terai.[85]

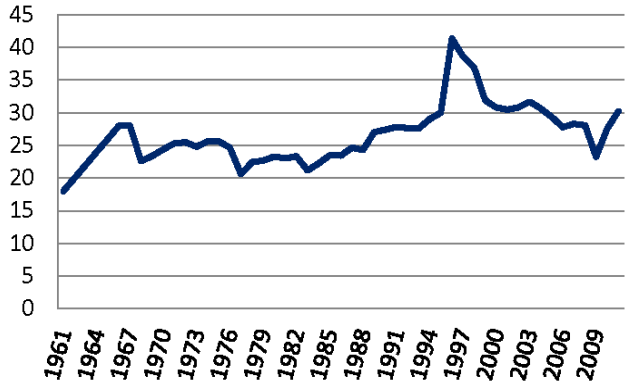
Figure 14. Barley Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

For about three decades, apart from expected inter-annual variation, the trend in barley production remained relatively flat. Beginning in the mid-1990s, there appears to have been a sudden but unsustained increase. In the last decade, barley appears to have returned to a more typical production pattern in Nepal (see Figure 15).

Figure 15. Barley Production (MT), 1961-2011



Source: FAOSTAT.

However, according to official statistics, although yields have increased by 12 percent during the last two decades, barley production has decreased nearly 20 percent over the same period (albeit from an unusual and unsustained high point in 1996), as farmers have increased area planted to alternative crops to mitigate against climatic changes such as winter droughts and reduced snowfall that more negatively affect barley.[86]

Imports and exports. There are minimal recorded imports of barley (47 MT in FY11-12, all from India),[87] and no recently recorded exports of barley.

Food aid. No known food assistance programs include barley in a ration.

Marketing. Marketing of this commodity appears to be primarily local or regional, and therefore limited in geographic scope.

Performance. There are no agencies monitoring the prices of barley, so it is not possible to undertake any price analysis to assess trends or the degree of market integration for this commodity. The team saw no barley for sale during the July 2013 field visit.

2.4.5 Millet (Finger Millet and Foxtail Millet)

Millet is considered an important food security crop in Nepal, and is among the seven crops now included in the GoN cereal balance calculations.[88] There are two types of millet produced and consumed in Nepal: finger millet and foxtail millet. They share some production, consumption, and marketing characteristics, but also have important distinguishing characteristics including agroecology and consumers' preferences towards each.

84 Riley and Singh, 1991, "Diversity and Stability of Barley in Nepal," accessible via http://idl-bnc.idrc.ca/dspace/bitstream/10625/6009/1/40369.pdf.

85 GoN, Agricultural Marketing Information Bulletin (Special Issue - 2012).

86 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

87 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

88 GoN, Agricultural Marketing Information Bulletin (Special Issue - 2012).

Finger millet is cultivated primarily in the Terai Foot-Hills and Mid-Hills, either as a relay crop with maize or as a mono crop. Finger millet is a relatively expensive crop. As a high-energy food, finger millet is desirable in the Mid-Hills but it is eaten mostly by medium- and high-income groups. Not surprisingly, while it is grown for own consumption, finger millet is primarily viewed as a cash crop to meet strong demand.

Households that do consume finger millet typically do so only once a week (because of its relatively high price). Finger millet becomes available about four months after the maize harvest (by about October) and faces little problem with storage so people able to afford it can eat finger millet year round.

Most finger millet (60-70 percent) goes into *raksi* (millet whiskey). However, finger millet is also used as flour for *roti* or as a thick porridge called *kodo ko dhido*.[89]

Foxtail millet is grown in the higher Mid-Hills (4,000 feet and above) and Mountain areas, and can be grown on poorer soil in harsher climates than many other cereals, including finger millet and barley.

Although the two millets can be prepared and consumed in the same manner, foxtail millet is considered a much less preferred cereal. Within production areas, poor households will consume foxtail millet during its harvest time.

Production. Finger millet is typically planted as a relay crop (mostly after maize) in the Hills. In the Mountains, foxtail millet is typically planted in the Mountains in April/May as a main summer crop, also harvested in October/November.

Millet production has remained very stable at an average of just over 236,000 MT per year (edible form), as shown in the table below. Unfortunately, available statistics do not distinguish between finger and foxtail millet, so it is unclear if production patterns for both are equally stable.

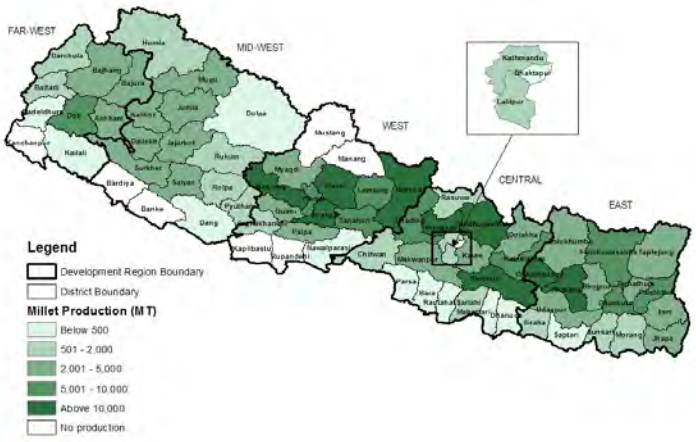
Table 2. Millet Production (MT), 2001-02 and 2009-10

Production Period	Production
2001/02	231,714
2002/03	231,931
2003/05	232,373
2004/06	237,778
2005/07	238,651
2006/07	233,451
2007/08	238,707
2008/09	237,440
2009/10	243,059
Average	236,123

Source: GoN, Agricultural Marketing Information Bulletin (Special Issue - 2012), Table 11.1.
Note: Production is reported in edible form, i.e., after applying a conversion factor.

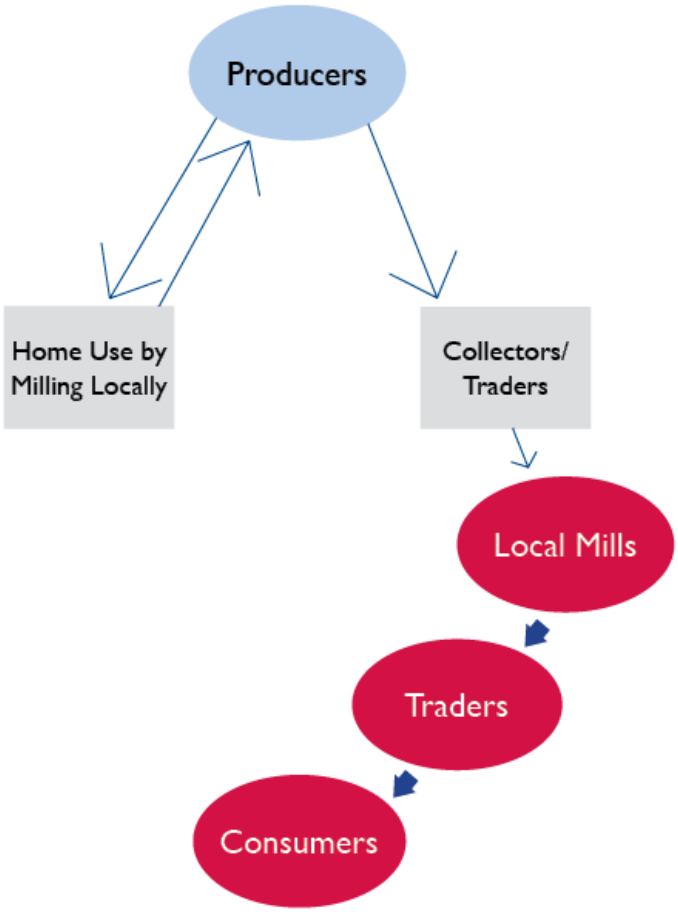
89 The porridge is typically eaten with curry; most local restaurants in the Kathmandu area appear to serve it with chicken curry.

Figure 16. Finger Millet Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

Figure 17. Finger Millet and Foxtail Millet Market Flow Chart



Source: Created by USAID-BEST.

Imports and exports. Nepal formally imported 19,013 MT of millet in FY11-12, all of which came from India.[90] Millet is not an important export crop. In FY11-12 for example, only 35 MT of millet was exported to Hong Kong. Based on interviews with

90 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

border officials and commercial industry actors, USAID-BEST believes informal trade likely contributes to net imports of millet, but was unable to ascertain a possible volume.

Food aid. No known food assistance programs include millet in a ration.

Marketing. Marketing of both finger millet and foxtail millet appears to be primarily local or regional, and therefore limited in geographic scope. The two share similar marketing patterns (see chart below).

As illustrated in the flow chart above, producers tend to locally mill their own millet for home use, or they will sell to collectors/traders who then sell to local mills. Products are then generally sold to traders/retailers who then reach consumers. As for brewing millet, this activity is only done at the household and village levels; there is no industrial brewing.

Performance. Despite the importance of millet, no agencies appear to monitor millet prices, so it is not possible to assess market performance based on any price analysis.

USAID-BEST saw finger millet (but not foxtail millet) for sale in several markets during the July 2013 field visit.

2.4.6 Buckwheat

Buckwheat has only recently been added to the GoN cereal balance calculation (beginning in NFY11-12).

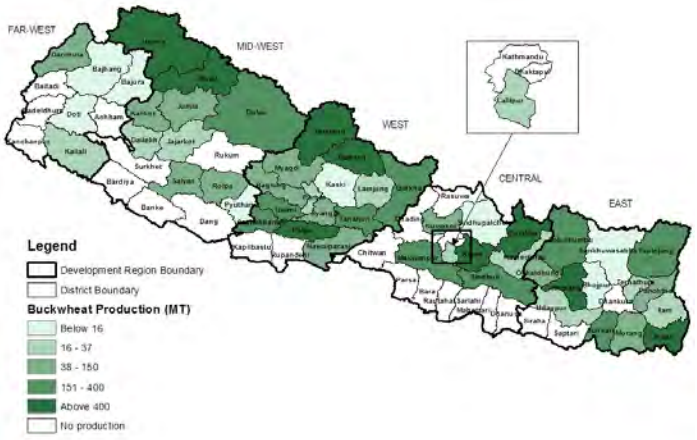
Though buckwheat can grow nearly everywhere in Nepal and farmers do increase production with demand, it is most frequently grown and consumed in the High- Hills and Mountains. In the High-Hills, it is mostly grown for household consumption and is in deficit.

Bitter buckwheat in the High-Hills grows wild while sweet buckwheat must be cultivated. HHs typically mix the two types to produce flour for bread, pancakes, and noodles. Wealthier HHs tend to eat buckwheat as pancakes or noodles.

Producers are the main consumers of buckwheat (consuming 40 percent of total production), while the remaining 60 percent is marketed through small traders, some of whom export the grain to Asian neighbors. Some HHs in the Mid-Hills eat it sparingly.

According to GoN statistics, there was just over 7,200 MT of buckwheat produced in 2010-11. Much of this production was concentrated in the Mountains of the West, Mid-, and Far-West, as illustrated in the map to the right.

Figure 18. Buckwheat Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

Imports and exports. Grain industry representatives report that occasional limited marketable surpluses are exported to Japan and/or Korea, where buckwheat is prized for its use in noodle (*soba*) production.[91] For 2011-12, only 680 MT of buckwheat was imported, which is less than 10 percent of domestic production volumes and almost all of these imports originate from India. That same year, official records show 527 MT of buckwheat was exported to India, leaving net trade closer to 150 MT, or just over 2 percent of domestic production.[92]

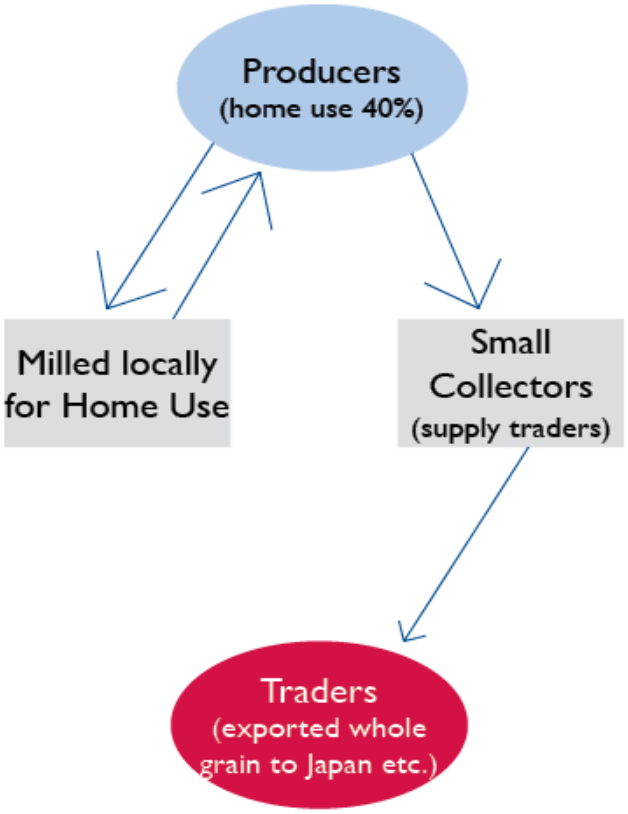
Food aid. No known food assistance programs include buckwheat in a ration.

Marketing. Marketing of buckwheat appears to be primarily local or regional, or specifically for the direct export market. As illustrated in the market flow chart below, the value chain is relatively shorter than for other grains.

91 Personal communication with multiple grain industry representatives, July 2013.

92 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

Figure 19. Buckwheat Market Flow Chart



Source: Created by USAID-BEST.

Performance. Buckwheat has only recently gained attention as an important food security crop. Prices are not monitored by any agencies, so it is not possible to assess market performance based on any price analysis.

The team did not see buckwheat for sale during the July 2013 field visit, but did observe buckwheat served in a number of restaurants in Kathmandu valley, the Terai, and the Mid Hills of the Mid-Western Development Region.

2.4.7 Grain Legumes

Alongside rice, maize, or wheat, a multitude of grain legumes make up the typical dish for many HHs across the country. Many different types are grown in-country, and while HHs have preferences, they appear to easily substitute among them depending on relative prices.

While secondary statistics are unavailable, field interviews with market actors suggest that most grain legumes are grown and consumed on the farm or within local areas, and that almost all *marketed* legumes are from imports. Outside of harvest time and especially in deficit areas, lentils, chickpeas, and black grams (among others) are often imported from Australia, Turkey, and Ukraine. WFP has been able to meet less than 5 percent of its requirements (less than 500 MT) within Nepal.

Table 3. Names of Common Grain Legumes in Nepal

English	Nepali
Black gram (whole, split)	Mas
Black gram (polished and split)	Mas ko chata
Broad bean	Bakulla
Chickpea (garbanzo)	Chana
Field pea	Kerau
Green gram/mung bean	Moong
Peanut	Badam
Pigeon pea	Rahar
Red bean	Razma
Red lentil	Musuro
Rice bean	Masyan
Soybean	Bhatmas
White bean	Seto simpu

Source: USAID-BEST field research.

This section briefly describes demand and supply characteristics for some of the more popular varieties: pigeon peas, lentils, chickpeas (garbanzo), black gram, and soybeans.

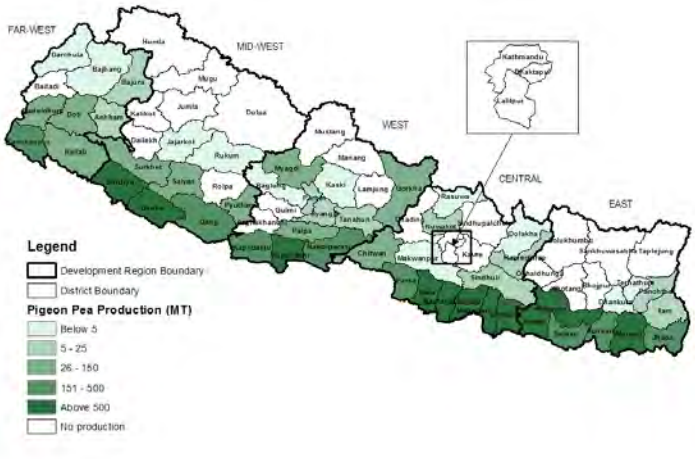
Pigeon pea. Grown extensively in the Terai (see map below), pigeon peas are a preferred legume in many parts of the country. They are generally used as a *dal* and eaten with bread or rice. Though they are available on the market year-round, they are relatively more expensive than some alternatives so HHs eat or purchase them just after harvest for as long as their budget permits. Middle and higher classes typically consume pigeon peas once or twice a week.

Photo by Fintrac Inc.

Market wholesalers typically place a sample of pulses in bowls or small containers so that customers can examine the quality before purchasing larger quantities. Kathmandu, Nepal, July 2013.

Production has averaged just under 19,000 MT per year in the period 2000/01 - 2011/12, according to official estimates.[93]

Figure 20. Pigeon Pea Production (MT), 2011-12

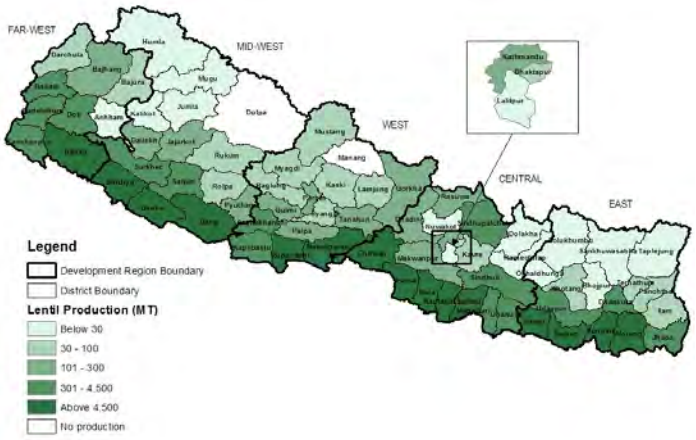


Source: Created by USAID-BEST, using data from MoAD.

Lentil. Since lentils are relatively less expensive than pigeon peas, they are a popular substitute for *dal*. Often, people mix lentils with a small amount of pigeon peas to impart the flavor of pigeon peas in their *dal*. HHs often eat lentils two-four times per week.

Many farmers throughout the country produce some lentils. According to GoN estimates, local farmers produced approximately 208,000 MT in NFY11-12.[94] This crop grows especially well in the Terai and up to around 5,000 feet in the Mid-Hills (see map below).

Figure 21. Lentils Production (MT), 2011-12

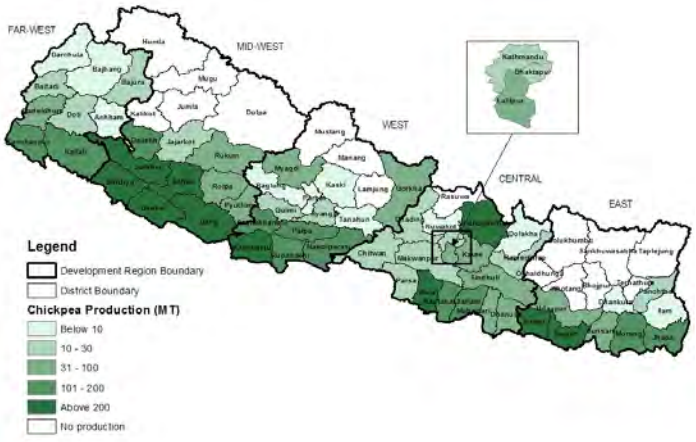


Source: Created by USAID-BEST, using data from MoAD.

Interestingly, despite their importance in the local diet, and that they are generally in deficit, lentils remain a significant export food crop. About 35,000 MT a year of red lentils are exported primarily to Bangladesh. To meet in-country demand, Nepal imports less expensive lentils from Australia and Turkey.

Chickpea (garbanzo bean). Known as *chana* locally, chickpeas are a popular legume appreciated for their versatility as *dal*, a snack, or roasted and sautéed as a breakfast food. Though they are grown mainly in the Terai (see map below), imports from Australia fill most of domestic demand. Production was only 8,192 MT in NFY11/12.[95]

Figure 22. Chickpea Production (MT), 2011-12

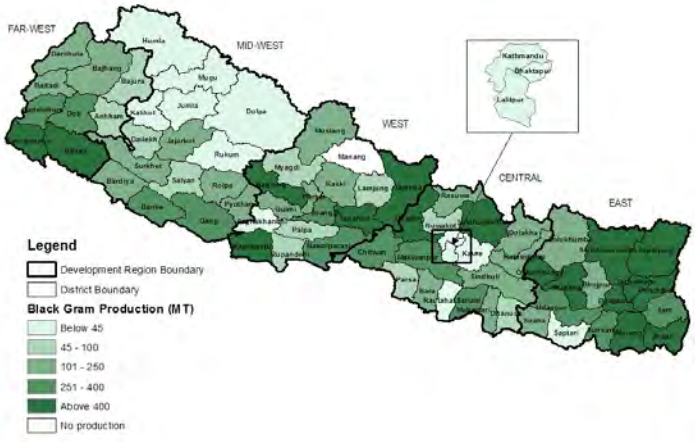


Source: Created by USAID-BEST, using data from MoAD.

Black gram. Black grams are grown and eaten throughout the country primarily as dal, whether whole or split (*mas*), or polished and split (*mas ko chata*). Black gram is widely available in the markets, but they are slightly more expensive than other choices.

Production of black grams has averaged 24,681 MT per year in the period 2000/01 - 2011/12, according to official estimates.[96]

Figure 23. Black Gram Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

93 GoN, 2012, Statistical Information on Nepalese Agriculture.

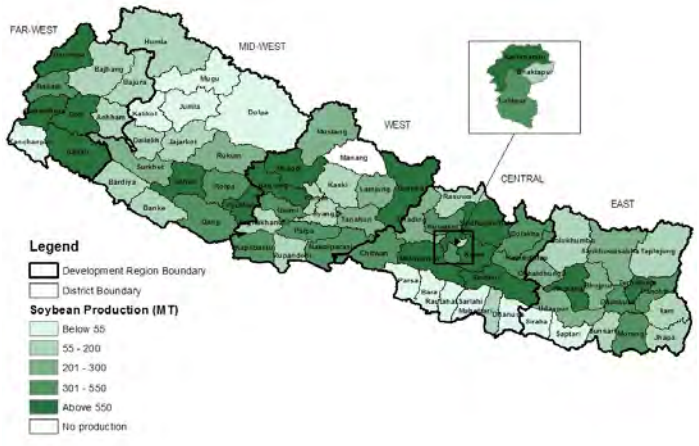
94 Ibid.

95 Ibid.

96 Ibid.

Soybeans. Soybeans are used primarily as snacks, though there is use of domestic soybeans for oil and feed. Domestic production is concentrated in the Mid-Hills, and reached 28,270 MT in NFY11-12.[97]

Figure 24. Soybean Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

There is a huge and growing demand for soybean by-products, but this demand is served primarily by imports from India, Argentina, and Brazil. Imports for soybean meal for feed, for example, topped 124,000 MT in 2012. (This excludes the huge demand for soybean, sunflower, and mustard cake which also serves the feed industry.)

Performance. The marketing of domestic legumes is based on small-scale production and trading. Larger processors buy from collectors and provide minimal value-addition (cleaning, minimal grading, and bagging). Markets for these goods appear competitive. The market for imported legumes also seems competitive because actors of all sizes are able to enter and exit the business and access price information.

Inadequate controls at the borders may hurt farmers who are net-sellers of legumes. However, the availability of imports from many external markets to meet internal demand helps to both dampen and smooth seasonal fluctuations in market prices, which keeps price levels more affordable for consumers, including the many farmers who are net-buyers.

2.4.8 Potatoes

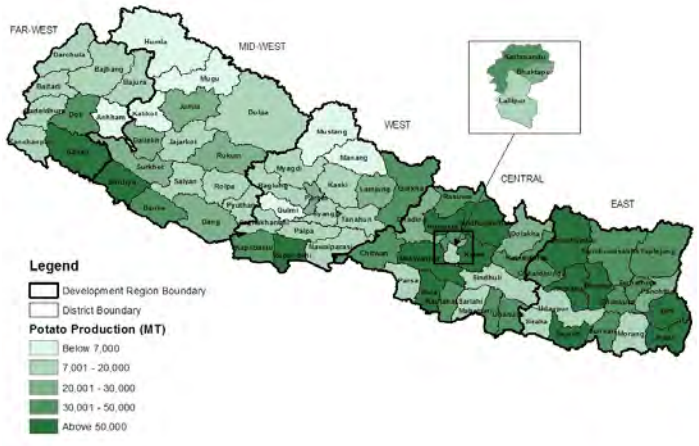
Consumption. Consumption of potatoes in Nepal is among the highest in the world and is nearly on par with Peru, according to the International Potato Center.[98] Potatoes are a staple food crop in the High- Hills and Mountains, and a common ingredient in many side dishes (especially vegetable curries) throughout the rest of the country. Although potatoes are eaten nearly every day by all but the very poorest households, they are not included in the GoN food balance sheet calculation because they are not considered a staple/ cereal.

In the High-Hills, potatoes are often eaten boiled, baked, or roasted, and served as a rice substitute. Poor HHs may eat a potato with salt and chili powder as a meal while wealthier HHs may consume it fried or in a curry. In the Terai, people eat *parantha* (potatoes mixed with wheat bread), pan-fried potatoes, or *pokori* (potato mixed with vegetables and deep fried, a common snack food). HHs in the Hills commonly consume potato with meat, bread, and alcohol. For weddings and other special occasions, the Nepali may prepare a potato cutlet (boiled, mixed with veggies, made into patties, and fried) or french fries.

According to recent HH surveys, potato consumption has been increasing rapidly. The Nepal Thematic Report on Food Security and Nutrition 2013 reports a 40 percent increase in consumption between 2003-04 and 2010-11. These findings were based on successive rounds of the NLSS. A comparison of previous rounds of the NLSS found HHs also had increased consumption by about 20 percent in the short period between those two rounds (1995-96 and 2003-04).[99]

Production. Potatoes are grown fairly extensively throughout the country, as illustrated in the map below. The ability to grow potatoes in all three agroecological zones and from east to west means that potatoes can be planted and harvested throughout the year. In the Terai and Foot-Hills potatoes are a winter crop, while in the High- Hills and Mountains it is a summer crop; they can be planted as a spring or autumn crop in the Mid-Hills.[100]

Figure 25. Potato Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

97 GoN, 2012, Statistical Information on Nepalese Agriculture.

98 International Potato Center, 2006, World Potato Atlas. https://research.cip.cgiar.org/confluence/display/wpa/Nepal, accessed September 13 A.D.

99 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

100 International Potato Center, 2006, World Potato Atlas. https://research.cip.cgiar.org/confluence/display/wpa/Nepal, accessed September 13 A.D.

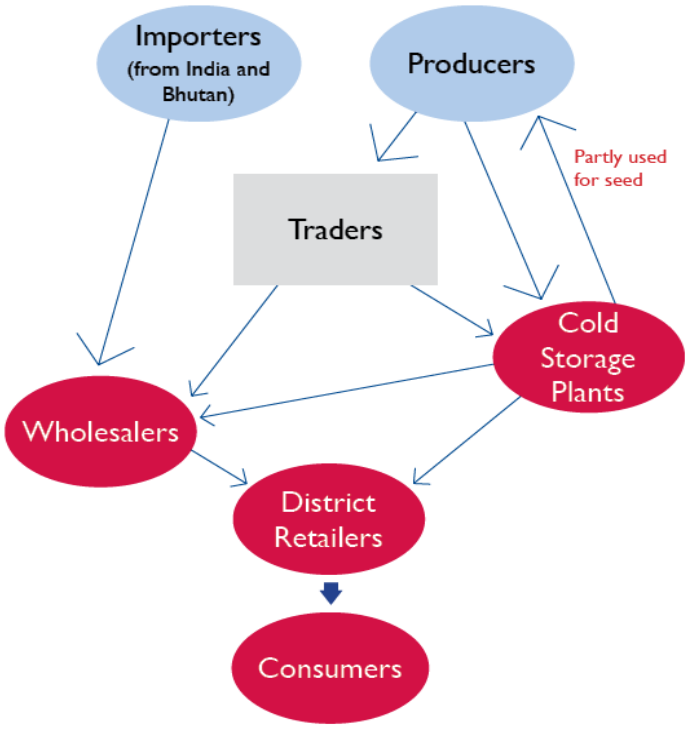
According to official statistics, Nepal grew 2,584,301 MT of potatoes in 2011-12.[101] This supports a 2003 study cited by the International Potato Center which estimated potato consumption at about 1.65 million MT per year.[102]

Imports and exports. Imports from India, and to a lesser extent from China and Bhutan, contribute to overall consumption. Official imports of 163,000 MT were recorded in 2011-12. exports for the same year were recorded as 159 MT.[103] Informal imports and exports also contribute a significant amount to the volume traded, but exact numbers are unknown.

Food aid. No known food assistance programs include potatoes or potato products in a ration.

Marketing. As with most other food crops, marketing of potatoes follows a fairly short chain from producer or importer to consumer. The bulk of potatoes flow from domestic producers to domestic traders, wholesalers, and retailers; a much smaller share of potatoes flow through importers.

Figure 26. Potatoes Market Flow Chart



Source: Created by USAID-BEST.

Performance. The GoN and Agriprice monitor the price of potatoes (red and white). Review of secondary research materials suggest price increases have been substantial. Based on the more recent NLSS, the price of potatoes increased some 219 percent between 2003-04 and 2010-11.[104]

During the July 2013 field visit, USAID-BEST saw potatoes for sale in several collection centers and retail markets, and potato products sold as street foods and in restaurants across the country.

2.4.9 Edible Oils

Consumption. Traditional tastes and increased health consciousness of wealthier consumers drive the edible oil market. The majority of Nepali, especially those in rural areas, appear to strongly prefer mustard oil for the preparation of traditional foods. In urban areas, consumers tend to purchase more expensive sunflower and soybean oils because of perceived health benefits. Imported palm oils provide a less expensive alternative for urban and rural consumers.

