

Food Security in Post Conflict Nepal: Challenges and Opportunities

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Preface

Food security has emerged as a major global concern due to changes wrought by climate change, demographic dynamics, political power struggles, and rapidly globalizing economic processes. In the case of Nepal, current efforts to rebuild the state after a decade-long insurgency have added another challenging dimension to food security. The Interim Constitution 2007 enshrined the 'right to food' as a fundamental right for Nepali citizens. Hence, post-conflict debates in Nepal have focused significantly on food issues. This book, "Food Security in Post-conflict Nepal: Challenges and Opportunities", devotes its pages to important issues and perspectives that help illuminate the complexity of food security in Nepal while also pointing ways forward to insure better livelihoods for rural and urban Nepalis alike.

This volume explores issues ranging from gender and markets to the current push for genetically modified seeds—all of which exert a challenging influence on the sensitive matters of food and agricultural productivity in post-conflict Nepal. In the first chapter "Food security in the conflict and post-conflict context of Nepal", the authors discuss different dimensions of food security in the post-conflict political context of Nepal. As a predominantly agricultural country, food insecurity should not be an issue for Nepal theoretically. However, in practice, food security is a constant challenge. Experiences in Nepal clearly indicate that food insecurity is exacerbated by a combination of internal domestic causes such as armed conflict, weak policies, and weak institutional arrangements for food governance. Externally, food security issues in Nepal are hampered by the commercial interests of developed countries as they influence the cultivation and use of resources, development investment, and trade regulations.

The chapter “Food security: Key terms and debates” highlights the different terminology used in recent debates on food security. Food security is a complex sustainable development issue connecting dimensions of the environment, economy, and society. The issue of food security in Nepal is multifaceted and complex, confronted with challenges such as socio-political structures, gender discrimination, degradation of natural resources, and many others.

“Conflict over seed and plant genetic resources: Implications for food security” examines the contestation between seed sovereignty and farmers’ rights and the virtual monopoly the corporate sector holds on plant genetic resources. In doing so, we highlight the concerns and issues of local people in developing countries who are at the greatest risk to suffer from food insecurity and the negative effects of globalising processes.

The chapter “The determinants of Nepal’s food insecurity” discusses the various social, cultural, and political factors that have precipitated Nepal’s food insecurity status. The authors argue that without proper and strengthened access and supply, Nepal cannot move forward to ensure food security in Nepal. Therefore, it is crucial to examine the demands of people before supplying goods (except for emergency situations when the demands are obvious and high).

In “Gendered dimensions of food security in Nepal”, the author examines the discriminatory power relations that influence food security in Nepal, as well as the national and international instruments that are being employed to address those issues. The author argues that examining the food system through the lens of gender is crucial to understanding the structural causes and for devising possible ways forward to ensure equal rights, entitlements, needs, and choices about food.

“Improving markets and trade policy for food security” posits that Nepal should focus its food production on goods that have a comparative advantage. Nepal also needs to position itself to benefit from trade facilitation schemes in the global market. International markets have been focusing on trade facilitation

issues such as customs procedures, logistics, trade infrastructures, and the trade regulatory environment than on reducing other trade barriers, such as tariffs and quotas. The author notes that Nepal could benefit through products that have international appeal and trade facilitation schemes already in place, such as organics.

The final chapter, “Agricultural productivity and food security: Challenges and opportunities”, argues for a paradigm shift in the overall vision of agricultural development, moving beyond increasing crop yields to a more holistic food security and livelihood-centric approach. To date, agricultural development has focused on staple crops at the expense of equally valuable products such as specialty crops, livestock, and poultry. Similarly, the authors argue that state agencies should increase their focus on lesser valued components of agriculture and rural development, such as improving rural income and employment, efficient use of scarce resources, and climate change.

From these discussions it becomes clear that there is an urgent need to develop tools and approaches that can assist farmers, researchers, policy makers, and other stakeholders to develop a better understanding of the factors driving food insecurity and hindering the implementation of effective policies and institutions. Enacting measures that focus on resilience and vulnerable populations will not only address the root causes of vulnerability, namely poverty, but would also constitute a major step towards tackling the problem of hunger that affects millions of Nepalis today.

We look forward to constructive comments from our readers.

The Editors
May 2014, Kathmandu

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Finally, we acknowledge the Swiss National Centre of Competence in Research (NCCR) North-South, Swiss National Science Foundation (SNSF), and the Swiss Agency for Development and Cooperation (SDC) who have provided the financial means to realize this publication.

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Acronyms and abbreviations

AA	Action Aid
ADB	Asian Development Bank
ADS	Agricultural Development Strategy
AfDB	African Development Fund
AoA	Agreement on Agriculture
APP	Agriculture Perspective Plan
ASTI	Agricultural Science and Technology Indicators
AusAID	Australian Agency for International Development
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
CBD	Convention on Biological Diversity
CFW	Cash for Work
CPI	Corruption Perception Index
DCA	Dan Church Aid
DFID	Department for International Development
ETC	Erosion, Technology and Concentration
FAO	Food and Agricultural Organisation
FFA	Food for Assets
FFS	Farmer Field Schools
FFW	Food for Work
FIAN	Food-first Information and Action Network
GDP	Gross Domestic Product
GEB	Genetic Engineering Biotechnology
GHI	Global Hunger Index
GMO	Genetically Modified Organisms
GoN	Government of Nepal
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICT	Information Communication Technology
ILO	International Labour Organisation
IPCC	International Panel on Climate Change
IPR	Intellectual Property Rights
LDCs	Least Developed Countries
MDG	Millennium Development Goal

MNC	Multinational Corporations
MoAC	Ministry of Agricultural Cooperatives
MoAD	Ministry of Agriculture and Development
MoCS	Ministry of Commerce and Supplies
MoE	Ministry of Education
MoFALD	Ministry of Federal Affairs and Local Development
MoHP	Ministry of Health and Population
MoUD	Ministry of Urban Development
MoWCSW	Ministry of Women Children and Social Welfare
NARC	Nepal Agriculture Research Council
NCCR	Nepal Centre for Contemporary Research
NCCR North- South	National Centre of Competence in Research (NCCR) North-South
NFC	Nepal Food Corporation
NTIS	Nepal Trade Integrated Strategy
PR	Patents' Rights
PVP	Plant Variety Protection
R&D	Research and Development
TRIPS	Trade-Related Aspects of Intellectual Property Rights
RtFN	Right to Food Network
SAFTA	South Asian Free Trade Area
SLRC	Secure Livelihoods Research Consortium
SMC	Seed Management Committee
APP	Agricultural Perspective Plan
TNCs	Transnational companies
TNI	Transnational Institute
TRIPs	Trade Related Intellectual property Rights
TT	Terminator Technology
UK	United Kingdom
UN	United Nations
UNDHR	United Nations Declaration of Human Rights
UNICEF	United Nations Children's Fund
UPOV	Union for the Protection of Plant Varieties
USA	United States of America
USAID	United States Agency for International Development
WB	World Bank
WFP	World Food Programme
WFS	World Food Summit
WTO	World Trade Organisation

List of contents

Preface	i
Acknowledgement	iv
Acronyms and abbreviations.....	v
Chapter 1 Food security in the conflict and post conflict context of Nepal.....	1
<i>Bishnu Raj Upreti, Christopher Butler</i>	
Chapter 2 Food security: Key terms and debates	19
<i>Prabin Manandhar</i>	
Chapter 3 Conflict over seed and plant genetic resources: Implications for food security	47
<i>Bishnu Raj Upreti, Yamuna Ghale</i>	
Chapter 4 The determinants of Nepal's food insecurity	73
<i>Sony K.C., Sagar Raj Sharma</i>	
Chapter 5 Gendered dimensions of food security in Nepal	91
<i>Yamuna Ghale</i>	
Chapter 6 Improving markets and trade policy for food security.....	115
<i>Nirmal Kumar Bishowkarma</i>	
Chapter 7 Agricultural productivity and food security: Challenges and opportunities	135
<i>Babar Shahbaz, Ghazanfar Ali Khan and Muhammad Iftikhar</i>	
About the authors	155

List of tables

Table 1.1	The National Hunger-Index (NHI) for Nepal.....	7
Table 1.2	Food production balances immediately after end of conflict (2008-2009).....	8
Table 1.3	Development indicators for one of the most conflict affected zone, Karnali	9
Table 3.1	Ranking of global corporations by their market share in GM seeds, agro-chemicals, agbio patents, and GM-related patent application.....	64
Table 4.1	Nepal's participation in food-related programmes..	81
Table 5.1	How discrimination impacts food security situations.....	97
Table 5.2	Summarises the main instruments that address women and food	106
Table 6.1	Trends of cereal grain production and requirement of Nepal (in metric tonnes)	119
Table 6.2	Strengths and limitations of FFW and CFW.....	120
Table 6.3	Trends of food export and import from different countries	122
Table 6.4	Food import and export duty in Nepal.....	129
Table 7.1	Agricultural and rural development indicators of South Asian Countries (2011-12)	137
Table 7.2	Some food security indicators for South Asia	138
Table 7.3	Agricultural research indicators across South Asia (2008).....	144

List of boxes

Box 2.1	Struggle against maize crop failure in Nepal.....	26
Box 3.1	Eleven facts about global hunger.....	55

Box 3.2 Local knowledge and practices of saving seeds.....	59
Box 5.1 Basic concepts around food	93
Box 5.2 Case study.....	96
Box 6.1 Case: Informal trade between India and Nepal.....	126
Box 7.1 Complexity of land conflict.....	146

List of figures

Figure 1.1 Pillars of food security.....	4
Figure 3.1 Pillars of achieving food security at local level in developing country	49
Figure 3.2 Corporate control of resource, knowledge and power domain in the food chain.....	62
Figure 5.1 Multiplicity of discriminations.....	100
Figure 5.2 Inter-connectedness of psychological wellbeing with socio-cultural, economic and political aspects of empowerment of girls and women.....	104
Figure 7.1 Yield comparison for wheat, rice, maize and milk	142

List of photos

Photo 3.1 Farmers protesting at high government office (Singh Durbar) carrying Maize.....	48
Photo 3.2 Discussion programme organised on seed security issues	66

*Bishnu Raj Upreti
Christopher Butler*

1.1 Introduction

The main objective of this chapter is to discuss different dimensions of food security in the post-conflict political context of Nepal. Nepal is predominantly an agricultural country; food insecurity should not be an issue theoretically. However, in practice, food security is a constant challenge. Experiences of Nepal clearly indicate that food insecurity is exacerbated by a combination of internal domestic causes such as armed conflict, weak policies, and weak institutional arrangements for food governance. Externally, food security issues in Nepal are hampered by the commercial interests of developed countries as they influence the cultivation and use of resources, development investment, and trade regulations (Pandey 2009).

At present Nepal is in the midst of a complex political transition after a decade-long armed conflict waged by the Communist Party of Nepal-Maoist¹ [CPN (M)] against the state. This political instability combined with bad governance over the past two decades has complicated food security in this country, and, in fact, a direct link between food insecurity and the conflict may be drawn. The first battles of the conflict began in 1996 in the far-western districts, which are also the most food insecure. For this reason, food issues have taken a more prominent place in political discussions at the state level; however, the government has yet to act on these

¹ In January 2009, CPN (M) and Unity Centre (another communist party) united together and the name of the CPN (M) as changed to Unified Communist Party of Nepal [UCPN (Maoist)]. The name CPN (M) was prevalent during the armed conflict time and all the documents referred at that time contains the CPN (M) instead of UCPN (M).

discussions in any meaningful way. Thus, food insecurity remains a potential threat to Nepal's future peace for the foreseeable future.

It is widely observed that food insecurity is the root cause of conflict and vice versa. As Cohen (2009) argues, conflict leads to hunger, reduces food production, and impedes economic growth in developing and transitioning countries. Reciprocally, food and economic insecurity results in natural resource scarcities that fuel the possibility of violence. For example, the operation by warring parties during the conflict period in Nepal was also concentrated in the prevention or diversion of food aid from intended beneficiaries. Sometimes food and aid were diverted to the insurgents and their supporters. The destruction of food stocks, livestock, and other assets in food-producing and fertile regions, blockades of food supplies, and donor policies directed to withhold food aid was common during the period of armed conflict.

Several studies specific to Nepal (Adhikari and Bohle 1999; Upreti 2004a, 2006b and 2009; Seddon and Adhikari 2003) have concluded that livelihood insecurity (of which food constitutes a central role) was one of the main structural causes of the armed conflict. According to Ministry of Agricultural Cooperatives (MoAC), the World Food Programme of the United Nations (WFP) and the Food and Agriculture Organization (FAO), 40 districts out of 75 are food insecure and the far and mid-western regions in particular are more vulnerable (MoAC, WFP and FAO 2009). On the other side, the decade-long conflict has destroyed the local coping capacity and delivery capacity of state institutions to deal on food insecurity. The situation ultimately became fertile ground for the persistent social tension, livelihood insecurity, and blatant politicisation of resources in Nepal.

From the 1970s to the present, Nepal has devolved from a net food exporting country to one that needs to import food. FAO (2008) states that 15 per cent of Nepalis are undernourished (approx. 4 million people) while the WFP (2008) says an additional 3.4 million people are food insecure. Most of these people live in the mid and far western regions, in small, isolated communities to which delivery of

assistance is difficult. On an individual level, food security in Nepal has been driven primarily through the historical denial of rights (social and economic) to poor and marginalised people (women, dalits, and minority groups). However, the process of establishing and strengthening rights of the poor and marginalised has advanced significantly since the political change of the 1990's; the state has made strong commitments by signing several international human rights conventions and by promulgating national policies aimed at improving the lives of marginalised Nepalis. However, the translation of the provisions into action specifically related to food has yet to be realised.²

Given these stark facts, this chapter attempts to investigate the gaps between conflict and food insecurity by examining associated factors that influence food issues and that must be addressed if Nepal is to remedy its food challenges in the coming years. The chapter will begin with a more careful consideration of the concept of food security and then discuss that concept in combination with those factors (conflict; land; governance, markets and pricing; and migration).

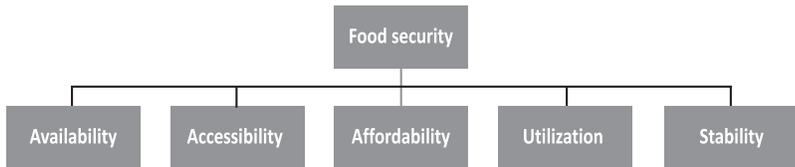
1.2 Conceptualizing food security

The World Bank's 1986 report entitled 'Poverty and Hunger,' defines food security as "access of all people at all times to enough food for an active, healthy life" (FAO 2003, p 27). Accordingly, the United Nations Food and Agricultural Organisation (FAO) defines food security as the situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO 2001, p 50). More specifically, we envision food security resting upon five pillars (See

² Series of plans and policies of Nepal have provisions that direct the government to avail food to all the people. The clause (h) of the article 33 under fundamental rights (responsibilities of the state) of part 4 'Responsibilities, Directive Principles and Policies of the State' of the Interim Constitution of Nepal 2007 mentions about food sovereignty. It reads, "... to pursue a policy of establishing the rights of all citizens to education, health, housing, employment and food sovereignty".

figure 1.1); availability, accessibility, affordability, utilization, and stability.

Figure 1.1 Pillars of food security



Availability refers to the domestic production of food or its distribution through a regulating market that entails transport and processing. Until the World Food Summit (WFS) in 1996, most experts believed that food insecurity was only a matter of production. However, at that meeting, Cuban president Fidel Castro discussed the availability of grain to feed world's population, which has been hindered by distribution and affordability. His speech changed the perspective on food insecurity and drew attention to the political forces that influence food security beyond production.

Access entails economic capability of individuals and households to acquire available food. Proper infrastructure, marketing information, price regulation mechanisms, equitable distribution mechanisms, and the provision of safety nets comprise the important components of access to food. Sen (1991) argues that the availability of food in markets does not necessarily ensure people's access to food. People have to have capability to access it by means of entitlements (social networks, kin relations) and to be able to afford it by means of endowments (land, capital, tradable skills).

Affordability implies the capacity to pay for essential food items. For this, ensuring employment and fixing minimum wage rates would be key aspects.

Utilisation refers to proper use of available food, including maintaining appropriate food habits, safety of food, and access to culturally acceptable food. For example, if some Hindu religious communities do not eat beef, access to beef does not present a

workable solution. Utilisation focuses on nutritional aspects and complementary factors like safe drinking water and hygiene.

Stability, as its term implies, connotes the regular availability of food so that families can avoid peaks and valleys of expenditure as well as sharp fluctuations in nutrition that may stunt growth and physical development in key periods.

1.2.1 Food insecurity and hunger

Food insecurity is manifested in different forms of hunger (chronic, acute and hunger), thus responses to food insecurity should address different forms of hunger.

Chronic hunger is the widely recognized form of food insecurity. It is assessed on the basis of calorie intake. This form of hunger is generally a manifestation of systematic denial of access to productive resources and weak purchasing power. This form of hunger can cause permanent damage in human life due to sustained uncertainty on access to food requirement.

Acute hunger arises due to natural disasters like drought and flood, market disruptions, and ineffective supply chains at the local level. It can also occur through war and blockades and other political events. Acute hunger directly impacts the physiological states of people. Lack of immediate access to food can lead to famine in a certain locality at particular time period and cause endemic illness like influenza and diarrhoea. Immediate responses are needed to address such events.

The most complex form of hunger is hidden hunger. It is generally triggered by macro level economic and structural adjustment processes, which in the long run systematically undermine the leverage and space of poor and marginalised people. Multi-national and national corporations influence production systems, changes in food habits, food composition, and control food supply chains by commoditisation and privatisation of resources. Commoditisation and privatisation processes create dependency, paralyse indigenous food systems, and alter the purchasing capacity of people. From

this process, people gradually lose their autonomy to decide what to grow, what to cook, and what to eat.

1.3 Food security and associated factors

Food issues intersect in many directions with a host of associated factors. If food were a singular issue, only a matter of production, food security would not be an issue. But like many matters of natural resource management, politics, economics, and social forces play an equally if not larger role in determining how food is produced, distributed, and consumed. In this section, the following paragraphs consider these associated factors.

1.3.1 Conflict and food security

The ten-year armed conflict in Nepal not only obstructed the food production and distribution systems but also damaged local coping mechanisms for food shortages (MoAC, WFP and FAO 2009). The conflict also destroyed the state's local coping capacity and delivery mechanisms related to food systems. Consequently, this situation provided fertile ground for persistent social tension, livelihood insecurity, and renewed political conflict in Nepal. Furthermore, due to the armed conflict, the state shifted financial resources to military expenditures and away from strengthening local capacity to deliver food. In the years since the conflict, the government has yet to reverse this change in state spending.

The following table 1.1 present different angles regarding the association between conflict and food insecurity.

Table 1.1 The National Hunger-Index (NHI) for Nepal

Region	Population under nourished (below 1810 kcal/person/day) (%)	Under weight in children under 5 (%)	Child mortality (%)	NHI	Ranking
Nepal	22.50 (17)	38.6 (38.8)	6.1 (5.9)	22.40 (20.6)	
Urban	22.7	23.1	4.7	16.83	1
Rural	22.4	40.7	8.4	23.83	2
<i>Development Region</i>					
East	22.3	32.9	6	20.40	1
West	17.3	38.5	7.3	21.03	2
Central	22.1	38.2	6.8	22.37	3
Far-West	23.5	43.7	10	25.73	4
Mid-West	29	43.4	12.2	28.20	5
<i>Ecological Zone</i>					
Hill	25.1	33.2	6.2	21.50	1
Terai	18.5	42.3	8.5	23.10	2
Mountain	28.5	42.4	12.8	27.90	3

Source: Upreti (2012)

Note: The numbers in brackets are the values used for the GHI-calculation

Table 1.1 shows the National hunger index of Nepal (NHI) for different geographic regions, where the incidence of low weight and undernourishment is worrying. Significantly, the mountain and hill regions in the western districts where the insurgency formed most strongly also display the lowest scores in terms of nourishment and child mortality. This is only a correlation, to be sure, but analysis during the war (Seddon and Adhikari 2003) indicates that food and food-related development factors played a strong role in strengthening the resolve of the insurgents.

Table 1.2 Food production balances immediately after end of conflict (2008-2009)

Districts	Projected population	Net edible prod. (Mt)	Requirement (Mt)	Balance (+, -)	Balance (%)
Mountain	1,914,652	296,510	365,701	69,191	-18.92
Hill	12,071,464	2,080,755	2,426,366	355,611	-14.24
Terai	13,819,051	2,783,135	2,501,249	281,888	11.27
Nepal total	27,805,166	5,160,400	5,293,316	-132,914	-2.51
Particular food deficit regions					
Central hills	4,462,507	510,460	896,964	-386,504	-43.09
Western mountain	30,616	2,178	5,848	-3,670	-62.76
Mid-west mountain	354,880	31,647	67,783	-36,136	-53.31
Far-west mountain	458,228	37,788	87,522	-49,734	-56.82
Far-west hills	918,082	78,880	184,535	-105,655	-57.25

Source: MoAC, WFP and FAO (2009, p14)

Table 1.2 shows that food production lagged more than 30 per cent below required levels in many hill and mountain districts. The highest food deficits were recorded in the western mountain districts, which were central areas during the conflict. Comparatively, the Terai maintains better food security than the hill and mountain areas, while the east and central regions of the countries surpass the west, mid-west, and far-western regions in terms of food security.