According to one market report, Nepal is now dependent on imports of soybean and palm oil to meet more than 3/4 of market demand.[105] One industry representative estimated that among the imported oils, soybean account for 80 percent, while sunflower and palm account for about 10 percent each. In terms of total demand for domestic and imported oil, industry representatives indicate mustard oil may still hold more market share, though imported mustard seed has become relatively important.[106] Regardless of individual oils' contribution to demand, overall consumption of oil and ghee (clarified butter) has increased nearly 100 percent in the last decade, according to survey findings from the NLSS.[107]

Mustard is grown all over Nepal, and **mustard oil** is the most highly preferred oil throughout the country and beloved for its distinct and pungent flavor. All socioeconomic classes eat the greens, and the oil is widely available. Whenever possible, homemade mustard oil is chosen for daily cooking. However, not everyone can afford to use mustard oil because it is costlier than other cooking oils; roasted mustard seed oil is also expensive. Poorer HHs are generally forced to use palm or soybean oil because of cost considerations.

While mustard mostly serves as a source of cooking oil, consumers also eat the leaves as a vegetable after the plants are thinned during cultivation. Mustard seeds are also fried and added to dishes for flavor. Aside from its use in cooking, mustard oil is also used as a massage oil for adults and infants, and on hair to promote growth.

An important by-product from processing mustard seed (mustard cake) is sold into the formal and informal animal feed sector.

Although soybeans are grown for food and feed, they are rarely pressed for oil. Imported crude and refined **soybean oil**,

101 GoN, 2012, Statistical Information on Nepalese Agriculture.

102 IPC website.

103 GoN, 2012, *Statistical Information on Nepalese Agriculture.*

104 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013.*

105 http://www.nepalsharemarket.com/Nepalsharemarket/Nepse/Analysis/news/news.aspx?news_id=NEW-005757.

106 Personal communication with edible oil industry informants, July 2013.

107 Found in GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013.*

however, does have a large and stable demand.

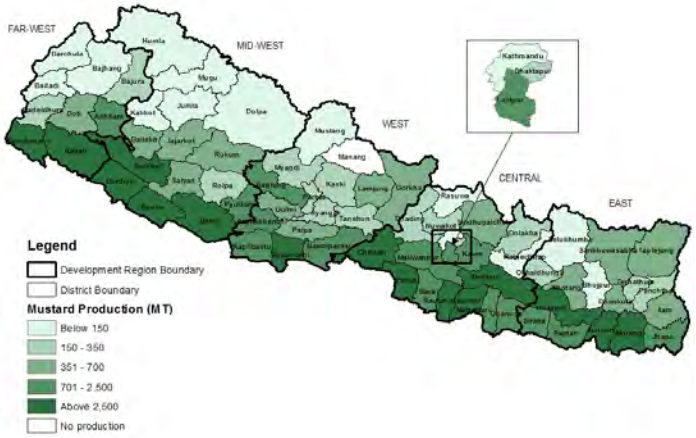
Both crude and refined **sunflower oil** are imported and marketed throughout Nepal, though sales tend to be concentrated in wealthier, urban areas.

Crude and refined **palm oil** are imported for refining and bottling, and marketed throughout the country.

Production. FAO STAT reports oil production from all sources has averaged just under 23,000 MT, with the latest year reported (2011) as 25,025 MT.[108]

MoAD figures indicate **mustard oil** *seed* production stood at 145,163 MT in NFY11-12.[109] The bulk of mustard oil seed production occurs along the Terai and Hills, as shown in the map below.

Figure 27. Mustard Production (MT), 2011-12



Source: Created by USAID-BEST, using data from MoAD.

In comparison, sunflower seed production was just under 2,000 MT that same year. As noted previously, soybeans are grown for food and feed, but not pressed for oil in Nepal so no soybean production is reported in this section.

Imports and exports. GoN statistics indicate formal imports of 35,277 MT of mustard seeds: 84 percent of Indian origin and the remaining 16 percent reportedly from Russia, Ukraine, and Kuwait. Official numbers also report formal imports of just under 167,000 MT of all edible oils in NFY2011/12.[110]

Border officials and traders report large volumes of illegal imports of processed mustard oil from India, particularly in markets close to the Indian border.

Food aid. WFP has distributed both regionally procured palm/palmolein oil, and refined vegetable oil from USDA and USAID. Between June 2009 - August 2013, WFP distributed 5,843 MT.[111]

108 FAO STAT.

109 GoN, 2012, *Statistical Information on Nepalese Agriculture*.

110 Ibid.

111 WFP/Nepal, July 2013. See Chapter 4 for more details.

Photo by Fintrac Inc.

The majority of Nepali, especially those in rural areas, prefer domestically-produced mustard oil for the preparation of traditional foods. Dadeldhura District, Nepal, July 2013.

Government policy. Oil processors blame the rise in informal Indian imports on the GoN imposed VAT on domestically produced oil. The GoN imposes a 13 percent tax but offers a 50 percent discount to import mustard seed, leaving an effective 6.5 percent VAT; however, processors must pay 4 percent VAT on the mustard cake that is a by-product of the seed crushing process so the ultimate discount is only 2.5 percent.

Combined with weak customs enforcement along the lengthy border with India, and what appears to be regular smuggling of refined mustard oil from India, the GoN tax and trade policies appear to distort the market.[112] One news account from late 2010[113] reported that 75 percent of vegetable oil on the market in eastern Nepal was illegally smuggled from India; the flooding of the market supposedly resulted in 32 of the 34 oil mills in operation closing its doors.

Marketing. The marketing chains are slightly different for mustard oil as compared to soybean and sunflower oils. Moreover, the import channel is divided between formal imports of crude and processed oils, and the informal channel through which large volumes of mustard oil are smuggled from India (mostly in smaller wholesale and retail packaging).

112 "Local producers hit as oil smuggling surge," ekantipur.com, August 25, 2013, accessed September 12, 2013 via http://www.ekantipur.com/2013/08/25/business/local-producers-hit-as-oil-smuggling-surge/376985.html.

113 "Contraband Oil Health Risk," Kathmandu Post, October 11, 2010, accessed September 4, 2013 via http://www.ekantipur.com/the-kathmandu-post/2010/10/11/money/contraband-edible-oil-health-risk/213806/.

There are four major industrial processors (KL Dugar, Golcha Organisation, Kedia Group, and Chaudhary Group) and several medium-scale processors (e.g., Shiv Shakti), all located in the Terai. Each company has its own distribution network and sells to wholesalers. The major industrial processers have substantial underutilized installed capacity. Many are operating in the vicinity of 30-50 percent capacity because they cannot access sufficient raw materials to process oil, and cannot easily compete with imports (formal and informal) of processed oil.[114]

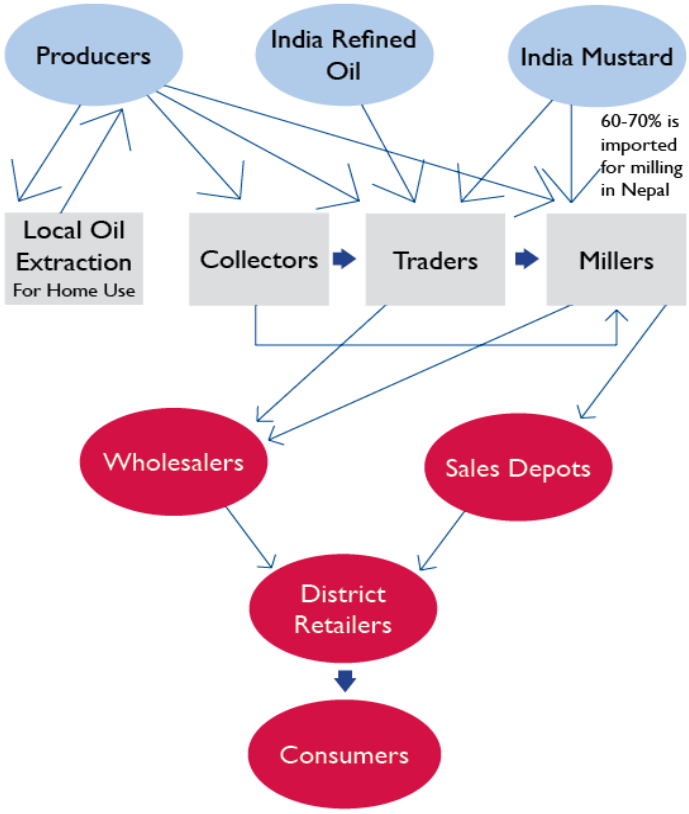
Individual traders sometimes operate as both distributor for one of the large processors and as independent vendors. Oil vendors almost always sell oil in addition to some other staple, such as rice or pulses. Large and small traders gain information about market prices (though not volumes) through informal networks, and often through mobile phones.

Some unknown portion of mustard oil never enters marketed supply, but is instead taken by producers to local oil millers (or crushed at home) for HH use. As illustrated in the chart below, producers do sell some seed to collectors, traders, and millers; oil is then extracted and bottled for food, and the cake by-products sold for feed. An estimated 60-70 percent of mustard seed used to produce oil in Nepal is imported from India, often directly by millers, but also via traders who on-sell to mills. A small portion of the mustard oil on the market is sourced directly from India in its refined state. Traders also informally import an unknown, but notable, quantity of this oil; while this oil is sold on to wholesalers, retailers, and ultimately consumers, the evasion of customs duty undercuts domestic oilseed producers and oil processors.

Photo by Fintrac Inc.

The Shiv Shakti mill, one of the larger mills in Nepal, processes and packages soybean oil for distribution to markets around the country. Jeetpur, Nepal, July 2013.

Figure 28. Mustard Oil Market Flow Chart



Source: Created by USAID-BEST.

Sunflower and soybean oil are imported in large volumes, typically from Argentina (soybean), Ukraine or Australia (sunflower), and Malaysia or Singapore (soybean or soybean blends). Both millers and traders directly purchase these imports for sale through the wholesale chain or via their own sales depots to reach retailers and consumers (see chart on next page).

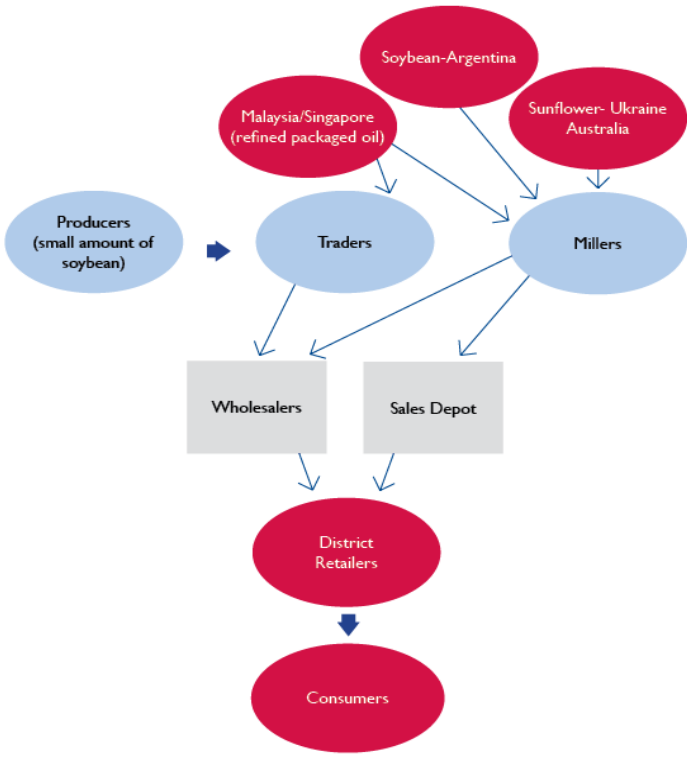
Performance. The markets for imported mustard, sunflower, soybean, and palm oils appear to operate fairly competitively, though it is possible that larger oil processors/distributors can exert some influence on prices in more isolated areas. The ability to influence prices would be weakened in areas where HHs produce their own mustard seed and press the oil themselves.

With the increase in world prices for edible oils, the value of edible oil imports has increased substantially (by nearly 1/3 according to a recent news article).[115] As oils other than domestic mustard seed oil gradually become more important for HH diets, this vulnerability to global prices will become increasingly important for food security.

114 Personal communication with edible oil industry representatives, July 2013.

115 See http://www.nepalsharemarket.com/Nepalsharemarket/Nepse/Analysis/news/news.aspx?news_id=NEW-005757.

Figure 29. Sunflower and Soybean Market Flows Chart



Source: Created by USAID-BEST.

2.5. CHARACTERISTICS OF MARKET SITES

2.5.1 Introduction

This section presents a summary of key findings applicable to all markets visited. In addition to available secondary reports, the information draws from interviews and observations during site visits in July 2013 to local markets across the country; through the field work, USAID-BEST intended to capture the characteristics of markets that traded in specific commodities including: rice, maize, wheat, grain legumes, vegetable oil, barley, buckwheat, and potatoes.

2.5.2 The Choice of Market Sites

USAID-BEST selected markets based on their size and the volume of major commodities (including rice, maize, wheat, grain legumes (lentils and pigeon peas), edible oil, and other important cereals (barley, buckwheat, and millet)) traded. The objective was to visit markets in a cross section of cereal surplus and deficit areas across Terai and Hills communities. In all, the team visited 15 markets across Nepal. Importantly, the team did not visit markets across the entire country (for example, there were no visits to Mountain communities because the field visit coincided with monsoon season). Readers should exercise appropriate caution when interpreting the findings herein.

All markets visited were in either undisputedly urban settings (e.g., Kathmandu, Nepalganj, Bhairahawa) or in what could be considered "semi urban" or "market center" areas in otherwise rural areas.

2.5.3 Summary of Shared Characteristics

This section provides a summary of the shared characteristics among the local markets visited.

Food markets perform reasonably well overall. On a macro scale, food supply appears adequate for imported and locally produced commodities. However, the availability of local foods is highly seasonal with fluctuating and often volatile market prices. If markets are efficient in Nepal, then interdepartmental trade can meet seasonal scarcity. There was ample evidence that even during monsoon season, goods are flowing from surplus to deficit areas, often over very difficult terrain and at great expense. However, the high price of food in deficit areas creates an affordability (economic access) issue that dampens market performance.

Regional trade flows. Marketed supply tends to flow within development regions, which reflects the topography and available transport routes. Large market actors (especially millers and large wholesalers) often report a segmentation of the national market into West, Central, and East.

Importance of informal trade and unequal trade relations with India. In the staple food market, the only significant external influence is India, whose exports to Nepal support the daily consumption of basic foods. Both formal and informal trade play important roles in ensuring food security. With approximately 7,000 km of open, unregulated border between the two countries, the volume of informal trade is most likely vast and could account for perhaps 30 percent of cereals consumed in Nepal.[116]

Formal structures. Local markets across Nepal are almost exclusively formal physical structures with clear boundaries between vendors. Signage is generally posted to indicate prevailing prices and compliance with GoN regulations (e.g., food safety, business permits). Markets are often located in district headquarters. This clearly delineated structure contrasts with the physical characteristics of most local markets in many Title II countries where markets are often an organic collection of road-side vendors who set up wares without shelter but in a location convenient to consumers.

For certain crops (potatoes and other seasonal vegetables, as well as high-value cash crops like ginger, cardamom), retail buyers can purchase 5 -10 kg of these items at small collection centers along the road; traders also use these facilities to aggregate commodities for onward sale in district collection centers (wholesale markets) where higher value cash crops are then exported to India and China.

116 Personal communication with market informants, July 2013.

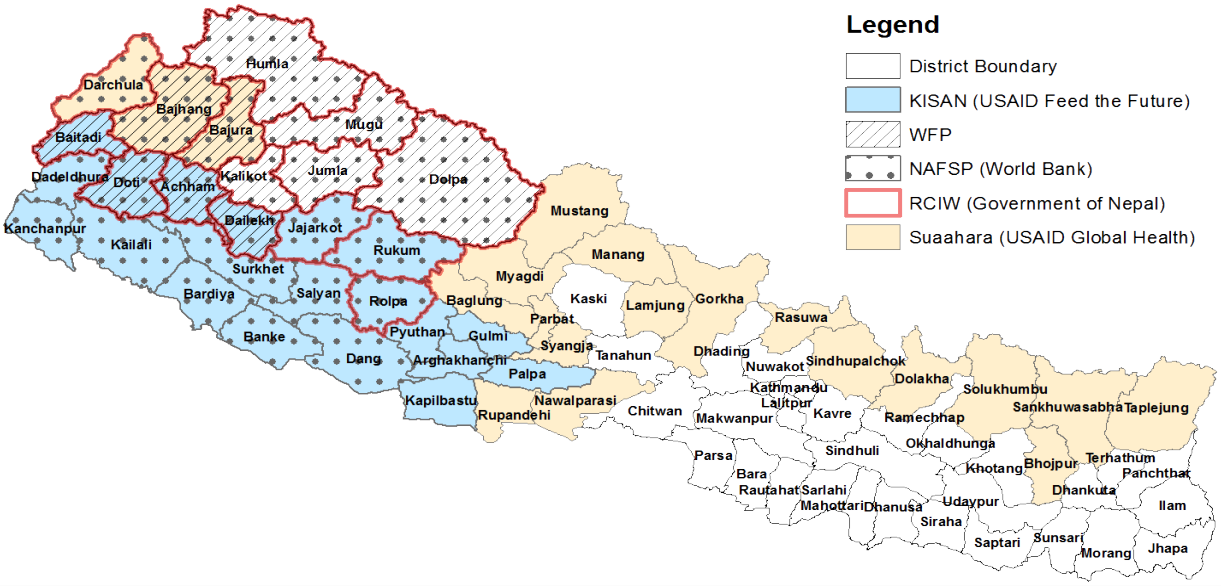
Photo by Fintrac Inc.

Despite the transport challenges Nepal's terrain creates, markets in the Hills and Mountains still manage to stock goods in high demand. Here, a small market near a produce market along the highway stocks soda and snack foods for travelers. En route from Hetauda to Kathmandu, Nepal, July 2013.

Credit availability and use. Traders and wholesalers reported widespread availability of credit at all levels of the marketing chain that is interest free for periods ranging from 15 days to 60 or even 90 days. This credit is available for slightly shorter periods when traders are selling in the Terai and Low-Hills (15-30 days), and longer periods (30-90 days) when selling to the High-Hills or Mountains because of lengthier transport time to access remote markets.

Years in business. Many traders at the wholesale level have well established businesses, which suggests a notable degree of market stability. Many larger wholesalers reported weathering losses and other business disruptions during the Maoist years.

Gender. All millers and processors, and most large- and medium-scale wholesalers, interviewed were male. At the small wholesaler level, there was limited female presence. At the retail level, there was a balance of male and female vendors, though it was not clear whether shop ownership was female or simply prominent sales staff.



This is a map of major food security programs in Nepal. July, 2013.

Source: Created by USAID-BEST, using information from WFP and USAID, July 2013.

CHAPTER 3
OVERVIEW OF FOOD SECURITY PROGRAMS

3.1. INTRODUCTION

This chapter intends to provide an overview of the major existing programs and projects as of July 2013 that target food insecurity and would be most relevant to inform a potential Title II program in Nepal.

3.2. PROGRAMMATIC TRENDS

- Numerous development actors focus **geographically** on the Mid- and Far-West, and this prioritization has the potential to overcrowd in these regions in the absence of adequate coordination.
- Advocacy for the **right to food** is growing. Donors and local non-governmental organizations (NGOs) are advocating pro-poor land and agrarian reform and are attempting to influence the constitution-making process via campaigns to ensure socioeconomic rights, and particularly the right to food. Rural development approaches now consider social mobilization and community empowerment integral to sustainability as education on personal rights allows for greater awareness of self-control in the development process.
- NGO programming has shifted from subsidy-based handouts to **awareness and capacity building**. NGOs and donors are focusing on designing projects based exclusively off technical assistance and trainings.
- Program activities are prioritizing **building and rehabilitating infrastructure** (e.g., roads, irrigation canals, and airports). Infrastructure not only improves access and production, but it is also a way to fund high-value projects with less of a management burden than attempting to target numerous households across development regions. Additionally, lack of infrastructure is a real barrier to development in Nepal.
- Environment projects are stressing **resilience-centered programming**. The definition of resilience varies across donors and NGOs but tends to primarily focus on disaster risk reduction (DRR) and climate change awareness and adaptability.
- Donors, NGOs, and the Government of Nepal (GoN) are using **cash transfers** for public works projects.
- NGOs prefer **long-term development projects** and are shifting away from short-term humanitarian responses.
- International NGOs (INGOs) are working through not only national NGOs but also local NGOs. There has been a push by GoN and donors to **build the capacity of local organizations.**
- There is an increasing awareness and focus on the **Millennium Development Goals (MDG)** across donors, NGOs, and the GoN.

3.3. USAID PROGRAMS

Food for Peace (FFP). Title II emergency food assistance to Nepal has been provided through WFP's Protracted Relief and Recovery Operations (PRRO). There has never been a Title II development food assistance program in Nepal.

Table 4. Title II Emergency Food Assistance (MT), FY08-13

Commodity	FY08	FY09	FY10	FY11	FY12	FY13*	Total
Beans**				120			120
Garbanzo beans							
(chick peas)	110		180				290
Lentils	230	500		630			1,360
Milled Rice	14,880	5,020	3,820	8,260	2,470	1,690	36,140
Vegetable oil	430	320	230	190		60	1,230
Yellow split peas	180	1,610	390	250		210	2,640
Total	15,830	7,450	4,620	9,450	2,470	1,960	41,780

Source: AMEX, June 2013.
*Through June 2013.
** The type of beans were not defined.

Office of US Foreign Disaster Assistance (OFDA). OFDA provides emergency funding in response to disasters to mitigate any impacts. In Fiscal Year (FY)08, OFDA provided more than US$3.9 million in Nepal for emergency relief supplies, DRR, earthquake preparedness, and water, sanitation, and hygiene (WASH). Examples of OFDA assistance include US$830,000 to Save the Children for social protection, relief commodities, and WASH support for internally displaced people and other conflict-affected populations. In FY08, OFDA also provided more than US$429,000 to support the National Society for Earthquake Technology in Kathmandu to increase earthquake awareness and preparedness.[117]

Feed the Future. The Knowledge-based Integrated Sustainable Agriculture and Nutrition Project (KISAN) is a five-year program implemented by Winrock and local partners that was awarded in February, 2013. KISAN focuses on food security and income generation. Maize, rice, lentils, high value vegetables and livestock are the target value chains. The project is largely focused on capacity building and training. There are five expected outcomes:

- Inputs (linking farmers to agricultural suppliers),
- Capacity Building (producers),
- Training (GoN),
- Agricultural Market Development (farmer groups), and
- Partnerships (GoN, local partners, NGOs).

KISAN is expected to work in 20 districts across the West, Mid-West and Far-West (Hills and Terai).[118] Village Development Committee (VDC) selection is finalized. KISAN focused the first year only in 10 districts in the Mid-West but is now set up in the remaining 10 districts in the Far West and West districts.

Feed the Future Innovation Lab/Collaborative Research Support Programs (CRSPs).[119] These programs are a partnership among USAID, US universities, developing country institutions, and NGOs to conduct research to address issues of hunger and poverty through science and technology. Much of the core funding is provided from the USAID Bureau of Food Security, funding is also provided from USAID Mission buy-ins and other offices within the Agency. CRSPs seek innovative solutions to improve food security, health, agriculture, trade, and natural resources in developing countries. Cross-cutting topics include climate change, gender, food security, nutrition, and capacity building.[120]

In Nepal, the Innovation Lab/CRSPs will provide essential research to inform food security projects. For example, Tufts University is researching the status of nutrition in 21 districts in collaboration with numerous GoN departments, NGOs, and academic institutions.[121] Additionally, Colorado State University, in collaboration with other international universities and NGOs, is researching the livelihoods of livestock producers affected by climate change to understand how to reduce their vulnerability and strengthen their adaptive capacity to environmental changes.[122] This on-going research, available on the CRSP public websites, will provide background information to designers and implementers of food security programs and projects.

Suaahara Integrated Nutrition Program (Global Health Initiative). Suaahara[123] started in September 2011 and runs through 2016. The prime organization is Save the Children and there are six sub partners (Helen Keller International, Jhpiego, Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs, Nepal Technical Assistance Group, Nepal Water for Health, and Nutrition Promotion and Consultancy Service). The project is in 25 districts, in the

117 USAID, 2013, *Nepal Humanitarian Assistance*.

118 The 20 KISAN districts are: Kanchanpur, Dadeldhura, Baitadi, Doti, Kailali, Dailekh, Achham, Surkhet, Bardiya, Banke, Salyan, Jajarkot, Rukum, Rolpa, Dang, Pyuthan, Kapilvastu, Arghakhachi, Gulmi, and Palpa. In the first year, KISAN is only working in 10 districts: Bardiya, Banke, Dang, Surkhet, Dailekh, Jajarkot, Rukum, Salyon, Ropla, and Pyuthan.

119 In 2013, USAID mandated a name change from CRSP to Feed the Future Innovation Lab.

120 Cultural Practice, 2013, CRSP Digest. http://crsps.net/about-the-crsps/, accessed August 2013.

121 Nutrition Innovation Lab, 2013, Nutrition Innovation Lab Asia. http://www.nutritioninnovationlab.org/asia/, accessed July 2013.

122 Innovation Lab, 2013, Livestock and Climate Change CRSP. http://lcccrsp.org/, accessed July 2013.

123 The predecessor to the Suaahara project was the USAID-funded Action Against Malnutrition through Agriculture (AAMA), a Child Survival Project in the Far-West (Kailali, Baitadi, and Bajura) that focused on pregnant and lactating mothers and infants under 2 years of age.

Mountains, Hills, and Terai (see Figure 30). Health, family planning and nutrition; agriculture; and WASH are the main components.[124]

Under the agriculture component, the program provides chickens (dual purpose improved chickens) and vegetable seeds to households (HHs). The focus is on improving consumption of diverse foods, especially greens and animal-source foods.[125]

For the health, family planning and nutrition components, Suaahara staff conduct a six-day village level training to health facilitators. Taking this knowledge, the health facilitators then provide five-day community level trainings to female community health volunteers (FCHV). These volunteers then train mothers in the 1,000 days window at the ward level for one day, on the second day, the FCHV educates all mothers and select family and community members. Suaahara focuses on the Essential Nutrition Actions-Plus:[126]

- Exclusive breastfeeding;
- Complementary feeding;
- Care of sick children;
- Maternal nutrition;
- Vitamin A deficiency;
- Iron deficiency;
- Iodine deficiency;
- Birth spacing and family planning;
- Dangers of smoking and indoor pollution for the health of mother and infant; and
- Proper storage and handling of food to prevent contamination.

Additionally, the project works to implement Essential Hygiene Actions, the creation of open defecation-free districts, antenatal care, postnatal care, integrated management of childhood illness, and detection and treatment of severe acute malnutrition.[127]

Global Climate Change Initiative. World Wildlife Fund is leading the consortium[128] to implement the USAID-funded *Hariyo Ban* Program (2011-16). *Hariyo Ban's* geographic coverage is in the Terai Arc Landscape and the Chitwan Annapurna Landscape. The program aims to reduce the adverse effects of climate change and threats to biodiversity in select biological corridors and areas with forest degradation. There are three main components: biodiversity conservation, payments for ecosystems services including REDD+[129] and climate change adaptation.[130]

The project especially focuses on local communities to ensure they adapt to climate change through sound conservation and livelihood approaches. All the components are coordinated with the government, communities, civil society, and private sector.[131]

3.4. USDA PROGRAMS

McGovern Dole International Food for Education (FFE) and Child Nutrition Program. WFP, in coordination with the Ministry of Education, is supplying school meals to primary schools, with food support from USDA. The food aid is shipped to Kalkuta, India and trucked into Nepal.[132] As of July 2013, USDA is currently accepting proposals for a new McGovern Dole International FFE Program in Nepal.

Table 5. USDA Food for Education Food Donations to WFP (MT), 2011-12

Year	Rice	Vegetable Oil	CSB
2011	570	1,720	
2012		350	3,540

Source: USDA/Washington DC, June 2013.

3.5. WFP PROGRAMS

The main WFP country office is in Kathmandu, with sub offices in Nepalgunj and Dadeldhura. WFP works in the Mountains and Hills of the Mid- and Far-West.

3.5.1 WFP Programs

PRRO. The current PRRO runs from 2011-13.[133] There is a PRRO to support the remaining 30,000-plus Bhutanese refugees in the East, and one to provide assistance to food insecure populations in the Hills and Mountains of the Mid- and Far-West.[134] WFP is currently working in 135 VDCs across 10 districts to reach about 85,000 HHs.[135]

Food-for-asset (FFA) and cash-for-asset (CFA). After the PRRO targeting food-insecure populations in the Mid- and Far-West concludes in December 2013, the FFA/CFA project will shift to the Country Programme (CP).

WFP is implementing FFA projects, CFA projects, and combination FFA/CFA projects. The food ration is 4 kg of rice

124 Personal communication with Suaahara staff, July 2013 and USAID, March 2014.

125 USAID, 2013, Suaahara. http://www.k4health.org/toolkits/suaahara-nutrition-project, accessed July 2013.

126 Personal communication with Suaahara staff, July 2013 and USAID, March 2014.

127 USAID, 2013, Suaahara. http://www.k4health.org/toolkits/suaahara-nutrition-project, accessed July 2013.

128 The additional three NGOs include: CARE Nepal, Federation of Community Forestry Users Nepal, and National Trust for Nature Conservations.

129 Reducing emissions from deforestation and forest degradation plus conservation.

130 Personal communication with WWF/Nepal, July 2013.

131 WWF, 2013, Hariyo Ban Program. http://wwfnepal.org/hariyobanprogram/, accessed July 2013.

132 Personal communication with USDA/Washington DC, June 2013.

133 WFP, 2013, WFP in Nepal (PowerPoint presentation).

134 WFP, 2010, *PRRO*.

135 Personal communication with WFP/Nepal, July 2013.

and 500 grams (g) of lentils per day per person worked over 60 days (for an average of eight hours per day).[136] On average, the CFA beneficiary receives US$2.50 per day for eight hours worked over a 60-day period in the lean season but exact cash payment varies by geographic location since the wage rate in each district is different (not a national average). The combination rations include 2 kg of rice, 250 g of pulses, and 1/2 the wage rate, which is about US$1.25 per day. The combination ration is the most widely used. The most common assets include road rehabilitation and irrigation canals, but there are also greenhouses, fish ponds, and orchards.[137]

CP. The new CP will run from 2013-17. The Program is focused on social safety nets in the areas of health, education, and rural livelihoods through activities such as MCHN, school meals, productive assets, livelihoods support, and capacity building of partners.[138]

MCHN. In 10 districts, WFP supported pregnant and lactating women (PLW) and under-twos (U2s) with a take home ration of 7 kg of SuperCereal (a locally produced wheat soy blend (WSB) called *unilito*). The ration provided an incentive for these women to visit health clinics and receive regular checkups. The program worked through one health post in each VDC. As of July 2013, the program was not active but WFP plans to reactivate it with new funding in the upcoming CP.

Photo by Fintrac Inc.

This beneficiary of the WFP-funded community development project receives an average US$2.50 per day for eight hours of work during the lean season. Often times, labor-based projects cannot pull from a large pool of healthy individuals and must rely on older women because of high rates of male migration. Doti District, Nepal, July 2013.

136 Some of the implementing NGOs compensate based off number of hours worked while others compensate based off quantity of work.

137 Personal communication with WFP/Nepal, July 2013.

138 WFP, 2013, School Meals Programme.

School Meals Programme. WFP is providing hot meals to students in 10 districts. First through fifth grade students now receive meals, but as of July 2013 the program will extend to eighth grade.[139] The school meal is intended to improve access to education, especially for girls, and decrease dropout rates. WFP and the Ministry of Education each share 50 percent of the costs of transporting the in-kind food assistance.

The food aid is calculated as 100 g per student per day for 22 days a month. WFP provides the schools with the commodities (WSB, corn soy blend (CSB), vegetable oil, and sugar) and the school prepares a hot porridge (*haluwa*).[140] The local WSB contains sugar but the CSB from the US does not so sugar is also distributed.

One unintended positive impact of the school feeding is that since all students eat the same meal at the school, traditionally divided groups - Dalit and non-Dalit children - have become comfortable eating together.[141]

3.5.2 WFP Food Aid Data

WFP is the only agency importing, procuring, and distributing food aid in Nepal. The US is the sole donor providing in-kind food aid donations, but WFP purchases food from various countries (listed in the table on next page) using cash donations from other donors.

3.6. GOVERNMENT OF NEPAL PROGRAMS

Rural Community Infrastructure Works Program (RCIW). RCIW is a public works project, started in 1996 to ensure HHs have enough food for consumption year-round. WFP provides the food aid for the program and the World Bank funds the cash component.[142] RCIW is managed and coordinated by the Ministry of Federal Affairs and Local Development.

RCIW overlaps in many of the same districts as the WFP FFA/CFA projects but in different VDCs. Traditionally, the asset creation was done with a FFW approach, but more recently cash is being introduced. Beneficiaries are allowed to work for up to 80 days of work, at an eight-hour work day. RCIW provides 4 kg of rice and 1/2 kg of pulse are provided (or a food/cash mix).[143]

Project for Agriculture Commercialization and Trade (PACT). The Ministry of Agricultural Development is the implementing agency for PACT. World Bank is funding the US$23 million project that runs from August 2009-June 2015. PACT works with farmers and cooperatives to provide market

139 Personal communication with WFP/Nepal, July 2013.

140 Ibid.

141 Personal communication with a gender and social inclusion specialist, July 2013.

142 Personal communication with WFP/Nepal, July 2013.

143 ODI, 2013, *Politics of a National Employment Guarantee Scheme in Nepal.*

linkages, strengthen value chains, and meet food quality standards in 25 districts.[144]

Nepal Food Corporation (NFC). The NFC is a branch of the GoN that is mandated to ensure an adequate food supply for food-insecure districts. Instead of targeting the most vulnerable families or HHs, the NFC supplies additional food (i.e., rice) to district headquarters based on district level indicators of food insecurity (i.e. cereal production estimates, population, etc.). For NFC food products, the subsidy is the cost of transport to food deficit areas. NFC currently only distributes rice. For 2013, the Government of Japan donated rice to support the NFC distributions.

3.7. OTHER DONORS, NGOS, AND DEVELOPMENT INITIATIVES

3.7.1 World Bank

Nepal Agriculture and Food Security Project (NAFSP). This project falls under the Global Agriculture and Food Security Project (GAFSP) of the World Bank. NAFSP launched April 30, 2013 and will run for five years. GAFSP is providing US$46.5 million to the Ministry of Agriculture and Cooperatives, and the GoN is expected to contribute an additional US$11 million to fund NAFSP.[145]

NAFSP will work in 22 districts in the Mid- and Far-West, across the Mountains, Hills, and Terai. The project will focus on technical assistance, dissemination of technology, and health and nutrition. There will be an equal emphasis on agriculture and livestock, but not on forestry or fisheries.

NAFSP overlaps with KISAN in many districts but they are coordinating on VDC selection since both projects are similarly agricultural-production based.

Poverty Alleviation Fund (PAF). PAF was created in 2004 to target the poorest of the poor in development and contribute to the MDG of reducing poverty by half in 2015. The major donor is the World Bank, and PAF also receives funding from the International Fund for Agricultural Development and the Ministry of Finance.[146] PAF is one of the major funds in Nepal for poverty alleviation. As of July 2013, PAF is working in 40 districts through local and national NGOs. PAF provides funding to NGOs for staff and to community-based organizations to form savings and loan groups. Communities are selected based off food insufficiency[147] indicators and the funds target women, Dalit, and other ethnic groups. PAF staff report that the majority of loans are used to purchase livestock.[148]

Table 6. Total WFP/Nepal Food Aid Commodities by Origin of Procurement (MT), August 2009 - June 2013

Origin	Pulse	CSB	Ghee	Salt	Rice	Sugar	Veg oil	WSB	Total
Australia	4,511								4,511
Belgium						255		436	691
Canada	308								308
Denmark	210								210
India				599	75,410	664			76,674
Indonesia							1,047		1,047
Italy								88	88
Malaysia							1,436		1,436
Nepal	491		314		1,646	791	390	15,156	18,788
Netherlands						254			254
Russia	814								814
Turkey	2,440								2,440
Ukraine	1,363								1,363
UAE	110								110
USA									
(In-kind)	3,390	6,190			20,150		2,970		32,700
Total	**13,637**	**6,190**	**314**	**599**	**97,207**	**1,963**	**5,843**	**15,680**	**141,434**

Source: WFP/Nepal, July 2013. Donations from the US include USAID food aid for the PRRO and USDA food aid for the McGovern Dole FFE Program.

144 GoN, 2013, Project on Agriculture Commericalization and Trade. http://www.pact.gov.np/?optoin=home, accessed June 2013.

145 Personal communication with World Bank/Nepal, July 2013. World Bank, 2013, Nepal Agriculture and Food Security Project. http://www.worldbank.org/projects/P128905/nepal-agriculture-food-security-project?lang=en, accessed May 2013.

146 Personal communication with PAF, July 2013.

147 Hard core poor (less than three months of food), medium poor (three-six month of food), or non poor (12 months of food).

148 Personal communication with PAF, July 2013.

3.7.2 Department for International Development (DFID)

Rural Access Programme (RAP). RAP is a labor-based project that builds roads. DFID provides the funding, IMC Worldwide manages the program and NGOs implement the projects. The third phase of this project started in January 2013 and is expected to run four years with £36.5 million in funding. RAP works in the Hills and Mountains of the Mid- and Far-West. This project targets economically active, able-bodied individuals, not the ultra-poor. The project primarily constructs roads using community labor and provides daily wages for six-seven months per year. Workers are paid in cash based off quantity of work. Roads are intended to improve access to markets and services.[149]

Photo by Fintrac Inc.

This girl is the daughter of a medium-scale trader who relocated from the Hills to the Terai. As frequently happens, she attends the local public school while her brothers are in private boarding schools in Kathmandu. Kailaili District, Nepal, July 2013.

3.7.3 European Union (EU)

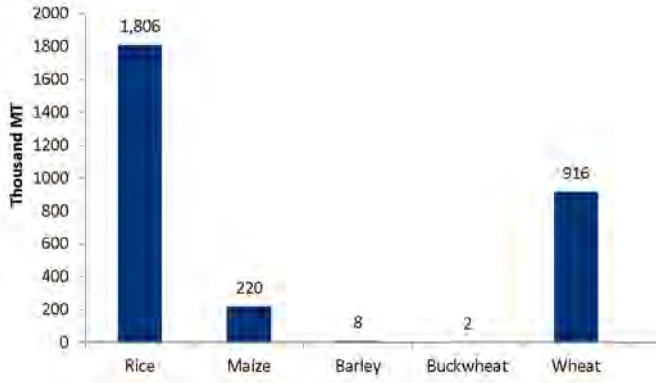
Food Security Thematic Programme (FSTP). FSTP is funded by the EU and implemented by Oxfam GB; it runs from December 2012-December 2015. The program aims to increase the participation and influence of poor and vulnerable farmers and fishermen in decision-making processes related to food security in Bangladesh, Pakistan, and Nepal for a total budget of €1.5 million. In Nepal, activities include increasing awareness of legislative and institutional arrangements concerning food security, right to participation in food security governance, and increased participation of women and men farmer groups and networks in decision-making processes advocating the right to food.[150] Currently, the project is being implemented in Dadeldhura, Dailekh, and Surkhet districts.

3.8. LOCAL AND REGIONAL PROCUREMENT

Local Procurement. WFP procures some pulses, ghee, rice, sugar, and vegetable oil from local suppliers.

WFP was procuring a blended foods (SuperCereal) from local processors for distribution in their MCHN and school meal programs but the procurement is currently on hold due to funding restrictions. The blended food is made of wheat, soy, and micronutrients. Prior to 2011, it was made with maize but that was substituted with wheat due to aflatoxins. WFP previously procured SuperCereal from three large suppliers.

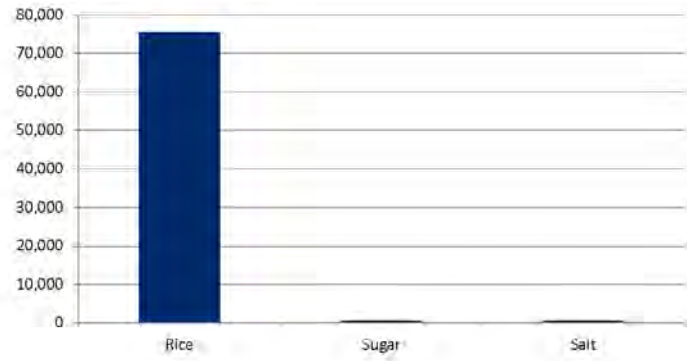
Figure 30. WFP Local Food Purchases in Nepal (MT), August 2009-June 2013



Source: Food Procurement Report WFP Nepal, July 2013.

Regional Procurement. WFP is purchasing numerous commodities from India and from other countries in the region. See Table 2 for a breakdown of regional food aid purchases, by source countries.

Figure 31. WFP Regional Food Purchases from India, (MT), August 2009-June 2013



Source: Food Procurement Report WFP Nepal, July 2013.

149 Personal communication with DFID/Nepal, July 2013.

150 Personal communication with EU/Nepal and Oxfam/Nepal, July 2013.

3.9. CASH PROGRAMS

WFP has been implementing CFA activities since 2007 in select VDCs. As of July 2013, WFP-funded CFA activities were in six districts[151] and reaching 146,000 beneficiaries. On average, each beneficiary receives US$2.50 per day for eight hours worked over a 60-day period in the lean season. The daily rate varies by district and year but it is theoretically based on 80 percent of the government established daily rate for unskilled labor in that district. In targeting, the Vulnerability Analysis and Mapping Unit selects districts considered most food insecure and then the partners rely on self-targeting in the communities for participation in the CFA activity. Cash is transferred to the beneficiaries in three modes: checks to user committees (31 percent), cash in hand (39 percent), or branchless banking (30 percent).[152]

As of July 2013, the branchless banking is through Siddhartha Bank.[153] In this scheme, beneficiaries receive an electronic bank card that is swiped at a voice-activated point of sale machine. Agents, i.e., local merchants operating shops in the area, assist with the process. Eighty percent of the transfers are to females. In Dialekh District, where WFP has instituted branchless banking since 2011 in coordination with the Manahari Development Institute, male beneficiaries reported that their wives carry the bank card.

Photo by Fintrac Inc.

WFP previously purchased a wheat soy blend called unilito from domestic millers. This plant in the Dugar Mill complex is now closed because WFP has ceased local purchase of unilito. Nepalgunj, Nepal, July 2013.

3.10. VOUCHER PROGRAMS

There is only one known program that used vouchers in a food security project.

Oxfam. From January 2010-October 2011, Oxfam implemented a project in Dadeldhura and Dailekh districts called *Improving Food Security in Communities Vulnerable to Food Price Volatility*. The project was funded by the EU Delegation to Nepal and included a voucher component.[154] The project aimed to target the most vulnerable HHs, especially those unable to participate in CFA projects.

HHs received a paper voucher worth NPR1,000, redeemable for rice, wheat, maize, oil, and/or salt (2 kg of salt was compulsory).[155] At that time, this amount was sufficient to buy a month of food for a family of six-eight people.[156] The vouchers were distributed four times (in March, April, August, and September) and could be redeemed at specific local retailers. Oxfam reimbursed those retailers monthly. Retailers had to be registered with the local government tax office, so certain smaller retailers were excluded.[157]

According to Oxfam, the project evaluation found that although HHs could spread their purchases across the whole month, almost all spent the voucher in one transaction. Additionally, Oxfam reports that vouchers were mostly allocated to rice (70 percent), then wheat (20 percent), then oil and salt (10 percent). This project was not scaled up or reinstated due to lack of funding at that time.

151 In January 2014, this number is expected to expand to 12 districts.

152 Personal correspondence with WFP/Nepal, July 2013.

153 Ibid.

154 The project funding was roughly € 1.4 million.

155 Personal communication with Oxfam/Dhangadhi, July 2013.

156 Oxfam, 2011, *Improving Food Security for Vulnerable Communities in Nepal.*

157 Personal communication with Oxfam/Dhangadhi, July 2013.

CHAPTER 4
RECOMMENDATIONS FOR PROGRAM DESIGN

This female vendor brings mangos in her basket to this small town center for sale along a main road that links the Terai to the Hills. Chinchu, Nepal, July 2013.

Photo by Fintrac Inc.

4.1. INTRODUCTION

The Bellmon Amendment requires assurances that a proposed food assistance program would not result in a substantial disincentive to, or interference with, domestic production or marketing in that country. The extent to which distributed food aid might have such a disruptive effect on production and markets rests fundamentally on whether proposed food aid represents "additional consumption" for beneficiaries (i.e., food consumption that would not have occurred in the absence of the food aid distribution program). If food aid transfers exceed households' (HHs') perceived needs, the beneficiary is more likely to sell the food aid, reduce market purchases of food, and/or increase HH farm sales. Such a response could lower market prices and/or reduce local incentives for production.[158]

This chapter provides recommendations to mitigate any negative impact on local markets from distributed food aid and local food procurement for a potential Title II food assistance program in Nepal. The recommendations stem from the well-documented fact that food assistance is most likely to be effective and have minimal market impact when it lands in the hands of the most appropriate people. Targeting concerns the who, when, where, what, and how questions surrounding food assistance intervention. When food assistance is targeted to the right people, at the right time, and in the right form, it is likely to have minimal negative effect on markets.[159]

Material in this chapter is based off desk research on food security, market visits, meetings with implementing non-government organizations (NGOs) and donors, discussions with field staff, and formal and informal conversations with program beneficiaries. Since Food for Peace is not currently implementing a development program in Nepal, the field discussions and meetings included visits with the Feed the Future Initiative, the Global Health Initiative, WFP, WFP implementing organizations, international and national NGOs, donors, and the Government of Nepal (GoN).

4.1.1 Overview of Food Insecurity

Food insecurity in Nepal is the result of a growing population, stagnant agricultural production, poverty, frequent environmental challenges, poor sanitation and hygiene, and poor feeding practices.

Availability. Nepal was relatively self-sufficient up until the last few decades, but with the ever-growing population, the country became dependent on imported foods to meet demand. Food and non-food items from a mix of local and imported sources

158 The complete distribution methodology for determining the potential impact of distributed food aid is available on the USAID-BEST website: http://usaidbest.org/other-best-products.aspx.

159 Barrett, Christopher, 2002, *Food Aid Effectiveness: "It's The Targeting, Stupid"*.

are widely available in the market, even during lean and monsoon seasons. Acute food shortages occur during short periods primarily due to washed out roads and road blocks.

Access. In Nepal, limited financial access (income) as a result of poverty constrains food security. Additionally, the inadequate physical access (road and transport system) poses limitations on reaching markets for buying and selling goods. The unfortunate social discrimination and marginalization of select castes and populations also contribute to a HH's inability to earn incomes and access markets.

Utilization. Lack of dietary diversity is a real challenge to appropriate micronutrient intake across Nepal. It is common for households to eat the same foods every day, such as rice in the morning and bread in the evening. Beneficiaries reported buying a package of instant noodles,[160] complimenting it with rice, and sharing that in the morning with the whole family.

Additionally, poor handling and feeding practices play a role in food insecurity. According to rural health professionals, poor infant child feeding practices primarily contribute to infant malnutrition. Specifically, exclusive breastfeeding is not followed because soon after child birth, mothers return to work in the field and collect firewood and fodder for the animals much of the child care and feeding is left to the older generation and other family members. Additional contributing factors to malnutrition include poor sanitation, lack of clean water, and inappropriate care practices by the grandmothers responsible for much of the feeding (e.g., feeding infants with dirty hands, giving infants non-boiled water, and meals of just starches rather than diverse foods that include micronutrients).

The consumption of food is also dependent on household power dynamics, a factor that is especially apparent in rural areas. The economic dependency of females on males as the main breadwinners dictates intra-household food allocation. Governed by socially guided norms, women are expected to eat after the male members. The wives will wait for their husbands to eat first and in many families they will eat the left overs. A daughter-in-law, even if she is pregnant, not only waits for her husband to finish his meal but also for other family members. Unmarried females are allowed to eat along with their brothers but certain specialty items will be allocated solely to the sons. Moreover, Hindu women fast for a longer period of time in many religious occasions since they believe doing so will bring fortune for their children and husband.

Stability. Stability refers to a consistent supply of food available and stable market prices, especially during lean periods and monsoon seasons in Nepal. Natural disasters, (e.g., landslides), disrupt the movement of food and increase market instability in Nepal. Additionally, both commercial traders and HHs struggle with limited food storage options to ensure consistent supply year round.

160 Known as *Chow-Chow* or *Wai-Wai* in Nepal and ramen noodles in the US.

4.1.2 Overview of Targeting Challenges with Food Aid

The use of self-targeting for determining HH participation, in theory, is designed so that only those within the target beneficiary group self-select, decreasing administrative screening processes and leakage to the non-needy. Generally, self-targeting uses a less preferred food transfer or a time requirement (labor or attendance) that carries high opportunity costs of time for the relatively better off so the cost of participating is then less attractive. Food-for-work (FFW) with a less preferred food will also suffer targeting errors when wages are set too high.[161]

One of the largest challenges to current food aid targeting practices in Nepal is the use of rice, a highly preferred commodity. Rice attracts beneficiaries that otherwise would not participate in a food-for-assets (FFA) project, since their time might be more beneficial spent elsewhere. Please see section 4.6 for a more detailed description on the use of rice in distributed food aid rations.

4.1.3 Malnutrition

Title II programs commonly use stunting[162] as a geographic targeting indicator for selecting areas of interventions. Stunting is a crucial indicator for public policy and development programs in non-emergency situations because it is linked to chronic malnutrition and is typically associated with low socioeconomic status. Wasting, on the other hand, is linked to acute malnutrition and is therefore generally an indicator appropriate for emergency response programs. (See the following maps for stunting rates and wasting rates by Development Regions and sub-regions.)

Stunting. Stunting is most prevalent in rural areas (42 percent), as compared to urban areas (27 percent).[163] According to the 2011 Demographic and Health Survey (DHS), 41 percent of children under the age of 5 are stunted and 16 percent are severely stunted. Children ages 36-47 months have a greater chance of being stunted (53 percent) as well as severely stunted (23 percent) compared to children ages 9-11 months. Mothers with a body mass index (BMI) less than 18.5 are more likely to have children that are stunted (47 percent),[164] a finding consistent with the literature on early childhood malnutrition. Additionally, "more than half of children whose size at birth was very small or small are stunted."[165]

Stunting is slightly higher in male children (41 percent) than in female children (40 percent).[166] One health professional interviewed suggested that the discrepancy between male and female stunting is in fact higher. She further noted that boys

161 Barrett, Christopher, 2002, *Food Aid Effectiveness: "It's The Targeting, Stupid"*.

162 Stunting is low height-for-age.

163 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

164 Ibid.

165 Ibid.

166 Ibid.

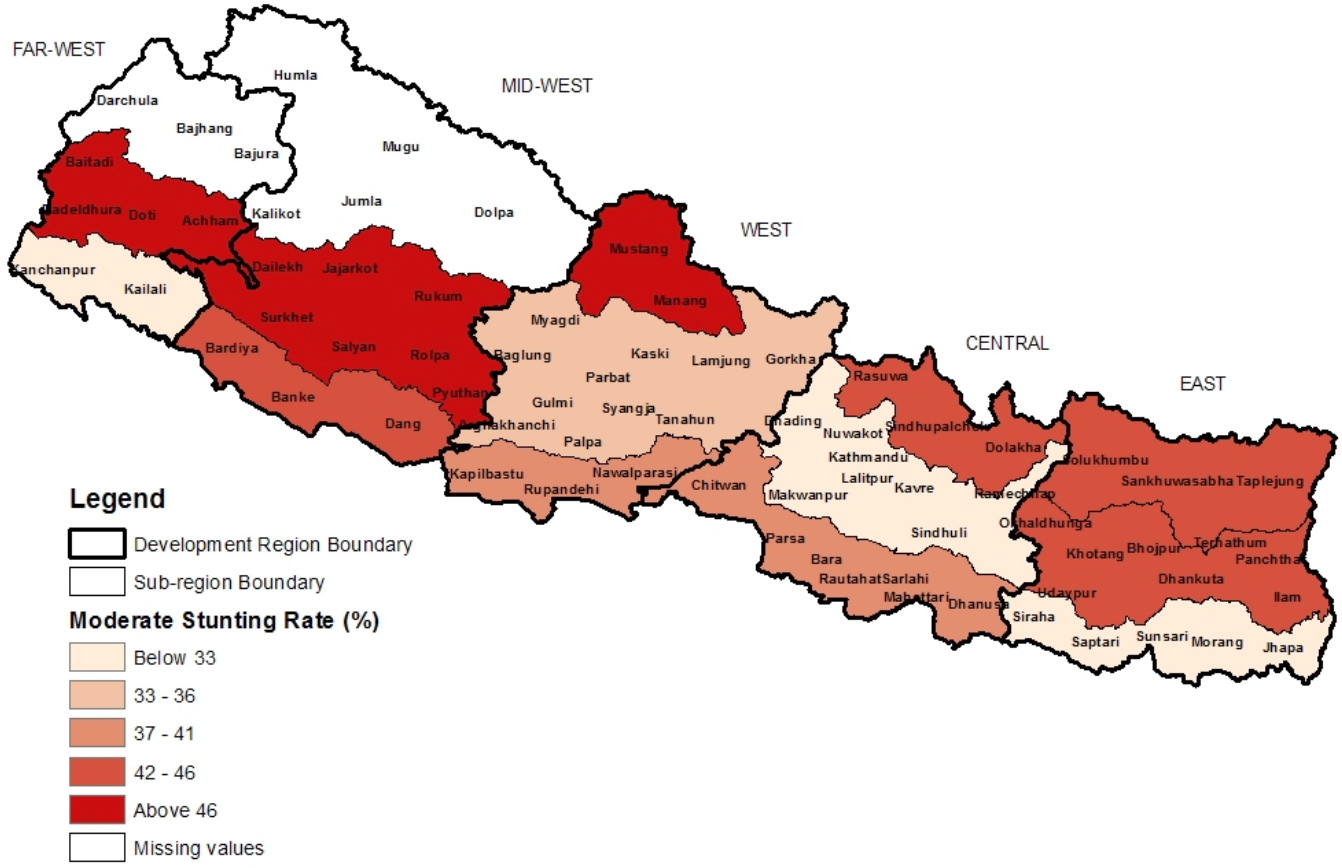
tend to suffer primarily because of misguided maternal feeding practices. Mothers who give birth to male children are 'rewarded' with rice, ghee, and salt since it is believed that they will stay healthier with this 'pure' diet, while mothers who have female babies are penalized with foods considered inferior, such as millet and vegetables, that in the end provide more nutrients.[167]

Wasting. The prevalence of wasting is highest in rural Terai areas and the prevalence of severe wasting is highest in urban Terai areas.[168] Eleven percent of children under five are wasted, while three percent are severely wasted. Children ages 9-11 months are most affected (25 percent); and unlike stunting, children ages 36-47 months are least affected (7 percent). A strong correlation exists between wasted children and low birth weight in Nepal.[169]

4.1.4 Poverty

Approximately 31 percent of Nepal's population lives below the poverty line and 41 percent consume less than the caloric requirement. Mountain, Hill, and Terai populations in the Mid- and Far-West are most impoverished.[170]

Figure 32. Moderate Stunting Rates by Development Region and Sub-region (%), 2011



Source: Created by USAID-BEST, using 2011 DHS data (height for age <-2 z-score). Please see Annex 4 for a map of severe stunting by Development Regions and Sub-regions.

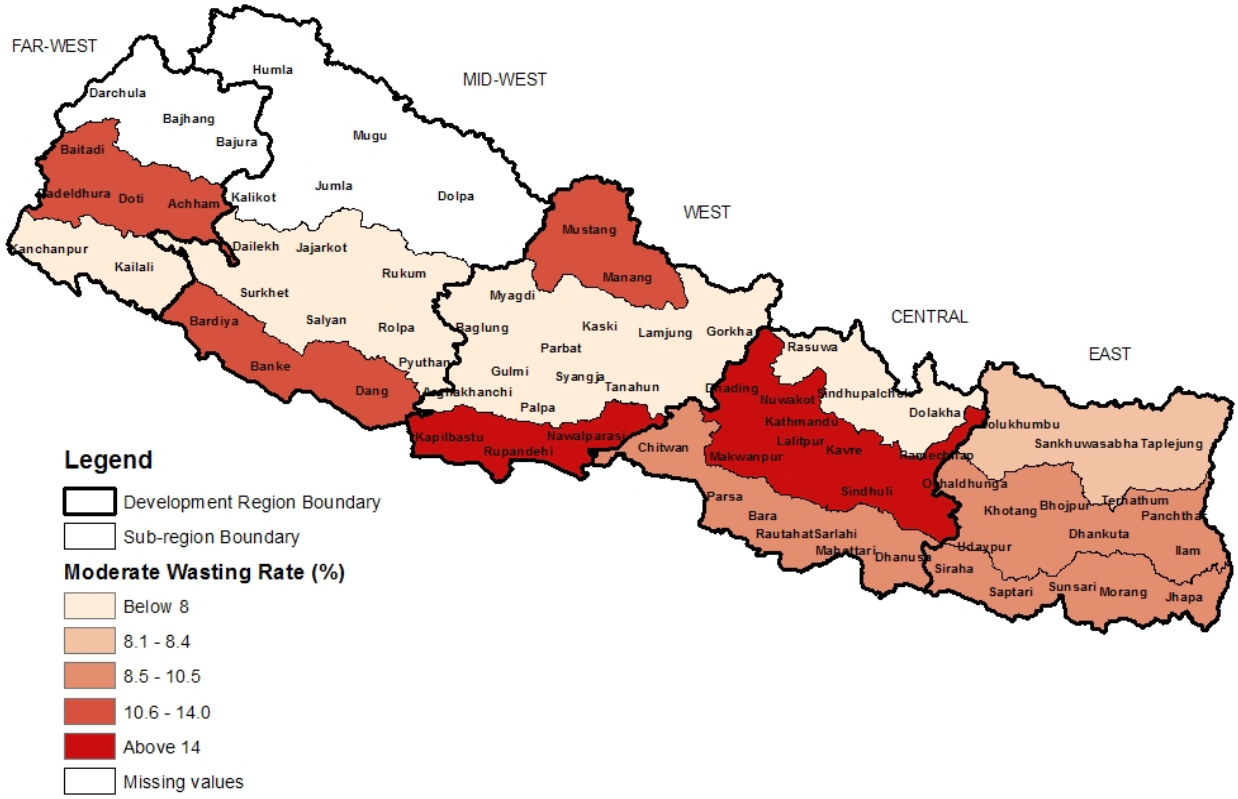
167 Personal communication with a Senior Auxiliary Health Assistant, July 2013.