During times of food insecurity, people opt for irreversible coping mechanisms (e.g., sale of productive assets such as land, livestock, jewellery, production tools) and occasionally socially evil methods (such as looting, extortion and robbery) because traditional coping mechanisms (e.g., migration, wage labour, selling of non-productive assets and consumption of uncultivated food) cannot sustain their daily needs. If people do not receive immediate food assistance under such circumstances, the choice to employ irreversible coping mechanisms results in severe social tension and political manipulations.

Table 1.3 Development indicators for one of the most conflict affected zone, Karnali

	Kalikot	Mugu	Jumla	Dolpa	Humla
Per capita income (US \$) (Nepal=240)	142	203	203	235	186
Rank based on Poverty Deprivation Index	71	75	67	69	73
Per capita production of food (calorie/day) (rank)	1445 (72)	1127 (74)	2004 (64)	2781 (47)	1018 (75)

Source: ICIMOD et al. (2003) as cited in Adhikari (2008, p 10)

Table 1.3 depicts a zonal perspective (Karnali) of development challenges facing Nepal. As the top line indicates, the per capita income in this area lags far behind the national average of \$240. Similarly, the per capital production of food occupies some of the lowest ranks in the country.

During the conflict in Nepal, the mobility of food and grains and the supply of food were affected in two ways. First, the state army restricted the movement of food as a strategic means for weakening insurgent positions. Secondly, insurgents destroyed bridges to fortify their positions, but at the sacrifice of food mobility (Upreti 2006a). As one example, the WFP ceased food shipments to Mugu in 2001 in the belief that the food was not reaching the intended persons (Seddon and Adhikari 2003, p 85). Furthermore, banks began restricting loans to remote areas, and the lack of investment and available capital in the area impacted local food systems and agriculture. Seddon and Hussein (2002) found that security forces were restricting people from carrying more than one day's food supply at a time as a means to cut the food supply to the Maoists. This was a particularly onerous burden as people living in rural areas generally have to walk up to 3-4 days to reach the nearest market. Food coping mechanisms were also impacted as locals were forbidden to go the forests to collect items (mushrooms, sprouts, medicinal herbs) typically used to bridge over times when food is scarce. Upreti (2005) found that the *haat-bazaar*³ system in

³ In Nepali society, haat-bazaar refers to a common place of informal marketing of goods and services. In many rural settings, people gather at one place on a weekly or monthly basis to sell and buy goods and/or offer or receive services.

eastern Nepal was forced to reduce its total hours of transaction and suffered low numbers of buyers and sellers, bringing trade and distribution to a veritable halt.

The end of the war in 2006, unfortunately, would not mean the end of complications regarding food distribution. Following the peace agreement signing, trade union and ethnic political parties began organizing general strikes and *bandhs* (closures) that had an unintended consequence of restricting the transport of food items to more remote areas of the country.

Funding agencies and institutions also struggled to fulfil their missions regarding rural support and food. The Agriculture Development Bank and other finance houses were attacked by Maoists who destroyed their records regarding outstanding loans and collateral. As a result of these attacks, banks could not staff their branches during the conflict and thus could not bring assistance to those most affected by the conflict (Upreti 2005).

1.3.2 Land, policy, and food security

Land in Nepal is directly linked with food insecurity and land distribution in Nepal remains highly skewed and politicized (Upreti et al. 2008). Before 2006, contestation of land distribution occurred along class lines: the rich versus the poor, the landlords versus the landless. But more recently, many landless people have embraced the mantle of ethnic rights as a means for pushing land reform in the hopes of improving food availability.

Land distribution became a contentious issue between political forces opting for radical reform and those opposing reform (Upreti 2009). During the war, the CPN (M) seized land from many landlords, which the Maoists used to cultivate crops. To date, since the end of the conflict, much of that land has not been restored to the original owners and the land has been left in an unproductive state. The Agricultural Development Bank also withdrew their operations from these areas and government offices were not allowed or willing to go into the villages, thereby severely disrupting the agricultural extension and input distribution systems.

Nepal Human Development Report 2004 shows that five per cent of Nepalis own 37 per cent of the total arable land while 47 per cent of poor people hold only 15 per cent (UNDP 2004; Upreti et al. 2008). The plight of landless people is compounded by a lack of access to non-farm employment opportunities to secure funds for investment. Consequently they work as contract labourers in roles such as *Kamaiya*⁴ (bonded labour), *Kamalari* (female domestic worker), *Kamara/Kamari* (servants), *Gothala* (cowherds), *Khetala* (farmhand), *Haruwa* (ploughmen), *Charuwa* (herders) or *Bhariya* (porters). As a result, many landless people would be easily recruited by the Maoists for the civil conflict, as the Maoists were able to capitalize on their feelings of injustice in regard to land and food (Upreti 2004a; 2009).

The Maoist slogan 'land to the tillers' earned the sympathy of tenants, poor farmers and marginalised people during the conflict period at the expense of food productivity. Upreti (2005) found that most large landholdings in areas controlled by Maoists were either regulated by Maoists or by tenants who were being encouraged to stop contractual payments to landlords and funnel that money to the insurgents. This situation created not only significant uncertainty for farmers and tenants but also had negative impacts on the land itself. Much land went fallow because it had not received the necessary inputs of fertilizer and labour (weeding, ploughing, harvesting). As well, farming-related assets were seized during the conflict to such a degree that food patterns in rural areas would change, and result in some families achieving food security while others fell into positions of food insecurity.

The land issue might be remedied if Nepal had more effective land policies, but most of it is out of date, dysfunctional, and/or extremely weak. For example, law permits building on highly productive lands and allows for real-estate companies to keep large parcels of land fallow while they attempt to sell and develop that land. These weak policies affect food security by unintentionally

⁴ The Deuba government abolished the Kamaya system seven years ago and the Maoist led government abolished the haruwa system on September 2008.

stagnating agricultural production, thus resulting in higher food prices.

More generally, Nepal's weak legislation affects food security in a secondary manner as well. The poor regulation of markets makes rural areas vulnerable to monopolies and cartels that drive prices artificially higher.

1.3.3 Natural calamity and food security

With its unique location and topography, Nepal remains vulnerable to several types of natural calamity that potentially impact food security. Within the last few years, Nepal has experienced prolonged drought, frequent landslides, flooding, and hail storms. MoAC, WFP, and FAO (2009) used satellite data to chart more than 1,500 forest fires in March 2009 as opposed to only 100 in February 2008. Long droughts and strong hill/mountain winds combine to exacerbate forest fires which decimate land productivity and resources that people use to produce food. When a drought affects one area, relief must draw from the national stock which affects the food security of other areas.

1.3.4 Markets/pricing and food security

Because of diminishing agricultural production in country, Nepal has begun to import food which subjects it to global economic forces on food prices. The economically vulnerable in Nepal feel these forces most acutely. As Richard Ragan, the country director of WFP Nepal, has noted "The extremely poor have no cash reserves and therefore will find it increasingly difficult to cope with increased food prices".⁵ In its 2008 report, "The State of Food Insecurity in the World," the FAO also laid blame on food prices for driving world hunger and global food insecurity. Because poor Nepalis live at a highest proportion in remote areas, already-high prices are even more so due to longer transport and rising petrol prices. According to MoAC, WFP and FAO (2009), Nepal experienced steep food price inflation in 2007-2008 and additional 3.7 million people became vulnerable to food insecurity and poor nutrition.

⁵ For detail see <http://www.irinnews.org/Report.aspx?ReportId=76992#>

Food prices intersected harshly with the civil conflict in Nepal. The reduced ability of villagers in conflict areas to produce their own food forced them to rely more on purchasing needed calories. When you consider the transportation limitations discussed above, you can observe the ripple effect of these impacts on food security for Nepal's poorest. Furthermore, Maoists also exacted a tax from rural farmers, requiring them to deposit a certain percentage of their crops into stocks reserved for soldiers. As a result, many rural Nepalis began migrating for work.

1.3.5 Migration and food security

Large scale of migration has directly and indirectly affected the system of food security in Nepal as youth left their villages, which resulted in the absence of a labour force that ultimately influenced the mechanisms and magnitude of food production. This situation caused larger areas of cultivable land to go fallow every year and reduced the amount of available food in Nepal. Several studies confirm the occurrence of this phenomenon (Ghale and Upreti 2005; Gersony 2003; Seddon and Hussein 2002; Upreti 2004a and 2004b; Pokharel 2004; UNDP 2004; Upreti 2002).

Many Nepalis (mostly young men) left their villages because of the Maoists 'one house one youth' policy, which expected all households to donate one person to the revolutionary cause. In remote mid-western villages, where most people already live a hand-to-mouth existence, households were expected to provide food and shelter to upwards of 12 Maoist soldiers (Seddon and Adhikari 2003), a particularly onerous burden in an areas where per capita food production was already as little as 1,018 calories per day (ICIMOD et al. 2003 as cited in Adhikari 2008).

It might be argued that migration remittances would counterbalance the diminished food production and available in the rural areas of Nepal. However, most remittances obtained from out migration were invested in urban centres and towns for building construction of building and other unproductive expenses. Remote and rural areas felt little of this investment.

1.4 Implications in a post-conflict Nepal

This section briefly attempt to tease out some of the more pressing implications of food insecurity in a post-conflict Nepal.

1.4.1 Political implication

As food security is a key issue to many poor, marginalized, and socially excluded Nepalis, the issue of food production and provision will be fertile ground for political parties to shape their message and attract potential supporters. Hence, food will be at the center of future political debates and elections. The previous sections amply demonstrate how food scarcity increases social tensions and intersects with a variety of social issues, making its redress quite complicated. Recent elections and debates in Nepal have already featured land reform as a key issue between the CPN (M) and other political parties.

1.4.2 Economic implication

Lack of food and the ability to produce sufficient food creates a spiralling effect that draws down on other generative capacities. If this process goes unabated, food scarcity can lead to more uncertainties in society: lack of food leads to malnutrition, hunger, reduced productivity due to illness. Falling agricultural productivity leads to more food imports and subjects consumers to rising food prices. As a result, the increasingly vulnerable citizenry comes to rely more on the state to provide safety nets in terms of health and welfare. In this environment, a weak central government, such as it exists presently in Nepal, opens possibilities for organized crime groups and cartels to exploit markets and engage in trans-border crime (e.g., poaching, smuggling, and trafficking). With diminished safety in the rural areas, migration will increase (Upreti 2009).

1.4.3 Health implication

Food insecurity has obvious links with health (malnutrition-related diseases, mental stress) particularly for children, women, and marginalized groups. However, large scale food insecurity can

unleash more significant complications such as pandemics (e.g., viral influenza) that can impact a serious toll on a society's well-being.

1.5 Conclusion: Ways forward

While Nepal plots its way forward through the challenges of economic and social development, it faces the most significant obstacles at a very fundamental level: food.

The food crisis in Nepal will continue unless it addresses the low investment in agriculture that has led to the present imbalance between demand and supply of food. However, as we have stated above, production is not the only issue. The government will also need to reconsider how it regulates markets and provides mechanisms to insure that food remains available and affordable to its most vulnerable populations. The humanitarian imperative in this charge is obvious, but there are important security implications as well. As the Maoists were able to build their ranks and rebellion by capitalizing on rural people's deprivations, it is not impossible to imagine the same events could occur again if the Nepali government does not find a way to address basic livelihood needs.

One reason for this persisting oversight in Nepal may be a matter of framing security challenges. Presently Nepal is boosting its military and defence budget because it envisions conflict as the largest threat to its development. But this is a myopic view: conflict is only the end result of more fundamental security challenges. If the Nepal government were to view food (and water and health) as security challenges, they would have a greater likelihood of curbing unrest before it could start. However, current political discourse indicates that political parties have not learned that much. Food (and water and health) do receive mention in political programs, but not resources.

Accordingly, Nepal needs creative leadership with the courage to observe a new security paradigm that places food, water, and land at the centre. This means shifting investment to social sector programs that proactively engage natural resource challenges

in Nepal: clean water, available medicine, green energy, reliable infrastructure, and affordable food. It is important to note, however, that this is not the government's responsibility alone. Concerted action between government, civil society and private sector will be required.

Here are a few pragmatic ideas for addressing food insecurity in Nepal;

- a. Strengthen small-holding agriculture by providing subsidies for irrigation, storage, technical assistance, and farming inputs. In this way, the food producing backbone of Nepal can be fortified and protect those populations most vulnerable to environmental and social changes.
- b. Legally, the Nepali government should consider protections on citizens' right to food and support this provision through improved regulation of markets.
- c. Increased investment in agriculture should focus on crop diversification and commodification in order to give Nepal's food system greater flexibility.
- d. Road infrastructure needs continued development so that producers and consumers have access to markets.

These are all ideas to hopefully forestall and prevent future conflict. In the case of future conflict, Nepal defence agencies should develop coping strategies to weather these instances. Nepal would be wise to learn from other global examples. In Bosnia and Sri Lanka, food aid helped large populations maintain relative food security amidst crises. In Sudanese refugee areas of Uganda in the early 1980s, households were capable of growing enough food to sell vegetables, seeds, and root crops. Services were readily available and traded with specialisation and reorientation of economies (Cohen 1995).

Peace-sensitive policies, investments, and socio-economic assistance to be accompanied with food security and survival options would do better because war is more costly. The economic

benefits that can be harvested once war is avoided should be aptly assessed and calculated. Its return in development policies and aid cannot be argued against. Cohen (2009, p19) opines that "More positive scenarios for food, agriculture, and the environment in the twenty-first century are possible if peace can be protected where conflict is imminent, achieved where conflict is active, and sustained where conflict has ceased".

References

- Adhikari J, Bohl HG.** 1999. *Food Crisis in Nepal. How Mountain Farmers Cope.* New Delhi: Adroit Publications.
- Adhikari J.** 2008. *Food Crisis in Karnali: A Historical and Politico-economic Perspective.* Kathmandu: Martin Chautari.
- Cohen MJ, editor.**1995. *Causes of Hunger: Hunger 1995.* Silver Spring, MD: Bread for the World Institute.
- Cohen MJ.** 2009. *Food Security and Conflict: Social Research.* Available at: http://findarticles.com/p/articles/mi_m2267/is_1_66/ai_54668884/, retrieved on 5 October 2009.
- FAO [Food and Agricultural Organisation].** 2001. *The State of Food Insecurity in the World 2001.* Rome: FAO.
- FAO [Food and Agricultural Organisation].** 2003. *Trade Reforms and Food Security.* Rome: FAO.
- FAO [Food and Agricultural Organisation].** 2008. *The State of Food Insecurity in the World 2008.* Rome: FAO.
- Gersony R.** 2003. *Sowing the Wind: History and Dynamics of the Maoist Revolt in Nepal's Rapti Hills.* Kathmandu: United States Assistance for International Development [USAID]/Mercy Corps International.
- Ghale Y, Upreti BR.** 2005. 'Impact of Armed Conflict on Environment and Human life: A Gender Perspective', *Seventh Asia-Pacific NGO's Environmental Conference.* 4-6 November 2005, Kathmandu, Nepal.
- MoAC [Ministry of Agriculture and Cooperatives], WFP [World Food Programme] and FAO [Food and Agriculture Organization].** 2009. *Crop and Food Security Assessment. 2008/09 Winter Drought in Nepal-Joint Assessment Report.* Kathmandu: MoAC, WFP and FAO.
- Panday DR.** 2009. *Nepal's Failed Development: Reflections on the Mission and the Melodies.* Kathmandu: Nepal South Asia Centre.
- Pokharel B.** 2004. *Cost of Conflict in Nepal, Seminar on Cost of Conflict in Nepal,* Nepal Foundation for Advanced Studies, June 9, 2004, Kathmandu, Nepal.

- Seddon D, Adhikari J.** 2003. *A Preliminary Analysis of Conflict and Food Security in Nepal*. Kathmandu: Rural Reconstruction Nepal.
- Seddon D, Hussein K.** 2002. *The Consequence of Conflict: Livelihoods and Development in Nepal*. Working Paper 185. London: ODI.
- Sen AK.** 1991. *Poverty and Famine: An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press.
- UNDP [United Nations Development Programme].** 2004. *Nepal Human Development Report 2004: Empowerment and Poverty Reduction*. Kathmandu: UNDP Nepal.
- Upreti BR, Sharma SR, Basnet J, editors.** 2008. *Land Politics and Conflict in Nepal: Realities and Potentials for Agrarian Transformation*. Kathmandu: Community Self Reliance Centre, Human and Natural Resources Studies Centre, Kathmandu University and South Asia Regional Coordination Office of NCCR North-South.
- Upreti BR.** 2002. *Management of Social and Natural Resource Conflict in Nepal: Realities and Alternatives*. New Delhi: Adroit Publishers.
- Upreti BR.** 2004a. *The Price of Neglect: From Resource Conflict to the Maoists Insurgency in the Himalayan Kingdom*. Kathmandu: Bhrikuti Academic Publications.
- Upreti BR.** 2004b. Resource Conflicts and Their Resolution Practices in Nepal. *Mountain Research and Development Journal* 24(1): 60-66.
- Upreti BR.** 2005. *Working on Conflict: Peace and Conflict Impact Assessment of Commercial Agriculture Development Project in Eastern Nepal*. Manila: Asian Development Bank.
- Upreti BR.** 2006a. One State, Two Regimes: Policy and Institutional Challenges for Managing Natural Resources in Nepal', ESSP OSC, 9-12 November. Beijing: Institutions for Sustainable Resource Management and Livelihood Security in Asia.
- Upreti BR.** 2006b. *Armed Conflict and Peace Process in Nepal: The Maoist Insurgency, Past Negotiation and Opportunities for Conflict Transformation*. New Delhi: Adroit Publishers.
- Upreti BR.** 2009. *Nepal from War to Peace: Legacies of the past and hopes for the future*. New Delhi: Adroit Publishers.
- WFP [World Food Programme].** 2008. *Food Security Bulletin-24, August 2008*. Rome: United Nations World Food Programme, Food Security Monitoring System.

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2.1 Food insecurity context and dynamics

The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. However, more commonly food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. Food security is built on four pillars:

- a. Food availability - food must be available in sufficient quantities and on a consistent basis;
- b. Food access - people must be able to regularly acquire adequate quantities of food;
- c. Food utilization - consumed food must have a positive nutritional impact on people; and
- d. Food stability - stability in the food supply from year to year and during different seasons of the year.

While these pillars may seem comprehensive for a general definition, Adhikari (2010) argues there are other dimensions of food security seldom discussed in the literature of international agencies. These include food chains, food consumption behavior and the role of media, the erosion of indigenous knowledge, and gender dimensions in food security.

The right to food is a fundamental human right and derives from the International Covenant on Economic, Social and Cultural Rights (ICESCR) which had been signed by 160 nations as of 2013 states that sign the covenant agree to take steps to maximize their available resources to achieve progressively the full realization of the right to adequate food, both nationally and internationally

(Article 11, part 1). The covenant further elaborates that “state parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international co-operation based on free consent” (Article 11 part 1).

However strong the right to food movement has become, the reality of food security paints a more complex picture and statistics vary. The most recent study from the Food and Agriculture Organisation (FAO 2013) entitled ‘State of Food Insecurity in the World’, indicates that globally 842 million people (12 % of the global population) were unable to meet their dietary energy requirements in 2011-13, down from 868 million reported for 2010-12. Thus, around one in eight people in the world are suffering from chronic hunger and have insufficient food for an active and healthy life. The vast majority of hungry people (827 million or 98 %) live in developing regions where the prevalence of undernourishment is now estimated at 14.3 per cent, a figure that has fallen 17 per cent since 1992.

The FAO study reports that Nepal has made a good progress in its fight against hunger, decreasing the prevalence of undernourishment from 25.4 per cent in 1992 to 16.0 per cent in 2013. Between 1995 and 2011, the prevalence of underweight in children declined from 44 to 29 per cent, while the prevalence of stunting declined from 64 to 40 per cent. However, despite such positive steps, the prevalence of underweight and stunting in children in Nepal are still among the highest in the world.

Combating under nutrition poses great challenges for both short-term (e.g. implementation of safety nets) and long-term (e.g. structural development) policy measures. On a larger scale, developing regions as a whole have registered significant progress towards meeting the MDG 1 hunger targets while marked differences across regions persist. Most of the world’s undernourished people are still to be found in South Asia, closely followed by sub-Saharan Africa and Eastern Asia. The regional share of undernourished people has declined most significantly in Eastern Asia and South Eastern Asia. Meanwhile, the share of

undernourished people has increased in South Asia, sub-Saharan Africa, Western Asia, and Northern Africa. Ghale and Bishokarma (2013) point out that the worldwide hunger situation is worrisome as there are increasing numbers of vulnerable populations whose access to food is further complicated by natural disaster and political instability, inter-nation regional variations, and gender-based discriminations within households.