168 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

169 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

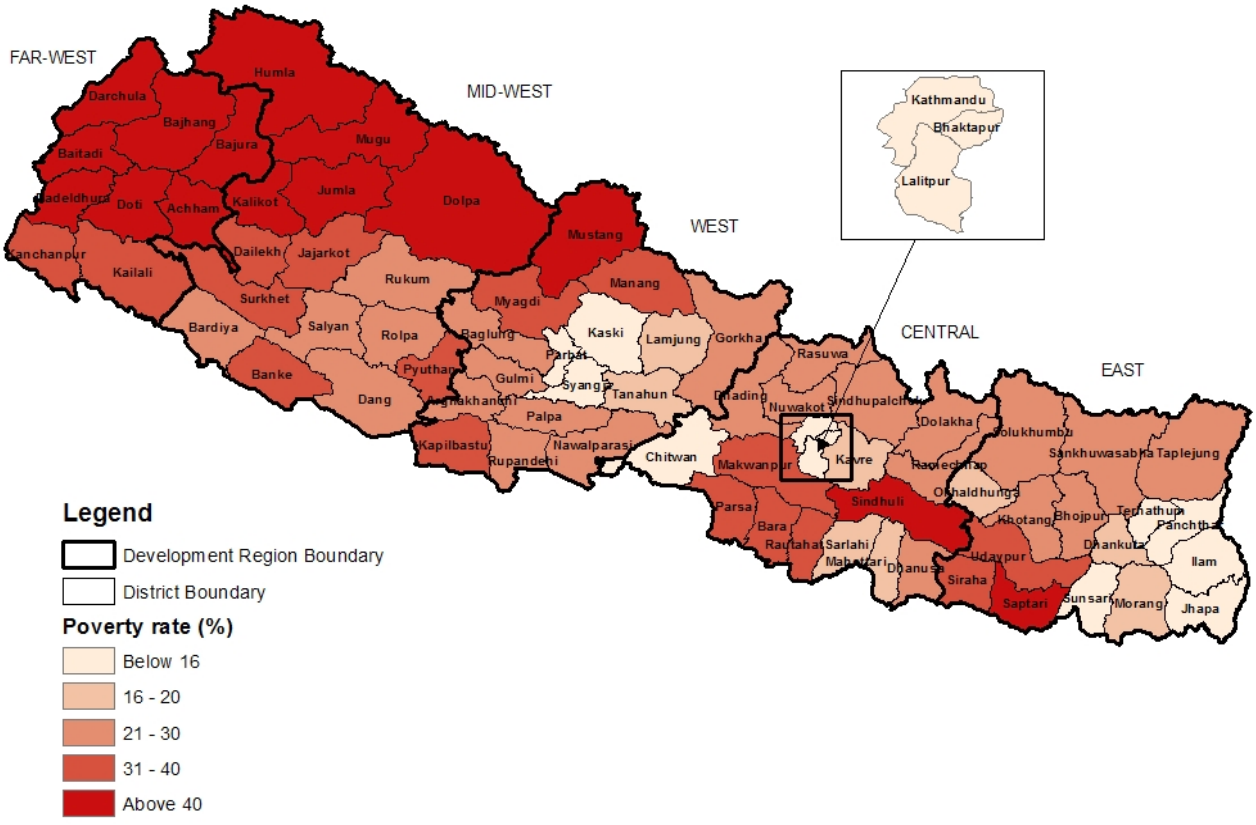
170 GoN, 2010, *The Food Security Atlas of Nepal*.

Figure 33. Moderate Wasting Rates by Development Region and Sub-region (%), 2011



Source: Created by USAID-BEST, using 2011 DHS data (weight for height <-2 z-score). Please see Annex 4 for a map of severe wasting by Development Regions and Sub-regions.

Figure 34. Poverty Rate by District, 2011



Source: Created by USAID-BEST, using Central Bureau of Statistics of Nepal, Nepal Small Area Estimates of Poverty, 2011.

4.2. SEASONAL TARGETING

This section covers the timing of a potential Title II program in Nepal and when it would be most appropriate to target beneficiaries with programmatic interventions involving in-kind transfers.

4.2.1 Lean Periods and Coping Mechanisms

Nepal has two agricultural lean periods per year: a summer lean period (July-August) and a winter lean period (February-April) with some variation depending on location.[171] During these months, HHs rely on coping mechanisms to meet food needs. HHs are able to smooth their consumption during lean seasons because they have incorporated regular coping mechanisms, ingrained in their HH structure. Coping mechanisms include:

- Seasonal out migration (to India);
- Permanent out migration (to India, Qatar, Saudi Arabia, Malaysia, etc.);
- Seasonal or permanent relocation to the Terai (for the Hill and Mountain populations);
- Remittances from domestic or external sources;
- Selling livestock;
- Taking loans of food and/or cash;
- Participation in food-for-assets (FFA)/cash-for-assets (CFA) projects; and
- Alcohol consumption.

4.2.2 Seasonality of Production and Marketing in Rural Hills

According to the Nepal Thematic Report on Food Security and Nutrition, in the rural Hills, HHs consume 40 percent of their food from their own production, 57 percent from purchased food, and 2 percent from in-kind sources.[172] Consumption indicators generally show poor consumption during lean periods, particularly the reliance on diets consisting mostly of staple foods. HHs are generally able to smooth their overall dietary energy consumption throughout the year but during lean periods HHs rely on cheaper and less nutritious foods from the market.[173] USAID-BEST observed, and beneficiaries reported, significant purchases of cheap ramen noodles[174] and a switch to lower grade rice.

Photo by Fintrac Inc.

Though most mills employ young male workers, some women do get involved in certain labor roles; as seen here, these two women are shouldering bags of wheat. Kailaili District, Nepal, July 2013.

4.2.3 Seasonality of Production and Marketing in Rural Terai

According to the Nepal Thematic Report on Food Security and Nutrition, in the rural Terai, HHs consume 43 percent of their food from their own production, 54 percent from purchased food, and 3 percent in-kind.[175] In 2010-11, consumption of HH production in the Terai was relatively consistent year round. The most notable exception was in March, in the winter lean period, when the percentage of the population with dietary energy deficiency increased. HHs are able to even out their consumption with market purchases throughout the year since market supply is steady. Based off the Nepal Thematic Report on Food Security and Nutrition (2013), there are no overall fluctuations in food security associated with the agriculture lean periods in rural Terai areas and it reports that other issues have a larger impact on household food security such as wage opportunities, individual HH shocks, and the price of food (dictated mainly by Indian prices).[176] USAID-BEST did learn that during the planting seasons in the Terai, child malnutrition, primarily wasting, does increase because mothers and caretakers spend their days in the fields and there is less food consumption at home.[177]

171 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

172 Ibid.

173 Ibid.

174 Known as *Chow-Chow* or *Wai-Wai* in Nepal and ramen noodles in the US.

175 Ibid.

176 Ibid.

177 Personal communication with GoN health professional, July 2013.

Timing of projects. The lean periods are the months when it is most appropriate to implement FFA/CFA projects because labor is available, prices are relatively high, and the transfers may discourage out migration. It is important to consider the monsoon season and ensure projects are completed before the rainy months, especially those centered around road and irrigation canals.

4.3. HOUSEHOLD/INDIVIDUAL TARGETING

To minimize the market impact of food assistance, it is essential to target the right person with the right resources in order to meet program objectives. Providing food assistance to people who do not need it or value it as food may distort markets, discourage livelihood practices, and waste resources.

4.3.1 Household Targeting

HH targeting in Nepal poses a few challenges. One issue is that the overlap of donor projects, especially in the Mid- and Far-West which leads to competition among the various donors. Consequently, some HHs may divert their time away from previous HH responsibilities. Moreover, some HHs could benefit twice while others none at all. Secondly, due to traditional social structures and systems in the communities, the selection of HHs by community groups and user committees does not guarantee inclusion of the most disadvantaged. Title II would have to invest financial resources in targeting to understand the poverty and food insecurity challenges by district, VDC, and HH level, (NGOs should educate all their field staff on the importance and methods of proper targeting).

4.3.2 Self-Targeting

Self-targeting can be an effective approach to target the poorest households when the food/cash is valued at an amount that would deter 'better off' HHs from participating. Relying on self-targeting with a highly desired food consumed by all socioeconomic classes, e.g., rice, is not reliable. By including rice in the ration, FFA will be certain to attract more than only the most vulnerable populations.

Implementing NGOs report that in each clustered settlement one person from each household can participate if s/he elects to do so. WFP reports less than 80 percent of HHs participate.

Support Activities for Poor Producers of Nepal (SAPPROS), an implementing NGO for WFP, reports in the case of a current FFA project in Bajura, for example, 220 households make up one cluster. Each household is participating in the FFA irrigation scheme construction. SAPPROS reports that 100 percent self-selection in their FFA projects is common.[178]

WFP'S FFA TARGETING PRACTICES

Food aid in Nepal is distributed primarily by WFP through FFA projects. Since WFP is the only actor distributing food aid we can draw on their practices as an example.

WFP reports the following targeting process for their FFA/CFA projects:

1. Identify districts in the Mid and Far-West Hills and Mountains, based on prevalence of hunger.

2. Identify the chronically food insecure and cluster them, in consultation with GoN and implementing partners.

3. Select settlements within the clustered VDCs, based off a list of indicators (food sufficiency, crop production, employment, landholding, physical access, social factors, out migration, and availability of non-timber forest products).

4. All households in the selected settlements are eligible for participation in the FFA work scheme.

5. Self-targeting is then used as HHs choose to participate in the FFA/CFA project.

Source: Personal correspondence and communication with WFP/Nepal, July 2013.

The FFA projects[179] are generally in districts that also receive (or received) WFP school meals and MCHN blended food rations so select HHs could benefit from multiple food transfers. Food aid could be received via FFA labor, a PLW and U2 visit to a health clinic, and/or a hot meal for school age children. This is important to recognize when selecting areas of interventions and HHs.

4.3.3 Vulnerability

There are a variety of factors in Nepal that contribute to HH vulnerability and food insecurity. It is important for a Title II program to recognize these factors and target these HHs and individuals with food and cash transfers. Economic, social, and climatic variations shock HHs and challenge their food security. Building resilience to these vulnerabilities is an important component to rural development and to strengthen HHs.

Economic vulnerability. Changing food prices leads to HH vulnerability, especially during the lean season months when HHs rely heavily on the market. The Nepal Thematic Report on Food Security and Nutrition (2013) reports "differences in vulnerability are a function of the relative changes in food prices in different regions, the magnitude of poverty in the regions, and the degree to which HHs rely on market purchases versus their own production." The analysis considered HHs that may have benefited from increased food prices, however, it reports

178 Personal communication with SAPPROS, July 2013.

179 For FFA activities, WFP distributes food at the beginning of the project, mid-way, and at the end.

virtually all poor HHs purchase more food than they sell.[180] The NLSS indicates 62 percent of HH expenditures go to food.[181]

Social vulnerability. There are many factors contributing to social vulnerability including early marriage, food taboos around menstruation and female adolescents. For example, women give birth young and typically live in the house of their spouse where young mothers are subject to the oversight of their in-laws. One quarter of all women give birth by age 18 and half of all women give birth by the age of 20.[182] Illiteracy contributes to vulnerability. Only 52 percent of agricultural HH heads, the prime decision makers, are literate.[183] Activities revolved around literacy and nutrition education would build the capacity of young mothers to ensure healthier generations; future mother-in-laws will be aware of dietary diversity and other factors essential to improving health and malnutrition.

Biased views on proper behavior and consumption during female menstruation cycles also lead to certain vulnerabilities. During this time, Hindu women are forbidden to eat eggs, meat, milk, yogurt, and homemade butter (ghee). In the Hindu religion, milk and its associated products are regarded as pure items, so as a result of the belief that menstruating females are dirty, these women are not allowed to even touch milk or yogurt; the cattle may die if the "impure" women come into contact with these animal products. Additionally, especially in the West, females must stay outside of the main house during their menstruation because their impurity renders them untouchable. In some cases, they stay in small sheds made especially for this purpose, or in stables with livestock. Consequently, menstruating females are not allowed to enter the kitchen and other parts of the main house so they have to depend on the food they are served (e.g. dry bread, chili, and salt).

Another stigma that leaves women vulnerable is the belief that if adolescent females consume nutritious food then they may exhibit heightened sexual desires, which is considered morally and socially unacceptable. Besides this perception, adolescent females also face discrimination in food allocation as their food consumption is seen as less important relative to male siblings and/or male members of the household. Additionally, girls are reportedly also given less nutritious portions during adolescence to control physical growth.[184]

Climatic vulnerability. As a country prone to natural disasters and climatic variations, Nepal faces floods, droughts, landslides, winds, hail storms, and earthquakes. The change in rainfall patterns, primarily linked to global climate change, put HHs at risk because the inconsistent rainfall can increase pressure on crop and livestock production, lead to lower yields, and shift production patterns and traditional growing seasons.[185] Activities that strengthen livelihoods and HH resilience are needed in this instable environment.

Photo by Fintrac Inc.

Health posts are scattered throughout districts and try to deter home deliveries by providing financial incentives for women to give birth at these centers. Here, a woman is bringing her baby to the health post for a check up and growth monitoring. Bardiya District, Nepal, July 2013.

4.4. COMMODITY SELECTION

Food assistance can strengthen and incentivize participation in development projects and improve livelihoods. With functioning markets in Nepal it makes sense for a Title II development program to especially fine tune the use of in-kind food assistance and to use market-based approaches.

4.4.1 WFP Food Assistance Rations

The current ration size for WFP distributions includes:[186]

- FFA: rice (4 kg) and pulses (1/2 kg) per day (about 60 days of work/8 hours per day)[187]
- CFA: 80 percent of the local GoN established wage rate per day
- FFA/CFA: rice (2 kg) and pulses (250 grams) per day + 1/2 wage rate per day

Milled rice. Rice is the most highly desired staple across Nepal, and therefore would be inappropriate in a FFA program. Households perceive it as a luxury to eat rice. Rice is always eaten at important events, provided to guests, and is indicative of social and economic status (i.e., more respect is given to

180 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

181 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Highlights)*.

182 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

183 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Highlights)*.

184 Personal correspondence with gender and social inclusion expert, July 2013.

185 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

186 As of July 2013.

187 WFP reported that the ration will cease to include pulses and instead switch to five kg of rice starting around December 2013.

those households eating rice). WFP distributes rice to those areas that traditionally did not produce rice or produced in minor quantities for special occasions. Rice has primarily been provided through FFA projects but also emergency humanitarian responses.

During the July 2013 field visit, USAID-BEST heard varying accounts on the use of WFP rice by beneficiaries:

- Eating rice and selling production of maize and soybeans;
- Converting the rice into rice alcohol; and
- Self-monetization of rice and pulses.

Certain criticisms have arisen surrounding WFP distribution of rice in the Hills and Mountains, particularly a concern that direct distribution of rice has changed diets and increased market dependency. Though these concerns may be justified, the evidence indicates that those same communities receiving rice from WFP may have already shifted to this commodity in their own market purchases. Whether the switch to rice is a result of WFP distributions is the subject of debate. The GoN, through the Nepal Food Corporation (NFC), has also distributed rice to food insecure populations for many years. However, it does not appear that NFC rice moves far beyond the district headquarters. Beneficiaries reported that they did not prefer to travel the distance for rice that they believe traders only purchase to resell at a higher price.

Generally, in food aid projects, especially ones that rely on self-targeting for participation in FFA, a less desired commodity is provided in order to attract solely the food insecure. In Nepal, rice will never attract only the most vulnerable, food insecure HHs because everyone, across all social classes and socioeconomic groups, highly prefer rice. USAID-BEST recommends against the inclusion of rice in a FFA or MCHN ration for a development food assistance program. However, emergency response programming could include rice.

Fortified blended foods. Currently, WFP provides 100 g per student per day of a blended food for 22 days a month for school meals. Previously, WFP provided *unilito* that it purchased from cash donations, but it now provides transoceanic CSB and vegetable oil under a USDA award, and locally purchased sugar to the school for preparation of a hot porridge (*haluwa*).[188] Although the local WSB contains sugar, the CSB from the US does not so sugar is also distributed. There were reports that the sugar was being pilfered by community volunteers that oversee the food storage. Additionally, it was noted that finding the right mix of CSB and sugar presents a challenge and the already mixed blends were more preferred by students and parents. Furthermore, there is a preference for ghee over the imported vegetable oil, but even so, the oil is still used.

188 Personal communication with WFP/Nepal, July 2013.

4.4.2 Commodity Options for Title II FFA Rations[189]

Wheat grain. Transoceanic wheat grain could be included in a FFA ration. Wheat is a commodity known to rural HHs but is not as highly preferred as milled rice. Distributing in the grain form will contribute to local milling industry. The use of wheat grain in a self-targeting FFA project should help to attract only the most needy. There would be minimal concerns of impact on market and production since domestic production is not sufficient to meet demand.

Photo by Fintrac Inc.

This woman is a beneficiary of a WFP-funded cash-for-asset project. The community involved in this project reports that households spend their earned money on purchasing goats, food, clothes, and hospital visits. Doti District, Nepal, July 2013.

Pulses. Transoceanic pulses would be a good compliment in a FFA ration. A pulse in the ration would provide a good protein source. Potential pulse options include: garbanzo beans (chick peas) and yellow split peas. There would be minimal production disincentive concerns since Nepal is importing a significant portion of their national pulse supply.

4.4.3 Commodity Options for Title II MCHN Rations

Fortified blended foods. Transoceanic CSB or local WSB (*unilito*) would be appropriate as a monthly MCHN ration to PLW and U2s. There is no market concern of the distribution of blended foods for a MCHN program. These foods are highly

189 USAID-BEST does not recommend switching to maize grain or maize flour (cornmeal/flour) because of the tendency to use maize for animal feed. Moreover, potential GMO concerns complicate the import of US maize grain.

nutritious with limited resale value in rural markets and with proper targeting, the foods will be consumed by the intended beneficiaries.

Vegetable oil. Although USAID-BEST recommends against the inclusion of vegetable oil in a FFA ration, it could be considered for a MCHN ration as a nutritional supplement. Distribution of vegetable oil to HHs has not occurred in the past so the likely behavioral response (i.e., whether beneficiaries would be more likely to consume or sell it) to such a commodity transfer is unknown. However, the team has some concerns that Title II vegetable oil would be self-monetized by the beneficiaries based on analysis of the edible oil market. Rural and urban populations highly prefer mustard seed oil for cooking and medicinal purposes. Additionally, ghee is often used over vegetable oil.

Despite these preferences, the team believes distribution of in-kind vegetable oil in a MCHN ration would not have any significant market impact as part of a well-designed Title II development program; to ensure MCHN beneficiaries consume intended rations, such programs around strong nutrition education, behavior change and communication messaging, and cooking demonstrations should accompany food transfers as needed. Title II could consider complementing CSB with cash or vouchers instead of, or in addition to vegetable oil if the program wants to expand its MCHN rations.

In sum, in-kind wheat grain and pulses are viable options for Title II FFA rations, while CSB and potentially vegetable oil could be included in a Title II MCHN ration. With functioning markets in the Hills and Terai, Title II could complement either ration with cash and/or vouchers.

GUIDANCE

Local and regional procurement (LRP), cash, and voucher programs are procurement approaches that aim to support local markets by stimulating production and/or marketing of basic goods. Typically, LRP refers to donors purchasing sizeable food tonnages from relatively large market actors; cash and voucher programs generally refer to donor provision of cash transfers or vouchers to beneficiaries, who then procure small amounts of food and non-food items from supermarkets or vendors in local markets.

TERMINOLOGY*

LRP: Local procurement refers to the in-country purchase of food to reach targeted beneficiaries via direct distribution, cash, and/or vouchers. Regional procurement refers to the purchase of food by donors in a third country for distribution in the recipient country.

Conditional cash transfer: Beneficiaries receive cash to purchase items themselves, but on a conditional basis. The conditionality associated with the transfer requires the beneficiary to carry out a certain livelihood activity, or engage in some behavior, such as visiting a health center or attending a training.

Unconditional cash transfer: Beneficiaries receive cash to purchase items themselves. Unconditional cash transfers allow beneficiaries to spend the money according to their own perceived need, with no restrictions on behavior or use of money.

Cash voucher: Beneficiaries receive a voucher that has a cash value. The cash voucher can be redeemed at pre-identified shops, through pre-identified traders, and/or at pre-identified markets. The cash voucher can be exchanged for a range of commodities up to the specific cash value. This mechanism is also referred to as an open voucher because end purchases are not defined.

In-kind/commodity voucher: Beneficiaries receive a voucher which can be redeemed at pre-identified shops, through pre-identified traders, and/or at pre-identified markets for a range of pre-determined commodities. Commodity vouchers can be exchanged for a fixed value or quantity of selected commodities. This mechanism is also referred to as a closed voucher because the program pre-determines the range of end purchases. Closed vouchers can also be used for non-food items, such as livestock or agricultural inputs.

Food-for-work/cash-for-work (FFW/CFW): Food/cash is provided to workers as wages. The projects are generally community-wide public works.

Food-for-asset/cash-for-asset (FFA/CFA): Food/cash is provided to workers as wages for community-based public works projects that create community assets.

Food-for-training/cash-for-training (FFT/CFT): Food/cash is provided to beneficiaries as compensation for participating in skills-based and capacity building trainings.

*Source: Cornell University, 2010, LRP Market Monitoring Training, Introduction to LRP and CaLP, 2012, Cash Transfer Programming.

4.5. LOCAL FOOD PROCUREMENT THROUGH CASH, VOUCHERS, AND DONOR PURCHASES

Cash transfers. Cash is feasible since there are functioning rural and urban markets and would be a good option since food is available in the marketplace.

Nepal was one of the first countries in which WFP implemented CFA. Both cash and vouchers (cash or commodity-based) are viable programming options in many areas of Nepal.

WFP has conducted market mapping exercises to evaluate the feasibility of using cash (see figure on next page as an example). The agency reports it uses a number of factors to assess which modality, cash or food, would be appropriate for each VDC in which WFP is implementing FFA and/or CFA. Factors include: "the number of food traders in market centers, permanency of market (versus seasonal or temporary markets), food price variation, existence and quality of road network, distance to market, travel cost, and travel time by food or vehicle."

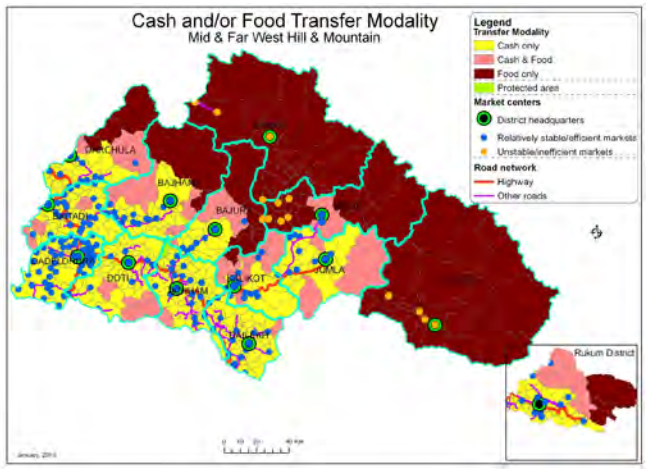
If Title II intends to work in any of the areas where WFP has conducted this market mapping exercise, USAID and its awardee(s) should collaborate with WFP to ensure the Title II program design benefits from the extensive market research already in place to inform the cash/food transfer decision.

Photo by Fintrac Inc.

USDA currently funds a McGovern-Dole International Food for Education and Child Nutrition award to WFP for school feeding. As part of this program, vegetable oil is distributed to schools for preparing hot meals. Doti District, Nepal, July 2013.

To date, WFP has used three modalities to provide cash transfers: check transfer to user committees, cash in hand, and branchless banking. Branchless banking, where possible, is the most intriguing and suitable option because it ensures cash goes to women (who are the only HH members who may open the required individual accounts), imposes security measures (biometrics and beneficiaries photographs on debit cards), enhances accessibility (voice messaging on point-of-sale machine), and provides additional benefits associated with increased financial literacy. Mobile money, transferred through cell phones is not yet common practice in Nepal. It is estimated that seven out of every 10 rural HHs possess a cell phone.[190] There are some branchless banking operations that could be scaled up with more demand. A Title II program could work through these branchless banking modalities[191] or rely on cash-in-hand transfers.

Figure 35. WFP Mapping Exercise to Assess Cash Feasibility



Source: WFP PowerPoint on programs, shared July 2013.

Calculation of the wage rate varies in the current WFP CFA project. Some NGOs report using the rate provided by WFP, and uncertainty about the actual district unskilled labor rate. WFP reports taking 80 percent of the district unskilled labor rate. Much consideration needs to be given to calculating an appropriate rate that would attract the most needy while not competing with any labor opportunities.

Cash transfers in any food security project will also require supplementary nutrition education. A CFA program without a nutrition component will not guarantee food security because HHs will primarily purchase rice, oils, salt, and non-food items. If the goal is to improve food security (not just quantity consumed, but also quality) then 1) invest in family nutrition education (CSB/WSB (*unilito*) could be used as an incentive) and/or 2) provide more nutritious, slightly less preferred food (wheat grain and pulses). With the investment in nutrition education a CFA program should lead HHs to increase their purchase of animal source foods (eggs, yogurt, cheese, meat), pulses, fruits, and vegetables.

Vouchers. Vouchers are a feasible option since there are functioning rural and urban markets. Vouchers could be tied to nutritious foods to improve household nutrition. The vouchers could be provided in the healthy homestead model as an incentive for labor (voucher-for-asset).

190 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

191 WFP transfers cash through a branchless banking model with Siddhartha Bank.

At present, electronic vouchers are not widely used in Nepal. A Title II program could start with paper vouchers and then investigate electronic possibilities.

Local donor procurement. WFP has procured limited amounts of WSB, pulses, ghee, rice, sugar, and vegetable oil from local suppliers. Those local suppliers source from producers in both Nepal and India. One commodity that could be sourced locally by Title II is WSB (*unilito*), assuming the processing facilities maintain quality standards.[192] Large donor procurement of local pulses is not advisable. While figures are unavailable, it appears that most grain legumes are grown and consumed on the farm or within local areas, and that most marketed legumes are from imports. WFP has been able to meet less than 5 percent of its requirements (less than 500 MT over the period 2009-13) within Nepal. Large donor procurements by Title II partners of other commodities is not advisable.

Photo by Fintrac Inc.

Outside of the Terai, many communities in Nepal are clustered on mountains that limit accessibility, especially during the monsoon season. Doti District, Nepal, July 2013.

4.6. ADDITIONAL CONSIDERATIONS FOR PROGRAM DESIGN

Food security research and projects need to focus not only on consumption patterns but also on the lack of dietary diversity and micronutrients in the diet. Rather than just promoting the production and consumption of staple foods, projects should focus on increasing dietary diversity, nutrition education, and promoting animal-based proteins, vegetables, and fruits.

For any **asset creation project**, whether it be FFA or CFA, the budget must account for sufficient resources to hire skilled labor (engineers, masons, etc.) in addition to unskilled labor, and for materials (cement, pipes, etc.) to ensure sound construction whether for community or homestead based projects.

International NGOs (INGOs) are working through not only national NGOs but also local NGOs due to pressure by the GoN. The GoN and donors are providing financial support to **build the capacity of local organizations**. As a result, more INGOs are working with local NGOs despite the limited capacity and political party affiliations of these local partners. Title II partners will need to find strong local partners for implementation.

There is also a trend of shifting from subsidy-based to capacity-building based projects, which may put pressure on females in poor HHs to participate in the trainings and in turn detract from their daily tasks. Some NGO staff noted that in the end these activities could **increase the workload** on women.

The '**feminization of agriculture**' in the Mid- and Far-West is a phenomenon fundamental to rural livelihoods. Due to limited labor opportunities in these areas of Nepal, numerous males migrate out of the country in search of work. Food production, including planting, and harvesting, collecting fodder and caring for livestock falls on the shoulders of women. This is an important consideration to note when planning development projects that involve labor and females.

192 WFP reports using three industrial processing companies to locally procure WSB, as of July 2013.

CHAPTER 5
ADEQUACY OF PORTS, TRANSPORT, AND STORAGE

A traffic jam ensues after heavy monsoon rains from the mountains wash out a causeway in the valley. Although this one cleared up after several hours, some floods leave travelers stranded for days. Dang Valley Nepal, July 2013.

Photo by Fintrac Inc.

5.1. INTRODUCTION

This chapter presents information on the ports, transport routes, and storage options to inform a potential Title II development program in Nepal. Most imports originate from India and arrive overland into Nepal. Imports from countries other than India still pass through India because Nepal is landlocked and the only port option for transoceanic shipments is at the Port of Kolkata (Calcutta). Traders bring goods from the Port of Kolkata to Nepal via rail or road. Once the commodities have arrived in Nepal, all movement occurs through the limited road network, which is mostly earthen or gravel outside of the paved road network in the southern Terai.

Currently, WFP is the sole humanitarian agency engaged in the delivery and storage of food aid for their programs in the Far-West and Mid-West Hills and Mountains. Besides WFP, the Nepal Food Corporation (NFC), a government body, is the only other organization that handles the transport of food aid around the country.

The following sections will analyze in greater detail the technical capacities and specifications for the logistics of moving commodities into and around Nepal.

5.2. PORTS

5.2.1 Port of Kolkata, India

Location. Kolkata is the capital of West Bengal. Located 100 nautical miles north of the Bay of Bengal on the Hooghly River, the Port of Kolkata is the only riverine port in India with two dock systems (see map on next page).[193] Kolkata Dock System (KDS) is located on the east bank of the Hooghly River while Haldia Dock Complex (HDC) is located on the west bank. The Kolkata Port Trust manages the port.

Capacity. The port serves a military and commercial purpose. After an influx of economic modernization in the 1990s, this port has transformed into a trade hub for cargo going to northern India, Nepal, Bhutan, China, and northern Bangladesh.

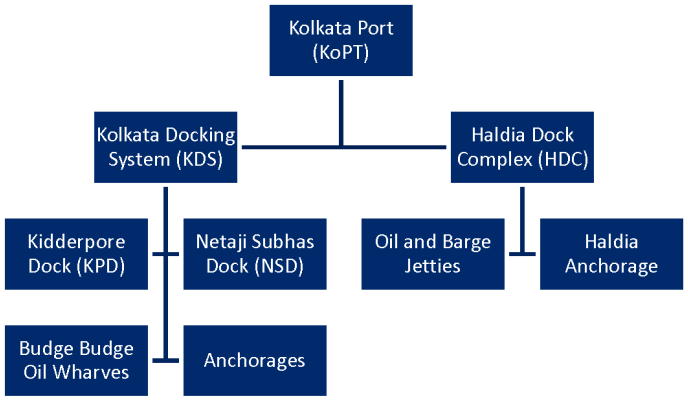
193 World Port Source, 2013, Port of Kolkata. http://www.worldportsource.com/ports/review/IND_Port_of_Kolkata_236.php, accessed June 2013.

Figure 36. Location of the Port of Kolkata

Source: Created by USAID-BEST using GIST/USAID data.

This port has extensive storage facilities and a computerized container terminal.[194] KDS is comprised of Kidderpore Dock (KPD) and Netaji Subhas Dock (NSD) in Kolkata, petroleum wharves at Budge Budge, and three anchorages at Saugor, Diamond Harbour, and Sandheads. HDC consists of one dock, three oil jetties, three barge jetties, and Haldia Anchorage (see chart below).[195]

Figure 37. Port of Kolkata Organization



Source: Created by USAID-BEST using information provided by WFP, Logistics Capacity Assessment 2010, and Kolkata Port Trust.

194 World Vision and WFP, 2010, *Logistics Capacity Assessment*.

195 Kolkata Port Trust, 2013, Kolkata Port Trust. http://www.kolkataporttrust.gov.in/salkds.html, accessed June 2013.

In 2011-12, the Port of Kolkata handled 43.25 million metric tons (MT), compared to 47.55 million MT in 2010-11. The port ranked third among major Indian ports in 2011-12 with respect to containerized cargo handled, which totaled 9.44 million MT, equivalent to 552,241 twenty-foot equivalent units (TEUs). Vessel calls reached 3,183 in 2011-12, the highest among all major Indian ports, accounting for 16 percent of total traffic at major Indian ports.

Table 7. KoPT Utilized Capacity by Docking System, 2011-12

Cargo Type	KDS	HDC	Port of Kolkata
Cargo Total (million MT)	12.23	31.02	43.25
Number of Containers (TEUs)	412,425	139,816	552,241
Containerized Cargo (MT)	6,818,291	2,618,680	9,436,971
Vessel Calls (No.)	1,223	1,960	3,183

Source: Kolkata Port Trust, accessed June 2013.

In total, the port consists of 43 berths (28 - KDS, 15 - HDC), five dry docks (KDS), six petroleum wharves (KDS), three oil jetties (HDC), and three oil barge jetties (HDC). The petroleum wharves at Budge Budge receive and store petroleum, vegetable oil (rapeseed oil, soy oil, palm oil, fatty acids and tallow), and various other liquids; bulk liquids as well as small parcels (drums, cases, cartons, etc.) are handled.[196] Ninety percent of KDS containerized cargo is handled at NSD berths 4, 5, 7, and 8; other NSD and KDP berths handle the remaining 10 percent. As the following table shows, HDC designates berths 10 and 11 for containerized cargo.

196 Ibid.

Table 8. HDC Berth Details

Berth	Annual Capacity (Million MT)	Cargo Type
3	2.25	Iron Ore, Thermal Coal, POL (Petroleum, Oil, and Liquids) & Paraxylene
4	3.25	Thermal Coal
4A	3.00	Coking Coal
4B	2.00	Coking Coal, Iron Ore, Coal, Other Bulk & Break Bulk Cargo
5	1.20	Iron Ore, Coking Coal, Fertilizer Raw Material
6&7	2.30	Break Bulk, Dry Bulk & Liquid Bulk
8	1.80	Coking Coal, Limestone, Steel, General and Other Dry Bulk Cargo
9	1.00	Containers, Break Bulk & Dry Bulk Cargo except Coking Coal, Coke and Other Black Cargo
10&11		Containers, Break & Dry Bulk except Coking Coal, Coke and other Black Cargo
12	1.80	Bulk, Break & Containers

Source: Kolkata Port Trust, accessed June 2013.

Specifications. Pilotage to the port is necessary, especially due to the port's riverine location. Two channels can be used to arrive at the port from the sea: Eastern Channel and Western Channel, but currently only the Eastern Channel is being used for navigation. Total pilotage distance to KDS is 221 km - 148 km by river and 75 km by sea; the distance to HDC is shorter at 121 km total - 45 km by river and 75 km by sea. High tides are advantageous in avoiding the river's numerous sandbars. The Harbor Master publishes spring and neap tide[197] forecasts of drafts for ships four to six weeks in advance. Ship lengths are restricted to 172 m at Kolkata and 189 m at Budge Budge in order to traverse sharp river bends.[198] The table below lists specifics regarding vessel dimension restrictions.

Table 9. Port of Kolkata Maximum Vessel Dimensions (m) by Docking System

	NSD*	KDS*	HDC
Length overall	172	157	240
Beam	24.3	21.3	32.26

Source: Kolkata Port Trust, accessed June 2013.
*Vessels up to 25 m beam may be accepted provided LOA does not exceed 162 m.

Because of these restrictions, WFP prefers to use feeder vessels from Singapore to reach the Port of Kolkata and to receive consignments in parcels for easier handling. Services provided by the port include: pilotage, tug, stevedoring, mooring/anchorage, fresh water and power supply, handling, storage, and other general services.[199] Various fees apply for each service, along with port and harbor dues, according to vessel size and content.

Unloading rates are quite efficient, with speedy ship turn-around. The tables below provide estimations on wait times and unloading rates per vessel. WFP reports that it takes about three-four days for humanitarian cargo to clear customs at the port while commercial actors say that it takes about 10-15 days for their goods to receive clearance. Commercial importers report that they often have to pay additional non-tariff "fees" to clear their goods and that union strikes sometimes slow the clearance process.[200]

Table 10. Average Pre-Berthing Wait Time per Vessel at Port (days), 2011-12

Type of Vessel	Kolkata Dock System	Haldia Dock Complex
Liquid Bulk	0.99	2.94
Dry Bulk	-	2.71
Break Bulk	0.6	4.55
Container	0.61	0.7
Overall	0.69	2.57

Source: Kolkata Port Trust, accessed June 2013.

Table 11. Average Unloading Rate per Vessel (MT per Shipday), 2011-12

Type of Vessel	Kolkata Dock System	Haldia Dock Complex
Liquid Bulk	2,817*	8,608
Dry Bulk	1,229	6,918
Break Bulk	609	816
Container	5,768 (355 TEUs)	5,369 (287 TEUs)
Overall	2,786	6,728

Source: Kolkata Port Trust, accessed June 2013.
* The pumping rate of vegetable oil and other liquid cargo varies between 125 to 350 kL per hour for tankers.

Table 12. Average Turn-Around Time per Vessel at Port (days), 2011-12

Type of Vessel	Kolkata Dock System	Haldia Dock Complex
Liquid Bulk	3.77	2.67
Dry Bulk	6.38	4.94
Break Bulk	7.32	7.35
Container	4.21	2.43
Overall	4.95	3.66

Source: Kolkata Port Trust, accessed June 2013.

All docking systems possess a wide array of handling equipment and storage. Overall storage capacity is 2.7 million sq m (KDS, HDC) for containers and bulk cargo, and 761,762 kiloliters (kL) (HDC, Budge Budge) for liquids.

197 Spring tides are high tides and neap tides are low tides.

198 Kolkata Port Trust, 2013, Kolkata Port Trust. http://www.kolkataporttrust.gov.in/salkds.html, accessed June 2013.

199 World Vision and WFP, 2010, *Logistics Capacity Assessment*.

200 Personal communication with industry informants, July 2013.

Photo by Fintrac Inc.

The dry port in Birgunj is a major hub for goods arriving from India. One train, carrying about 90 containers, passes through this facility three to six times a week. Birgunj, Nepal, July 2013.

KDS has the following equipment:[201]

- KPD Berths
- 12 Electric level luffing (ELL) cranes - 3 to 5 MT each
- KPD Dry Dock No. 1
- Electro-hydraulic capstan
- ELL crane - 5 MT at 20m radius
- Power supply - 500 amp AC, 200 amp DC
- Keel blocks
- KPD Dry Dock No. 2
- ELL crane - 7 MT at 25.42m radius
- Power supply - 500 amp AC, 200 amp DC
- Keel blocks
- KPD Dry Dock No. 3
- Power supply - 500 amp AC, 200 amp DC
- Keel blocks
- NSD Berths
- ELL crane(s) - 200 MT total capacity
- NSD Dry Dock No. 1&2
- ELL crane - 25 MT at 18.25m radius
- Two electric cranes - 3 to 6 MT
- One electric crane - 3 MT
- Four electro-oil hydraulic capstans - 7 MT
- Power supply - 1000 amp for both dry docks
- Keel blocks

201 Kolkata Port Trust, 2013, Kolkata Port Trust. http://www.kolkataporttrust.gov.in/salkds.html, accessed June 2013.

HDC has the following equipment:[202]

- Mechanized Terminals (berths 3, 4, 4A, and 5)
- Four Wagon tipplers
- Eight Stacker-cum-Reclaimers
- Four Ship loaders
- Four Wagon feeding systems
- Two Wagon loaders
- Two Mechanized grab handling systems
- Two Unloaders
- Multipurpose Berths (berths 2, 4B, 6, 7, 8, 9, 12, and 13)
- 22 Dumper/Payloaders for Shore Transfer
- Four Front-end loaders
- Pipeline discharge facilities
- Mobile harbor crane
- Eight forklifts
- Six Tractor-trailers
- Four Mobile hoppers
- Two EOT Cranes
- Container Berths (berths 10 and 11)
- Two Rail-mounted quay cranes
- Four Rubber tyred yard gantry cranes
- Rail-mounted yard gantry crane
- Reach stackers
- Tractor-trailers
- Forklift
- Top-lift trucks

The Government of India is investing Indian Rupees (INR) 1,400 crore[203] to upgrade infrastructure through storage improvements, road-rail integration, port equipment, and IT augmentations. Public-private partnership projects have committed approximately INR 12,000 crore, mainly to explore possibilities of expanding the port southwards towards deep-drafted areas. As of 2011-12, KDS is planning to construct four container handling jetties at Diamond Harbour; additional infrastructure will complement the expansion of 1.6 million TEUs in new container handling capacity.[204] HDC berths 2 and 13 were commissioned in 2007; currently, improvements are being made to expand the berths' daily capacity from 6,300 MT to 20,000 MT.[205]

202 Ibid.

203 A unit commonly used in South Asia to denote 10 million.

204 Kolkata Port Trust, 2013, Kolkata Port Trust. http://www.kolkataporttrust.gov.in/salkds.html, accessed June 2013.

205 Ibid.

5.3. INLAND TRANSPORT

Figure 38. Nepal Road and Rail Transport Systems

Source: Created by USAID-BEST using GIST/USAID data.

5.3.1 Capacity

Roads. The limited road network in Nepal serves as the primary in-country transport for traders, but access to remote areas remains poor as there is often a lack of even the most basic earthen roads. During the monsoon season, heavy rains often wash out these roads and can delay traffic from a few hours to a few days. Additionally, most routes in the Hills wind through mountainous terrain and transporters face the possibility of landslides blocking traffic for several hours.

The national Strategic Road Network (SRN) covers 9,400 km out of 18,828 km[206] of Nepal's total roads and links major cities, commercial centers, and international border crossings.[207] The Mahendra Highway, 1,027 km of road running through the southern Terai plains, traverses the country east to west from border to border. This highway contains 510 of SRN's 1,001 main bridges with the longest one spanning 1,150 m.[208] However, sections of this main route are unpaved gravel roads and there remains the possibility that a portion of the road could be washed out in the monsoon season as heavy rains in the Hills flood the Terai.

Most major roads are poorly maintained and congested. Terrain becomes rough and road conditions poor once transport exits the SRN, resulting in low travel speeds, which limit travel to as little as 200 km per day. Asphalt roads best serve medium-sized trucks (7-10 MT); however, most cross-border trucks are 2- to 3-axle and weigh up to 18 MT, causing further damage to roads.

Table 13. Main Domestic Transport Corridors

Town, District	Region	Advantage
Kakarbhitta, Jhapa	Eastern	Large-sized border-crossing town with good access to Kathmandu
Birgunj, Parsa	Central	Main entry point from India; has railway connection to Raxaul, India
Kodari	Central	Important border town for Chinese and Tibetan trade
Bhairahawa, Rupandehi	Western	Important entry point from India
Nepalgunj, Banke	Mid-Western	Near Indian border; major trading center
Dhangadhi, Kailali	Far-Western	Near Delhi, India

Source: WFP, Logistics Capacity Assessment 2010.

Table 14. Distance (km) and Travel Times (hours) to Major Towns

	Kathmandu	Biratnagar	Birgunj	Hetauda	Bhairahawa	Nepalgunj	Dhangadhi
Kathmandu	-	549 km	276 km	221 km	279 km	507 km	661 km
Biratnagar	12 h	-	348 km	350 km	566 km	754 km	909 km
Birgunj	6 h	6 h	-	54 km	270 km	499 km	653 km
Hetauda	5 h	6 h	2 h	-	217 km	446 km	600 km
Bhairahawa	7 h	10 h	5 h	5 h	-	273 km	427 km
Nepalgunj	12-14 h	15 h	10 h	9 h	5 h	-	181 km
Dhangadhi	15 h	18 h	13 h	12 h	9 h	5 h	-

Source: WFP, Logistics Capacity Assessment 2010; Distance Calculator, distancecalculator.himmera.com, accessed June 2013; USAID-BEST field visit calculations.

206 As of 2006-2007 estimates. (Department of Roads).

207 World Vision and WFP, 2010, *Logistics Capacity Assessment*.

208 Ibid.

Rail. Railways in Nepal are practically non-existent. A short cargo inlet (5.4 km) from Raxaul, India to the Dry Port in Birgunj is operated by Sirsiya-Birgunj Internal Clearance Depot (SBICD). There is no plan for expansion of railways in Nepal, and therefore, rail is not a feasible option for the transport of food aid or other cargo.[209]

Photo by Fintrac Inc.

Transportation from the Terai into the Hills and Mountains requires traveling on winding mountain roads that become risky to navigate due to variable weather conditions year round. En route from Dang Valley, Nepal, July 2013.

5.3.2 Challenges

Slow traffic on rough terrain, road congestion, lack of rail and motorable roads, and landslides pose the main transport challenges across the country. Kathmandu Valley is most affected by heavy-duty trucks and high levels of general traffic. Nationwide, several new roads constructed under road development projects and built on hillsides with the intention of reaching remote areas have already been swept away by monsoons or are in poor condition. Likewise, the main risks for bridges are landslides and high river levels, generally coming from rivers which originate in the snow-covered Himalayan mountain range.[210]

WFP reported difficulty transferring large cargo because certain remote areas cannot be reached by motorable road so other modes of transportation must be used that can carry large and bulky containers. For example, WFP relies on trucks (10 MT) to the Mid-Hills, and then tractors (3-4 MT) thereafter to reach the High Hills or Mountains. In some cases, WFP uses mules (60-70 kg), sheep (10 kg), and/or porters (40 kg) to reach the beneficiaries.

WFP strives to complete all deliveries before the start of the monsoon season, which runs from July-September. Although accidents do not occur frequently, WFP reports that there have been a few incidents of tractors and mules falling off narrow and steep mountain passes.

5.4. STORAGE FACILITIES

Although facilities at the Port of Kolkata are adequate for storing goods, key informants in the public and private sector reported that once commodities arrive in Nepal, storage poses a tremendous challenge for operations. All NGOs, apart from the Nepal Red Cross Society which has its own storage, must rent government or commercial warehouses because no public storage is available.[211]

5.4.1 Locations and Capacities

Port of Kolkata. This port has extensive storage facilities for containerized and bulk goods at both KDS and HDC, as well as edible oil storage at Budge Budge. At Budge Budge, companies are able to lease land equipped with tanks for liquid storage; total storage capacity for non-Petroleum, Oil, and Liquids (POL) liquids is 136,808 kiloliters (kL).

209 World Vision and WFP, 2010, *Logistics Capacity Assessment.*

210 Ibid.

211 Ibid.

Table 15. KDS Storage Facilities and Capacity (sq. m.)

	Berth	Covered Shed (sq. m.)	Open Shed (sq. m.)	Major Commodity
KPD	1	3,345	2,565	G/C (General Cargo)
	2		2,693	
	3	-	3,887	G/C/Container
	4	3,344	9,098	G/C
	5	6,689	4,128	G/C
	6	3,345	11,849	G/C/Container
	7		4,374	
	8	3,344	4,647	G/C
	9	3,345	3,812	G/C/Fertilizer
	10	3,345	5,683	G/C
	11	3,344	1,604	G/C/Also passenger terminal for A&N islands
	12	3,344	5,699	G/C
	22	8,919	Nil	G/C
	23	6,919	Nil	G/C/Grain (silo)
	24	6,919	Nil	G/C
	25	8,919	Nil	G/C
	26	9,033	2,616	G/C
	27	3,623	3,680	G/C/Log, Heavy lift
	28	3,523	3,726	G/C Log, Heavy lift
	29	3,623	3,440	G/C/ Log, Heavy lift
NDS	1	-	6,000	G/C/Container H/Lift
	2	11,757	3,831	G/C
	3	11,758	3,600	G/C/Cement
	4	11,758	3,400	G/C/Container
	5	-	11,000	G/C/Container
	7	9,000	50,000	Container
	12	1,872	-	POL, Dolphin berth for oil tankers
	13	10,093	1,278	G/C
	14	15,235	2,555	G/C

Source: Kolkata Port Trust, accessed 2013.

Table 16. HDC Storage Facilities and Capacity (sq. m., kl)

	Type of Storage	Capacity (sq. m.)
Inside Custom Bonded Area	Transit shed	25,040
	Hardstand	105,000
	Available bare land	787,840
Outside Custom Bonded Area	Existing liquid	193,500 kL
	Existing dry bulk/ container storage	109,950
	Available storage area	732,240

Source: Kolkata Port Trust, accessed June 2013.

Dry Port, Birgunj. SBICD, Nepal's main dry port, is equipped with adequate handling facilities and storage capacity. Bonded customs storage of 7,105 sq. m., along with space for 1,600 shipping containers, is available.[212] One train carrying 90 containers passes through about three to six times per week. There are plans for construction of another site alongside the present facility that would sit on 60 hectares of land, but the expected end date for that project is unknown.

WFP/Nepalgunj. WFP currently leases six warehouses at this site from private companies. The combined capacity of these warehouses is 8,000 MT. WFP is working on procuring another facility from the National Trading Corporation, a GoN affiliated organization. USAID-BEST visited the largest of the six warehouses, which was storing approximately 2,000 MT of Corn Soy Blend (CSB) as of July 2013. Ventilation was lacking at this facility although WFP did note plans to install ceiling fans.

Photo by Fintrac Inc.

Previously, WFP utilized this facility to store 500 MT of food aid. This storage facility has been handed over to the government. Dadeldhura, Nepal, July 2013.

Government of Nepal (GoN). NFC maintains the majority of domestic commercial storage units, with an estimated total of 164 warehouses across the country with a combined installed capacity of 99,310 MT. In Dialekh District, a NFC representative reported a storage capacity of 190 MT. Another NFC site in Doti District holds about 250 MT, but a USAID-BEST visit to this NFC warehouse showed water damage to the infrastructure and open bags of CSB spilling onto the floor.

212 World Vision and WFP, 2010, *Logistics Capacity Assessment.*

WFP has considered renting storage space from NFC but says that poor quality would mean additional costs to renovate the facility for WFP purposes. Additionally, since most of the NFC warehouses were built before the 1990s and the construction of most roads, they are not usually located in areas accessible to these new routes.

Challenges. As mentioned, storage poses the greatest obstacle for commercial businesses and for humanitarian agencies. Hot and humid conditions in the Terai during the summer months means that those commodities with a short shelf-life must move quickly, which is often times difficult because of poor road conditions and the inability to rapidly turn over large volumes. Both commercial and government facilities lack adequate ventilation systems, solid infrastructure, and the requisite size and capacity. NFC stated that in the case of a national calamity, such as an earthquake in Kathmandu Valley, its warehouse facility could not sufficiently handle the increased volumes of food aid.

5.5. IMPLICATIONS FOR TITLE II PROGRAMMING

5.5.1 Ports

The Port of Kolkata is the only practical choice for transoceanic food aid destined for Nepal.[213] At this time, WFP is the sole organization transporting food aid from the Port of Kolkata to its warehouses in Nepal via Nepalgunj. The average cost for WFP to move goods from the Port of Kolkata to the warehouse at Nepalgunj is US$110 per MT.

5.5.2 Inland Transport

Currently, for WFP, it takes approximately four-five days for commodities to move overland by road into Nepal. Rail is not an option. To achieve delivery of commodities beyond the Terai, WFP uses multiple modes of transportation with various capacities. Trucks are able to carry 10 MT, but cannot be used as the terrain moves into the Mid Hills. Thereafter, WFP uses tractors (3-4 MT), mules (60-70 kg), porters (40 kg), and sheep (10 kg).[214] According to WFP, their average transportation cost from their current hub in Nepalgunj to other distribution sites is US$30-US$100 per MT depending on mode of transport.

Title II awardees need to consider the limited transportation options due to poor road conditions, congestion, slow traffic, lack of railways, landslides, flooded roads due to heavy rains in the monsoon season, and the overall absence of any roads. Given the difficulties of inland transport, future Title II partners should consider entering into an arrangement with WFP whereby WFP would manage, on behalf of the awardees, the relationship and negotiation with private transporters. In this manner, a potential Title II program would be working with an experienced logistics partner knowledgeable of the various transport options needed for successful delivery of food aid.

Photo by Fintrac Inc.

Landslides pose a constant threat not only during the monsoon season, but also in winter due to heavy snowfalls. Despite the wire mesh reinforcements, the force of the rocks has broken through the intended barricade. En route to Surkhet Nepal, July 2013.

5.5.3 Storage

Humanitarian aid organizations must rent space from commercial or government warehouses. GoN storage via the NFC could be rented but the poor quality of these facilities would require renovation. Alternatively, the process of procuring land to construct a new warehouse would be costly and the necessary paperwork could delay the implementation process for a new Title II program.

213 WFP acknowledges that this port may occasionally apply a storage charge to imported humanitarian cargo on the basis of certification by the appropriate government authority (Government Authority of Central/State or GoN, or local Consulate General).

214 The use of helicopters to reach the High Mountain districts ended in June 2011 because it was too costly. WFP still flies commodities to Jumla District but uses fixed wing aircrafts instead of helicopters.

ANNEXES

Interested readers can access additional data and relevant background information via a series of annexes found here: http://usaidbest.org/docs/nepal_annexes2013.pdf. These annexes include charts, graphs, and tables highlighting important economic, agricultural, and food security indicators; primary contacts from research and field work; and references cited.

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW | Washington, DC 20523
Tel: (202) 712-0000 | Fax: (202) 216-3525
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USAID OFFICE OF FOOD FOR PEACE

NEPAL USAID-BEST ANALYSIS ANNEXES

SEPTEMBER 2013

This report is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of Fintrac Inc. and do not necessarily reflect the views of USAID or the United States government.

PREFACE

The following annexes present background information to supplement the main report. The additional data provided highlight relevant economic, agricultural, and food security indicators. USAID-BEST also provides a list of contacts from the research and field work as well as references cited.

CONTENTS

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ANNEX 1
ECONOMIC OVERVIEW, DATA, AND TRENDS

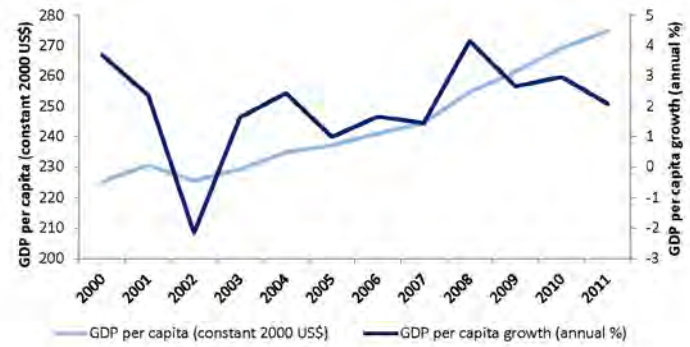
1.1. INTRODUCTION

This Annex details information on the main economic indicators and linkages in Nepal, and describes the country's major development policies. USAID-BEST accessed data from international and domestic institutions, including the Government of Nepal (GoN), to display the following information. The team recognizes the data across these sources are not all consistent. The following topics are covered:

- Macroeconomic indicators;
- Global/regional economic linkages;
- Major products and service industries; and
- Major shifts in policy and performance.

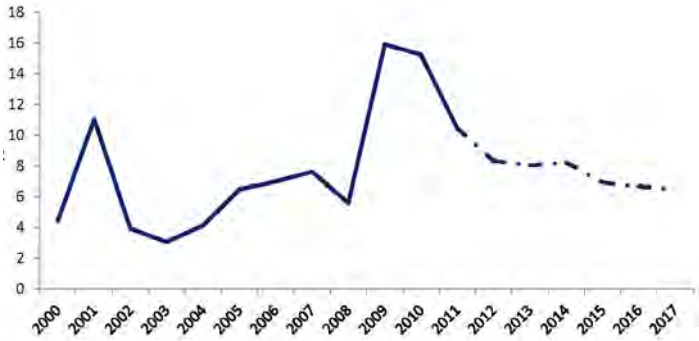
1.2. MACROECONOMIC INDICATORS

Figure 1. GDP per Capita and Growth Rate, 2000-11



Source: The World Bank Database.

Figure 2. Annual Inflation Rate, Actual (2000-11) and Projected (2012-17)



Source: The World Bank Database; IMF, Economic World Outlook Database, 2012.

Figure 3. Inflation (% change) by Sector, August 2009 - December 2012

Source: Nepal Rastra Bank, 2013; Asian Development Outlook 2013: Asia's Energy Challenge.

Table 1. Trade Balance (US$ Million), 2009-10 and 2010-11

Trade	2009-10	2010-11
Exports of goods	626.10	702.50
Imports of goods	3,644.30	3,900.40
Exports of services	521.40	534.50
Imports of services	684.90	647.90
Net Trade	**-3,181.70**	**-3,311.30**

Source: Nepal Rastra Bank, June 2011.
*Nepalese fiscal year runs July - June.

Table 2. Top Imports (US$ Million), 2011

Description	Trade Value
Petroleum	1,225.72
Iron and steel	493.68
Electrical machinery and equipment	419.92
Machinery and mechanical appliances	356.30
Jewelry	341.58
Vehicles and parts	305.52
Plastics and articles thereof	232.18
Animal or vegetable oils	211.67
Construction materials, lime and cement	178.33
Pharmaceutical products	167.49
Fertilizers	131.71
Cereals	99.20
Oil seeds and oleaginous fruits	91.37
Apparel and clothing accessories	86.01
Paper and paperboard; articles of paper pulp, of paper or of paperboard	80.86

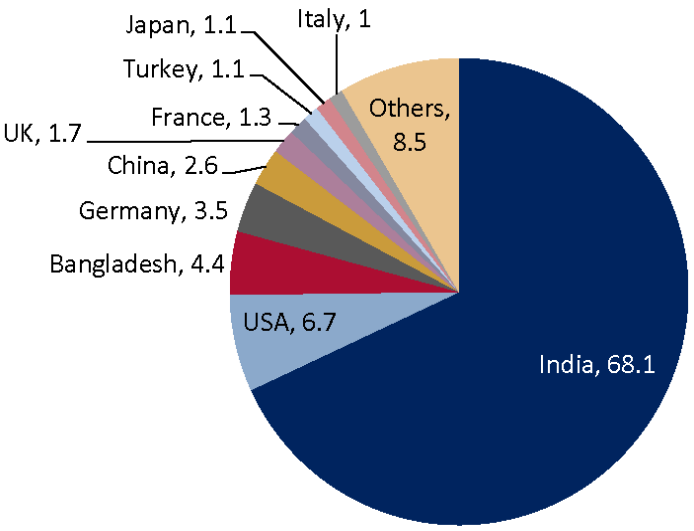
Source: UN Comtrade, accessed June 2013.

Table 3. Top Exports (US$ Million), 2011

Description	Trade Value
Iron and steel	117.01
Carpets and other textile floor coverings	77.11
Apparel and clothing accessories	69.83
Textile materials	67.07
Fibres	66.54
Coffee and tea	57.30
Other made up textile articles	42.82
Vegetables, fruit, and nuts preparations	33.98
Articles of iron or steel	25.88
Edible vegetables and certain roots and tubers	25.63
Copper and articles	22.95
Yarns; twine, cordage, ropes and cables	20.00
Essential oils	18.78
Plastics and articles	16.93
Plastering materials, lime and cement	15.87

Source: UN Comtrade, accessed June 2013.

Figure 4. Proportion of Trade (%) with Top Trade Partners, 2012



Source: GoN, Trade Promotion Centre.

1.3. GLOBAL/REGIONAL ECONOMIC LINKAGES

As of 2007, Nepal has static and perpetual bilateral trade agreements with 17 countries: Bangladesh (1976), Bulgaria (1980), China (1981), Czech Republic (1982), Egypt (1975), India, Democratic People's Republic of Korea (1970), Republic of Korea (1971), Mongolia (1992), Pakistan (1982), Poland (1992), Romania (1984), Sri Lanka (1979), UK (1965), USA (1947), Russia (1970), and Yugoslavia (1965).[1] The table on the next page contains a summary of additional agreements.