A higher gross domestic product doesn't necessarily mean fewer issues with food security. The Global Hunger Index (GHI) indicates that countries with higher gross national income have a lower GHI and vice versa. But conflict, inequality, poor governance and gender discrimination can alter the correlation. For example, in South Asia, the low nutritional, education and social status of women contribute to levels of poor nutrition for children under-five years (IFPRI 2010). In sub-Saharan Africa, low government effectiveness, conflict, political instability, and HIV/AIDS are major factors for hunger (ibid).

Nepal's food challenges persist despite the fact that it is predominantly agrarian society with more than 85 per cent of its people living in the rural areas. Agriculture is the main source of food, income and employment and continues to be the single largest sector in the economy and employs some two-thirds of the total population, accounting for 38 per cent of the GDP. Nevertheless, Nepal is a food deficit country struggling to recover from a ten-year civil war. There are concerns that the decline in agriculture production will lead to serious food deficits at the individual, household, community and district levels with heightened malnutrition, hunger and famine as consequences. Equally, there are concerns that lack of security generally due to armed conflict, combined with food insecurity could lead to large-scale internal displacement and involuntary migration.

Contemporary rural life in Nepal is found to be highly vulnerable due to a higher concentration of mass poverty, food insecurity, unemployment, illiteracy, and powerlessness. For the majority of Nepalis in rural areas, livelihoods are risky and uncertain at the

best of times; they are also highly dependent on a nexus of social relationships with others, both in their immediate locality and beyond, and on their ability (or lack of it) to gain control of and access to resources and income generating opportunities in the public and the private sectors (Seddon and Adhikari 2004). Rural poor people generally have large families, are landless, or have very small landholdings, with high rates of illiteracy. Rural poor are also concentrated in specific ethnic, caste and minority groups, particularly those of the lowest caste (Dalits) and indigenous peoples (Janajatis). Life is a constant struggle for survival. The Terai plain area has good potential for food production but is increasingly overtaxed by the needs of a growing population. The number of landless and marginalized poor people is rising in the region.

The urban population of Nepal is also growing: the urban areas grew at a rate 2.9 per cent in 1954 compared to 17 per cent in 2011 (CBS 2013). Adhikari (2008) argues that migration is changing the nature of poverty, and that internal rural urban migration is adding to the pressure on already inadequate urban utilities, infrastructure, and services. The Global Food Security Index 2013 reports that although a higher level of urbanization is often correlated with greater food security, the process of urbanizing can have negative implications for food security, particularly if the development of resources is unable to maintain pace with urban growth rates. Following this analysis (ibid), Nepal would be required to quickly develop a number of key aspects of its infrastructure, including markets, transport infrastructure, regulatory frameworks, and storage and retail facilities to accommodate changing demographics.

Overall, food insecurity remains a fundamental challenge in Nepal, particularly in the hills and mountains because of lack of availability, access, utilization, and stability of food. Malnutrition rates¹ in Nepal are among the highest in the world. The World Food Programme (WFP 2007a) conducted a Food Security and Vulnerability Analysis

¹ The terms 'malnutrition' and 'undernutrition' are often used interchangeably. Malnutrition refers to all deviations from adequate and optimal nutritional status. While, undernutrition refers to generally poor nutritional status, but also implies under feeding.

(FSVA) in 2005 in order to understand the food insecurity and vulnerability in Nepal. They interviewed 1,676 households across the agro-ecological regions of Nepal (Terai, hills and mountains) and across all five development regions. The study revealed that approximately 27 per cent of rural households are food insecure and have a very poor food consumption pattern. Chronic malnutrition and low weights were common: 49 per cent of children aged 0-59 months were underweight and 46 per cent were stunted. Among the far-western and mid-western regions of the country the WFP noted the highest concentration of households with poor or very poor food consumption patterns. Undernutrition in mother and children does not stop with growth and development concerns. Prolonged undernutrition puts children at risk for early death and increased childhood illnesses, as well as long-term chronic diseases such as diabetes, hypertension, and cancer.

According to Seddon and Hussein (2004), the livelihoods of the rural poor and 'working' classes involve a constant struggle for survival as their control over and access to strategic resources is limited. Their sources of income are precarious and yield generally low returns to effort and risk. Their social networks and stocks of social capital are generally of limited capacity. And, finally, their personal resources and quality of life are poor. The lack of access to land and low food production contribute to the high risk to food security in the rural Nepal. These issues are further complicated by productivity potentials in farming. Maharjan and KC (2006) evaluated farmers' perceptions and found that they, collectively, face a host of problems when trying to grow more food: diseases and insects, poor quality seeds, lack of modern technical knowledge and training, lack of manure and fertilizers, over-reliance on rain-fed farming, lack of irrigation provisions, and predominance of traditional cultivation methods.

2.2 Major debates on food security

Food security is a complex sustainable development issue connecting dimensions of the environment, economy, and society.

The issue of food security in Nepal is multifaceted and complex, confronted with challenges such as socio-political structures, gender discrimination, degradation of natural resources, extreme weather events, small size of land holdings, low productivity, long supply chains, high transaction costs, post-harvest losses and wastes, and government neglect and mismanagement. The major debates on food security issues are discussed below.

2.2.1 Food sovereignty

There is an alternative movement evolved from the need to go beyond food security to a larger, more encompassing concept of food sovereignty. The concept of food sovereignty emerged from ‘La Via Campesina’ in the mid-1990s as a critique of the concept of food security and corporate food regimes that were controlling local food markets (Wittman et al. 2010; Fairbairn 2010). Food sovereignty is not an academic concept but the outcome of a social movement of peasants, farm workers, and small producers to challenge the global neoliberal food hegemony. It advocates for the rights of people to define their own food and agriculture production and promotes the formulation of ecologically sustainable trade policies and practices.

Food sovereignty is the “right of nationals and people to control their own food systems, including their own markets, production modes, food cultures and environments” (Wittman et al. 2010, p 2). Food sovereignty thus is a means to achieve the goal of food security. The key components of food sovereignty include the right to food, valuing farmers and farm workers, local production and control, and environmental sustainability. It is not possible to fully realize food sovereignty without controlling the main determinants of agricultural policies today, that is, rules regarding tariffs and domestic supports, which are decided within trade policies, particularly through the World Trade Organization.

Unlike food sovereignty, food security, as a concept, does not recognize the right of people, particularly small food producers to have access to productive resources and decision-making to

produce their own food, though it may be implied. The debate on food sovereignty proposes a set of precise policy measures focusing on food for people, localizing food systems, putting control of resources to small food producers, and taking into consideration sustainable production (Sachs 2013). Food sovereignty focuses on control over territory, land, grazing, water, seeds, livestock, and fish populations for local food providers and indigenous people. Privatization of such resources, for example through intellectual property rights regimes or commercial contracts, is explicitly rejected. Food sovereignty rejects technologies, such as genetic engineering, that undermine food providers' ability to develop and pass on knowledge and skills needed for localized food systems. It requires addressing unequal gender relations which deny women's access to property rights and finance, health, and education. It requires production and distribution systems that protect natural resources and reduce greenhouse gas emissions, avoiding energy-intensive industrial methods that damage the environment and the health of those that inhabit it.

Food sovereignty has been incorporated in the Interim Constitution of Nepal, under Article 18 (3) 3 which deals with the fundamental rights of people. Part 4, Article 33 (H) of the same constitution lists food sovereignty along with employment shelter, health, and education as essential rights of people in the state of Nepal. It is noteworthy that the rights-based approach to food security is gaining ground in Nepal. Several farmers' groups, civil society organizations, and communities are advocating for food sovereignty (SAAPE 2013). Parallel movements linked to food sovereignty have also been mobilized. An example is the struggle against maize crop failure in Nepal, detailed in box 2.1.

Box 2.1 Struggle against maize crop failure in Nepal

In 2010, corn farmers in the districts of Bara, Sarlahi, and Rautahat faced serious problems of maize crop failure due to genetically modified hybrid seeds they had imported from India. The farmers had been motivated to use genetically modified seeds through the promise of a bumper harvest without having to submit to a proper regulatory mechanism. When the corn failed, farmers suffered a huge loss. In response, the farmers, their associations and civil society organizations launched series of agitations demanding compensation for the corn loss. They maintained that the farmers were least to blame, and that blame should be directed toward transnational seed companies that sell the genetically modified seeds, planting materials, and chemicals. The victimized farmers won this battle: the government had allocated NRs 200 million to compensate the affected farmers.

Source: www.ekantipur.com

It has been argued that a human rights-based approach to food security is required at the national level to enable individuals to realize their part in the conduct of public affairs, such as the right to freedom of expression and the right to seek, receive and impart information (FAO 2005). "Such an approach should take into account the need for emphasis on poor and vulnerable people who are often excluded from the processes that determine policies to promote food securities and the need for inclusive societies free from discrimination by the State in meeting their obligations to promote and respect human rights" (FAO 2005, p 14).

Nepal has a vibrant civil society to empower citizens as right holders and make the state accountable for its obligations to respect, protect, and fulfill the human right to food. Two such prominent civil society networks are the Right to Food Network (RtFN) and Food-first Information and Action Network (FIAN) Nepal. The RtFN, established in 2007, argues that hunger, malnutrition and poverty are closely interlinked and interdependent phenomena (RtFN 2011). RtFN advocates for food sovereignty through pro-poor policies with respect to food and agriculture, particularly in areas of agrarian reforms, land use planning, sustainable agriculture development, and community rights to natural resources (ibid).

Similarly, FIAN Nepal, established in 2008, argues that poverty and hunger is due not only to insufficient food production but also

because of systemic marginalization and exclusion that denies people from access to natural and productive resources and means to feed themselves in dignity. FIAN strives to establish equal opportunity for all peasants in Nepal regarding their right to food, whether that be food to produce or purchase (ibid).

With the elections of a new Constituent Assembly, Nepal is currently drafting a new constitution. It is the right moment for civil society networks and organizations to sensitize and influence the Constituent Assembly to include food sovereignty and right to food. These ideas should be incorporated in the forthcoming Constitution and associated legislation.

2.2.2 Global discourse and food security

Globalization has made food security a complex problem and its consequences can be seen in many different forms (Adhikari 2010). Globalization has enabled corporations to expand into multi-national corporations and trans-national corporations aided by information technology and bio-technology. The related changes in global food system are having important effects on farmers, fishermen, and households in developing and transition countries (Swinnen 2007). Some commentators have pointed at the benefits to be gained from these developments as these as farmers now have access to high-value international markets, and to inputs, credits, and technology, which enable higher productivity and higher income. Meanwhile, critics of globalization argue that these developments are likely to lead to a further marginalization of the poor as small, under-educated, and weakly capitalized farmers are likely to be excluded from these markets and have their traditional markets weakened. Ghale (2010) argues that the processes of globalization have slowly destroyed local food systems by weakening state power and marginalizing people's rights. She further claims that voluntary nature of corporate social responsibility has to date proven ineffective to hold corporations accountable to the people and society.

Drawing from the case studies from South Asia and South America, Shiva and Bedi (2002) argue that globalization, particularly

as expressed through the World Trade Organization (WTO), is threatening the very foundations of Third World agrarian economies and hence could condemn millions of small and marginal farmers to perpetual poverty while seriously damaging the environment and biodiversity. They call for immediate action in order to halt the forces of globalization which are manifested in many ways including large-scale farming, agribusiness, the entry of multinational corporations, the patenting of plants and seeds, and the demand that Third World governments end subsidies to agriculture and close down public distribution systems.

Nepal joined the WTO in 2004 as its 147th member, but the country has not been able to capitalize on the WTO. WTO membership implies that Nepal has agreed to adjust domestic policies as per the general WTO rules and be competitive in terms of trade, both in exports and the domestic market. Currently, India absorbs the bulk of Nepal's agricultural exports within the framework of a bilateral preferential trade agreement under which primary agriculture products from India are subjected to very nominal tariff barriers. This arrangement gives an indication that Nepal is not competitive on a most-favored nation basis both in the India and in other markets. Of the total agricultural products imported by Nepal, over 80 per cent comes from India. Nepal, meanwhile, has been suffering a trade deficit of at least Rs 1.43 billion per day due to constraints in the supply of goods and services in the international market.²

Trade facilitation for least developed countries (LDCs), including Nepal, is also a long-running need that has not been properly implemented to enhance their international trade capacity. The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) is another contentious issue within the WTO that has violated farmers' right in developing countries as they will have to pay to use technology developed in advanced countries. The impact of TRIPS and the control of modern seeds by the corporate sector is

² For detail see National daily Republica "Nepal Suffers Trade Deficit of Rs 1.43 Billion a Day". Published on 26 November 2013.

now visible in Nepal and South Asia. The trend of growing genetically modified seeds in developed countries and genetically modified crops in developing countries will have negative implications on food security and the environment. For example, Monsanto seed products have already had a negative impact on maize crops in Nepal. After a two-year battle, Nepal's Supreme Court issued an order temporarily prohibiting the import of genetically modified seeds. This would prevent multinational agricultural corporations like Monsanto from selling and distributing their products in the country. This is one way that LDCs can battle back against unequal trade regimes.

2.2.3 Policy frameworks and food security

The human right to adequate food and the right to be free from hunger are fundamental human rights enshrined in the ICESCR, 1966 and many other international human rights instruments. The Interim Constitution recognizes Food Sovereignty along with employment, shelter, health and education as the right of people to be established in the policy framework of the state of Nepal. In the mid-1990s, the Agriculture Perspective Plan (APP) was devised, largely on the basis of the 'Green Revolution' in the Indian Punjab, to provide a framework for agricultural development in Nepal for the next 20 years (Seddon and Adhikari 2004). But the APP proved non-implementable in Nepal from the beginning due to the lack of co-ordination among government line agencies and poor provision of agriculture inputs and credit. Moreover, the APP does not suggest any mechanism for enhancing livelihood opportunities for resource-poor farmers and landless people. The APP is not linked to land right issues that need to be addressed for ensuring pro-poor growth such as the implementation of a land ceiling, distribution of land to the landless, security of tenure for unregistered tenants, and the transfer of ownership and management of Guthi land.

The pattern of agricultural growth has been far worse in hill areas where the agriculture sector grew at an annual rate of only 2.3 per cent per annum on average, about the same rate as Nepal's population growth (NPC 2003). Small farmers continued to face

problems in finding good quality seeds, irrigation, and a potential market. Remote households did not receive minimum technical assistance from the government extension workers. Cameron (1998) argues that the livelihood challenge in Nepal is immense and there is little evidence that the foundations for advance in the hills economy have been laid as the APP asserts. The neo-liberal APP left the centre even more powerless to bring about change and led to increased frustration among tenant-cultivators, small farmers, and landless people in rural areas. The government blamed ambitious targets, under-funding, differing priorities, inconsistent policies, inadequate agricultural inputs, lack of co-ordination among ministries and departments, and the Maoist insurgency for not fulfilling the achievements of APP (NPC 2003).

But the last eight years, since the end of the conflict and signing of the Comprehensive Peace Agreement, have seen little significant improvement in terms of agriculture and food security. There has been a persistent failure of government, at all levels, to spend the funds allocated to the development budget, whether in capital investment or in recurrent expenditures. The last Three Year Plan (2010/11 – 2012/2013) envisaged special agricultural zones under a National Special Agricultural Zone Policy. It was suggested that the government would identify 'special agricultural sectors' to help boost agriculture in the Terai, which would contribute to the general development of agriculture overall. However, the new Three Year Plan Approach Paper (2013/14 to 2015/16) to be adopted on 6 July 2013 was 'silent on these issues'.

The Government has recently approved Agricultural Development Strategy (ADS) that will replace the APP. The ADS aims to help transform the agricultural sector over the next 20 years by increasing productivity and commercialization, food security and exports in the hope of making Nepal better able to provide for its people and be more competitive in regional and international markets. Under ADS, agricultural productivity is expected to triple and its contribution to GDP to double. As well, exports are expected to increase seven-fold while incomes increase fourfold. The key to this strategy is a massive increase in irrigation – planned

to reach 80 per cent of arable land in the hills and 90 per cent in the plains (Terai) by the end of the next two decades. To achieve this, considerably more than current government expenditures will have to be spent on agriculture, irrigation, and agricultural roads combined. The new ADS envisions an outlay of around NRS 50 billion a year in the first ten years to achieve its targets more than twice its current expenditure. The additional expenditure is certainly an issue, but a bigger issue is the implementation of policy of agrarian change, including land reform, accompanied by a major improvement in the efficiency and effectiveness of the national and local government.

Food security is not related to single ministry or policy or law; it needs efforts of all related ministries like the Ministry of Agriculture and Development (MoAD) for production, Ministry of Health and Population (MoHP) for nutrition, Ministry of Education (MoE), Ministry of Urban Development (MoUD) for market linkages, Ministry of Federal Affairs & Local Development (MoFALD) for local planning and coordination, and Ministry of Women Children and Social Welfare (MoWCSW) for popular participation and civil society engagement. Furthermore, indigenous knowledge, practices and technologies must be recognized, preserved and promoted for sustainable agriculture.

2.2.4 Food habits and food security

Different features of globalization, like changes in food habits and dietary patters, the media and advertising, technology, and state subsidies are discouraging local products, which complicates food security for poor people in Nepal. It has been observed that the changing food habits in the hills and mountains of the country have increased food insecurity. The introduction of subsidized food, food for work, and support of rice as the staple food have discouraged the production and consumption of local foods such as potatoes, beans, barley, maize, and buckwheat. The changing food habits have serious implications on food security and the nutrition situation in the country according to the recent 'Nepal Thematic Report on Food Security and Nutrition' (NPC 2013) carried out by

National Planning Commission in collaboration with WFP, World Bank, AusAID and UNICEF.

2.2.5 Out-migration and food security

Globalization is also affecting food security by creating employment opportunities in urban areas in countries outside Nepal. In the last decade, foreign labor migration has become a major feature of Nepal's economy and society because of insecurity and lack of economic opportunity in rural areas. On average, 300,000 youths leave the country each year for foreign employment (and this does not include seasonal migration to India). Whether migration will improve or worsen food security conditions in these farm households and their communities in the long run is a matter of debate (Maharjan et al. 2013; Seddon and Adhikari 2004).

Some argue that migration can reduce farm labor and subsequently lower agricultural production. Typically men migrate, and when they do, women and children are left to cope with very limited resources and access to food. As result of this migration a significant portion of arable land has been abandoned and remains idle in the Hindu Kush Himalayan (HKH) region which compounds the social challenge with low returns on productivity (ICIMOD 2008). Some observers point out that migration can address the critical problem of under-employment and not necessarily lead to a reduction in farm labor input. It is also argued that remittances from migrant workers can be used for labor and non-labor inputs in the farming sector to offset any labor losses. However, when remittances are not invested in farming, the net impact of migration on farm production can be negative, particularly when farming is subsistence-based and has low returns on investment. Furthermore, the desire of farm household members to escape the back-breaking work of subsistence farming can also act as an important deterrent to investing remittances in agriculture.

A recent study from Maharjan et al. (2013), "Migration for Labor and its Impact on Farm Production in Nepal" have some interesting findings with policy implications. They argue that although the

population moving out of the agricultural sector is a natural process, the stagnation of the agricultural sector is a matter of concern that seeks immediate policy attention. The feminization of the agricultural sector is also another area requiring policy attention. With men migrating in great numbers, the bulk of the work load and responsibilities fall upon women who are not adequately prepared for these new responsibilities. Therefore, there is an urgent need for a socio-political framework within which women can be empowered with the relevant skills and technologies to undertake this new role more efficiently (ibid).

2.2.6 Land rights and land grabs

Nepal being primarily an agrarian society, the majority of population derives food security from land. Thus the issue of food security of the poor and marginalized people is inherently linked to equitable land and agrarian reform. The pattern of land holding is owner-peasant. Upreti (2008) argues that land debate in Nepal is often shaped by extreme thoughts, which advocate for seizure and redistribution of land. According to a research report on indigenous communities' access to natural resources, land was traditionally used by indigenous communities as common property, but this system was disrupted once the land grants system was introduced by the ruling elites during the years of Rana rule beginning 1846 (ibid). As the land system advanced, landlords introduced the *Kut* (contract) system to ensure their rent, where the right to till land went to the highest bidder, leaving less and less land available to peasants. Regardless of good or bad harvests, under the *Kut* system, the farmers had to pay rent even if crops failed.