1 Prasad, Uma Shankar, December 2007, *Nepal's Regional and Bi-lateral Trade Agreements: Performance and Prospects*.

Table 4. Summary of Global/Regional Economic Linkages

Country/Region	Agreement/Treaty	Main Benefits	Date
Multilateral	South Asian Association for Regional Cooperation (SAARC)	Preferential trade terms among members; information exchange; joint research and development among members; safeguard economic and business interests of SAARC.	1988
Multilateral	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)	Enable environment for development; assistance through training and research facilities; maintain close cooperation with international and regional organizations.	2003
Multilateral	World Trade Organization (WTO)	Member of Asian developing members, G-90, and Least-Developed Countries (LDCs).	2004
Multilateral	South Asian Free Trade Area (SAFTA)*	Dismantling of tariff and non-tariff barriers to intra-regional trade.	2006
Multilateral	Asia-Pacific Trade Agreement	Liberalize and develop trade in the Economic and Social Commission for Asia and the Pacific (ESCAP) region; enhance international economic cooperation.	2006
India	Treaty of Trade	Facilitation of cross-border trade flow through simplification, standardization, and harmonization of customs and transport and development of border infrastructure	2009
China	Nepal China Preferential Tariff Treatment	Ninety-five percent of goods originated in Nepal and exported to China will receive zero-tariff treatment.	2010
India, China, Bangladesh	Treaty of Trade, Treaty of Transit and Trade Related Agreements Between GoN and Neighboring Countries (Update)	Exemption of taxes and duties for Nepal-destined "traffic-in-transit" across designated routes in neighbor territories; facilitation of free flow of goods for trade expansion and diversification; exemption of duties and quantitative restrictions on primary products.	2010

Source: FNCCI, 2013; WTO, 2013; SAARC, 2013; GoN, Ministry of Foreign Affairs, 2013; Prasad, Uma Shankar, Nepal's Regional and Bi-lateral Trade Agreements: Performance and Prospects, December 2007.
*To be converted to South Asian Custom Union (SACU) by 2015 and finally to South Asian Economic Union (SAEU) by 2020.

1.4. MAJOR PRODUCTS AND SERVICE INDUSTRIES

Three main sectors contribute to GDP: services (46.6 percent), agriculture (38.1 percent), and industry (15.3 percent).[2]

The service industry revolves around tourism. Nepal hosted 736,215 tourists in 2011, bringing in over US$321 million in tourism revenue.[3] Nepal is a destination for the nature-loving tourist. Home to eight of the world's 14 highest mountain peaks, including the highest peak in the world, Mt. Everest, Nepal's most popular tourist activity is mountaineering, for which the GoN has opened 326 peaks.[4] Major tourism activities include: mountain and rock climbing, trekking, mountain biking, bird watching, mountain flights, kayaking/canyoning/rafting, paragliding, hot air ballooning, and jungle safaris.

The agriculture industry faces reduced GoN investment in extension services and research, difficulty obtaining loans, and out-migration of workers.[5] Despite setbacks, agriculture employs approximately 66 percent of the population.[6] Main agricultural products are: pulses, rice, maize, wheat, sugarcane, jute, root crops, milk, and water buffalo meat. Much industry relies on agriculture such as the processing of rice, jute, sugar, and oilseeds, and cigarette production.

The manufacturing sector supplies carpets, textiles, cement, and bricks.[7] Exports of carpets fell 17 percent in 2012. Due to increasing competition from regular carpet makers, Nepali carpet manufacturers are shifting production to high-end carpets.[8] Currently, the carpet industry employs approximately 100,000 people.[9] The textile and garment industry, relatively new to Nepal, has skyrocketed since its beginning when Nepal acted as a low-cost alternative to other garment-producing nations which were hitting export quota ceilings.[10] Formerly, the industry was largely funded by Indian industrialists; however, over the years, more Nepali industrialists have invested in this sector.

2 CIA, 2013, *The World Factbook*.

3 GoN and Ministry of Culture, Tourism and Civil Aviation, June 2012, *Nepal Tourism Statistics 2011*.

4 GoN, 2013, Ministry of Culture, Tourism and Civil Aviation. http://www.tourism.gov.np/page.php?nav=13, accessed June 2013.

5 IRIN, January 2013, *Analysis: The Trouble with Nepal's Agriculture*.

6 GoN, 2013, Ministry of Agricultural Development. http://www.moad.gov.np/, accessed June 2013.

7 CIA, 2013, *The World Factbook*.

8 fibre2fashion, 2013, Nepali carpet makers shift focus to high-end products. http://www.fibre2fashion.com/news/carpets-news/newsdetails.aspx?news_id=145846, accessed June 2013.

9 Ibid.

10 Garment Association Nepal, 2013, Garment Association - Nepal. http://www.ganasso.org/about/intro.php, accessed June 2013.

Table 5. Sectoral Contributions to GDP (%), 2005-06 and 2009-10

Sector	2005-06	2006-07	2007-08	2008-09	2009-10
Agriculture and forestry	27.42	26.58	26.05	26.92	27.89
Fishing	0.36	0.34	0.35	0.38	0.36
Mining and quarrying	0.39	0.38	0.44	0.42	0.41
Manufacturing	16.85	16.56	16.14	15.16	14.39
Electricity, gas, and water	2.23	2.23	2.09	1.97	1.87
Construction	8.20	8.15	8.83	8.71	8.62
Wholesale and retail trade	10.59	9.80	9.92	9.96	10.49
Hotels and restaurants	2.91	2.88	2.97	3.02	2.98
Transport, storage, and communications	10.59	10.81	10.53	10.66	10.45
Financial intermediation	2.76	3.28	3.47	3.34	3.31
Real estate, renting, and business activities	8.45	8.93	8.53	7.96	7.64
Public administration and defense	1.41	1.47	1.52	1.59	1.63
Education	4.44	4.73	5.00	5.36	5.40
Health and social work	1.08	1.12	1.21	1.27	1.28
Other community, social, & personal service activities	2.34	2.75	2.96	3.28	3.28

Source: Federation of Nepalese Chambers of Commerce & Industry (FNCCI).

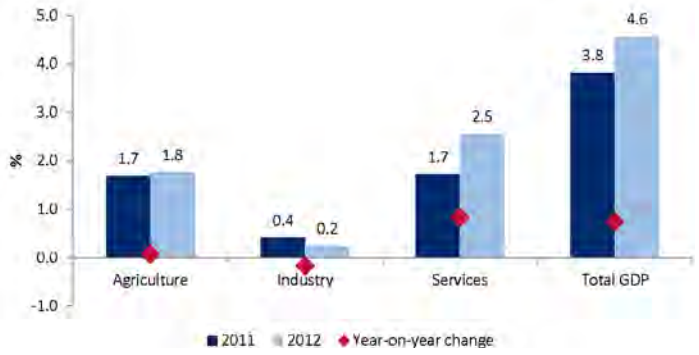
Nepal's investment climate continues to suffer from long-term political instability, poor transport and energy infrastructure, and labor unrest. Resulting from this scenario, production costs are high, business and trade are often disrupted, and there is a lack of competitiveness.[11]

1.5. MAJOR SHIFTS IN POLICY AND PERFORMANCE

After sluggish growth in Nepalese Fiscal Year (NFY)11 (3.5 percent) due to weak remittance inflows, a downturn in real estate, fuel shortages, and political uncertainty, the economy rebounded in NFY12 (4.6 percent); inflation steadied, food prices declined, and remittances surged.[12] However, this growth may be short-lived with the disbanding of the Constituent Assembly (May 2012) causing more political unrest, along with a poor monsoon season. To restore consistent economic prosperity, political uncertainty must be resolved and an enabling environment for investment created.

As noted above, overall GDP growth can be largely attributed to two sectors: agriculture and service. Industry continues to suffer from a lack of investment due to labor disputes and an uncertain political environment. Abundant harvests contributed to lower food prices; however, high inflation (8.3 percent) driven by non-food items persists.[13] Other factors contributing to high inflation are: higher administered fuel prices, depreciation of the Nepalese Rupee, rising wages, and supply constraints.[14] The figure to the right displays sectoral GDP growth for NFY11-12.

Figure 5. Sectoral GDP Growth (%), NFY11-12



Source: Central Bureau of Statistics, 2012.

In the financial realm, Nepal saw progress from NFY11. Tax administration efficiency improved, increasing revenue by 22.5 percent.[15] The boost in remittances eased banking stress and encouraged lower interbank rates. The central bank tightened lending regulations and monitoring, which led to moderate credit growth. The national account balance recorded a surplus (4.9 percent of GDP); with modest merchandise export growth (5.4 percent) but even more modest import growth (4.5 percent).[16]

Poor harvests due to an unfavorable monsoon and fertilizer shortage, wage pressures, higher fuel prices, supply constraints, power shortages, low business confidence, lack of a parliamentary-approved full budget, and slow growth in India, are reasons for a projected slow GDP growth of 3.5 percent in NFY13.[17] Inflation is expected to rise to 10.5 percent.[18] Export

11 Afram, Gabi G. and Salvi Del Pero, A., 2012, Nepal's Investment Climate. http://elibrary.worldbank.org/content/book/9780821394656, accessed June 2013.

12 ADB, 2013, *Asian Development Outlook 2013*.

13 Ibid.

14 Ibid.

15 Ibid.

16 Ibid.

17 Ibid.

18 Ibid.

growth is likely to grow by only 0.2 percent while import growth is estimated to grow 18.7 percent.[19] Tax rates, duties, and fees will remain unchanged from NFY12, while spending is not to exceed previous levels. A possible rebound is anticipated in NFY14. With adequate fertilizer, a good monsoon, adoption of a budget, and remittance expansion, GDP growth has the potential to rise to 4.2 percent in NFY14.[20] Inflation is expected to ease to 9 percent.[21]

To strengthen the financial sector, changes in bank policy are necessary. Commercial banks, which handle 80 percent of all deposits and loans, took a hard hit in NFY11 because of large declines in the real estate sector.[22] Deteriorating balance sheets sent these banks and other financial institutions to seek assistance from the central bank. Since then, the central bank has implemented a number of regulatory and monitoring directives, such as limiting real estate and housing loans to 25 percent of total loans.[23] Departments within the central bank are being created to supervise development banks and finance companies. The Asian Development Bank recommends consolidating banks, ensuring sound corporate governance, diversifying portfolios, strengthening analysis, greater effectiveness controlling developments in liquidity, and better monitoring of large unregulated cooperatives' activities.[24]

19 ADB, 2013, *Asian Development Outlook 2013*.

20 Ibid.

21 Ibid.

22 Ibid.

23 Ibid.

24 Ibid.

ANNEX 2
AGRICULTURAL SECTOR

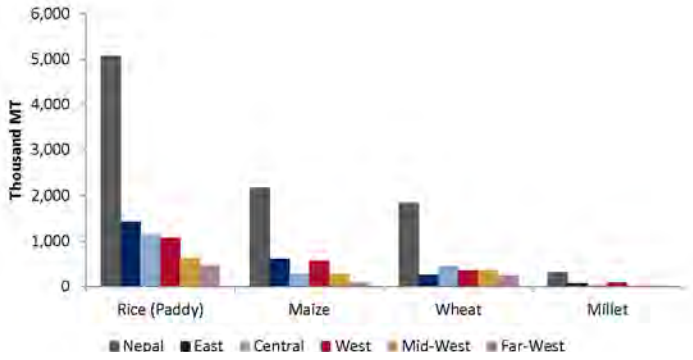
2.1. INTRODUCTION

This Annex provides supplementary information on Nepal's agricultural sector. It relies on survey, production, and price data collected from international organizations, private and national companies, and the Ministry of Agriculture Development (MOAD). The topics covered include:

1. Crop and livestock production;
2. Major agricultural import and export quantities;
3. Characteristics of agriculture households (HHs), including input use; and
4. Major agriculture policies and initiatives.

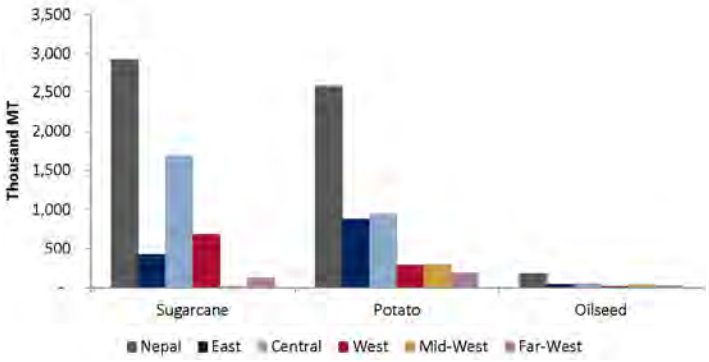
2.2. PRODUCTION BASE AND TRENDS

Figure 6. Cereal Crop Production (thousand MT) by Region, 2011-12



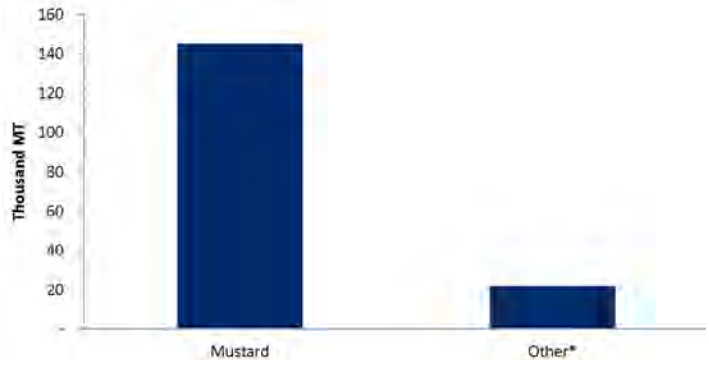
Source: GoN, MOAD, Statistical Information on Nepalese Agriculture 2011-12.

Figure 7. Cash Crop Production (thousand MT) by Region, 2011-12



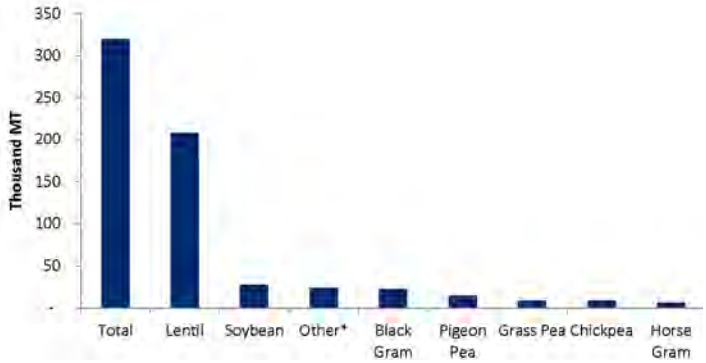
Source: GoN, MOAD, Statistical Information on Nepalese Agriculture 2011-12.

Figure 8. Oilseed Production (thousand MT), 2011-12



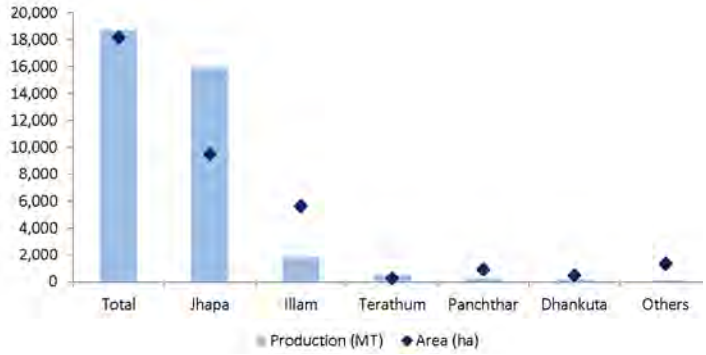
Source: GoN, MOAD, Statistical Information on Nepalese Agriculture 2011-12.
*Other oilseeds include: sarsoon, groundnut, sesame, sunflower, linseed, niger, and rayo.

Figure 9. Pulse Production (thousand MT), 2011-12



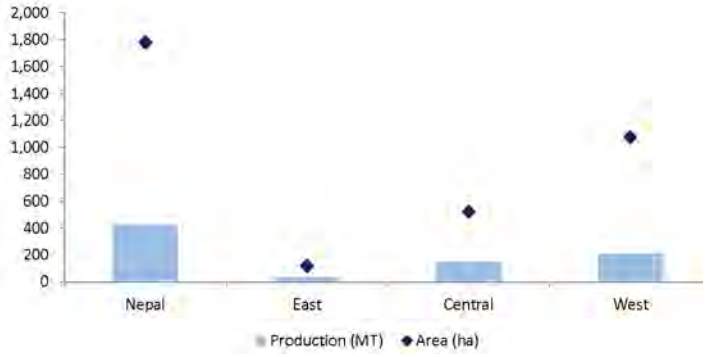
Source: GoN, MOAD, Statistical Information on Nepalese Agriculture 2011-12.
*Other pulses include: field pea, cow pea, broad bean, phaseolus, masyang, mung, etc.

Figure 10. Tea Production (MT) and Area Cultivated (ha) by District, 2010-11



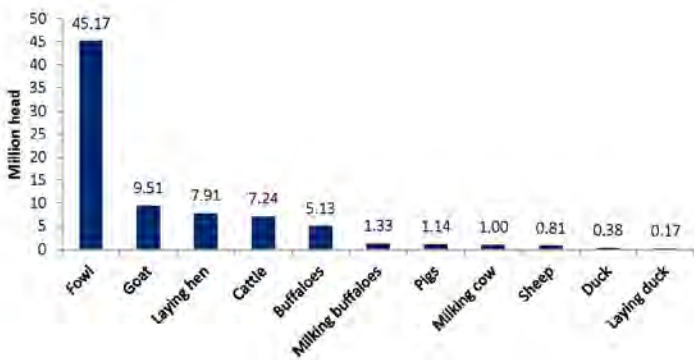
Source: National Tea and Coffee Development Board.

Figure 11. Coffee Production (MT) and Area Cultivated (ha) by Region, 2011-12



Source: CTDS, Kirtipur.
Note: No data were reported for Mid- or Far-West.

Figure 12. Total Number of Livestock (million head), 2011-12



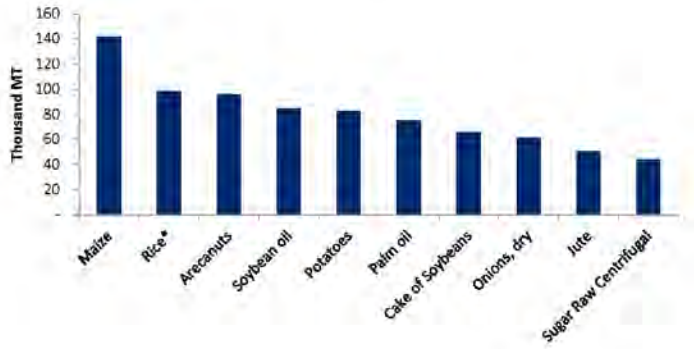
Source: GoN, MOAD, Statistical Information on Nepalese Agriculture 2011-12.

Figure 13. Egg (total number, millions) and Animal Protein Production (thousand MT), 2011-12

Source: GoN, MOAD, Statistical Information on Nepalese Agriculture 2011-12.

2.3. IMPORTS

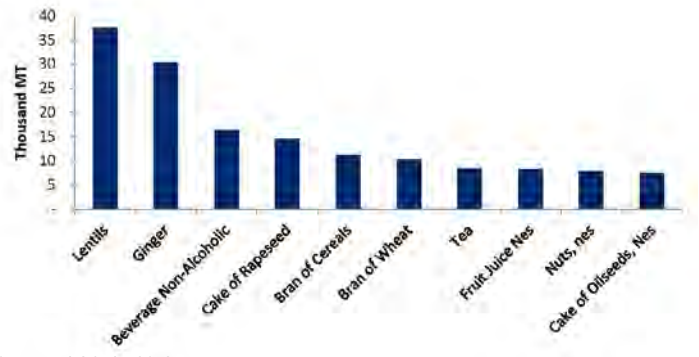
Figure 14. Select Commodity Imports (thousand MT), 2010



Source: FAOSTAT, 2013.
*Total milled rice equivalent.

2.4. EXPORTS

Figure 15. Select Commodity Exports (thousand MT), 2010



Source: FAOSTAT, 2013.

2.5. CHARACTERISTICS OF AGRICULTURAL HHS, INCLUDING INPUT USE

Table 6. Selected Characteristics of Agricultural Land by Development Region, 2010-11

	Agricultural land HHs (% of national total)	Area of agricultural land (% of national total)	Irrigated area (% of agricultural land)	Average size of agricultural land (ha per HH)
East	24.00	31.10	57.90	0.90
Central	30.00	28.70	58.10	0.60
West	21.40	18.80	50.60	0.60
Mid-West	14.30	12.80	37.90	0.60
Far-West	10.30	8.70	62.10	0.60
Nepal	100.00	100.00	54.40	0.70

Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010/11, November 2011.

Table 7. Distribution of Agricultural Land HHs (%) by Land Size (ha), 2010-11

Area (ha)	East	Central	West	Mid-West	Far-West	Nepal
Less than 0.1	10.2	9.4	7.0	9.5	9.1	9.1
0.10-0.25	11.2	22.8	22.0	15.7	19.1	18.4
0.25-0.50	19.0	25.3	26.9	29.9	28.5	25.1
0.50-1	28.9	24.8	28.0	28.0	29.1	27.4
1.0-2.0	22.8	13.2	13.0	14.2	12.5	15.5
2 and over	8.0	4.3	3.1	2.8	1.7	4.4

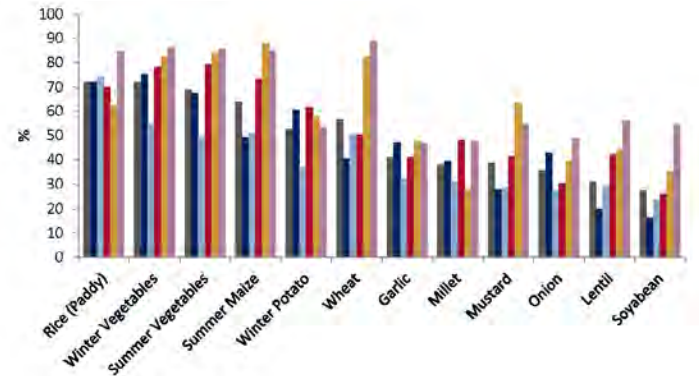
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010/11, November 2011.

Table 8. HHs (%) Owning and Renting Land by Development Region, 2010-11

	Owned	Renting-out	Renting-in	Renting-in only
East	92.7	9.3	39.1	7.3
Central	93.1	9.1	30.3	6.9
West	95.8	11.9	33.2	4.2
Mid-West	98.3	9.4	18.8	1.7
Far-West	96.4	12.8	32.1	3.6
Nepal	94.6	10.2	31.6	5.4

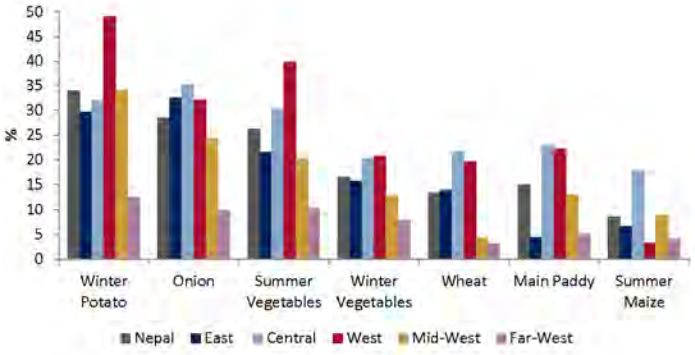
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010/11, November 2011.

Figure 16. Agricultural HHs (%) Cultivating Selected Crops by Development Region, 2010-11



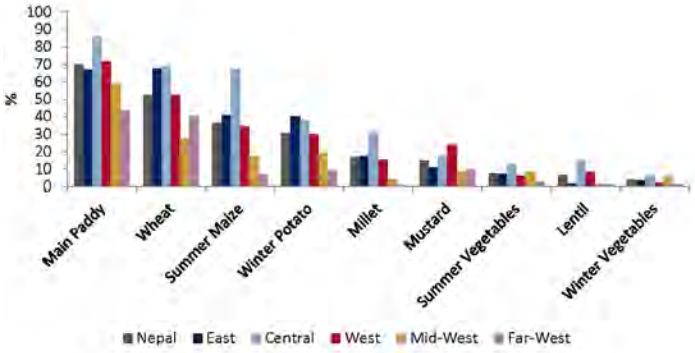
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010-11, November 2011.

Figure 17. Agricultural HHs (%) Using Improved Seeds in Selected Crops by Development Region, 2010-11



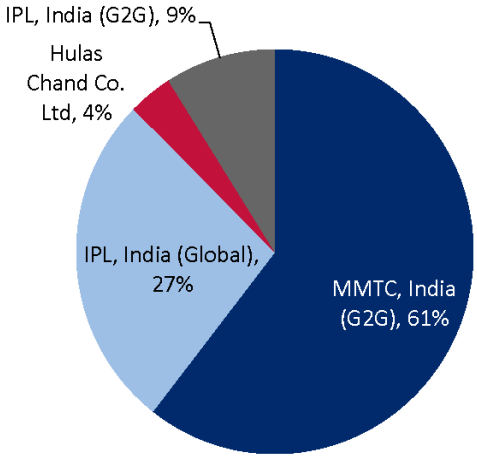
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010-11, November 2011.

Figure 18. Agricultural HHs (%) Using Fertilizers in Selected Crops by Development Region, 2010-11



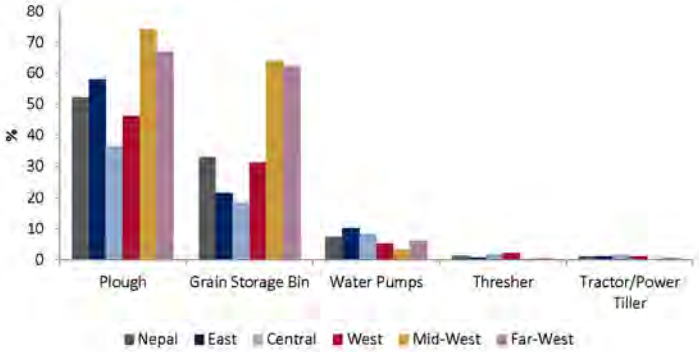
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010-11, November 2011.

Figure 19. Market Share of Nitrogen Fertilizer Suppliers (%), 2011-12



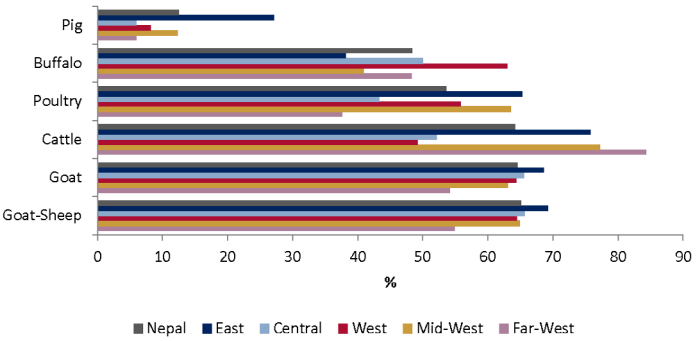
Source: Agricultural Inputs Company Ltd., 2013.
*Total 2011/12 Urea and DAP procurement was 111,500 MT.

Figure 20. Agricultural HHs (%) Owning Selected Agricultural Equipment by Development Region, 2010-11



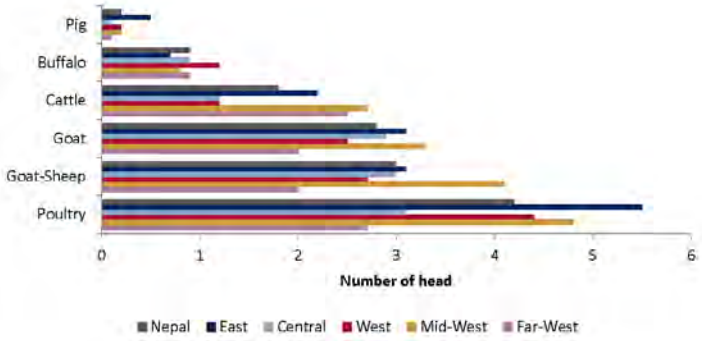
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010-11, November 2011.

Figure 21. Agricultural HHs (%) with Livestock and Poultry by Development Region, 2010-11



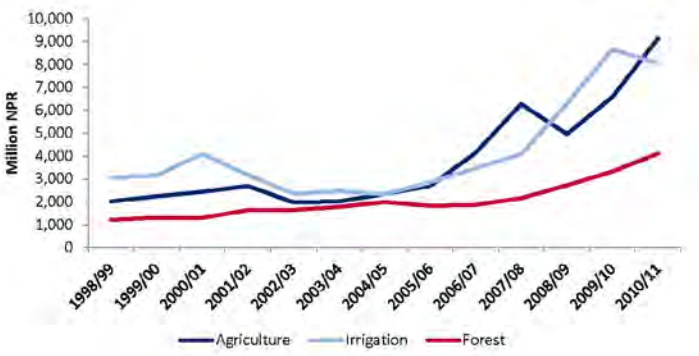
Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010-11, November 2011.

Figure 22. Mean Number of Livestock and Poultry per Agricultural HH by Development Region, 2010-11



Source: GoN, Central Bureau of Statistics, Nepal Living Standards Survey 2010-11, November 2011.

Figure 23. GoN Expenditure (Million NPR) on Agriculture, Irrigation, and Forestry, 1998-99 and 2010-11



Source: GoN, Ministry of Finance, Economic Survey 2011-12.

2.6. KEY AGRICULTURE POLICIES AND INITIATIVES

Table 9. Policies Affecting Agriculture

Policy	Agriculture Objectives	Date
Agricultural Prospective Plan (APP)	Increase factor productivity; alleviate poverty and improve living standards; transform subsistence agriculture into commercial agriculture; identify strategies and provide guidelines.	1995-2015
National Seed Policy	Involve of private-sector in crop-variety development; allow research on genetically modified organisms.	1999
National Tea Policy	Promote private sector's participation in production, processing, and trade of tea.	2000
National Fertilizer Policy	Enhance agricultural productivity through improvements in soil fertility	2002
National Irrigation Policy	Provide year-round irrigation to suitable land through current water resources; develop institutional capability of water users for sustainable management.	2003
National Coffee Policy	Support poverty reduction by generating income and expanding coffee farming; create a sustainable and lucrative coffee enterprise.	2003
National Agricultural Policy	Means to achieve APP goals; increased productivity through technology; commercialization of production; natural resource protection and disaster risk management.	2004
National Water Plan (NWP)	Guide implementation of the Water Resources Strategy to mitigate water-induced disasters, manage sustainable watersheds, provide potable water and efficient irrigation, etc.	2005
Agribusiness Promotion Policy	Reduce poverty through market-oriented and competitive agro-product production; develop partnership between the private sector and GoN for export of quality goods.	2006
Agriculture Bio-diversity Policy	Sustainable development and maintenance of ecological balance by protecting agriculture bio-diversities.	2007
Commercial Agriculture Policy	Promote animal husbandry, off-season vegetable cultivation, fishery operations, and expanded tea cultivation.	2007
Dairy Development Policy	Diversify milk products; increase production, quality control, and commercial development of a competitive milk industry.	2007
Three-Year Interim Plan (TYIP)	Measurable outcomes include food production increases by the following percentages: food crops (25%), pulses (40%), fruit (10%), potato (12%), vegetables (20%), milk (10%), and meat (30%).	2007-2010
Country Investment Plan (CIP)	Aligns with TYIP and NASDP to facilitate food security improvement by prioritizing agriculture investment programs.	2010
Second Three-Year Interim Plan (TYIP)	Stipulate development interventions to be geared towards poverty reduction by ensuring food security, enhancing economic growth, and sustainable exploitation of agriculture.	2010-2013
National Agriculture Sector Development Priority Plan (NASDP)	Improve technology, environment, market competitiveness, natural resource use, infrastructure, and adaptation to the effects of out-migration of agriculture.	2011-2015
Nepal Agricultural Research Council's (NARC) Strategic Vision for Agricultural Research	Create and enhance technologies that contribute to food security, poverty reduction, value addition, export promotion, environmental sustainability, and cost effectiveness.	2011-2030
Twelfth Five-Year Plan (Poverty Reduction Strategy)	Four percent agriculture growth target; distribution of hybrid seeds; seed banks for emergency agriculture reconstruction after disasters; plant health and watershed management; and farm mechanization.	2012-2017
National Land Use Policy	Encourage land cultivation and discourage non-agricultural use of fertile land; identify and preserve sensitive land; discourage population to reside in disaster-prone areas.	2012

Source: GoN, Ministry of Irrigation; GoN, Ministry of Energy; GoN, Planning Commission; Nepal Agricultural Research Council; Karki Yogendra Kumar and K.C., D.B., February 2002, Approaches and Tools to Promote Better Interagency Coordination to Design and Implement SARD-M Interventions; FAO, 2007, Legal Policies, Acts, Rules, Agreements and International Commitments Made by the Government.

ANNEX 3
HOUSEHOLD CONSUMPTION AND EXPENDITURE PATTERNS

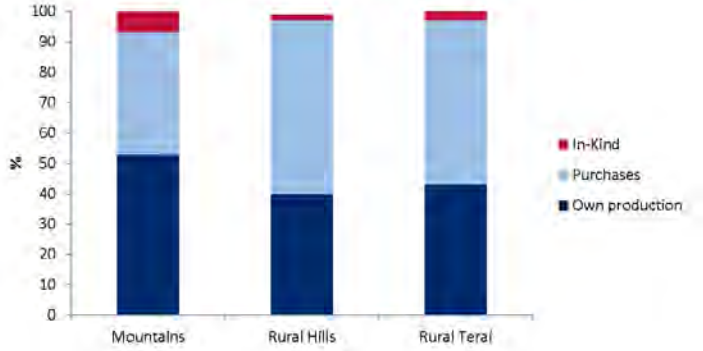
3.1. INTRODUCTION

This Annex summarizes Nepali household consumption and expenditure patterns based on information derived primarily from the 2013 Government of Nepal (GoN) and WFP *Nepal Thematic Report on Food Security and Nutrition* as well as the 2011 GoN Living Standards Survey. The topics covered are:

5. Food sources,
6. Local diets,
7. Income sources,
8. Expenditure patterns, and
9. Poverty Indicators.

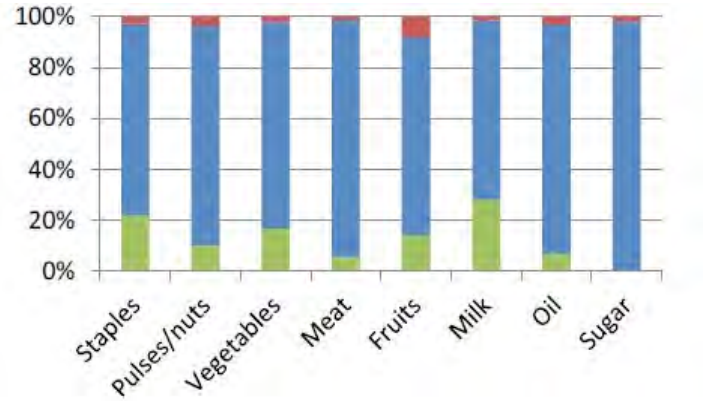
3.2. FOOD SOURCES

Figure 24. Average HH Sources (%) of Food, 2010-11



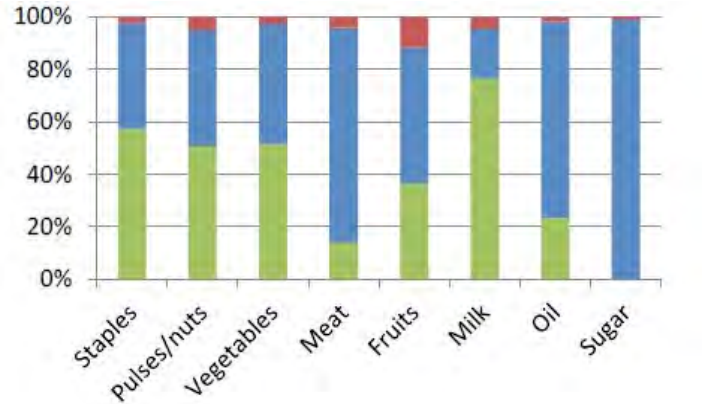
Source: GoN, WFP, Nepal Thematic Report on Food Security and Nutrition, 2013.

Figure 25. Food Consumed in Urban Areas (%) by Commodity, 2011



Source: GoN, WFP, Nepal Thematic Report on Food Security and Nutrition, 2013.

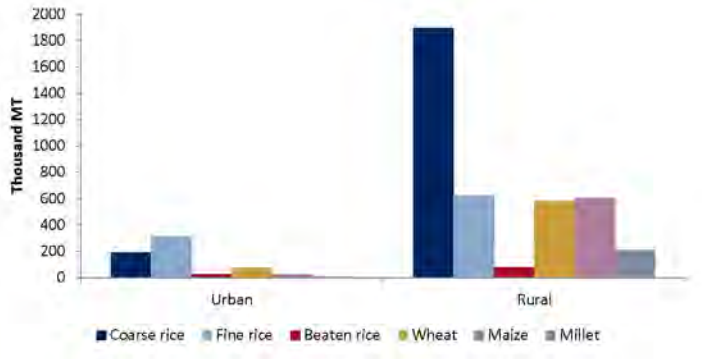
Figure 26. Food Consumed in Rural Areas (%) by Commodity, 2011



Source: GoN, WFP, Nepal Thematic Report on Food Security and Nutrition, 2013.

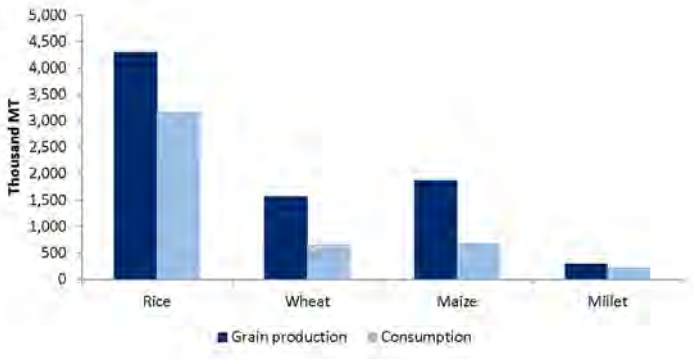
3.3. LOCAL DIETS

Figure 27. Total Cereal Consumption in Rural and Urban Areas, 2007-08



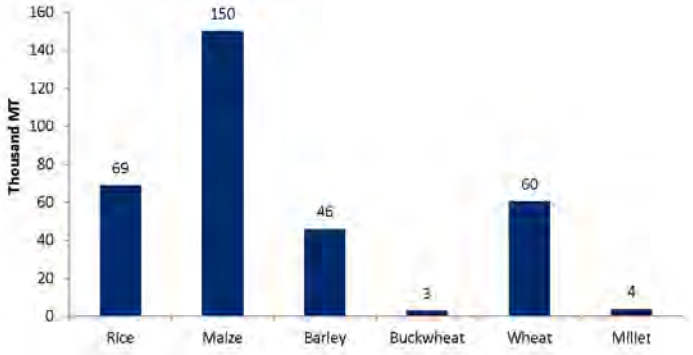
Source: GoN, 2007-08, Central Bureau of Statistics, Nepal Living Standards Survey (NLSS II).

Figure 28. Total Cereal Crop Production and Consumption, 2007-08



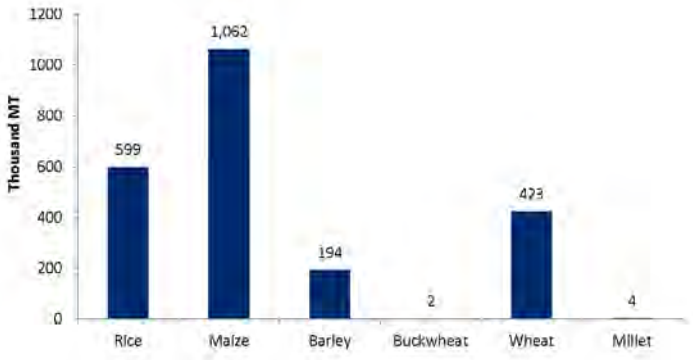
Source: Consumption data from NLSS II and production data from Department of Agriculture, Ministry of Agriculture and Cooperatives (MoAC).

Figure 29. Cereal Availability in the Mountains, 2010-11



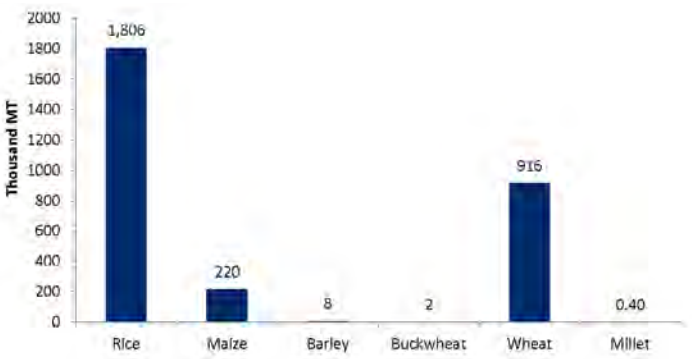
Source: GoN, 2012, Agricultural Marketing Information Bulletin, Special issue.

Figure 30. Cereal Availability in the Hills, 2010-11



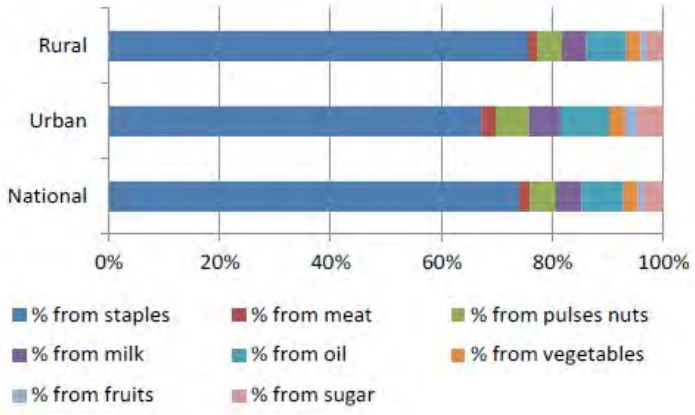
Source: GoN, 2012, Agricultural Marketing Information Bulletin, Special issue.

Figure 31. Cereal Availability in the Terai, 2010-11



Source: GoN, 2012, Agricultural Marketing Information Bulletin, Special issue.

Figure 32. Calories Consumed (%) from Varying Food Groups, 2010-11



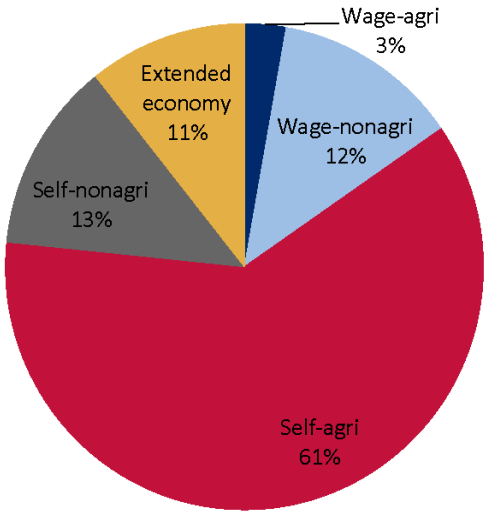
Source: GoN, WFP, Nepal Thematic Report on Food Security and Nutrition, 2013.

As of 2011, the required caloric intake has been set at 2,220 kilocalories per person per day.[25] Although urban and rural areas exceed the minimum average of 2,220 kilocalories and there is no great disparity between the two, these numbers alone do not account for the wide variability in caloric intake among regions.

25 GoN, WFP, et al, 2013, Nepal Thematic Report on Food Security and Nutrition 2013.

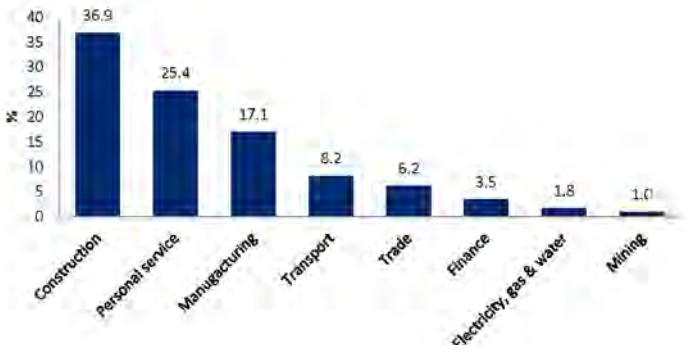
3.4. INCOME SOURCES

Figure 33. Distribution of Employed Individuals (%) by Main Sector of Employment, 2010-11



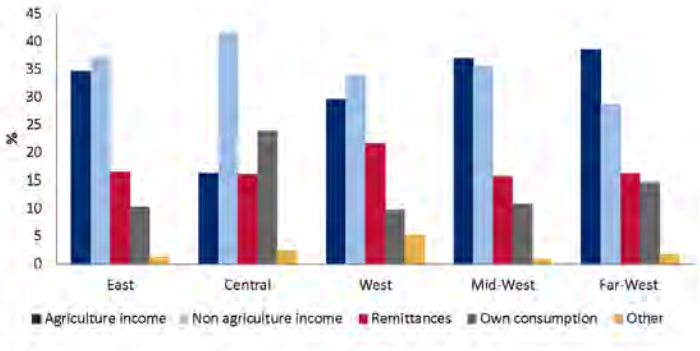
Source: GoN, November 2011, NLSS III 2010/2011.

Figure 34. Distribution of Wage Earners (%) by Industry (Non-Agriculture), 2010-11



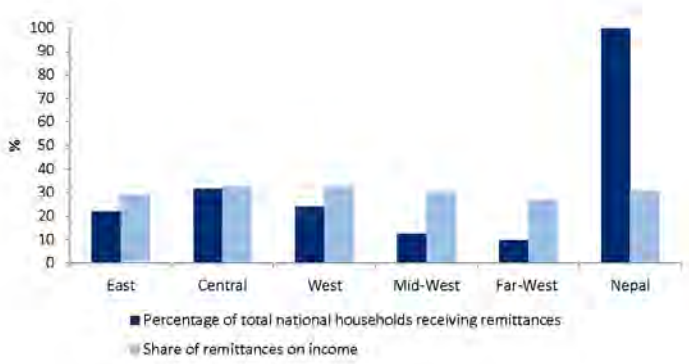
Source: GoN, November 2011, NLSS III 2010/2011.

Figure 35. Shares of HH Income (%) by Sector and Development Region, 2010-11



Source: GoN, November 2011, NLSS III 2010/2011.

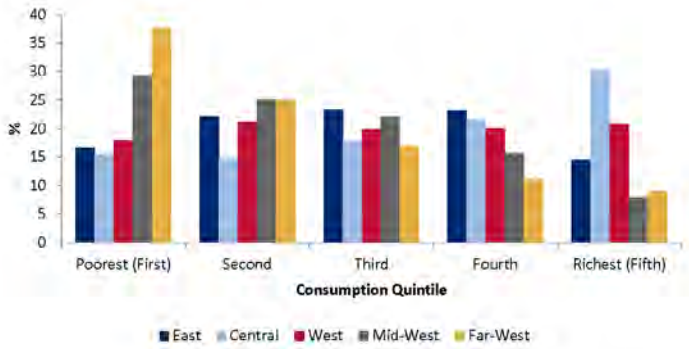
Figure 36. Share (%) of Remittances in Income by Region, 2010-11



Source: GoN, November 2011, NLSS III 2010/2011.

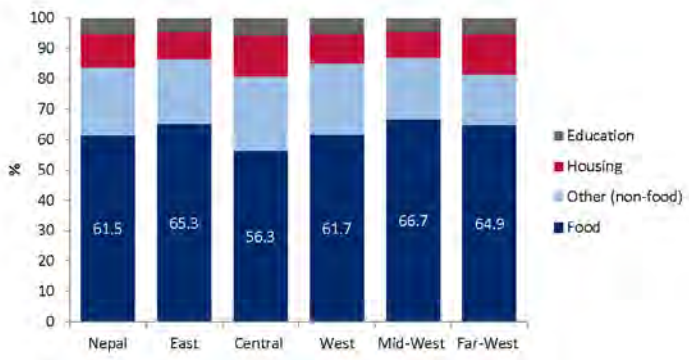
3.5. EXPENDITURE PATTERNS

Figure 37. Distribution of Population (%) by Nominal per Capita Consumption Quintile and Region, 2010-11



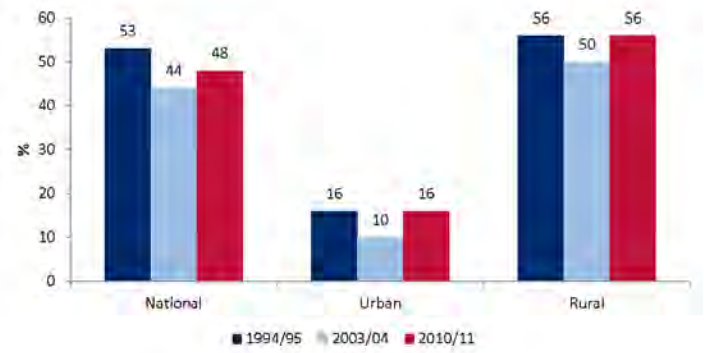
Source: GoN, November 2011, NLSS III 2010/2011.

Figure 38. HH Expenditure (%) by Category and Area, 2010-11



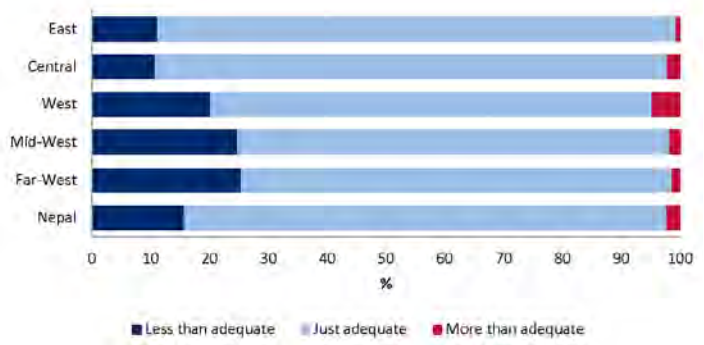
Source: GoN, November 2011, NLSS III 2010/2011.

Figure 39. HHs with Greater than 65% Expenditure on Food (%) by Strata, 1994-2011



Source: WFP, 2013, Nepal Thematic Report on Food Security and Nutrition.

Figure 40. Distribution of Food Consumption (%) by Degree of Adequacy and Development Region, 2010-11



Source: GoN, November 2011, NLSS III 2010/2011.

3.6. POVERTY INDICATORS

Table 10. Poverty Severity (%) and Poverty Incidence (%), 2011

	Poverty Severity *	Poverty incidence
Central	23	32
East	20	27
Far-West	45	35
Mid-West	37	46
West	22	46
Nepal	29	34

Source: Poverty rates from GoN, 2011, Small Area Estimation of Poverty.
* Note: Poverty severity rates are Foster-Greer-Thorbecke (FGT) index values with the measure of sensitivity being 2 (a=2).

ANNEX 4
FOOD SECURITY

4.1. INTRODUCTION

This Annex provides an overview of food security in Nepal, based on desk research and review of recent assessments. The findings noted in the following section belong to the assessments' authors, and do not reflect USAID-BEST findings or recommendations.

4.2. SUMMARY OF RECENT FOOD SECURITY ASSESSMENTS

4.2.1 Nepal Thematic Report on Food Security and Nutrition 2013[26]

Objectives. Based on the findings of the Nepal Living Standards Survey 2010/11 (NLSS-III), this report provides an overview of long-term food security and nutrition trends. The report also analyzes the factors that can influence implemented plans, policies, and programs. The data, analysis, and recommendations from this document aim to enable the Government of Nepal (GoN) to make evidence-based decisions around coordinated multi-sectoral efforts intended to reduce hunger and malnutrition.[27]

Findings: Food security. The GoN has set the average daily dietary intake requirement per capita at 2,220 Kcal, according to this report. However, nearly 40 percent of the population remains food energy deficient. Staples make up approximately 72 percent of the household diet on average even though households in all regions consumed foods from at least six out of eight food groups. Rural diets are comprised of more staple foods than urban diets. Between 2003-04 and 2010-11, dietary diversity increased marginally while food energy deficiency decreased from 59 percent to 38 percent nationally. Most households consume adequate amounts of food; however, 23 percent of rural households consume an inadequate variety of food in their diet compared to 10 percent of urban households.[28]

The urban population obtains 80 percent of its food through purchase while the rural population consumes mostly own-production (52 percent), except for meat, oils, and sugar. The development regions and ecological zones that rely heavily on own-production are also the most food insecure: Mountains, Eastern Rural Hills, Mid- and Far-Western Rural Hills, Western Rural Terai, and Mid- and Far-Western Rural Terai. Nationally, households spend 54 percent of income on food. Rural households are more severely affected by poverty, which increases their expenditure on food. International migration and remittances are common coping strategies among poor households.[29]

Table 11. Food Security Indicators by Area (% of households), 2010-11

	Urban	Rural	Total
Inadequate Food Consumption Score*	10	23	20
Food poverty**	13	26	24
Households with >75% share of expenditure on food	6	27	22
Food consumption less than adequate***	8	18	16

Source: GoN, WFP, Nepal Thematic report on Food Security and Nutrition, 2013.
*FCS less than 42; Urban FCS = 74, Rural FCS = 60. FCS is based on factors such as dietary diversity and kilocalories.
** Food expenditure below food poverty line.
***Figure based on household self-perception.

Table 12. Food Security Profile, 2010/11

	Urban	Rural	Total
Daily food energy consumption per capita (Kcal)	2525.00	2539.00	2536.00
Population with food energy deficiency (%)	43.00	37.00	38.00
Energy derived from staples (%)	66.00	74.00	72.00
Households with high energy share from staples (%)	69.00	87.00	84.00
Households with very high share of energy from staples (%)	24.00	52.00	46.00
Household diversity score	7.01	6.35	6.49
Households with low dietary diversity (%)	5.00	10.00	9.00
Households with poor food consumption (%)	4.00	10.00	8.00
Households with inadequate FCS (%)	10.00	23.00	20.00
Food poor population (%)	13.00	26.00	24.00
Households wither very high percentage of expenditure on food (%)	6.00	27.00	22.00
Population below poverty line (%)	15.00	27.00	25.00

Source: GoN, WFP, Nepal Thematic report on Food Security and Nutrition, 2013.

26 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

27 Ibid.

28 Ibid.

29 Ibid.

Findings: Nutrition. Stunting affects nearly half of all Nepali children under five years of age (about 1.75 million), while 518,000 children suffer from acute undernutrition. Much of the growth faltering of children takes place before birth, signifying poor nutrition among mothers.[30]

A statistically significant relationship was found between households' dietary energy sufficiency and stunting and underweight, but not with acute undernutrition (i.e., wasting). Children in high or very high staple diet households are 50 percent more likely to be stunted or underweight. Stunting is most prevalent in the Mountains than in the Hills or Terai; the wasting rate is twice as high in the Terai as in the Mountains, and three times higher than in the Hills.[31]

Findings: Agricultural inputs and outputs. Agriculture contributes about 35 percent to overall gross domestic product (GDP) and employs approximately 75 percent of the population. Over 60 percent of farms are subsistence, while only 3 percent are commercial. Post-2000, the cereal balance has been positive except in 2006-07 and 2009-10 due to droughts. The majority of agricultural households keep livestock such as cattle, pigs, goats, sheep, buffalo, and poultry, but most households have fewer than six animals. Chemical fertilizers are being used for key crops, but seeds and agricultural equipment remain unimproved; 37 percent of land is irrigated. Time spent in agricultural activities has increased 15 percent since 2003-04 with a significant increase in time spent in agricultural activities for women in rural areas.[32]

4.2.2 Nepal Food Security Bulletin, May 2013[33]

Findings: Food security. Food security has improved since the January-March 2012 period when 209 Village Development Committees in the Mid- and Far-West were classified as moderately food insecure (Phase II).[34]

Good rainfall and agricultural inputs signal positive prospects for the winter crop harvests of wheat and barley. However, lack of chemical fertilizers remains an ongoing issue that could negatively affect summer crop production.[35]

Various organizations have provided food assistance to vulnerable regions. WFP is distributing 3,332 metric tons (MT) of rice and 387 MT of pulses as part of the ration in a food-for-assets program. The Nepal Food Corporation (NFC) subsidizes rice in remote districts so as to enhance access to food. The NFC has supplied rice to the Far-Western Hill and Mountain districts (1,125 MT), the Mid-Western Hill and Mountain districts (790 MT), the Eastern Hill and Mountain districts (857 MT), and the Western Hill and Mountain districts (256 MT).[36]

Findings: Household food consumption and stocks. A large majority of households (77 percent) reported adequate food consumption in January-March 2013 compared to 59 percent in 2012. Households in the Hills and Terai indicated the greatest inadequacies of food consumption (31 percent). Household food stocks (403 kg) dropped 23 percent since the October-December period. Nationally, food sufficiency months stand at an average of 4.6 months; Western Hill (144 kg total stocks) and Mountain (188 kg total stocks) areas have 1.63 and 2.34 months of food sufficiency, respectively.[37]

Findings: Markets and prices. Year-on-year, the Consumer Price Index rose 3.3 percent to 10.2 percent in March 2013; the food and beverage index increased 11.3 percent, while the cereal index increased 12.9 percent. Regarding purchasing power, the wage to cereal (rice price) terms of trade have deteriorated; with their daily wage, laborers in the Mountains, Hills, and Terai can purchase 7.0 kg, 9.4 kg, and 8.4 kg of rice per day, respectively.[38]

Farm gate prices of key vegetables and spices increased since December. Significant revenues from high value commodities are evident in the January-March period. Western Hill and Mountain districts' households reported earnings of NPR 13 billion, which is a 5 to 10 percent increase year-on-year.[39]

Retail prices of food commodities increased marginally. Despite stable supply, price varied spatially. Compared to consumers in the Terai, the population in the Mountains paid as much as 72 percent more for coarse rice, 103 percent more for wheat flour, 88 percent more for potatoes, 44 percent more for lentils, and 36 percent more for soybean oil.[40]

4.2.3 2011 Nepal Demographic and Health Survey (NDHS), March 2012[41]

Objectives. Survey data were collected to provide current information on fertility and family planning, child mortality, children's nutritional status, utilization of maternal and child health services, domestic violence, and knowledge of HIV/AIDS. Additionally, key demographic rates can be calculated from the data.[42]

Findings: Water and sanitation. Eighty-nine percent of households receive drinking water from an improved source, and 82 percent of households do not treat the water by any means. Use of improved sources has increased since 2006; urban households (93 percent) have slightly better access to these

30 GoN, WFP, et al, 2013, *Nepal Thematic Report on Food Security and Nutrition 2013*.

31 Ibid.

32 ibid.

33 WFP, May 2013, *Nepal Food Security Bulletin*.

34 Ibid.

35 Ibid.

36 Ibid.

37 Ibid.

38 Ibid.

39 Ibid.

40 Ibid.

41 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

42 Ibid.

sources than rural households (88 percent). Over half of all households have access to drinking water on their premises.[43]

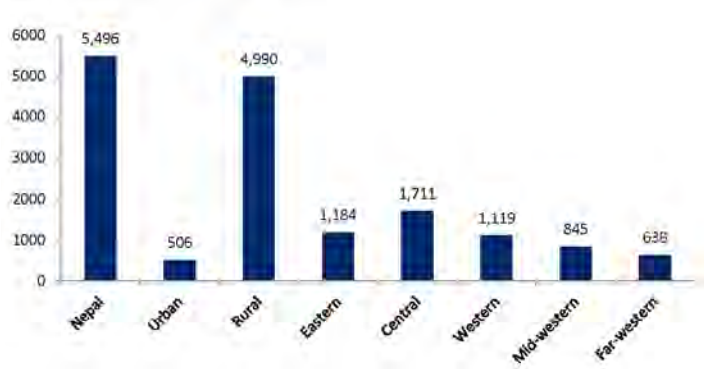
Thirty-eight percent of households have an improved sanitation facility; while 43 percent use a non-improved facility. It is more common for rural households (40 percent) to not have a toilet facility compared to urban households (9 percent).[44]

Findings: Socioeconomic status. Among five wealth quintiles, the majority of urban residents (62 percent) are in the wealthiest quintile, while only 16 percent of rural residents fall into the same category. Referring to ecological zones, less than 1 percent of the population in the Mountains is in the highest wealth quintile compared to 49 percent of the Central Hill (Kathmandu Valley) population. Sixty percent of the population living in the Western Mountains is in the lowest quintile.[45]

Findings: Food insecurity. Nearly half of Nepali households have access to food year-round; 12 percent are mildly food insecure; 23 percent are moderately food insecure; and 16 percent are severely food insecure. Urban (67 percent) and Terai (52 percent) households are more food secure than rural (46 percent), Hill (47 percent), and Mountain (41 percent) households.[46]

Major causes of food insecurity were reported as droughts, floods, landslides, crop failures, and financial problems. Ninety-six percent of households stated financial problems contributed to their food insecurity. Natural disasters mostly affected rural areas, the Mountains, the Mid-Western and Western development regions, and lowest wealth quintile households.[47]

Figure 41. Number of Food Insecure Households by Area, 2011



Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.