Eventually, a significant proportion of the peasant farmers and their families were forced to work as bonded labor (slaves) of the landlords (Regmi 1978). Over time, it caused land degradation and semi-feudal forms of production. A large number of landless people who did not have access to non-farm employment ended up as *Kamaiya* (bonded labor), *Kamalaris* (female domestic worker), *Kamara/Kamari* (servants), *Gothala* (cowherds), *Khetala* (farmhand), *Haruwa* (ploughmen), *Charuwa* (herders) or *Bhariyas*

(porters). In such a subjugated state, they were subjected to face systematic and structural violence (Upreti 2008; Nepali and Pyakuryal 2008).

Nepal has a long history of struggle for land rights and the character of the strategies used by rebel groups Nepal's political and economic history have changed over time (Karki 2002). Until the 1950s, resistance related to land and land rights was basically limited to disputes between the central government, rural ruling elite and feudal landlords. The effort by land poor and landless people to 'repeasantize' themselves by settling in forest frontier areas or by invading or squatting on large public and illegally possessed land held by absentee landlords is a recent phenomenon in Nepal. The Comprehensive Peace Agreement of 2006 states that policies shall be formulated to implement a scientific land reform program by doing away with the feudal land ownership practice. As well, policies shall be pursued to provide land and socio-economic security to backward communities like the landless squatters, bonded laborers, tillers, bonded domestics, bonded cattle-tenders and such other groups (ibid). According to a recent FAO report (2010a) on land use policy and planning in Nepal, an integrated land use plan with an identification of areas and locations for certain use like agriculture areas, urban areas, forest (different types of community forestry, leasehold forestry), pasture, hazardous areas, wetland, special niche, military use and administrative use has been recommended. The government priority also includes reducing land fragmentation and discouraging undesirable use of land and resources.

Worldwide, there is an alarming trend of governments and corporations buying up farm land on a large scale. Global investors are buying land to offset the impact of the global financial crisis for more reliable return, while food-importing countries are keen to out-source their food production. According to the World Bank (Hall 2011), about 45 million hectares of land were sold or under long-term lease to foreign governments and investors in 2008 and 2009. In a regional workshop organized by FIAN Nepal in April 2013, civil

society leaders from Nepal, India, Pakistan, Bangladesh, Sri Lanka, and Malaysia said that multinational companies, state authorities and security forces across the globe were active in land grabbing and posed serious threats and violations to people's right to food and livelihoods. The FIAN actors pointed out the need for timely action to end poverty, hunger, and malnutrition by ending this land grabbing trend and holding states responsible and accountable for their people, inside and outside of national boundaries. In Europe, too, campaigns are underway by the Food First International Action Network (FIAN), Transnational Institute (TNI), and partners, urging European citizens to 'follow their money' and ask critical questions about European companies and banks to find out 'what land acquisitions in the developing world are being supported through their investments and through their consumption patterns, and what the true costs of these are' (Hall 2011).

2.2.7 Climate change and food security

Climate change is no longer a matter of debate. Climate change poses great risks to the world's food supply in coming decades as it has the potential to undermine crop production and drive up prices at a time when the demand for food is expected to soar. Climate change is adding a further element of risk and volatility for subsistence farmers who are already struggling to ensure food and livelihood security. Scientists have concluded that rising temperatures will have some beneficial effects on crops in some places, but that globally they will make it harder for crops to thrive, perhaps reducing production over all by as much as two per cent each decade for the rest of this century.

Nepal is warming 0.6 degrees centigrade per decade, higher than the global average. Nepal will be disproportionately affected by climate change as the Himalayan ice caps and glaciers are melting (Webersik and Thapa 2008). Nepal will likely to experience more intense monsoon and dry seasons as well. Poor farmers are more vulnerable to climate change as they are more exposed to floods and landslides, and they are more reliant on climate sensitive natural resources such as land, forest, and water.

The International Panel on Climate Change (IPCC) offers the following summary of the vulnerability of key sectors in the South Asia region. In keeping with the IPCC approach, the summary reports both the degree of vulnerability and the level of confidence. The South Asia region has the highest proportion of 'highly vulnerable' sectors of all the Asian sub-regions as reported by Practical Action (2013).

In keeping with the regional assessment, the most profound impacts of climate change in Nepal will be in agriculture and food security, water, biodiversity changes, and human health. It has been reported in the policy brief that there could be decrease in overall crop yield (wheat, maize and rice) in South Asia by up to 30 per cent by the end of this century (compared with an increase of up to 20 per cent in East and Southeast Asia).

In Nepal, the predicted decrease in precipitation during the winter months will reduce winter and spring crop production. Temperature increases are also expected to reduce wheat and maize yields, whilst increased variability in both temperature and precipitation will present significant challenges to farming practices. Irrigation-fed agriculture will be increasingly threatened as water resources deplete. Landslides and flash floods have already reduced the area of land available for cropping and are likely to continue to reduce productivity in the future. However, some estimates suggest that rice production will increase if there are moderate temperature and precipitation increases, whilst wheat production may increase the westernmost areas of Nepal (Practical Action 2013).

Climate change is likely to be a risk accelerator, exacerbating existing risks and putting additional pressure on those with less capacity to cope with shocks. LDC Watch (2012) in its Thematic Briefing Paper on Food Security asserts that climate change uncertainty will lead to harvest unpredictability, price volatility, and increased vulnerability for poor food-buying families. Strategies for adaptation need to focus on the needs of the people most affected by climate change impacts and aim to reduce the most significant hazards they face (Practical Action 2013). Identifying communities'

own priorities and needs, and valuing their knowledge alongside science-based knowledge is key to the development of sound adaptation strategies. And there is another challenge of integrating disaster risk reduction with climate change adaptation both in terms of policy and practices that is currently not happening.

Climate change is a highly political issue and contested. The Copenhagen summit on climate change failed to deliver a global deal to tackle climate change. There was lack of political will, particularly from the US and BASIC countries (Brazil, South Africa, India and China) to understand, recognize, and accept the scientific evidence and the worldwide suffering due to climate change.

During the UN Climate Change Conference held in November 2013, approximately 800 civil society observers walked out of negotiations protesting what they termed as governments' failure to agree on various issues such as mitigation goals, adaptation, loss and damage, and finance. The need to focus on adaptation in agriculture, to work closely with farmers and indigenous knowledge systems, and to facilitate this through finance, transfer of appropriate technologies and capacity building was emphasized by many parties.

2.3 Conflict, post conflict, corruption and patterns of food insecurity

2.3.1 Conflict scenario and food security

Since the end of the Cold War, the world has seen a steady decline in the number of active armed conflict between the states. However, 2011 deviated significantly from that trend with the largest year-to-year increase in the both the number of active conflicts and conflict severity. These conflicts were closely followed by spikes in international food prices—in late 2010 and early 2011—which have raised the question of whether food insecurity is a cause of violent conflict (Hendrix and Brinkman 2013). In post-conflict situations ranging from Nepal to Rwanda, land reform—specifically, expanding ownership opportunities for

previously landless households—has become a national priority. In each conflict location, large horizontal socio-economic inequalities among groups, especially with regards to land exist. Ensuring that food security interventions address these inequalities on a more permanent basis could reduce the risk of violent conflict.

Nepal experienced a period of prolonged conflict and political uncertainty that affected agricultural production, marketing, and distribution. There are large disparities across geographical regions and between groups in Nepal. The highest concentration of poor rural people is found in the mid-western and far-western regions. In these remote hill and mountain zones, the terrain is rugged, rainfall is low, and the soil is poor and difficult to farm. Agricultural holdings per household are the smallest in the country, and access to health, education, roads, telephones, electricity, water supply and sanitation services is very limited (Manandhar 2011). The conflict has exacerbated the extreme isolation of these regions. An estimated 36 per cent of the people live at least two hours walk from the nearest all-season road, and 15 out of 75 district headquarters are not connected by road.

In April 2007, WFP undertook a rapid assessment of the impact of conflict in 37 poor and conflict-affected districts of Nepal using field surveillance (WFP 2007b). This involved collecting, analyzing, and mapping conflict-related data such as conflict intensity, number of internally displaced persons, number of dead and injured, damage to critical infrastructure, and identification of priority needs. Community focus group discussions (185 in total) were held to gain better insight into the impact of conflict on issues such as livelihood and food security, personal security, civil justice, and social structures. The preliminary results of the assessment show that rural Nepal has been significantly affected by the conflict including impact to food availability and production, access to markets, employment and personal security. In particular, WFP found that districts in the hills and mountains of the mid- and far-western development regions were severely impacted by the decade-long conflict. These coincide to a large extent with areas that are also the most deprived areas in Nepal in terms of

food insecurity, inaccessibility, poverty, and malnutrition. While Upreti (2008) affirms the findings of the WFP, he also notes that the conflict created some opportunities for alternative means of livelihood through the redistribution of land to landless, by forcing the government to channel resources to pro-poor activities, and by encouraging donors to focus interventions on social inclusion and livelihood security.

Nepal's political environment is still fragile in 2014, eight years after the signing of the Comprehensive Peace Agreement to end a decade of civil war. The country is emerging from conflict, and in a process of profound change to build an inclusive state. In a background report on development policies and conflict in Nepal, Bonino and Donini (2009) argue that the failed development narrative has two streams. The first is one of "botched development," the notion that the technical failure of mainstream development plans and strategies is at the root of the insurgency. The emphasis on infrastructure did not really change the lives of ordinary people and the conflict emerged as a response to poverty and exclusion—issues that were not at the forefront of the concerns of the development enterprise in Nepal. The second stream is more critical. According to this view, the flaws are structural, not technical. Because of its linkages to the Kathmandu elite and because the development enterprise was Kathmandu-centric, it was unable to "see" the real conditions of the country.

There is a growing gap between the discourse of rights and the reality of delivery in Nepal, which is fuelling high expectations that will be difficult to meet. As a result, the majority of Nepalis now feel that the country is going in the wrong direction. The peace dividend has not been realized and ordinary people are concerned with issues that (e.g., food security, inflation, strikes) are simply not registering within the discourse of the political elite. While the risk of systemic violence of the sort experienced during the war may have decreased, human insecurity for the average Nepali seems to be increasing with the proliferation of armed gangs and criminal groups. Moreover, the citizen perspective has become fragmented. It is no longer a view of joint Nepali citizenship as it appeared to be

after the People's Movement II, but a view of specific segments of the population which often compete against each other and can be mutually exclusive, with the risk of polarization, identity politics, and an increase in ethnic identities that this entails (ISE 2009).

2.3.2 Corruption and food security

Corruption creates distortions and inefficiencies in relevant markets, thus reducing available supply and raising costs and it creates bottlenecks and inefficiencies in the distribution of food commodities (The Economist 2013). Corruption has been added as a new indicator in food security debates by Global Food Security Index in 2013. It has been found that corruption has a harmful effect on food security (ibid). Higher levels of corruption can lead to higher levels of food insecurity. Institutional instability, which is often both a cause and a product of corruption, can hinder a government's ability to develop and employ effective agricultural policies. This can lead to the misuse of land and other resources as reported in the Global Food Security Index 2013 Report.

Corruption is widespread in South Asia, including Nepal and Africa according to Corruption Perception Index, 2012 (CPI 2013). Corruption affects poor and vulnerable communities as the funds earmarked for the agriculture sector often do not reach them and subsidies are misused by powerful elites. In 2001, then Vice-Chair of Transparency International Tunku Abdul Aziz gave a good overview of the importance of paying attention to governance and corruption issues in trying to address food security concerns. Corrupt governments, he noted, cannot be expected to develop and implement sound long-term agricultural policies, including land tenure and water management, against a background of institutional instability (Shkolnikov 2011). In Nepal, there is corruption in land sector varying from petty bribes and frauds to misuse of government power and political positions. IFAD's (2012) Independent Office of Evaluation of the Nepal Country Program has reported that poor governance and corruption have hindered Nepal's political and economic development.

2.3.3 Patterns of food insecurity

The production, distribution and access of food are influenced by various internal and external factors as discussed above. Agriculture has been based on subsistence farming leading to food deficits in the hill and mountain regions. While most development plans give priority to agriculture, government investment has declined.

Nepal has three main ecological zones each with its own unique resource endowments, cropping patterns, and farming systems which lead to differences in commodities produced, production levels, and productivity (MoAD 2010).

- The Terai has 23 per cent of the total land area with 47 per cent of the population. The land is relatively fertile and has the majority irrigation infrastructure producing about 55 per cent of the total food grain supply. The population density per hectare of agricultural land is 6.6. Paddy is the main crop and other crops include wheat, maize, oilseeds, jute, tobacco, tea, pulses, fruits and vegetables. Cattle and buffalo are also raised mainly for milk, meat, and draft power.
- The hill region has 42 per cent of the total land area with 45 per cent of the population. The population density per hectare of agricultural land is 9.6. Maize is the main crop in most hill areas although paddy is the main crop in several hill districts. Most of the millet production takes place in the western hills with barley grown as a minor crop. Hill production also yields potato, sugarcane, oilseed, pulses, fruits and vegetables as well as coffee and tea in the eastern districts. Cattle and buffalo are also raised mainly for milk and draft power along with sheep and goats.
- The mountain region has 35 per cent of the total land area with 8 per cent of the population. The population density per hectare of agricultural land is 8.8. Maize and potato are the main crops. Millet, barley, buckwheat and various pulses and fruits (apple) and vegetables are also

produced. Agricultural yields are very low with a single crop per year. Cattle and yak are raised milk, meat, wool and transportation along with sheep and goats. This region has few roads, little electrification, and few health facilities.

Nepal is recovering from conflict and there has been recent decline in agriculture production and labor engagement. Land holdings are getting smaller and more fragmented on limited arable land. Ghale (2010) states that the food production and distribution patterns across the whole geographic region are skewed, reflecting poor management of resource distribution, lack of access to information, technology, and production inputs based on geographical disparities; and the weak purchasing capacity of the people.

Women's work agricultural work requirements vary by region. According to a study carried out by FAO in 2005 women in the high mountain areas contribute more to agricultural work than men, more or equal work in the middle hills, and slightly less work in the Terai (low foothills and plains) (FAO 2010b). However, in all agro-ecological zones, men generally perform tasks that require heavy physical labor such as ploughing (although women all over rural Nepal can be seen carrying heavy loads of fuel-wood, water, and fodder). Women, on the other hand, chiefly perform tedious and time-consuming work such as weeding, harvesting, threshing, and milling.

According to a WFP study (2007b), household vulnerability to food insecurity in Nepal is contingent on two inter-related issues: food utilization and food access. Access to proper sanitation, health services, and clean water are important subcomponents of food utilization. Educational attainment is the second key component of food utilization. It has been reported that households whose members are educated are more likely to be economically mobile, have better health and nutritional status, and are better able to meet their food and non-food needs. Moreover, having educated household members also decreases the inter-generational transmission of poverty and food insecurity.

Food access in Nepal is, primarily, dependent on the ability of rural households to effectively combine a set of livelihood strategies

that help them secure food, income, and other services. Under the umbrella of livelihoods, several intertwined sub-factors such as assets, remittances access to credit, and expenditure patterns are central. The study (WFP 2007a) drew three important conclusions as they relate to livelihoods and food access. The first is that food insecure households are asset poor—both in terms of physical assets and livestock. The second conclusion is that in the absence of productive assets and inability to generate sufficient food or income from agriculture, other livelihood activities such as unskilled wage labor are not able to fill the gaps as they are low-paying and seasonal—implying erratic and unpredictable income streams. Finally, the third main conclusion emanating from the survey is that households whose livelihoods are not able to meet basic needs are also unable to withstand and recover from external shocks and stresses.

2.4 A Way Forward

The world has made some progress in reducing food insecurity, but the progress is uneven within and between the countries, and it has come at a human and environmental cost. Nepal has also made a good progress in its fight against hunger. But food security varies across the country. Moreover, undernutrition is still widespread.

Food security is complex and its drivers are interdependent, such that sufficiency of food does not guarantee an end to hunger and malnutrition. Internal and external factors, as discussed above, can alter the availability access, utilization and stability of food.

Long-term food security is thus a broad development issue. Despite the provision of a right to food sovereignty in the Interim Constitution and the Three Year Interim Plan (2014-2016), there is a need for coherent national policy, strategy and programs to address underlying causes of hunger and undernutrition for all.

The above debates on food security suggests that policy and strategy should be based on progressive agrarian change within sustainable integrated forest and farming systems encompassing food security, nutrition security, energy security, climate change

adaptation, biodiversity conservation, and livelihoods. The success of national policy and strategy demands effective government policy and investment by all the stakeholders including the government, non-government, farmers, and the private sector, individually and collectively, to improve the productivity, innovation, research and extension, indigenous knowledge, skills and technologies, public distribution, value added agro-processing, marketing, productive use of remittances, policy advocacy, and building resilience to long term food security and sovereignty.

References

- Adhikari J.** 2008. *Changing Livelihoods: Essays on Nepal's Development since 1990*. Kathmandu: Martin Chautari.
- Adhikari J.** 2010. Food Insecurity, Conflict and Livelihood Threats in Nepal. In: Upreti BR, Muller-Boker U, editors. *Livelihood Insecurity and Social Conflict in Nepal*. Kathmandu: NCCR North-South.
- Bonino F, Donini A.** 2009. *Aid and Violence: Development Policies and Conflict in Nepal*. Boston: Tufts University.
- Cameron J.** 1998. The Agriculture Perspective Plan: The Need for Debate. *Himalayan Research Bulletin* XVIII (2).
- CBS [Central Bureau of Statistics].** 2013. *Nepal in Figures*. Kathmandu: Central Bureau of Statistics.
- CPI [Corruption Perceptions Index].** 2013. *Corruption Perceptions Index*. Transparency International, Germany.
- Fairbairn M.** 2012. Framing Resistance: International Food Regimes and the Roots of Food Sovereignty. In: Wittman H, Desmarais A, Wiebe N, editors. *Food Sovereignty: Reconnecting Food, Nature, and Community*. Halifax: Fernwood Publishing.
- FAO [Food and Agricultural Organisation].** 2005. *Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security*. Rome: FAO.
- FAO [Food and Agricultural Organisation].** 2010. *Integration of Gender in Agriculture: An Analysis of Situation*. Kathmandu/Rome: FAO.
- FAO [Food and Agricultural Organisation].** 2010a. *Land Use Policy and Planning*. Kathmandu/Rome: FAO Nepal.
- FAO [Food and Agricultural Organisation].** 2013. *State of Food Insecurity in the World Report 2013*. Rome: FAO.
- FIAN [Food-first Information and Action Network].** 2013. *Extraterritorial States Obligations and Access to Natural Resources*. Kathmandu: FIAN Nepal.
- Ghale Y, Bishokarma NK.** 2013. *Food Security: A Fundamental Basis for Human*

- Security. In: Upreti BR, Bhattarai R, Wagle GS, editors. *Human Security in Nepal: Concepts, Issues and Challenges*. Kathmandu: Nepal Institute for Policy Studies and NCCR North-South.
- Ghale Y.** 2010. Corporate Globalization: Hunger and Livelihood Insecurity in Nepal. In: Upreti BR, Muller-Boker U, editors. *Livelihood Insecurity and Social Conflict in Nepal*. Kathmandu: NCCR North-South.
- Hall R.** 2011. *Land Grabbing in Africa and the New Politics of Food*, Policy Brief, Future Agricultures, London, UK.
- Hendrix C, Brinkman H.** 2013. Food Insecurity and Conflict Dynamics: Causal Linkages and Complex Feedbacks. *Stability: International Journal of Security and Development* II (2).
- ICIMOD [International Centre for Integrated Mountain Development].** 2008. *Food Security in the Hindi Kush Himalayan Region*. Kathmandu: ICIMOD.
- IFAD [International Fund for Agricultural Development].**2012. *Nepal Country Program Evaluation*. Kathmandu: IFAD.
- IFPRI [International Food Policy Research Institute].** 2010. *Global Hunger Index The Challenge of Hunger: Focus on Crisis of child under-nutrition*. Washington DC: IFPRI.
- ISE [Institute for State Effectiveness].** 2009. *Nepal: from Statement to State-building*. Washington DC: ISE.
- Karki AK.** 2002. Movements from Below: Land Rights Movement in Nepal. *Inter-Asia Cultural Studies* III(2): 201-217.
- LDC Watch.** 2012. *Thematic Briefing Paper on Food Security*. Kathmandu: LDC Watch.
- Maharjan A, Baurer S, Knerr B.** 2013. *Migration for Labour and Its Impact on Farm Production in Nepal*, Working Paper IV. New York: Centre for the Study of Labor and Mobility.
- Maharjan KL, KC A.** 2006. *Household Food Security in Rural Areas of Nepal: Relationship between Socio-economic Characteristics and Food Security Status*, Poster paper prepared for presentation at the International Association of Agricultural Economics Conference, Gold Coast, Australia.
- Manandhar P.** 2011. *Contested Rural Development in Nepal*, NCCR North-South Dialogue, No.32, Bern and Zurich, Switzerland.
- MoAD [Ministry of Agriculture and Development].** 2010. *Country Investment Plan - Nepal Agriculture and Food Security*. Kathmandu: MoAD.
- Nepali P, Pyakuryal KN.** 2008. Land and Power Relations. In: Upreti BR, Sharma SR, Basnet J, editors. *Land Politics and Conflict in Nepal: Realities and Potentials for Agrarian Transformation*. Kathmandu:CSRC/NCCR North South/HNRSC Kathmandu University.
- NPC [National Planning Commission].** 2003. *The Tenth Plan (Poverty Reduction Strategy Paper) 2002-07*. Kathmandu: NPC.