Table 13. Food Insecurity Causes by Area (% of households), 2011

Region of residence	Drought/ crop failure	Flood/ landslide	Financial problems	Other causes
Nepal	25.2	1.9	95.7	6.6
Urban	6.3	0.3	96.1	6.0
Rural	27.1	2.0	95.6	6.6
East	29.1	1.3	95.3	7.3
Central	20.0	1.8	95.9	5.7
West	10.5	0.5	98.7	6.9
Mid-West	45.8	2.5	91.5	8.8
Far-West	30.2	4.3	96.2	3.8

Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.

Table 14. Coping Mechanisms Used by Food Insecure Households (%) by Area, 2011

Region of residence	Took loan	Consumed seed	Sold livestock	Sold other household assets	Worked as labor
Nepal	70.1	19.0	31.2	8.7	4.0
Urban	63.0	5.9	12.8	8.4	1.9
Rural	70.8	20.3	33.0	8.7	4.2
East	72.3	13.0	41.3	10.5	1.6
Central	65.6	14.2	25.6	7.8	1.5
West	66.3	13.6	25.9	4.7	6.1
Mid-West	72.0	36.7	35.5	13.9	11.0
Far-West	82.2	29.0	31.1	7.9	1.8

Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.

Findings: Nutrition. The nutritional status of children in Nepal has improved over the past 15 years, and is close to meeting the Millennium Development Goal of reducing the percentage of underweight children by 29 percent by 2015. Three indices were calculated based on collected data: height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight).[48]

Approximately 41 percent of Nepal's under-five population is stunted. Children ages 36-47 months exhibit the highest prevalence of stunting (53 percent) as well as severe stunting (23 percent). Mothers with a body mass index (BMI) less than 18.5 are more likely to have children that are stunted (47 percent). Geographically, stunting is most prevalent in rural areas (42 percent), the Mountains (53 percent), and the Mid-West (50 percent), as compared to urban areas (27 percent).[49]

Eleven percent of children under five are wasted, while 3 percent are severely wasted. Children ages 9-11 months (25 percent) are most affected; and unlike stunting, children ages 36-47 months (7

43 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

44 Ibid.

45 Ibid.

46 Ibid.

47 Ibid.

48 Ibid.

49 Ibid.

percent) are least affected by wasting. A strong correlation exists between wasted children and low birth weight. Urban children are less likely to be wasted (8 percent) compared to rural children (11 percent). Regionally, more children (15 percent) are affected by wasting in the Central Hill and Western Terai.[50]

Nearly 1/3 of children under five are underweight, while 8 percent are severely underweight. Like stunting and wasting, a correlation exists between low birth weight and underweight. Rural children (30 percent) are more likely to suffer from underweight than urban children (17 percent). Underweight is most prevalent in the Mountains (36 percent) and the Mid-Western development region (37 percent). The lowest rate of underweight is in the Western Hills (17 percent).[51]

4.2.4 Nepal Living Standards Survey 2010-11, November 2011[52]

Objectives. The NLSS-III provides updated data to previous living standards surveys. Trends in data are used to assess impacts of government policies and programs, as well as socioeconomic changes since the prior survey (2003-04).[53]

Findings: Water and sanitation. Piped drinking water can be accessed by 45 percent of households; the remainder source water from covered wells (39 percent), open wells (7 percent), and natural sources such as rivers and springs (10 percent). Urban areas have better access to safe water than rural areas (58 percent versus 41 percent). The West has the highest proportion of households with access to piped water (61 percent) and the Far-West has the lowest (34 percent). As for ecological zones, the Terai has the least access to piped water (14 percent).[54]

Sanitation access is limited across the country. Only 19 percent of households have access to sanitary systems (sewers) and of that number, 56 percent are located in urban areas. Slightly more than 1/2 of households (56 percent) have access to latrine facilities; it is not uncommon for the remainder to defecate in open areas.[55]

Findings: Income distribution. The richest 20 percent of Nepal's population account for 56 percent of total income, while the bottom 80 percent of the population earn 44 percent of total income. The poorest 10 percent of the population only earn 2 percent of total income. Urban areas have a greater population in the wealthiest quintile compared to rural areas (43 percent versus 15 percent). The Mid- and Far-West have the lowest proportion of the population in the wealthiest quintile, 11.7 percent and 10.8 percent, respectively; nearly 1/3 of the population in these regions is in the lowest income quintile.[56]

Findings: Food security. A large majority of households (82 percent) classified their food consumption as "just adequate," while 16 percent classified their food consumption as inadequate. Higher rates of inadequate food consumption were evident in rural areas (17.8 percent) compared to urban areas (7.9 percent), and in the Far-West (25 percent).[57]

Within the 30 days prior to the survey, 8 percent of all households reported a lack of food or lack of money to purchase food. Food shortage rates were doubled in rural areas (8.4 percent) compared to urban areas (4.2 percent). In many households (43 percent), food shortages last three-five days. Coping strategies, as reported by households,[58] include: borrowing food or money to buy food (68 percent), purchase food on credit (57 percent), rely on less preferred/expensive foods (51 percent), limit the size of meals (42 percent), and skip meals (33 percent).[59]

Table 15. Food Scarcity Alleviation Measures Used by HHs (%) by Area, 2010-11

	Urban	Rural	Total
Eat cheaper or less preferred foods	54.9	50.4	50.9
Borrow food or money	59.3	69.6	68.4
Buy food on credit	61.2	56.5	57.1
Eat wild-food or unripen crop-food	1.2	6.8	6.2
Eat seeds preserved for sowing	5.3	14.1	13.1
Send household members to eat elsewhere	5.4	9.8	9.3
Send household members for begging	3.9	3.6	3.7
Eat less for each meal	42.3	41.3	41.5
Feed children by reducing adult member's share	11.9	18.3	17.5
Feed working members by reducing other's share	4.8	7.9	7.5
Ration available money among household members	7.3	2.6	3.1
Reduce number of meals in a day	36.2	33.1	33.4
Skip days without meals	5.1	11.7	10.9
Sell assets/jewelry to buy food	5.9	5.8	5.8

Source: GoN, November 2011, Nepal Living Standards Survey 2010/2011.

Findings: Nutrition. Indicators assessed for child nutrition are: stunting (height-for-age), underweight (weight-for-age), and wasting (weight-for-height). Statistics are reported for children under five years of age.[60]

50 GoN, New ERA, et al, 2011, *Nepal Demographic and Health Survey 2011*.

51 Ibid.

52 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Statistical Report, Volume One)*. GoN, 2011, *Nepal Living Standards Survey 2010/11 (Statistical Report, Volume Two)*.

53 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Statistical Report, Volume One)*.

54 Ibid.

55 Ibid.

56 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Statistical Report, Volume Two)*.

57 Ibid.

58 Households were allowed to select all coping strategies used in the past 30 days.

59 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Statistical Report, Volume Two)*.

60 Ibid.

Forty-two percent of all children are stunted and 15 percent are severely stunted. Stunting rates increase with older age groups as well as with poorer quintiles. Stunting is more prevalent in rural areas (44 percent) compared to urban areas (28 percent); the highest rate of stunting is in the Mountain region with 56 percent of children stunted and 20 percent severely stunted.[61]

Underweight affects 31 percent of children, while 8 percent are severely underweight. Rural children are more likely to be underweight compared to urban children. The rural Central Terai has the highest percentage of underweight children (43 percent). Prevalence of underweight increases as children grow older; from 17 percent among ages less than 12 months to 38 percent among ages 48-59 months. All income quintiles are affected by severe underweight.[62]

Fourteen percent of children are wasted, while 3 percent are severely wasted. Wasting is more prevalent in the Terai (20 percent) than in the Hills (7 percent) and Mountains (9 percent). Unlike stunting and underweight, wasting rates reduce with increasing age groups. Children in poorer quintiles are more likely to be wasted than children in richer quintiles.[63]

4.2.5 The Food Security Atlas of Nepal, July 2010[64]

Objectives. This report serves to provide an analysis of food security issues in Nepal through thematic maps, charts, and graphs. The report includes measures of hunger, small area estimates of malnutrition and poverty, and geographic representations of disparities affecting food security.[65]

Findings: Hunger. Nepal ranked 57th out of 88 developing countries according to the 2008 Global Hunger Index. Hunger is most prevalent in the Mid- and Far-western Hills and Mountains. Underweight is a greater issue in the Terai, whereas chronic malnutrition, as evidenced by stunting, is more common in the Hills and Mountains.[66]

Findings: Agriculture. Nepal will become consistently food deficit if demand continues to outpace production. The Terai dominates agricultural production, the Hills contributes 10 percent of total nationally cultivated land, while the Mountains only have 2 percent of arable land. Paddy rice is the main crop in the Terai while maize is most abundant in the Hills and Mountains. Lack of land is the main challenge facing agrarian societies, followed by lack of irrigation, soil erosion, limited mechanization and poor usage of improved seeds, fertilizers, and pesticides.[67]

Findings: Poverty. Poverty is measured by the cost-of-basic-needs approach which establishes a poverty line of NPR 7,696 per person annually, and by direct caloric intake which sets the daily requirement at 2,144 kilocalories for this report. Approximately 31 percent of Nepal's population is below the poverty line; 41 percent consume less than the caloric requirement. Hill and Terai populations in the Mid- and Far-West are most impoverished.[68]

Findings: Nutrition. Approximately half of children under five years of age are stunted, 38.6 percent are underweight, and the incidence of wasting is 12.6 percent. More than 60 percent of children are stunted in the Hills and Mountains in the Mid- and Far-West. The highest prevalence of underweight (above 50 percent) is in the Hills of the Mid- and Far-West and in Central Terai. Additionally, 24 percent of Nepali women have a BMI below 18.5, significant evidence of undernourishment among women.[69]

Findings: Coping strategies. A coping strategy index based on frequency and severity of coping strategies used among households is employed as an indicator of household food security. The Hills has the highest coping intensity as well as the highest food insecurity. Coping can be two to three times higher in highly food insecure areas, where households sell assets and borrow heavily, than in generally food secure areas.[70]

4.2.6 Assessment of Food Security and Nutrition Situation in Nepal, June 2010[71]

Objectives. As part of the National Medium –Term Priority Framework formulation exercise, this study serves to analyze strengths and weaknesses of existing agricultural policies and programs related to food security and nutrition and provide recommendations for addressing identified gaps.[72]

Findings: Food security. Widespread poverty, along with low food and livestock production, are the major causes of food insecurity; approximately 3.7 million people are food insecure. The report states women, Dalit, and Madhesi groups have failed to be reached by the public sector.[73]

Nepal has been a net food importer for the past two decades. Food deficits in the mid-1990s reached 79 percent in the Mountains and 39 percent in the Hills; the Terai had a surplus of 7 percent. Limited agricultural inputs such as fertilizer, seed, irrigation, and machinery, in addition to conflict, have reduced production, diversification, and access to markets. Approximately 40 percent of rural households produce enough to meet their annual needs. Crops account for 50 percent of agricultural income, while livestock contribute 30 percent to agricultural

61 GoN, 2011, *Nepal Living Standards Survey 2010/11 (Statistical Report, Volume Two)*.

62 Ibid.

63 Ibid.

64 GoN, 2010, *The Food Security Atlas of Nepal*.

65 Ibid.

66 Ibid.

67 Ibid.

68 Ibid.

69 Ibid.

70 Ibid.

71 FAO, 2010, *Assessment of Food Security and Nutrition Situation in Nepal*.

72 Ibid.

73 Ibid.

GDP.[74]

Proportionally, price increases were greater than reductions in food supply in 2008-09, leading households to buy smaller quantities and rely more on credit; nearly 75 percent of households report insufficient access to food during this time.[75]

Findings: Nutrition. Nepal ranks third among the 12 South Asian countries in terms of poor nutrition. Root causes of malnutrition in Nepal are: poverty, inadequate food intake, heavy disease burden, recurring food shortages, limited efforts made to address malnutrition and widespread misconception that malnutrition is only a food issue.[76]

Major nutritional issues prevalent in Nepal are: low birth weight, childhood undernutrition, chronic energy deficiency in mothers, vitamin A deficiency, iodine deficiency disorders, and iron deficiency anemia. Of the total population, 49.3 percent are stunted, 12.6 percent are wasted, and 38.6 percent are underweight. Rural areas and the Mountains have higher rates of malnutrition than urban areas, the Hills, and the Terai. Malnutrition affects 48-75 percent of the population in the Mountains and Hills of the Mid- and Far-Western development regions.[77]

Sixteen percent of rural households have very poor consumption patterns and consume maize daily, seasonally complimented by rice, barley, and tubers. Women and lower castes are discriminated against and have restricted access to food, contributing to their high prevalence of inadequate diets; 40 percent of women living in the Terai suffer from a low BMI.[78]

Findings: Recommendations. To obtain food security and solve nutritional problems, geographical disparities and gender discrimination must be reduced. Short- and medium-term recommendations are: disaster preparedness, school-based programs, mass awareness on nutrition, social awareness, initiation of target program on hotspots, livelihoods strengthening, and support to establish and maintain food reserves. Long term recommendations include: disaster and agricultural risk management, strengthening development programs, improving agricultural marketing and food quality and safety standards, controlling food loss, promoting household food security and livelihoods interventions, improving monitoring and evaluation of nutrition situation.[79]

4.2.7 FAO/WFP Food Security Assessment Mission to Nepal, 2007

Objectives: This assessment was undertaken to better explain chronic, short-term, and disaster-affected food insecurity in Nepal by examining the 2007 winter cereal crops, market access, and food utilization at the national, sub-national, and household level.[80]

Findings: Import barriers. Duties are fairly low and, during times of drought traders had no issues with importing cereals from India. Traders seem confident that they can supply Nepal's market with cereals during similar times of diminished harvest.[81]

Findings: Logistical barriers. Nepal is extremely challenging logistically with most communities lacking roads navigable by truck. Many areas in the Mid- and Far-West rely on air or mule transport for food delivery.[82]

Findings: Future programming. Highly food-insecure areas, along with areas that have endured repeated harvest losses should be targeted for longer-term support. Improved irrigation technology, rainwater harvesting techniques and water management, and use of appropriate seeds would help mitigate food insecurity in these areas.[83] External food assistance should be targeted towards impoverished communities in the Mid- and Far-West.

High-visibility programs targeting poor and conflict-affected communities for immediate assistance should be emphasized. Longer-term support directed at basic social and economic causes of civil conflict are also necessary; improvements in food security are integrally linked to the peace process.[84]

A complete understanding of the food security situation in Nepal demands regular crop monitoring and study of seasonal migration patterns.

Findings: Recommendations. Agriculture must be the government's highest priority, and the diverse agro-ecological zones in the country should be strategically utilized to their full potential. Further, commodities with the best development potential should be identified and cultivated using value-chain and market-oriented approaches.[85]

74 FAO, 2010, *Assessment of Food Security and Nutrition Situation in Nepal.*
75 Ibid.
76 Ibid.
77 Ibid.
78 Ibid.
79 Ibid.
80 WFP, 2007, *FAO/WFP Food Security Assessment Mission to Nepal.*
81 Ibid.
82 Ibid.
83 Ibid.
84 Ibid.
85 Ibid.

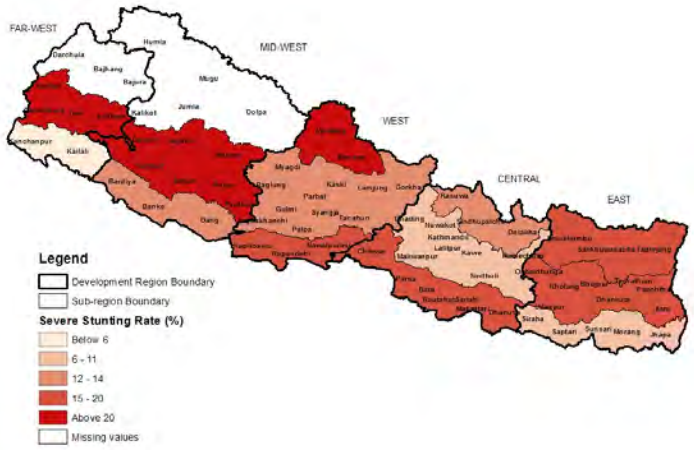
4.3. MALNUTRITION RATES

Table 16. Nutritional Status of Children Aged 0-59 Months by Area (%), 2010-11

Region	Underweight-Moderate	Underweight-Severe	Stunted-Moderate	Stunted-Severe	Wasting-Moderate	Wasting-Severe
Nepal	31.1	7.7	41.5	15.0	13.7	3.2
Urban	18.9	6.5	27.9	8.3	11.0	3.6
Rural	33.1	7.9	43.8	16.1	14.2	3.1
East	26.9	5.8	40.4	11.3	13.1	2.9
Central	33.3	9.6	38.4	15.3	16.8	4.3
West	27.2	6.8	40.3	14.1	10.9	2.0
Mid-West	36.3	6.7	51.2	18.9	12.0	2.6
Far-West	30.5	8.2	41.4	16.9	12.2	2.8

Source: GoN, November 2011, Nepal Living Standards Survey 2010/2011.

Figure 42. Severe Stunting Rates by Development Regions and Sub-regions (%), 2011



Source: Created by USAID-BEST project, using 2011 DHS data (height for age <-3 z-score). Please see Chapter 4 for a map of moderate stunting by Development Regions and Sub-regions.

Figure 43. Severe Wasting Rates by Development Regions and Sub-regions (%), 2011

Source: Created by USAID-BEST project, using 2011 DHS data (weight for height <-3 z-score. Please see Chapter 4 for a map of moderate wasting by Development Regions and Sub-regions.

4.4. WATER, SANITATION, AND HYGIENE ACCESS

Table 17. Drinking Water Source and Treatment by Area, 2011

Region of residence	Improved source (%)	Non-improved source (%)	Percentage using an appropriate treatment method*	Total number
Households				
Urban	93.4	6.6	45.8	1,546
Rural	88.1	11.9	12.9	9,280
Total	88.9	11.1	17.6	10,826
Population				
Urban	93.5	6.5	44.3	6,338
Rural	87.8	12.2	11.2	41,785
Total	88.6	11.4	15.6	48,123

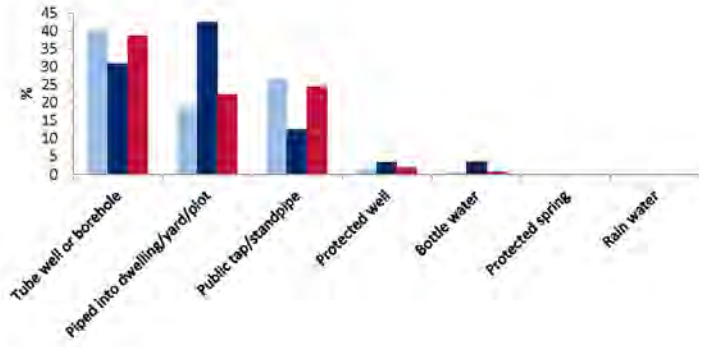
Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.
*Appropriate water treatment methods include boiling, bleaching, straining, filtering, and solar disinfecting.

Table 18. Water Treatment Methods by Area (%), 2011

	Households-Urban	Households-Rural	Households-Total	Population-Urban	Population-Rural	Population-Total
Boiled	20.9	6.5	8.6	20.5	5.5	7.5
Bleach/chlorine added	4.0	1.0	1.4	4.0	1.0	1.4
Strained through cloth	1.4	1.4	1.4	1.4	1.3	1.3
Ceramic, sand, or other filter	34.3	6.3	10.3	33.2	5.3	8.9
Solar disinfection	1.4	0.3	0.4	1.2	0.2	0.3
Other	0.3	0.2	0.2	0.4	0.2	0.2
No treatment	54.1	86.9	82.2	55.5	88.6	84.2

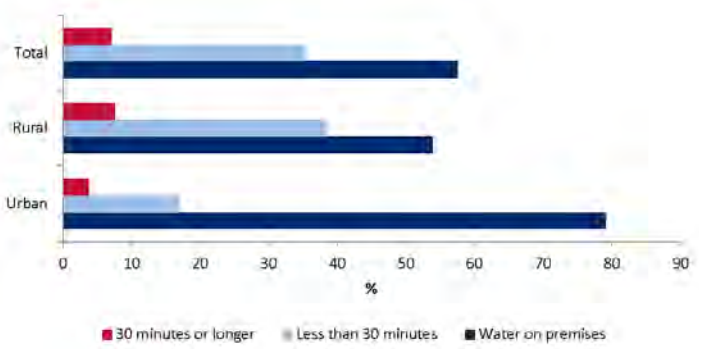
Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.

Figure 44. HHs with Access to Safe Water and Main Source of Drinking Water by Area (%), 2011



Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.

Figure 45. Time to Obtain Drinking Water by Area (% of HHs), 2011



Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.

Table 19. Sanitation Facilities by Area (% of HHs), 2011

Type of toilet/latrine facility	Urban	Rural	Total
Improved, not shared facility	52.5	35.8	38.2
Flush/pour flush to piped sewer system	15.9	1.4	3.5
Flush/pour flush to septic tank	32.0	23.7	24.9
Ventilated improved pit latrine	2.1	6.6	6.0
Pit latrine with slab	2.1	3.3	3.1
Composting toilet	0.0	0.2	0.2
Shared facility*	36.7	15.9	18.9
Flush/pour flush to piped sewer system	11.4	1.7	3.1
Flush/pour flush to septic tank	22.6	10.0	11.8
Flush/pour flush to pit latrine	1.2	1.3	1.3
Ventilated improved pit latrine	0.3	0.3	0.3
Pit latrine with slab	1.2	2.6	2.4
Non-improved facility	10.8	48.3	42.9
Flush/pour flush not to sewer/septic tank/ pit latrine	0.4	0.3	0.3
Pit latrine without slab/open pit	1.6	8.0	7.1
No facility/bush/field	8.7	39.9	35.5

Source: GoN, March 2012, Nepal Demographic and Health Survey 2011.
*Facilities that would be considered improved if not shared by two or more households.

ANNEX 5
CONTACTS

Last Name	First Name	Organization	Title
Adhikari	Ramesh	World Wildlife Fund	Program Officer, Water Based Climate Adaptation
Adhikary	Shrawan	Food and Agriculture Organization	Program Officer
Agrawal	Sandeep	Shiv Shakti group	Director
Aryal	Shiva Prasad	Helvetas/Nepal	Country Director
Baidya	Suman	Department for International Development	Infrastructure Advisor
Banskota	Balram	All Nepal Peasants' Federation	Deputy Secretary General
Basmet	Mamata	World Food Programme	Cash Officer
Bhattarai	Tilchandra	Chamber of Commerce & Industry, Chitwan	President
Bista	Guna Chandra	Avinash Hatchery Pvt. Ltd.	Executive Chairman
Chand	Rabindra	World Food Programme	Senior Program Staff
Chhajer	Pradeep	K.L. Dugar Group	General Manager
Chhetri	Purna	World Bank	Senior Rural Development Specialist
Colavito	Luke	International Development Enterprises	Country Director
Collis	Bill	Winrock	Chief of Party, KISAN
Dahal	Pradiumna	United Nations Children's Fund	Nutrition Specialist
Davis	Dale	Helen Keller International	Country Director
Devkota	Mahesh	Save the Children	Programme Coordinator
Devkota	Harish	Winrock	Agriculture Input Supply Manager, KISAN
Duwadi	Vrigu	Development Project Service Center	Program Advisor
Dwivedi	Ram Shanker	Regional Plant Quarantine Office, Nepalgunj, Banke District	Plant Quarantine Officer
Gewali	Govinda	Asian Development Bank	Senior Project Officer
Ghimire	Gita	District Health Office, Bardiya	Senior Auxiliary Health Assistant
Gotame	Bishnu	Oxfam	Coordinator, Field Office Dhangadhi
Gurun	Ghana	World Wildlife Fund	Conservation Program Director
Hada	Navin	US Agency for International Development/Nepal	AID Project Development Specialist, General Development Office
Hada	Meenu	World Food Programme	National Programme Officer
Iswar	Sharma	Siddhartha Pellet Feed Pvt. Ltd.	Managing Director
Joshi	Yagya	German Society for International Cooperation	Sub-National Governance Programme

Last Name	First Name	Organization	Title
K.C.	Manoj	World Food Programme	Logistics Officer, Nepalgunj
Kakshapati	Kismat Kumar	Kakshapati Rice & Oil Mill	Managing Director
Kanner	Jussi	Delegation of the European Union to Nepal	Programme Officer
Karki	Sanjay	Mercy Corps	Country Director
Kedia	Saurab	Mahabir Mill, Kedia Organisation	Company Representatives
Kefle	Prakash	Practical Action	Manager
Khatri	Narayan Hari	Siddhartha Pellet Feed Pvt. Ltd.	Chairman
Kumar Sah	Manoj	World Food Programme	Programme Unit
Kyung-Hoo	Roh	Good Neighbors International	Country Director
Langen	Dominik	German Society for International Cooperation	Program Manager
Maharjan	Pradip	Agro Enterprise Center	Executive Director
Manandhar	Suresh	Nepal Purdwadhar Bikash Company Limited	Administrative and Logistics Officer
Menage	Nicole	World Food Programme	Representative
Nakarmi	Meena	Poverty Alleviation Fund	Portfolio Manager
Neure	Bhim	Helen Keller International	Cluster Agriculture Coordinator, Suaahara
Oyloe	Peter	Save the Children	Chief of Party, Suaahara
Pal	Kiran	World Food Programme	Head of Sub Office, Dadeldhura
Pandey	Amsit	Helen Keller International	District Ag Officer, Suaahara
Pathak	U.S.	Regional Plant Quarantine Office, Bhairawa, Parsa District	Plant Quarantine Officer
Paudel	Lila Ram	Department of Agriculture, Ministry of Agricultural Development	Director General
Pradhan	Komal Prasad	International Development Enterprises	National Program Director
Prevatt	Amy	US Agency for International Development/Nepal	Food Security Specialist, General Development Office
Pulami	Ram Prasad	Ministry of Agricultural Development	Joint Secretary, Planning Division
Puri	Rabin	Siddhartha Pellet Feed Pvt. Ltd.	Financial Director
Rijal	Kailash	Development Project Service Center	Director
Sah	Manoj Kumar	World Food Programme	Programme Unit
Sanjel	Bal Ram	Siddhartha Pellet Feed Pvt. Ltd.	Marketing Director
Sarma	P.K.	K.L. Dugar Group	Director of Plant, Nepalgunj
Shah	Hari Narayan	Nepal Food Corporation	General Manager
Shahi	Mahendra	Mercy Corps	Program Manager, Protecting and Mainstreaming Informal Sector Safety Nets
Shahu	Rajendra	Winrock	Agriculture Marketing Manager
Sharma	Ratam	Support Activities for Poor Producers of Nepal	Project Manager
Sharma	Iswar	Siddhartha Pellet Feed Pvt. Ltd.	Managing Director

Last Name	First Name	Organization	Title
Shrestha	Shiddi	Food and Agriculture Organization	Lead Consultant
Shrestha	Shailendra	International Development Enterprises	Marketing Program Coordinator
Shrestha	Pushpa	World Food Programme	Programme Officer, Nepal Food Security Monitoring System National Coordinator
Singh	Surya	Asian Development Bank	Livestock Specialist
Singh	Shygon	Regional Plant Quarantine Office, Nepalgunj, Banke District	Senior Plant Quarantine Officer
Sinha	Tirtha	German Society for International Cooperation	Senior Program Officer
Sitoula	Indra Prasad	Nepal Food Corporation	Acting Deputy General Manager
Stamm	John	US Agency for International Development/Nepal	Director, General Development Office
Steimer	Shanda L.	US Agency for International Development/Nepal	Director, Office of Health and Family Planning
Thapa	Lalita	German Society for International Cooperation	Sub-National Governance Programme
Thapa	Chandra	Nepal Water for Health	Water, Sanitation, and Hygiene Manager
Thapa	Moti Prasad	World Food Programme	Head of Sub Office, Nepalgunj
Thapaliya	Dinesh Kumar	Ministry of Federal Affairs and Local Development	Joint Secretary
Tiwari	Hari Babu	Ministry of Agricultural Development, Department of Agriculture	Director, Agribusiness and Marketing
Upreti	Manoj	World Food Programme	Logistics Officer
Vishwakarma	Shiv	World Food Programme	Head of Programmes

ANNEX 6
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Fintrac Inc.
www.fintrac.com

1400 16th NW, Suite 400
Washington, DC 20036 USA
Tel: (202) 742-1055
www.usaidbest.org
infobest@fintrac.com

3077 Kronprindsens Gade 72
St. Thomas, USVI 00802
Tel: (340) 776-7600

Back cover: In an agricultural household, women are often the laborers responsible for planting and harvesting while men prepare the land. Here, a woman is transplanting rice. Kailali District, Nepal, July 2013.

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U.S. Agency for International Development
1300 Pennsylvania Avenue, NW | Washington, DC 20523
Tel: (202) 712-0000 | Fax: (202) 216-3525
www.usaid.gov