- NPC [National Planning Commission].** 2013. *Thematic Report on Food Security and Nutrition*. Kathmandu: NPC.
- Practical Action.** 2013. *Promoting Adaptation to Climate Change in Nepal Policy Brief*. Kathmandu: Practical Action.
- Regmi MC.** 1978. *Thatched Huts and Stucco Palaces: Peasants and Landlords in 19th-century Nepal*. New Delhi: Vikash Publishing House Pvt Ltd.
- RtFN [Right to Food Network].** 2011. *Strategic Plan, 2011-2013*. Kathmandu: RtFN.
- SAAPE [South Asia Alliance on Poverty Eradication].** 2013. *Crises, Vulnerability and Poverty in South Asia*. Kathmandu: SAAPE.
- Sachs C.** 2013. *Feminist Food Sovereignty: Crafting a New Vision, Food Sovereignty: A Critical Dialogue*, Conference Paper No. 58, International Conference, Yale University.
- Seddon D, Adhikari J.** 2004. *Conflict and Food Security in Nepal: A Preliminary Analysis*. Kathmandu: Rural Reconstruction Nepal.
- Seddon D, Hussein K.** 2003. *The Consequences of Conflict: Livelihoods and Development in Nepal*, Working Paper 185. London: Overseas Development Institute.
- Shiva V, Bedi G.** 2002. *Sustainable Agriculture and Food Security: The Impact of Globalization*. New Delhi: Sage Publications.
- Shkolnikov A.** 2011. *Corruption and the Food Crisis in the Horn of Africa*. London: Thompson Reuters Foundation.
- Swinnen JFM.** 2007. *Global Supply Chain Standards and the Poor*. London: CAB International.
- The Economist.** 2013. *Global food security index 2013: An annual measure of the state of global food security*. Washington, DC: The Economist.
- Upreti BR.** 2008. Land as Source of Marginalization and Conflict in Nepal. In: Upreti BR, Sharma SR, Basnet J, editors. *Land Politics and Conflict in Nepal: Realities and Potentials for Agrarian Transformation*. Kathmandu: CSRC/NCCR North South/HNRSC Kathmandu University.
- Webersik C, Thapa M.** 2008. *Nepal Climate Change and Security Factsheet*. Tokyo: United Nations University.
- WFP [World Food Programme].** 2007a. *Nepal Comprehensive Food Security and Vulnerability Analysis*. Kathmandu: WFP, Nepal.
- WFP [World Food Programme].** 2007b. *Food Security Assessment of Nepal*. Kathmandu: WFP, Nepal.
- Wittman HK, Desmarais AA and Wiebe N.** 2010. The Origins and Potential of Food Sovereignty. In: Wittman HK, Desmarais AA and Wiebe N, editors. *Food Sovereignty: Reconnecting Food, Nature and Community*. Halifax: Fernwood Publishing.

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Chapter 3 | Conflict over seed and plant genetic resources: Implications for food security

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Yamuna Ghale

“Anikal ma biu jogaunu, hulmul ma jiu jogaunu”¹

- A Nepali proverb

3.1 The context

In this chapter, we examine the conflict and contestation between seed sovereignty and farmers’ rights and the virtual monopoly the corporate sector holds on plant genetic resources. In doing so, we are highlighting the concerns and issues of local people in developing countries who are at the greatest risk to suffer from food insecurity and the negative effects of globalisation and privatisation process.

In the past few years, the phenomena of seed conflicts and the role of multinational corporations (MNC) in promoting seed hybrids in developing countries has caught critical attention from scholars (Bakshi 2003; ESRE 1999; Rafi 2001). In particular, scholars, the media, and policy makers have noted the opposition to hybrids emerging from farmers organisations and food rights groups on one side, while governments and multinational seed corporations promote these products (Bakshi 2003; Bernstein et al. 2003). The centre of the debate revolves around the corporate monopoly on seeds and genetic resources, and the ensuing encroachment on farmers’ rights. US-based Monsanto Corporation is largely regarded as having spurred this debate with its development of terminator technologies and genetically modified organisms (GMO) through their biological research (Bakshi 2003).

¹ Save seed in famine and save life in crowd

Photo 3.1 Farmers protesting at high government office (Singh Durbar) carrying Maize



Source: Kantipur Daily

The supporters of the indigenous seeds argue that corporatisation of local seeds does not respect farmers' rights and threatens the need for local food security. Privatising local seeds, in this context, is seen as the most serious point of contention (Shiva 2005; Ghale 1998). Those who support local farmers argue that protection, promotion and sustainable use of genetic resources are of the utmost importance for food security for them (Ghale 1998). They argue that local seed systems have economic, social, and cultural values, political meaning and ecological resilience for achieving viable food security at the local level (Shiva 2007 a; 2007b).

The rights to genetic resources fall along two schools of thought. The first school—for farmers' and indigenous resources—argues that genetic resources are largely considered common heritage since time immemorial but have been contaminated by globalisation and privatisation as it has concentrated these genetic materials, knowledge, and power in the hands of a few MNCs (Chaudhari 1999; AA 1999; GRAIN 2008). This school further argues that the system of granting monopoly rights over seed and genetic resources has posed new challenges to local production, processing and marketing, as resource-rich countries and profit-oriented MNCs have shaped policy and even determining national policies and priorities in the seed sector (ESRE 1999; Ghale 1999). One example of MNCs efforts to shore up their possession of seed

varieties is the Union for Protection of New Varieties of Plants (UPOV), which is designed to promote commercial Plant Breeder's Rights by granting them patent licensure over seeds they produce. In this way, MNC retain greater control over the marketing and sale of biotech and Genetically Modified (GM) seeds and foods (Ghale 1999).

The supporters of the local farmers' rights and indigenous seeds argue that corporate seed industries are promoting mergers amongst companies and consequently controlling seed, agro-chemical, and food markets globally. The mergers give MNCs more leverage to control the market and raise prices at the expense of poor people of the developing countries who can less and less afford to purchase these inputs. This situation is exacerbated by slow-reacting governments in developing countries who have not moved to protect their own autonomy and control over genetic resources, which could maximise bio-prospects and ensure equitable sharing of benefits for farmers by reducing an unreasonably high dependence on imported seeds to sustain viable agricultural systems and food security (Ghale 1999; Shiva 2005).

Figure 3.1 Pillars of achieving food security at local level in developing country



Source: Authors

The opponents of corporate globalisation argue that the context is changing as climate change and global food crises will be made worse by corporate hegemony and ultimately threaten national sovereignty undermining democracy, destroying genetic diversity

and jeopardising basic rights (food, water, etc.) in the developing countries (Rafi 2001).

In the following sections we attempt to analyse why and how the effects of globalisation are influencing seed sovereignty and food insecurity in Nepal.

3.2 Effects of globalisation on seed and food security

In this section the effect of globalisation is analysed from the local farmers' perspective. The advancement of genetic engineering biotechnology (GEB) as a part of the globalisation process has been presented as a solution for increasing global food insecurity (Shiva et al. 1995; Shiva 2005; 2007a and 2007b; Cummins 2010) However, the alternative school of thought believes that the dominant reductionist scientific world-view promoting inventions such as GEB has created a gap between rich and poor farmers, contributed to increasing food insecurity, widened poverty, and damaged natural cycles of crop regeneration through genetic modifications (Ho 1998). Wynberg et al. (2012) argue that international agricultural trade has not benefitted the poor people nor has it enabled developing countries to achieve food security, largely because monetary corporate interests have established policy that focuses on profits over productivity. Similarly, Action Aid (1999) has argued that corporate control of GMOs severely threatens farmers' rights to seed and plant resources. Launched during the 1970s to address famine in the global South, genetic engineering in recent years has focused more patents and market control at the cost of food security and resource-poor farming (Wynberg et al. 2012). Other studies have shown that global trade liberalisation exerts enormous pressure on resource poor agriculture and marginalises poor and small farmers while promoting starvation, eroding agricultural biodiversity and indigenous knowledge (AA 1999; Bakshi 2003; Bernstein et al. 2003; Rafi 2001; Cummins 2010; Wynberg et al. 2012; Randerson 2008; Melvin 2008).

3.2.1 World trade organisation and food security

Industrialised countries have been successful in legitimising and protecting genetic engineering technologies through the 'Agreement on Trade Related Intellectual property Rights (TRIPs) under WTO provisions (GRAIN 1999; Ho 1998; Ghale 1999). Though MNCs have cited justifications and arguments in favour of GEBs, the Patents' Rights (PR) issue and potential negative impacts of genetically modified (GM) products are widely questioned (Bakshi 2003; Bernstein et al. 2003; Rafi 2001; Cummins 2010; Wynberg et al. 2012; Randerson 2008; Melvin 2008; Pimentel and Raven 2000; Ghale and Upreti 1999). Industrialised countries led by USA would like to have no exceptions to patentability while other many developing countries would like to separate biodiversity from patenting (Adhikari et al. 2000; Lauren 2010). MNCs have patent protection for their plant and animal technologies under Article 27.3b of WTO (Adhikari et al. 2000). Developing countries allege that these patent rights (PR) give MNCs potential monopolistic control over these technologies, thus wresting away control and ownership of genetic resources. Therefore, the ownership of local genetic resources and the need to protect community/ indigenous knowledge in the third world countries is crucial.

Open market economy, free trade and economic liberalisation are the basic premises of WTO. Patenting and intellectual property rights (IPR) are the most controversial issues related to agriculture in WTO. An early assessment from Action Aid (1999) found that many rules of the WTO do not favour developing countries:

- WTO rules refuse supportive measures like import control and subsidies for developing countries and privilege farming sectors of the developed world, especially in the USA and EU.
- Even for provisions designed to protect developing countries, many of them are financially expensive and technically complicated beyond the capacity of developing countries.

- Periodic decisions to benefit developing countries, such as the provision of compensation to net food imports, are not implemented.
- The ambiguous nature of commitments in the agreement on agriculture (AoA) is exploited by the developed countries to their benefit.
- Article 27.3 (b) of the TRIPs agreement does not recognise the right of local communities to own their indigenous knowledge and agricultural practices (Adhikari et al. 2000). This article forces WTO members to protect IPR to genetic resources for food and agriculture.
- Many developing countries lack financial resources and capacity for informed and full participation in WTO negotiations.
- There is a deadlock in negotiations regarding the international biosafety protocol. The Miami Group², a consortium of commercial agricultural interests, is not ready to make any concession that might impair the free and unimpeded free trade of genetically modified products, in direct opposition to several developing countries that oppose this position. The Miami Group is against any mandate that obliges companies to seek and obtain prior informed consent of the importing countries to move or trade genetically modified products (GRAIN 1999).

The implementation of AoA imposes problems on poor countries as it increases the likelihood they may face higher food import bills, price instabilities and reduced food aid. Therefore, the urgent action to minimise the immediate effect of AoA is essential. The AoA arrangement needs to focus on food security of poor countries by eliminating export subsidies provided by developed countries, by reducing the level of support to agriculture in developed countries, and by improving market access for agricultural products of poor countries by reducing tariffs.

² Miami group includes USA, Canada, Australia, Argentina, Chile and Uruguay

At Rio de Janeiro in 1992, signatories to the Convention on Biological Diversity (CBD) established that plant genetic resources like seeds are no longer "the common heritage of mankind" but fall under the sovereignty of the individual country. Such decisions have sparked confusion and debate in Asia. In 1997, India, Thailand, and Pakistan expressed disquiet over the use of the name *Basmati* or Jasmine in a patent granted to an American firm. A subsequent explanation by the firm and other experts, however, made clear that the U.S. patent and the company's actions had not affected the rights of these countries to grow, produce, and export *Basmati* or Jasmine rice anywhere in the world. Despite this explanation, concerns linger across Asia about future control of the region's rich reservoir of rice germ plasm. Of special concern is the possibility of monopolies emerging, as the private sector develops new rice varieties using the region's traditional genetic material and then seeks to sell that seed to poor rice farmers.

Majority of the international and transnational life science companies are not only ignoring the ethics and values related to the genetic modifications and their possible effects of poor people but also destroying indigenous knowledge, technologies and practices for the sole aim of profit (AA 1999; GRAIN 1999). MNC efforts and innovations through biotechnologies on seeds, agrochemicals, veterinary products and human medicine are not synergetic to the human values (Uva 1999).

Patents on generic resources for food and agriculture should be excluded from TRIPs 27.3 (b) in order to minimise negative effects on farmers and agriculture in developing countries (Adhikari et al. 2000). In fact, by not excluding generic resources from its purview, TRIPs contradicts with the Article 8j of the CBD which asks member countries to recognise and protect the rights, knowledge and technologies of local people. In reality the relationship between intellectual rights on life forms and the conservation and sustainable use of bio-diversity is highly contentious and conflicting between TRIPs and CBD (GRAIN 1999; Adhikari et al. 2000). Though the Union for the Protection of Plant Varieties (UPOV) claims that the

implementation of the plant variety protection (PVP) arrangements stimulate protection of the environment, conservation of biodiversity, and food stability, this not proven to be the case (AA 1999; GRAIN 1999) as the uniformity criterion specified for PVP by UPOV tends to destroy diversity, and precipitate genetic erosion.

3.2.2 Genetic engineering bio-technology and food security

GE is a departure from conventional breeding. The motive of these innovations seeks to monopolise global agriculture and maximise profit by using the rich genetic resources available in developing countries. GE is being widely touted as the cure for world hunger by developed countries and some researchers (Prakash 2005; Cribb 2010) whereas several breeders, agriculturists, activists, and ecologists from the North and South argue that genetically engineered (or modified) crops are likely to make the world more hungry place, not a happier one (Bakshi 2003; Bernstein et al. 2003; Rafi 2001; Cummins 2010; Wynberg et al. 2012; Randerson 2008; Melvin 2008; Pimentel and Raven 2000).

Box 3.1 Eleven facts about global hunger

1. 13.1 per cent of the world's population is hungry. That's roughly 925 million people who go undernourished on a daily basis, consuming less than the recommended 2,100 calories a day.
2. The world produces enough food to feed all 7 billion people, but those who go hungry either do not have land to grow food or money to purchase it.
3. The difference between hunger and malnutrition is that malnutrition means the body does not have the necessary vitamins and nutrients necessary to grow or fight off disease. In developing countries where sanitation is poor, lack of nutrition only makes children and adults more vulnerable to illness.
4. Poverty is the main cause of hunger, and hunger is a cause of poverty. When people go malnourished, they lose brain functionality and the mental resources to be a productive asset in society or earn money.
5. In 2010, an estimated 7.6 million children — more than 20,000 a day — died from hunger.
6. Nearly 98 per cent of worldwide hunger exists in underdeveloped countries. Hunger is often passed from mother to child. Each year, 17 million children are born underweight because their mothers are malnourished.
7. Almost 1 in every 15 children in developing countries dies from hunger.
8. While hunger exists worldwide, 62.4 per cent of the hunger exists in Asia/South Pacific. .
9. More than 20 per cent of children in Asia and Africa are underweight for their age.
10. When a mother is undernourished during pregnancy, the baby is often born undernourished, too. Every year, 17 million children are born this way due to a mother's lack of nutrition before and during pregnancy.
11. Women in hunger are so deficient of basic nutrients (like iron) that 315,000 die during childbirth from hemorrhaging every year.

Source: From official web site of *Do something.org*.³

It has been observed that world's giant gene-banks and gene-techs are tactically adopting a messianic position on the role and importance of GEB in agriculture in the 21st century to minimise the

³ For detail see; <http://www.dosomething.org/actnow/tipsandtools/11-facts-about-world-hunger>,

potential opposition from activists and civil society. For example, USA gene-tech giant Monsanto launched a public relations campaign stressing GEBS' importance for feeding the world's increasing population. Monsanto argues that GEBS will help to restore a healthy environment, prevent further degradation, and provide globally more choices and opportunities for food and agriculture.⁴ As well, Monsanto portrays anti-GMR activists as being traitors to the hungry and poor, while the giant industries are painted as the benevolent friends to farmers.⁵ Proponents against the GMBs say that these industries cannot stand up to their bold claims of providing a sufficient amount of healthy and environmentally-friendly food to the world's growing population. GMB opponents also argue that it seems plausible only if multinational industries and gene-techs acknowledge the real causes of hunger and famine (political causes as opposed to natural causes). By citing starvation as a problem of food shortage, proponents of GMF offer a simple and misleading analysis of world's hunger. The main cause of hunger is lack of money and political will, not of lack of food.⁶

Indeed, hunger has seldom been the result of an aggregated shortage of food (See box 3.1). Rather it is the result of inequalities in economic and political power both at micro and macro levels. Even some neo-institutional and ecological economists argue that hunger is the inevitable result of the globalisation and free market economy.⁷ GMB has been directed to meet the commercial needs of the few giant food producers and processors of the industrialised countries at the cost of finding more equitable ways to distribute and make food available to hungry people. The Research Foundation

⁴ for detail see <http://fracturedparadigm.com/2014/01/28/monsanto-launches-community-engagement-campaign/>

⁵ for detail see <http://naturalrevolution.org/facts-to-fight-back-monsantos-soon-to-be-pr-campaign-of-lies-monsantos-dirty-dozen/> and <http://www.prweek.com/article/98682/international-public-responds-monsanto-pr-campaign>

⁶ for detail see <http://www.wfp.org/hunger/causes>

⁷ for detail see <http://www.globalissues.org/article/40/criticisms-of-current-forms-of-free-trade> and http://www.thirdworldtraveler.com/Globalization/DoesGlobaliz_HelpPoor.html

for Science, Technology and Ecology (RFSTE) has synthesized the potential negative impacts of GMF resulted from the intervention of GEB in agriculture and food security as follows:

- GEB bypasses natural reproduction process as it horizontally transfers genes from one individual to another as compared to the natural vertical passing from parents to offspring. These horizontal gene transfers not only spoil genetic diversity but also raise the ethical questions regarding the transfer of genes between species (e.g., human gene transfer to pigs, sheep or bacteria);
- GEB introduce several problems to bio-diversity and health through the introduction of new genes and gene products. These events produce unintended effects inherent to the technology and interaction between external and host genes;
- Often external genes are introduced from bacteria, viruses and other non-food species, and may have long term negative impacts on human and animal health;
- Transgenic plants harm beneficial insects such as the ladybird in food chain;
- Transgenic plants are generally resistant to broad-spectrum herbicides and cause acute and chronic toxicity that will have negative impact on bio-diversity;
- Herbicide resistant transgenic plants may lead to increased use of herbicides and negative impacts on environment as increases the likelihood of resistant plants;
- Transgenic crops are incompatible with sustainable agriculture as they disregard natural processes such as the maintenance of species diversity and productivity of ecosystems;
- GEBs cause unintended effects like mammalian cancer, deformation of transgenic animals, caused by random insertion of foreign into the host genome;

- Unexpected and unintended effects may also arise from interaction between foreign and host genes;
- GM varieties (for example, RoundUp Ready Soyabean) are more estrogenic and are therefore, possibly disrupt native plant hormones (RFSTE 2000).

Considering these potential negative impacts of GEBs, the intervention of GE biotechnology in agriculture not only obstructs the implementation of food security but also poses unprecedented risks to health and unexpected negative impacts on bio-diversity (Shivakoti et al. 2005; Shiva 2005; 2007a and 2007b; Grain 1999; Shiva et al. 1995). In fact, far from feeding the over growing population, GEBs may actually intensify corporate control on food production and distribution systems, which would stimulate poverty and hunger. Similarly, GE intervention in agriculture will reinforce existing social structures, monopolistic profit maximisation, and intensive agricultural practices, which collectively could lead to widespread environmental destruction and ecological imbalances.

GM Myths

There are several myths existed in the field of genetically modified seeds. Some of them are discussed in the following section

Granting monopoly rights is an incentive to investors for innovation and technology transfer. WTO supporters and MNCs argue that worldwide promotion of monopoly rights incentivizes investment on research, innovation, and transfer of technology (Prakash 2005; Cribb 2010). However, competing studies have shown that concentration of the seed production in a few companies is frustrating competition and innovation, and limiting the choices for farmers instead (GRAIN 2008; Shiva 2007b and 2005).

Myth 1

GM seed will enable nations to feed increasing population.

Worldwide promotion of GM crops is increasing and having multiple impacts on biodiversity, farmers' rights, local autonomy

and national sovereignty (Shiva 2005). Worldwide food insecurity and hunger is, in fact, the manifestation of inequity in production, distribution and benefit sharing mechanisms (Ghale 1999; Randerson 2008). Gene and trait specific GM crops are claimed to be insect pest resistant however, different studies have shown that these crops are not necessarily more productive compared to indigenous varieties and require high investment to prevent pest damages. Hence, the proclaimed financial advantages of GM seed are not an ultimate solution to minimise cost of production, enhance productivity and feed the increasing population of the world.

Myth 2

Global trade as a solution to deal with climate change and price hikes

It is often heard that increasing trend of securing monopoly rights over “climate-ready” genetically-modified crops can be a solution to deal with food security of poor people in the global south. However,

Box 3.2 Local knowledge and practices of saving seeds

- Selective harvesting of spikes from rice, upland rice and finger millet crops which look good, free from diseases/insects for the seed purpose
- Identification and selection of healthy maize cobs from the field, separation and special treatment for some plants of broadleaf mustard, radish, cauliflower, which are maintained for seed for next season
- Farmers use special practices like deculmination of minor tillers, separation of only spikes instead of harvesting full plants for seed purpose.
- Use local herbal extracts to save seed.
- Use inter-cropping, crop- rotation and crop intensification for seed security purpose.
- Use multiple cropping, and integrated agriculture the risk of failure of seed production.
- Proper cleanings and drying of the seed storage.
- Special packing of seed in clothes, earthen pots, tin and bamboo materials and application of organic materials to save the stored seeds
- Keep their fully dried seed in the locally made bamboo and earthen storage bins
- Hanging dried spikes wrapped in plastic in an protected open area
- Cosmovision: Seed to dry in the sun during the day of new moon light (lunar calendar), that will have high storability and less incidence of weevils and other storage grain pests.

Source: Ghale (1998)

the failure of Copenhagen climate negotiation in 2012 is just one example of how developed countries deal with the climate issue. Furthermore, lack of equitable investment in research and development, production technologies, and profitable marketing mechanisms is still a challenge especially in developing countries like Nepal. Global trade does follow fair trade practice. Therefore, promotion of fair trade with equitable access to opportunities and benefits created by globalisation can be more responsive to climate change and price hikes rather than simply advocating for free trade.

3.2.3 The convention on biological diversity and food security

The Convention on Biological Diversity (CBD) is important international instrument for protecting genetic resources.⁸ The CBD signatories include more than 160 member states of the United Nations and provide an international legal framework for the conservation of biological diversity including access to and exchange of genetic materials. The CBD legally binds member countries to conserve the genetic resources. However, developing countries, that are rich in plant genetic resources (PGR), are pressured from another side by TRIPs of WTO (Adhikari et al. 2000). This bind makes it difficult for developing countries like Nepal to meet the requirements of TRIPs.

The CBD is forthright in declaring how and when genetic resources should be protected. The preamble of the CBD states that “Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such threats”. Article 8(g) of the CBD deals with in-situ conservation and obliges contracting parties to “establish or maintain means to regulate, manage or control the risks associated with the use and release

⁸ For detail see <http://www.cbd.int/convention/> for details on the different provisions/articles of the CBD discussed in this page.

of living modified organisms resulting from bio-technology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also account the risk to human health". Article 8(h) requires parties to "prevent the introduction of, control or eradicate of those alien species which threaten ecosystems, habitats and species". Article 8 (j) of the CBD addresses the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.

If all these provisions of the CBD are effectively implemented, the possible threats associated with the food security could be addressed. However, the influence of multinational and transnational companies has prevented this implementation, leading to a loss of biodiversity.

3.3 Conflict over plant genetic resources and food insecurity

Since time immemorial, foods and food related goods and services were the major areas of trade and commerce. Since the late 1980s, the commodification of life forms and granting of monopoly rights of genetic resources has become an integral part of global trade focus.⁹

In this context, seed has become one of the more lucrative commodities for multinational agribusinesses. Hence, the patent protection on life forms became an integral part of an agreement of Trade Related Aspects of Intellectual Property Rights (TRIPs) within the World Trade Organisation (WTO) package (Adhikari et al. 2000).

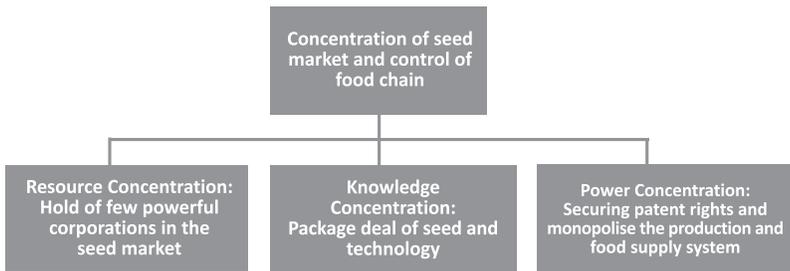
Seed is not only a mere input to determine production, but is also a cultural, spiritual, and emotional resource for local communities in developing countries. The relationship between agriculturalists and their seed is a source of pride, a way of life (Shiva 2007a; 2007b),

⁹ For details see <http://techliberation.com/2006/07/04/monopolies-in-the-17th-and-21st-centuries/>

which is now under threat due to encroachment by multinational seed corporations (Shiva 2005). Hence, this issue became a great concern for farmers and environmentally-focused civil society groups. Consequently the provision of granting monopoly rights over plant genetic resources to MNCs is vehemently opposed.

Despite the consistent opposition, lobby, resistance and pressure from different concerned groups to prevent the monopolisation of plant genetic resources by MNCs, global trade negotiation processes have not yielded to these concerns. Furthermore, the emergence and expansion of monopoly rights over seed is becoming a main strategy of MNCs. Hence, the TNCs/MNCs are becoming successful in plant genetic resource concentration, knowledge concentration, and ultimately a power concentration in the food system depicted in the figure 3.2.

Figure 3.2 Corporate control of resource, knowledge and power domain in the food chain



Source: Developed by authors

It is increasingly realised at global level that genetic engineering bio-technology (GEB) and patenting have caused a negative impact to food security (Shiva 2005; 2007a; 2007b). The interventions of trans-national and multinational seed and agribusiness companies in developing countries are increasing under the frame of liberalisation and globalisation. Further, the WTO, Agreement on Agriculture (AoA) and Article 27.3(b) of the Trade Related Intellectual Property Rights (TRIPs) are promoting such interventions and finally contributing to poverty and inequality (FAFI 2001; Ho 1998; Grain 1999; Adhikari et al. 2000). Patenting and IPR are most controversial

issue and major threat to resources-poor farmers. GMO and seeds, terminator technology (TT) developed by giant agriculture business companies are trying to monopolise global agriculture (GRAIN 2008). Several arrangements under WTO are also contradictory with Convention on Biological Diversity (CBD) (Wynberg et al. 2012; Randerson 2008). These provisions have several actual and potential negative impacts on food security, farmers rights (GRAIN 2008).

A WTO goal is to rapidly transform developing countries subsistence economies in to cash-driven market economies. The article 27.3b of WTO is most dangerous for least developed countries and serves the interests of TNC/MNC. All farmers should produce for world markets to obtain cash to purchase food and other basic needs. Terminator seeds are genetically engineered so the crops they produce have sterile seeds, and thus farmers must purchase new seeds each year. Patenting can be a very expensive for developing countries like Nepal.

3.4 Multinational companies and effects on local seed system

The merger and acquisition of seed and agro-chemical corporations across the world is becoming a powerful strategy of MNCs to accumulate and consolidate their power in production and distribution systems of seeds and food (Shiva 2007a; Ghale 1999). It is estimated that the top ten seed corporations around the globe control 50 per cent of the commercial seed market, and that top ten agro-chemical companies control 84 per cent of that market (Ghale 1999). Likewise, thirteen commercial GM seed companies control 80 per cent of GM food market.¹⁰ Table 3.1 below shows which companies promote which GM products and gives a better sense of the dominant MNCs who drive the policy-making around GM products.

¹⁰ For detail see [http://voiceireland.org/\(Bio-patents controlling life](http://voiceireland.org/(Bio-patents%20controlling%20life)), Voice of Irish Concern for the Environment, Dublin)

Table 3.1 Ranking of global corporations by their market share in GM seeds, agro-chemicals, agbio patents, and GM-related patent application

Rank	World's largest seed corporation (2006)	World's largest agro-chemical firms (2007)	World's top ten Food and Beverage Corporations (2001)	Agbio Patents (2001)	Patent applications for "Climate-Ready" genes and traits (2008)
1	Monsanto including Delta and Pine Land	Bayer	Nestle	Pharmacia (Monsanto-287)	BASF (21)
2	Dupont	Syngenta	Philip Morris (Kraft + Nabisco)	Dupont (279)	Syngenta (7)
3	Syngenta	BASF	ConAgra Inc. (+ International Home Foods)	Syngenta (173)	Monsanto (6)
4	Grupo Limagrain	Dow Agrosiences	Unilever (+ Bestfoods)	Dow (157)	Bayer (5)
5	Land O' Lakes	Monsanto	Coca Cola Company	Aventis (77)	Cers Inc in partnership with Monsanto (4)
6	KWS AG	DuPont	Pepsico Inc.	Grupo Pulsar (38)	Mendel Biotechnology Inc with equity stake of Monsanto (3)
7	Bayer Crop Science		IBP Inc.		Evogene Ltd. With Monsanto and Dupont(2)
8	NA		Diageo		Dow (2)
9	NA		Mars Inc.		Dupont (Pioneer-HiBred-1)

Source: Compiled by authors from various sources

With such a dominant position in these markets, MNCs are inclined to produce terminator sequencing seeds through genetic engineering

and bio-patents, as these products, once used, guarantee that the farmer will continue to use these varieties of seeds. In this process, the production of GM crops is widely expanding around the globe. Between 1996 and 2007, the coverage of biotech and GM crops increased 67 times, now accounting for 12.3 million hectares, or 5 per cent of total cultivable area in the world (ISAAA 2007). Expansion of GM crops is a consequence of global merger and market concentration of MNCs, which occupy one quarter of the total value of the commercial seed market worldwide (ETC Group 2005). This trend is increasing despite of low public acceptance and even opposition. Furthermore, the public research system in developing countries has not been able to respond to the demands of the market-led processes.

A majority of farmers in developing countries are thus dependent on farm saved seeds. Though farmers and indigenous communities have vast knowledge for improving local cultivars and landraces that are suitable to local geographical requirements, there is very less investment in promoting and or documenting indigenous knowledge. It can be argued that if effective measures are not implemented soon, there may be severe problems for protecting and promoting plant genetic resources, which will have implications for food security and combating the threats arising from monopolisation of genetic resources by MNCs.

Similarly, another major challenge brought on by the concentration of seed market is the threat of bio-patenting and bio-safety (Ghale 1999). According to the GM contamination register from 1996-2006, there were 146 publicly documented contamination events involving 42 countries on six continents (GRAIN 2008).

Photo 3.2 Discussion program organised on seed security issues



Source: Yamuna Ghale

Multinational companies claim they are producing ‘climate-ready’ seeds to help in achieving global food security. Global climate change has created both opportunities and challenges in the seed sector worldwide. It is observed that the resourceful multinational life science corporations such as BASF, Monsanto, Bayer, Syngenta, Dupont and Biotech partners have been advancing in new processes of gene and trait specific sequencing to respond the impacts of climate change. These corporations have filed 532 patent documents (a total of 55 patent families) on so-called “climate ready” genes at patent offices around the world. In the face of climate chaos and a deepening world food crisis, the “Gene Giants” are gearing up for patent rights offensive to re-brand themselves as climate saviors (ETC Group 2008). The focus on so-called climate-ready genes is a golden opportunity for these companies to push genetically engineered crops as a silver bullet solution to climate change. But the ETC Group (2008) claims that patented techno-fix seeds will

not provide the adaptation strategies that small farmers need to cope with climate change. According to the Human Development Report 2007/2008, “adaptation is ultimately about building the resilience of the world’s poor to a problem largely created by the world’s richest nations” (UNDP 2007). Therefore, “climate-ready” seeds may be a good recipe in the view of MNCs, but they overlook that these products are not necessarily responsive to the needs of poor in global south. In this context, the people in the mountain will suffer from the limited access to resources and technologies to cope with the challenges posed by global processes.

3.5 Safeguarding plant genetic resources for food security

The time has come to safeguard our biodiversity and maintain the ecosystem of the earth for the present and future. Seed is the major source of life and the basis to maintain the micro and macro ecosystems. Because of this multiple potential, the socio-political, economic, cultural, and environmental value of seed has to be promoted in the service of long-term interests rather than the fulfilment of short term greed. In this effort, there is an urgent need to refocus on global priorities towards the following objectives.

Objective 1: Partnership in research, development and technology transfer

The seed sector is a lucrative and sophisticated business. Every community and state needs a sophisticated system to promote the system of breeding, testing, certification, reproduction and distribution of seeds suitable for each micro-climatic region. It requires optimisation of opportunities for the small scale producers to promote diversified, stable and a micro-climate specific food basket. Therefore, global partnerships among resource-poor and resourceful countries, international financial institutions, and the private sector is a must for promoting research, development and transfer of technology to support the resource poor in the global south.

Objective 2: Protecting farmer's rights

A majority of the small farmers in the mountains of the developing countries who are both producers and consumers should have principal control over the production process from sowing to harvesting. However, farmers are losing their autonomy to secure their rights for saving and re-using seeds, for the application of indigenous knowledge to agriculture, for participation in decision making processes related to farming, and for obtaining compensation during times of crop failure. The package deal promoted by multinational seed firms has forced farmers to be dependent on the market for the source seed supply. Therefore, countries in the global south should be more vigilant, and lobby with like-minded alliances to enhance their representation of farmers' autonomy and rights.

Objective 3: National integrity to promote food sovereignty

Nepal has specific responsibilities to tap opportunities and mitigate negative implications brought on by corporate globalisation. National governments in the south need to reorient their agriculture and development plans with clear political vision formed in collaboration with farmers' organisations, civil society, private sectors, and other relevant partners. The policy of the government and its response mechanisms need to be reconstructed and strengthened, human capacities are to be enhanced and assessment of potentials of bio-prospects needs to be promoted ensuring the provision of prior informed consent and equitable share of benefits. The government agencies responsible for dealing with issues raised in this chapter have to ally with like-minded blocs at regional and international levels to safeguard national interest and to promote food sovereignty.

Objective 4: Dealing with global change and adaptation of agriculture systems

In the world of today, the poor in the global south are bearing a disproportionate burden of climate change. Climate change has larger and more visible implications on agricultural systems and food chains. Different studies have shown that climate change will

require both adaptation and mitigation processes. On this frontier, development, conservation and promotion of indigenous seeds, knowledge, and technologies will be of paramount importance to battling climate change. If not, poor and small farmers in the global south will pay the highest costs for climate change. Therefore, the most vulnerable communities in developing countries need assistance to adapt with climate changes and build local competence to mitigate negative implications.

3.6 Conclusions

In the past decade, the conflict between the multinational and transnational companies (MNCs/TNCs) and the local people in developing countries has become more intense due to the increasing control of the plant genetic resources by MNCs/TNCs at the cost of food security, indigenous knowledge, and rights of the local farmers. Though many voices are raised against monopolistic control of seed and plant genetic resources, MNCs have been able to resist stricter regulation of these products.

One of the important global instruments designed for the protection of bio-diversity and plant genetic resources is the Convention on Biological Diversity (CBD), but some of the provisions (e.g., 27.3b of TRIPs) of WTO and CBD [e.g., 8J (community rights on genetic resources)] conflict with other regulatory measures and thus weaken the overall effect the CBD could have.

Seed is the basis of people's livelihoods. However, the external seed market increases dependency, undermines local seed systems, erodes genetic diversity, and reduces options for poor and small farmers. Therefore, it is important for the policy makers to minimise the effects of MNCs's concentration on seed market

The indigenous seed management process is exacerbated by the IPR regime. IPRs allow MNCs to usurp and monopolise the development and production of seed through private property claims. Conserving seed is more than merely conserving germplasm. Conserving seeds is, in effect, conserving bio-diversity, seed knowledge, seed culture, and food system sustainability.

Globalisation is not only negatively affecting indigenous seed management systems, but also rapidly enhancing biopiracy of valuable PGRs from developing countries like Nepal. Hence, governments in developing countries like Nepal need a clear policy, strategy, and regulatory mechanisms to deal with this issue. Developing nation governments also need to have clear policy on biosafety measures for importing transgenic seed/materials and technologies.

As many scientists dispute the effectiveness of GM seeds, it is important to withhold in introducing them until clear evidence of their safety is available. It is important to establish mechanisms to assess the risks of external genetically modified seed with a specific focus on seed characteristics such as the biological and reproductive property of the parental organisms, the characteristics imparted by genetic modification, and the ecological consequences. In this way, farmers can make more informed decisions about using these seeds.

The national government has to analyse the potential negative impacts of TRIPs/WTO and develop coping mechanisms to ensure that farmers' rights and indigenous knowledge are protected as per the provisions of the CBD (i.e. Articles 8j, 10c, 17.2, and 18.4) and the International Undertaking on Plant Genetic Resources. The government must promote, support and facilitate traditional practices of saving, sharing, and exchanging seeds; and harvesting, cultivating, and using plants genetic resources.

References

- AA [Action Aid]. 1999. *The World Trade Organization and Food Security: Recommendations for Actions*. London: Action Aid.
- Adhikari R, Belbase N, Ghale Y. 2000. *Seed of Monopoly: Implications of TRIPS, Agreement on Nepal*. Kathmandu: Action Aid Nepal and Propublic.
- Bakshi A. 2003. Potential adverse health effects of genetically modified crops. *Journal of Toxicology and Environmental Health* 6: 211-225.
- Bernstein JA, Bernstein IL, Bucchini L, Goldman LR, Hamilton RG, Lehrer S, Rubin C, Sampson HA. 2003. Clinical and laboratory investigation

of allergy to genetically modified foods. *Environmental Health Perspectives* 111(8): 1114-1121.

- Chaudhary RP.** 1999. Intellectual Property Rights and Farmers Rights. Proceedings of the National Conference on Wild Relatives of Cultivated Plants in Nepal. June 2-4, 1999. Kathmandu: GEM-Nepal, pp 215-223.
- Cribb J.** 2010. *The Coming Famine: The Global Food Crisis and What We Can Do to Avoid It*. Los Angeles: University Of California Press.
- Cummins R.** 2010. Monsanto's poison pills for Haiti. The Huffington Post. Available at: http://www.huffingtonpost.com/ronnie-cummins/monsantos-poison-pills-fo_b_587340.html; retrieved on 12 February 2014.
- ESRE [Economic and Social Research Council].** 1999. The Politics of GM Food: Risks, Science and Public Trust. Global Environmental Change Programme. Special Briefing No 5, Oct. 1999, University of Sussex.
- ETC Group.** 2005. Global seed industry concentration, Issue no. 90.
- ETC Group.** 2008. Patenting the "Climate Genes" and capturing the climate agenda. Issue No. 99.
- Ghale Y.** 1998. The Ecological Dynamics of Low-External-Input Agriculture: A Case Study on Hill Farming in Nepal. MSc Thesis. Wageningen Agricultural University.
- Ghale Y.** 1999. Intellectual Property Rights, Bio-diversity and Food Security. Proceedings of the National Conference on Wild Relatives of Cultivated Plants in Nepal. June 2-4, 1999. GEM-Nepal, Kathmandu, pp 229-235.
- Ghale Y, Upreti BR.** 1999. Indigenous Knowledge and Food Security in Developing Countries: Opportunities and Challenges. A paper submitted to 16th Symposium of the International Farming Systems Association, 27-29 Nov. 2000 in Santiago, Chile.
- GRAIN [Genetic Resource Action International].** 2008. Seeds of passion. *Seedling-Biodiversity, Rights and Livelihood*. Barcelona: GRAIN.
- GRAIN [Genetic Resource Action International].** 1999. Seedling December 1999 Vol. 16, No 4. Genetic Resource Action International. Barcelona: GRAIN.
- Ho MW.** 1998. *Genetic Engineering Dream or Nightmare. The Brave New World of Bad Science and Big Business*. Parang: Third World Network.
- ISAAA [International Service for the Acquisition of Agri-biotech Applications].** 2007. Global status of commercialised biotech/GM crops: Brief 37. Manila: ISAAA.
- Melvin J.** 2008. Increased Oversight of GMO Crops Needed: Government. *Reuters*. Available at: <http://www.reuters.com/article/idUSTRE4B504R20081206>; retrieved 11 November 2010.
- Pimentel D, Raven P.** 2000. Bt Corn Pollen Impacts on Nontarget Lepidoptera: Assessment of Effects in Nature. *Proceedings of the National Academy of Sciences*. 97(15):8198-8199.

- Prakash CS.** 2005. Benefits of Biotechnology in Developing Countries. *Ag BioWorld*. Available at: <http://www.agbioworld.org/biotech-info/topics/dev-world/benefits.html>; retrieved on 12 February 2014.
- Rafi.** 2001. Globalisation, Inc.: Concentration of Corporate Power: The Unmentioned Agenda, *RAFI Communiqué*, I. 71 July/Aug 2001
- Randerson J.** 2008. Arpad Pusztai: Biological Divide. Available at: <http://www.guardian.co.uk/education/2008/jan/15/academicexperts.highereducationprofile>; retrieved 10 November 2010.
- RFSTE** [Research Foundation for Science, Technology and Ecology]. 2000. Fact Sheets: Genetically Modified Organisms. New Delhi: RFSTE.
- Shiva V.** 2005. *Globalization's New Wars: Seed, Water and Life Forms*, New Delhi: Women Unlimited
- Shiva V.** 2007a. *Manifestos on the Future of Food and Seed*. Editor. New Delhi: South End Press
- Shiva V.** 2007b. *Democratizing Biology: Reinventing Biology from a Feminist, Ecological and Third World Perspective*. New Delhi: Paradigm Publishers
- Shiva V, Ramprasad P, Hagde V, Krishnan O and Holla-Bhar R.** 1995. The Seed Keepers: Navdany. New Delhi: The Research Foundation for Science, Technology and Natural Resource Policy.
- Shivakoti GP, Ghale Y and Upreti BR.** 2005. The ecological dynamics of low external input agriculture: A case study of hill farming in a developing country. *The International Journal of Sustainable Development and World Ecology* 12(4): 385-397.
- UNDP [United Nations Development Programme].** 2007. *Human Development Report 2007/08, Fighting Climate change: Human solidarity in a divided world*. New York: UNDP.
- Wynberg R, van Niekerk J, Williams R, Mkhalipli L.** 2012. Policy Brief. Securing Farmers' Rights and Seed Sovereignty in South Africa. Capte Town: Biowatch South Africa and the Environmental Evaluation Unit, University of Cape Town.

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4.1 Introduction

4.1.1 Situating food insecurity in Nepal

The US government's Global Hunger and Food Security Initiative under its (Feed the Future programme) states that "two out of every three Nepalis suffer from food insecurity each year" providing an unfortunate, yet true, scenario of the country (Feed the Future 2013). In recent years, newspaper articles have covered issues related to insufficient food in certain areas of Nepal: children and vulnerable women going hungry, and the outbreak of disease in crops that lead to food insecurity in the long run. Moreover, media news and articles have also highlighted the government's commitment to ensuring food security in the country. Globally, Nepal ranks low in terms of food security: according to the Global Food Insecurity Index 2012 Nepal is 79th out of 105 countries. Among South Asian countries, Nepal is second last in terms of food security. This situation is compounded by global price hikes in terms of food accessibility and food distribution around the globe (AfDB 2012).

Today, the World Food Programme (WFP) estimates there are approximately 3.5 million people in Nepal (especially in rural areas) who suffer from severe food insecurity, out of which 410,000 live in the mid- and far-western hill and mountain regions of the country (WFP 2013). At the time of this writing, during the first six months of 2013, Nepal imported agricultural products worth Rs 59.07 billion, up from Rs 49 billion in 2012, while the exporting only Rs 13.26 billion (MoCS 2014). Some people argue that due rising population and dwindling production, exports will continue to drop, making

Nepal even more reliant on imports, especially cereal grains, from abroad (Parajuli 2006). This type of uneven exchange makes Nepal vulnerable to food insecurity.

The World Food Summit of 1995 defined food security as a state “when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life”.¹ This definition, used broadly by many organisations, is predicated upon three A’s: availability, accessibility and affordability (AfDB 2012). All three A’s must be satisfied to ensure food security.

The definition of “food security” has evolved over time. Initially, the World Bank (WB 1986) defined food security as no shortage of food, an interpretation that only considered the supply side of food and overlooked the demands and needs of the household unit and/or individual. More recent definition now understand and incorporate various factors of food production, which includes unexpected natural calamities, and individual level requirements based on gender and social differences. For example, Nanama and Frongillo (2012) demonstrate how gender influences food availability to girls and women living in rural areas. Similarly, Ghale and Bishokarma (2013) explore how geography connects with gender to create more intense food insecurity in the hill and mountain regions of Nepal when compared with the Terai region. Thus, geography and gender demonstrate how food security is more than a matter of improving food production.

4.1.2 Why is Nepal food insecure? Socio-cultural factors

Historically, Nepal has kept pace with food demands due to a largely agriculturally-based economy. However, global economic shifts in recent decades have intensified the influence of newly-appreciated factors on food, such as population growth, migration, diminishing interest in agriculture, introduction of new technologies, livelihoods diversification, and civil unrest.

¹ For detail see; www.fao.org/wfs/index_en.htm

Climate change has also had a dramatic effect on food production as monsoon, upon which so much Nepali agriculture depends, has also been altered. The WFP and Food and Agricultural Organisation (FAO) have noted the reduction of production in paddy, staple food for Nepalis, due to late monsoon in 2009/2010. The production of paddy declined to 40.2 million metric tons (11% decreases) from 2008/2009. The food price inflation over this period was, not surprisingly, was 17.8 per cent (2013).

Famine and drought as a result of changing climate patters in mid and far western regions are becoming common in Nepal. Research conducted with rural farmers has noted in rainfall patterns and fluctuations in temperature that have affected productivity (Syncott 2012). As well, there are many cases of shifts in rainfall timing that are complicating the growing seasons. With the change in temperatures, farmers need to anticipate new forms of crop disease coming to the area. Synnott has linked food security with climate change, and recommends immediate action toward devising adaptation and resilience strategies for “improving water management, diversifying cropping strategies, improving access to markets, or developing community insurance schemes” (Syncott 2012, p 23).

The case of cholera outburst in 2009 in Jajarkot and Rukum districts of Nepal is tangible evidence witnessed by millions of people – both inside and outside the country. Though the case were said to have caused by lack of proper water facilities, poverty and hunger were associated with it. Newspapers highlight on severe hunger induced in Dailekh District in mid-Western Development Region of Nepal in 2007. Hungry people became the victims of rotten and decayed rice which was supplied by the World Food Programme (WFP) to the District Food branch four years before the District Food branch dumped the stock. People, engraved by hunger, and ignorance collected the dumped and obsolete stock, thus falling victims of illness.

In the agriculture arena, various events and crisis took place in Nepal causing farmers distress. In 2006, the Nepal Agriculture Research Council (NARC) release of a particular species of rice which they termed 'loktantra' caused massive food insecurity since the crop did not yield any fruit.² Similar case – which is still an ongoing debate – took place in Nepal with maize crop not bearing any fruit, further leading to huge revolution in the country against Monsanto.

To this point, we have only mentioned physical factors that influence food security. There are a host of socio-cultural factors that also play a significant role.

a) Poverty and ownership: Poverty is a strong driver of food insecurity in Nepal. Ownership, particularly in terms of land is another cause for food insecurity in Nepal. About half of marginal farmers who rent land in Nepal live below the poverty line (FAO 2010). The range of poverty in Nepal varies based on its geographical features. For example, the hills and mountains situated in far- and mid-west Nepal are the poorest regions as people living below national poverty line accounts for 70 per cent of the population (CBS, WFP and WB 2006). The far- and mid-west have always been in the low ranks in terms of access due to geographical constraints, under nutrition, low literacy rate as compared to other regions. The history of land distribution in Nepal is a history of unequal distribution, land grabbing, and bonded labour. Data suggest that at the national level 47 per cent of households that own just 15 per cent of the total land, with average holding less than 0.5 hectares. By contrast, 5 per cent of Nepal's population owns 37 per cent of its land (FAO 2010, p 11). Such variation suggests that inequitable distribution of land rooted in historical inequalities is contributing to stratification in Nepal, including the ability of poor Nepalis to meet their basic needs such as food.

b) Diversification from agricultural to non-agricultural work: Agriculture currently comprises 39 per cent of Nepal's GDP a large

² For detail see national daily, The Kathmandu Post. "Time to Harvest". Published on 29 October 2011.

figure that masks the actual decrease in people's engagement with agricultural activities in the past few decades (MoAC, WFP and FAO 2009; Sanjel 2005). Such shifts have occurred largely due to migration and livelihood diversification, which has resulted in a decrease in productivity and barren lands. The largest section of migration is youth heading to the Middle East or southeast Asia for wage labor. The departure of male labour from rural households has intensified the severity of food insecurity. In the highlands of Nepal 75 per cent of households have male migrants. In men's absence, women have to manage the farmer along with all the other household responsibilities; as a result, agricultural productivity suffers. Occasionally, women will take up additional income-generating work either through agriculture, or by working as laborers or porters (OXFAM 2009). However, this added work does not make up for the absence of men in the field. Thapa (2011) argues that agricultural productivity lingers below 1 US\$ per labourer per day, which does not provide sufficient food for families nor sufficient food to markets for sale.

Moreover, youths in remote areas are not interested in taking up with farming and agriculture jobs. This can be supported well by the hyped labour migration of youths and men of the households to other countries. In most situations, the blame has been put at the government for not being able to provide employment opportunities; however, for a country whose major livelihood depends on agriculture, most of the employments are related to agriculture which people do not want to undertake. This is one of the many reasons why land across the country is left barren with no labour force to work on it. This already demonstrates an imbalance and incompatibility between people's choice and what is there from the supply side.

c) Socio-political Stability: The link between social and political stability and food security has been acutely felt in Nepal. For example, after signing the comprehensive peace agreement in 2006 (ending a decade-long civil war), five different governments took over in a span of six years. Though there was progress in several fields, such as addressing women's issues and Dalits empowerment

(Upreti et al. 2012), the frequent changes in government had a detrimental effect on food security, because each successive ruling party pursued its own interests and agenda, thus creating significant disjuncture and disruption in policy development.

Along with frequent turnover in government, Nepal is beset by several other associated political drivers, such as inadequate representation, corruption, transparency, conflict, and access to information. In this environment, the decade-long conflict negatively affected the flow of food in Nepal as both the government and Maoists attempted to restrict and enable food distribution in their efforts to win the conflict. Not only were individuals and families affected, but the obstructions also decreased food exports while making Nepal more reliant on expensive food imports (Seddon and Adhikari 2003). This had both political and social implications because the country's political scenario looked hopeless and people starved due to lack of food. Such practice then questioned the issue of accessibility and availability of food among the mass of people.

d) Geographical location: Food production and food security varies widely across Nepal depending on terrain and proximity to urban areas. About one-third of the nation's crop production comes from central region, by the eastern and western regions in Nepal. Not surprisingly, then, the western region suffers the most intense forms of food insecurity (CBS, WFP and WB, 2006; Regmi, 2007). Of the total land coverage in Nepal, only 16 per cent is agricultural (NPC 2010). Eight per cent of population lives in the mountainous region where they can produce only 3/4ths of what is required for daily consumption (ICIMOD 2011). It is estimated that households pursuing farming activities in the mountains would require 0.64 hectare of land to feed a family of 6 members, while the figure for this in the hills and Terai is 0.52 hectares and 0.42 hectares respectively (NPC 2010). As the average landholding in these rural areas is below 0.5 hectares, you can envision the problems they face in regard to food. Furthermore, the lack of infrastructure in the rural areas—roads, marketplaces—makes obtaining supplementary food and agricultural products difficult (Seddon and Adhikari 2003).

e) Inter-household or caste-based food intake and nutrition: Some studies have found that in times of food scarcity, women generally eat less food or are permitted to eat less (Messer 1997; Kakwani 1986). However, Gittlesohn et al. (1991) found no differences in the food distribution patterns between boys and girls. So this suggests that discrimination in terms of food is assigned to women who suffer low calorie and nutrient intake.

Caste and ethnicity also have a determining role in relation to food insecurity. A study on calculation of food intake by NPC (2013) demonstrates that Dalit groups residing in the Terai and hills consume less food compared to Brahmin ethnic groups. The same study also found that the average food insecurity indicator for Dalits and Janjatis was lowest amongst all the groups in Nepal.

NPC (2013) reveals that nearly half of the children in Nepal under five years suffer from under nutrition. Also 25 per cent of households do not have sufficient food to cover their dietary needs. The CBS (2010) provides evidence that the average dietary intake in kilocalories (kcal) in Nepal is 2,536 per capita per day and people in the rural areas have lower calorie intake than those in the urban areas. Another source tells us that people in rural areas have less access to food or have lower food consumption than people in urban areas and stunting is higher in the mountains and the hills (NPC 2013)

The debate about food insecurity in Nepal—its causes, coping mechanisms, and policy implications—is complex and potentially fractious. This is because food insecurity is multidimensional and cannot be addressed through any single or direct means. That being said, in the next section, we look at some food policy, practices and interventions that may hold promise for Nepal.

4.2 Food aid – Policies, practices and interventions

Nepali communities historically have an established practice of food aid—*dharma bhakari*—wherein the community establishes a central saving of grains to be used during crisis. But, for reasons noted in the previous section, this social structure has weakened over the years due to migration, conflict, and less available surplus food.

The government of Nepal is aware of the food security issues affecting the country. Debates on this topic play a central role in each party's agenda. As such, understanding the multivectoral causes of food security is a high priority item for the government. With assistance from non-governmental institutions, the government, we hope, will take some more direct steps to solving this problem. In this section, we review existing Nepali legislation on food issues, as well as non-governmental food aid policies and programmes.

4.2.1 Food security policies and participation in Nepal

The interim constitution of 2007 includes clauses related to food security concerns. Article 18 (3) of the interim constitution states, "Every citizen shall have the right to food sovereignty as provided by the law." Article 33 (h) notes that the state is responsible to 'pursue a policy establishing the rights of all citizens to education, health and food sovereignty.' In this context, food sovereignty should be interpreted to imply a freedom from food insecurity.

The right to food and associated issues first gained official notice in the United Nations Declaration of Human Rights (UNDHR) in 1948. These tenets of the UNHDR were subsequently reaffirmed in the Vienna Conference on Human Rights in 1993. Though these conferences were inclined mostly towards addressing human rights, food security and people's right to food were included as components of these rights. Similarly, the International Covenant on Economic, Social and Cultural Rights (ICESCR) in 1976, highlighted the issues of the right to food to insure freedom from hunger and malnutrition (KIRDARC 2011).

In Nepal, food security was incorporated openly in governing agendas for the first time ever in the 1980s, which cited food as an important component of national progress and security (Baidhya 2005). Since then, the country has been able to step forward onto international platforms, showing commitment to reducing poverty and eliminating hunger. Table 4.1 is a list of Nepal’s formal participation in international food-related programmes and charters.

Table 4.1 Nepal’s participation in food-related programmes

S.N.	Year	Event	Agenda
1	1990	World Summit for Children	Inclined towards forming nutrition-related goals for children
2	1992	International Conference for Nutrition	Child Summit Goals and called for elimination of death from famine.
3	1996	World Food Summit	Halving the number of hungry in 1992 by 2015
4	2000	UN General Assembly	Millennium Development Goals on reducing hunger
5	2002	The International Meeting of Finance for Development, in Monterrey, Mexico	Countries made financial and political commitment to MDGs
6	2002	The World Summit on Sustainable Development	Countries recommitted to MDG
7	2004	UN's Food and Agriculture Organization Council	Voluntary guidelines for the progressive realization of the right to adequate food
8	2007	14 th SAARC Summit for Food, New Delhi	Serve as regional food security reserve for SAARC nations but yet needs to become functional
9	2014	The first Nepal Economic Summit	One focus was on the agriculture reform agenda- giving incentives to private sector and ensuring food and nutrition security in the country by increasing production and productivity

Source: Adapted by authors from various sources, Baidhya (2005), Pradhan (2008), Sapkota (2011)

The Government of Nepal (GoN) has taken various steps to poverty and hunger on the policy and discursive levels. Various instruments have been ratified by the government such as Article 25 of the Universal Declaration of Human Rights (UDHR) and Article 27.3 of TRIPs, both of which, address indigenous communities and their right to access over resources through the International Labour Organisation (ILO) held in 2007 (Ghale and Bishokarma 2013). More ratifications have been made by the GoN which are implicitly associated with addressing the issues of food insecurity, such as linking it to land and agriculture related to food.

At the national level, GoN is committed to providing food security to the people of Nepal through policies that are both, implicitly and/or explicitly framed. During the 1970s, incorporating marginalized people into political agendas and policies related to access were framed (Adhikari and Bohle 1999). The Agricultural Perspective Plan (APP) introduced in 1995 as part of the Ninth Five-Year Plan (1997-2002) by the GoN with the help of Asian Development Bank (ADB) focuses on incremental improvement of food production in Nepal, with an aim to help marginal farmers (NPC 1995). Moreover, since the 1980s, GoN has been providing subsidies in transportation, to help food reach people in the food-deficit areas.³

4.2.2 Interventions

Foreign aid in Nepal began in the 1950s as multilateral and bilateral agencies such as WFP, ADB, WB, DFID and USAID began putting forth effort to address food insecurity. USAID's 'Feed the Future Initiative' is a recent example. This programme has focused on providing knowledge on improved farming techniques to 85,000 smallholder farmers in 26 remote districts affected by conflict. As well, "Feed the Future" also assists flood affected communities with farming improvement skills and provides marketing ideas for agricultural products, thus hoping to build capacity for 49,000 households in 20 hill districts to improve their production of maize.

³ For detail see the national daily, The Kathmandu Post. "Farmers get kick in the Teeth." Published on November 2010.

In 2013, WFP introduced its new programmes aimed at providing food security to people along with social protection and safety nets covering the areas of nutrition, livelihoods and education. Some of these programmes are targeting towards women and child nutrition, cash for work and asset creation and school meals. WFP mainly focuses on providing emergency food relief.

During 2007 and 2008, when unexpected price hikes severely affected food situation in Nepal, WFP responded to reduce potential risk associated with it. Additionally, other organisations such as The European Union (EU) Food Facility programmes became visible which were implemented by OXFAM and other similar organisations (WFP 2013). Programmes on food by EU were questioned for its lack of sustainability approach as it was operationalised for only two years. A survey by WFP on its programme, food for assets (FFA) in five districts – both qualitative and quantitative fieldwork - mentions that people who are very poor are highly hit by the price hikes in food and have not still recovered from shocks (ibid).

News highlight that a five years regional project with 1.95 million Euro, to improve food security governance by involving local farmer's and aiming to end hunger and malnutrition in a long run has been initiated under the funding of European Union (EU) and co-funded by Dan Church Aid (DCA). In Nepal, four districts Achham, Doti, Kailali and Banke have been chosen for implementation of this project. It aims to provide support to the marginalized farmers by encouraging their participation.⁴

Other prominent organisations such as OXFAM in Nepal have also been dedicating in providing support related to food in remote areas of Dailekh and Dadhedhura, which are considered as the poorest regions in Nepal. OXFAMs strategies are rather different from those adopted by other organisations, for it aims to make households independent of food aid and rather develop self sufficiency through other forms of support, such as producing own or increasing skills and livelihoods diversification (OXFAM 2011).

⁴ For detail see national daily, Republica. 'Food security project to help 24,000 households.' Published on 30 November 2013

Besides, support and implementation on food needs, Sapkota (2011) through his research argues that WFP focuses in addressing the emergency need while the other agencies focus on agriculture and production, and lacks attention from the government in other implementation work besides budget allocation for subsidies and irrigation projects across the country.

4.3 Challenges in addressing food insecurity in Nepal

Despite the government's commitment and various policies to reduce poverty and fight hunger, there is still a struggle to feed millions of hungry people in Nepal. The problem related to food insecurity in Nepal is complicated, since it is multidimensional.

Rural areas currently lack local representatives, which exacerbate the capacity of rural populations to agitate for better policy and programmes. Despite frequent news reports of people dying of hunger or striving for food, effective policy has yet to be implemented. Recent reports from Metro News (2013) states that Rs 600 million was demanded by the Nepal Food Corporation (NFC) to feed people in 23 food deficit districts, with rice. In response, the government allocated Rs 420 million but provided only Rs 300 million.

Lack of policing and law enforcement provides another challenge. For example, food distribution monopolies have been noted across the country. In Dailekh, local people blamed the lack of local political representation for the rice monopoly that affected the area. Stories such as NFC selling rice provided on subsidy due to increased demand have been reported by media and other sources.⁵ This led to public distress, especially for those poor who could not afford to buy food without subsidies.

There exists another, philosophical, challenge to addressing food security in Nepal. Most food aid involves direct food or in-kind transfers such as seeds and tools. Looking at the work of NFC and

⁵ For detail see national daily Republica. "Experts deliberate on food security issues". Published on 25 November 2013.

the WFP, OXFAM has speculated that current distribution practices may actually increase people's dependency on aid and induce greater expectations rather than encouraging rural populations to work or produce what they can in their lands.

With this question in mind, we suggest it would be good practice to develop a holistic view of food insecurity in a particular area before and then adapting to a need-based approach. For example, OXFAM trains farmers on new techniques, provides them with improved seeds that are drought resistant, and requires payment by community members to a seed bank. This combination of steps has been implemented successfully in Dailekh and Dadeldhura, two of the more food insecure districts in Nepal. Such practices, OXFAM believes, will lead to the practice of storing better seeds every season and encourage farmers to take up suitable crops in the face of current climate change. OXFAM has also established a Seed Management Committee (SMC) that is responsible for assessing the best seed from those farmers who store them, thus providing the best seed to be used for upcoming years (OXFAM 2011). Moreover, such practices have sown better results in utilizing the seeds and, in the long run, produced better seasonal crops every year.

Regardless of how thorough and effective an intervention might be, it is always a challenge to ensure that a programme reaches the most needy households. A survey conducted by the Nepal Centre for Contemporary Research (NCCR) in association with Secure Livelihoods Research Consortium (SLRC)⁶ reveals that institutions find it challenging to reach out to remote households because of time and human resource constraints.

Moreover, inflation across the country has led to despair among people who are not able to afford what they could in the past. On one hand, price hikes have affected the major cities while on

⁶ The SLRC is a six years project funded led by Overseas Development Institute (ODI), London. It aims to conduct research in livelihoods, basic services and social protection in the post conflict Nepal. NCCR is currently in its third year of SLRC project and has completed its first baseline survey in 3175 HH in Rolpa, Bardiya and Ilam districts of Nepal.

the other; production has gone wasted due to lack of access and proper marketing in the far rural areas. Moreover, inflation has challenged the Nepalis economy without generating any clue for improvement, further stressing that the inflation rate has exceeded 9 per cent in the past five years (ADB 2014). The faces of inflation in the form of rise in fuel price, low currency and low wages have massively affected Nepal's economy which shows indirect signs of food insecurity.

Programmes that focus on incentives or cash in-kind also hold some promise for addressing food security. Several of these types of programmes are already available in Nepal, such as the old age allowance for elderly people, widow allowance, food for work, food for education, and stipends for Dalit. Other research (Adato and Bassett 2009; Devereux et al. 2005; Samson et al. 2004) demonstrate that cash transfers contribute to fulfilling household's basics needs, health care, children's education and other needs. Help Age International (2009) found that the impact of old age allowance tends to successfully satisfy food needs. However, these programs are relatively new and other associated problems must be overcome. For example, Samson (2012) notes that the old age allowance of Rs 500 (\$6) per month in Nepal is a very small amount which cannot even meet monthly expenses. However, the old-age allowance has been recently increased from Rs 100 to Rs 500, which in the government's view was a tremendous increase.

4.4 Conclusion and discussion

The act of ensuring food security in Nepal is extremely difficult and full of challenges in today's context. However, this does not mean that reaching out to the poor and food insecure people is impossible. There is a lack of proper intervention on providing food for security or reducing hunger based on context (e.g., emergency-induced hunger v. structure-based hunger). In most cases, emergency responses have to be fulfilled with food and basic needs.

This is also the right time to question the existing modalities and effectiveness of the food-aid programs in Nepal. For example, if

we agree that inflation hits the poor the hardest by diminishing their ability to procure enough food, we need to ask where the government or foreign aid and humanitarian agencies can intervene to balance the needs of people. Also, if cash or in kind transfers provided by the government do not meet the basic food needs, then should donors make up that difference?

If access is a problem, and if geographical constraints can block food distribution, the question of how food can be taken to the poor in remote areas becomes important. Distributing food only in the district headquarters may only cover those poor who live in proximity.

Nepal also needs to continue question the priority of food security in Nepal. Policy makers need to think seriously about whether we want to be a strong nation in agriculture and agricultural production, or if we should adopt off-farm diversification as our primary source of livelihoods? Do we want to revive the agriculture sector? Is agriculture our priority? If reviving agriculture is not a priority, our concern is then to look at other options that can help the nation secure its food needs.

Remittance from migratory work has played a big role in fulfilling basic needs in many parts of Nepal. Is this a sustainable phenomenon? Should we be focusing more on proper governance of labour migration and boosting remittances rather than agriculture for income generation?

Evidences (See Upreti et al. 2012) show that after the conflict, donors started working with the local communities directly, rather than engaging the government as a mediator. Such practices have ensured better access based on the demand of people. However, as regards food related policies and programmes, it is still unclear whether the donors are directly investing at the local level or working by engaging with the government in a broader run. It is also evident from the past experiences that donors mostly tend to rely on the government for interventions which leaves a gap between the people's demand and the supply. The practice of monitoring is when certain projects run are rather weak.

In summary, it is clear that we have a huge demand for food and strong policies that ensure food security. Nepal needs a concrete plan to ensure access to food in all corners of the country. Without proper and strengthened access and supply, Nepal really cannot move forward to ensure food security in Nepal. It is crucial to examine the demands of people before supplying goods, except for emergency situations when the demands are obvious and high. Nepal's situation on food security is indeed extremely precarious. Had this issue of food security not been so serious, it would have not garnered the attention of such magnitude from global and national agencies.

References

- Adato M, Basset L.** 2008. What is the Potential of Cash Transfers to Strengthen Families Affected by HIV and AIDS? A Review of Evidence on Impacts and Key Policy Debates. Joint Learning Initiative on Children and HIV/AIDS (JLICA). Washington, DC: International Food Policy Research Institute.
- ADB [Asian Development Bank].** 2014. *The Asian Development Outlook 2014*. Kathmandu: ADB.
- Adhikari A, Bohle HG.** 1999. *Food Crisis in Nepal*. New Delhi: Adroit Publishers.
- AfDB [African Development Fund].** 2012. The Political Economy of Food Security in North Africa. Economic Brief.
- Baidhya, BG.** 2004. *Food security situation in Nepal*. The 6th Agricultural Research Development Forum General Meeting, Bangkok.
- CBS [Central Bureau of Statistics].** 2010. *Nepal Living Standard Survey 2010/2011*. Kathmandu: Central Bureau of Statistics.
- CBS [Central Bureau of Statistics], WFP [World Food Programme] and WB [World Bank].** 2006. Small Area Estimation of Poverty, Caloric Intake and Malnutrition in Nepal.
- Devereux S, Pelham L.** 2005. *Making Cash Count: Lessons from cash transfer schemes in east and southern Africa for supporting the most vulnerable children and households*. London: Save the Children UK, Help Age International, and University of Sussex, Brighton.
- FAO [Food and Agriculture Organisation].** 2010. Assessment of Food Security and Nutrition Situation in Nepal. Kathmandu: FAO Nepal.
- Feed the Future.** 2013. Nepal FTF Multi-Year Strategy. Kathmandu: Feed the Future Nepal.
- Ghale Y, Bishokarma N.** 2013. Food Security: A fundamental basis for human security. In: Upreti BR, Bhattra R, Wagle GR, editors. *Human Security*

in Nepal: Concepts, Issues and Challenges. Kathmandu: Nepal Institute for Policy Studies and South Asia Regional Coordination Office of NCCR (North-South), Pp 89-118.

- Gittelsohn J, Thapa M and Landman LT.** 1997. Cultural factors, caloric intake and micronutrient sufficiency in rural Nepali households. *Social Science and Medicine* 44(11):1739-1749.
- Help Age International.** 2009. The Universal Social Pension in Nepal: An assessment of its impact on older people in Tanahun District. London: Help Age International.
- ICIMOD [International Centre for Integrated Mountain Development].** 2011. New Reports Identify Impacts of Climate Change on World's Highest Mountains. Available at: www.icimod.org/?q=5934; Internet; retrieved on 28 October 2012.
- Kakwani N.** 1986. Is sex bias significant?’, Wider Working Paper-9, The World Institute for Development Economics Research, United Nation University, Finland.
- KIRDARC [Karnali Integrated Rural Development and Research Center].** 2011. Right to Food: Role of Media. Report on National Workshop, 2011. Karnali Integrated Rural Development and Research Center, Nepal.
- Messer E.** 1997. Intra-household allocation of food and health care: current findings and understandings—introduction. *Social Science & Medicine* 44(11): 1675-84.
- Metro News.** 2013. Rs 480 millions on food supply to deficit areas in Nepal. Available at: <http://66.7.193.115/news/rs-480-million-on-food-supply-to-deficit-areas-in-nepal>; retrieved on 24 March 2014.
- MoAC [Ministry of Agricultural Cooperatives], WFP [World Food Programme] and FAO [Food and Agriculture Organisation].** 2009. Crop and Food Security Assessment: 2008/09 Winter Drought in Nepal, Joint Assessment Report – May 2009. Kathmandu: MoAC, WFP and FAO.
- MoCS [Ministry of Commerce and Supplies].** 2014. Trade and Export Promotion Centre. Available at: http://www.tepc.gov.np/tepc_pub/; retrieved on 10 March 2014.
- Nanama S, Frongillo EA.** 2012. Women’s rank modifies the relationship between household and women’s food insecurity in complex households in northern Burkina Faso. *Food Policy* (37), pp. 217–225.
- NPC [National Planning Commission].** 1995. *Agriculture Perspective Plan*. Kathmandu: NPC.
- NPC [National Planning Commission].** 2010. *Millennium Development Goals: Progress Report, 2010*. National Planning Commission and United Nation Development Programme.
- NPC [National Planning Commission].** 2013. *Nepal thematic Report on Food Security and Nutrition*. Kathmandu: NPC.

- OXFAM.** 2011. *Improving Food Security for Vulnerable Communities in Nepal*. Kathmandu/London: OXFAM.
- OXFAM.** 2009. Even the Himalayas Have Stopped Smiling: Climate Change, Poverty, and Adaptation in Nepal. Available at; <http://www.oxfam.org/sites/www.oxfam.org/files/nepal-climate-change-poverty-adaptation-0908.pdf>; Internet; retrieved on 1 March 2014.
- Parajuli R.** 2006. Food insecurity, a threat to Nepal. Available at: www.fao.org, retrieved on 1 May 2013.
- Pradhan G.** 2008. The Kathmandu Post. Jaws of Hunger and Right to Food. Available at: http://202.166.193.40/the-kathmandu-post/2008/07/29/related_articles/jaws-of-hunger-and-right-to-food/155074.html; retrieved on 2 May 2013.
- Regmi HR.** 2007. Effect of unusual weather on cereal crops production and household food security. *The Journal of Agriculture and Environment* 8: 20-29.
- Samson M, Lee U, Ndlebe A, Mac Quene K, Niekerk van I, Gandhi V, Harigaya T and Abrahams C.** 2004. The Social and Economic Impact of South Africa's Social Security System. Cape Town: Finance and Economics Directorate, Department of Social Development, EPRI.
- Samson M.** 2012. Nepal's Senior Citizens' Allowance: A Model of Universalism in a Low-Income Country Context. In: Handayani SW, Babajanian B, editors. *Social Protection for Older Persons: Social Pensions in Asia*. Manila: Asian Development Bank.
- Sanjel N.** 2005. *PARYAWARAN: Disaster Management Special. Status of Agriculture production and Food security in Nepal*. ECO-Nepal, Paryawaran monthly, volume 13, Additional issue, June.
- Sapkota C.** 2011. Food Security and Aid in Nepal. AAMN Research and Policy Brief: 05. Kathmandu: Alliance for Aid Monitor Nepal.
- Seddon D, Adhikari J.** 2003. Conflict and Food Security in Nepal. A preliminary Analysis. Kathmandu: Rural Reconstruction Nepal.
- Synnott P.** 2012. Climate Change, Agriculture and Food Security in Nepal: Developing Adaptation Strategies and Cultivating Resilience.
- Thapa YB.** 2011. Right to food and food security in the changing context. In: Pyakurel KN, Upreti BR, editors. *Land, Agriculture and Agrarian Transformation*. Kathmandu: COLARP, pp 201-230.
- Upreti BR, KC Sony, Mallet R and Babajanian B.** 2012. *Livelihoods, Basic Services and Social Protection in Nepal*. An ODI-SLRC Working Paper. London: Secure Livelihoods Research Consortium at Overseas Development Institute (ODI).
- WFP[World Food Programme].** 2013. Evaluation of the Impact of Food for Assets on Livelihood Resilience in Nepal. Evaluation Report. Kathmandu: WFP, Nepal.

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5.1 Introduction

This chapter focuses on the gender equality issues as regarding food security concerns. When it comes to food security, girls and women are often the most affected groups. As such, any attempt to address food insecurity must necessarily include a consideration of how gender relates to food available and access. Examining the food system through a gender equality lens is crucial to understanding the structural causes and possible ways forward to ensure equal rights, entitlements, needs, and choices about food. Therefore, chapter examines the discrimination and power relations that influence food security in Nepal, as well as the national and international instruments that are being employed to address those issues.

5.2 Rights, entitlements, needs, and choices of girls and women

Basic rights and entitlements are the same for all people irrespective of gender, race, religion, age, geographical location, or society. Therefore, human rights related provisions enshrined in the international instruments are principally abided by the United Nations (UN) member states through different policies, institutions and implementation procedures.¹ Many international and national instruments have complimentary provisions in support of girls and women that recognize their special needs. Despite these

¹ Girls are foreseen as future mothers and therefore special attention is needed from the beginning of their existence. Hence, girls are included as separate and special category in this chapter. Similarly, the paper has emphasized to women as part of gender analysis as women are most affected from all dimensions of food security viz the availability, access, utilization and stability.

instruments in place, differentiated gender relations persist in every society. Power relations are skewed at many levels (individual and societal) and influenced by specific social, economic, and cultural contexts that shape gender-based roles and responsibilities. On top of that, certain customary rights practiced by different communities further support gender based discriminations. For example, one common phrase in Nepal says: “*chhora paye khasi, chhori paye pharsi*”, (woman giving birth to a baby boy is entitled to have mutton where as having baby girl has to eat pumpkin). Such proverbs demonstrate the tradition of discrimination enshrined in tradition. The cumulative effect of such beliefs, understandings, and practices perpetuate gender-based discriminations. Therefore, the inter-personal relationships within family and society, especially in the developing world, remain very much governed by patriarchal values, norms, and practices.

Addressing gender based discriminations requires empowerment of girls and women themselves as rights holders (Ghale 2008). Empowerment for the purpose of this chapter is conceptualized as both the process and result of self-realization of power-within, which is thereby mobilized to procure acceptance by others to make best use of the potential talents and competence for women’s overall human development, which, for our purposes, includes the cause of food insecurity.

It is widely observed that the recognition of equal rights of girls and women to enjoy their life as dignified human beings is still not receiving adequate attention (CWGL 2011). The discrimination against women and girls is very much rooted in the patriarchal power relations, which allow for and, in some cases codify, particular societal values, beliefs, and practices (Ghale 2008). In such circumstances, there is an important need for the State to intervene so as to establish, respect, protect, and promote women’s and girls’ rights with the required set of legal and institutional norms to enact a transformation. Once equal rights are supported by the appropriate legal instruments, the institutions and behaviours of the people can be modified accordingly. Though free societies are still realizing the many aspects of gender inequality, much progress has been made in the last century. Food is one more way to strengthen the push for true gender equality, and as such, it is

important to understand the different concepts such as the right to food, food sovereignty, food security, food sufficiency, and hunger to contextualise the food system debate (See box 5.1).

Box 5.1 Basic concepts around food

Right to Food: right of everyone free from hunger as a basic human rights, where the State as duty bearer has certain obligations to ensure the rights,

Food Sovereignty: asserting the rights of people over food systems,

Food security: all people have access to quality food all the time,

Food sufficiency: feed the population from its own production,

Hunger: form of perpetuated situation that can lead to starvation if the situation is not managed properly and on time.

Source: Compiled by author from different sources FAO (2006 a; 2006b; 2004; 2013), Prugli et al. (2012)

5.3 Discriminations against girls and women

Discrimination remains pervasive throughout all spheres. Certain forms of discrimination are general and mainly perpetuated based on sex based identity. However, some other forms of discrimination are very much contextual and differ according to the class, caste, religion and customary practices. The general forms of discrimination in most cases are visible, and can be readily addressed with human rights instruments and other means. However, some gender-based discrimination is localized and covered-up under the names of customary practices or societal norms, values, and culture.

For example, according to the culture of Paschimchauki area of the Doti district of Nepal, the birth of first baby boy is celebrated by the family and community by organizing a feast and procession, but this does not take place for a baby girl.² Though this example is symbolic, it represents the general devaluation of girls in that culture. Furthermore, mothers of infant girls are made to feel inadequate for having girls and not boys. Situations such as this can negatively impact the mother's health and directly affect the quality

² For details see national daily, The Kantipur Daily. "Santan ma Bibhed". Published on 18 January 2014.

of breast-feeding to the baby girl. It also hampers the psychological well-being of mother as such practices challenge her position, rights, and dignity. Such practices enforce a process of subjugation to both baby girl and the mother. Consequently, the entitlement of the baby girl is curtailed from the beginning of her existence. From this point, women and girls face challenges from society. So it must be seen as even more degrading that despite these discriminations, women and girls are still expected to perform equally to boys and men. How can girls and women without proper acceptance of their identity and adequate investment to enhance their abilities contribute to larger economic, political and social objectives? Some of the pertinent questions to be asked in this context;

- Why are sex-based abortions still practiced? Doesn't the girl have the right to birth and enjoy her existence? Who are the actual perpetrators who force women to have sex-biased abortions? Who cares for the psychological well-being of pregnant women forced to have an abortion? Who conducts such abortions?
- Why are girls more often sent to public while boys are sent to English medium schools?
- Why are girls pulled from school during labour shortages around the house?
- Why do women have to compromise the quantity and quality of their food intake when food is scarce?
- Right to be valued equally for their contributions?
- Why do women in situations of different food requirements receive the same quality food during emergency and disasters? Don't women during pregnancy and lactation have the right to eat better quality food for improved breastfeeding?
- Why do women in the time of famine have to compromise the need to save seed for next season and thus sacrifice the food insecurity situation of the family? Isn't there a role of the state as rights bearer to facilitate immediate food

supply and seed for next season?

- Why are women not ensured to equal employment and income and control over their assets and resources? Don't women have the right to enjoy those rights as men do?
- Why do the widows and children of HIV/AIDs affected men get pushed away from home by the family members? Doesn't the family have responsibility to provide treatment to their son and ensure protection for his family after he is deceased?
- Why women are questioned for their performance without making meaningful investment in their abilities?
- Why are women questioned about the decline in land and labour productivity while men -migrate?
- Why is women's mobility scrutinized when they attempt to explore off-farm opportunities for income?
- Are there any structural reforms that would support women's legal ownership of land, access to production inputs such as seeds, breeds, fertilizers, irrigation, technologies, knowledge, and skills to gain more from per unit of land and labour?
- Why are women most responsible for agricultural tasks but still not fully recognized as farmers? Why there is still a need to address women as 'female farmers'?
- Has there been any specialised knowledge or technology provided to women to better utilize the foods available from domesticated cultivation and/or collected from wild sources?
- Do any state authorities realize the impact of food price hikes on women who manage family food systems? Don't women want to have better choices while preparing food for her family according to the age, health, and individual taste?
- Has any political party manifesto explicitly addressed how to improve the food governance system specifically with

regard to gender and production relations?

- Have any research institutes and universities systematically mapped of family needs in female-headed households?
- Has any private sector focus on women-friendly production, post-harvest management and food processing related investments?
- Do development-related service providers have a basic understanding of food governance systems? Do they address food related challenges to both rural and urban women? Are they sensitive enough to establish gender-responsive programmes, monitoring systems, and policy feedback loops? Do the policy analysts consciously consider women-responsive indicators in their analyses and respective response mechanisms?

These are some of the pertinent questions to consider while discussing gender dimensions of food security in Nepal. Natural (e.g., flood) and human-induced (e.g., conflict) calamity can intersect with food issues to exacerbate the conditions. Such situations also affect their rights and access on many other different basic need levels.

Box 5.2 Case study

Kausi Devi Acharya – 35, single woman who was infected with HIV/AIDS by her husband who contracted it during migrant labor in India: *“My husband had gone to Bombay, India to earn money due because we cannot grow enough food on our land. I expected him to bring home money but instead he brought the dreadful incurable disease HIV/AIDS. My husband died eight years ago due to HIV/AIDS. It’s been three years that I am suffering from this terrible disease. After my husband’s death I am living with my maternal family. I am facing discriminatory behaviour from my in-laws. I was thrown out of my husband’s home and have been barred from access to any type of family property. I have ten years old son, but my in-laws restrict me from meeting him or living with him. It’s only sometimes that I get to see him and talk to him. I want my son to study. I have pleaded with my in-laws for this, but they have not responded. I don’t have land to cultivate; I cannot do any labour work due to ill health and cannot feed myself. Sometimes, I don’t have the minimum food required to eat before taking my ARV medicine and sometimes I just take it with plain water”.*

Source: FIAN (2010)

Some of the general forms of discrimination and violence that can have an impact on food security are elaborated in the Table 5.1.

Table 5.1 How discrimination impacts food security situations

Form of discrimination	Root causes	Impact on food security
Access to and control over resources	Patriarchal norms, values, systems, institutions and practices	<p>Women as managers of the food security for the family are forced to rely on limited allocated amount of total household income. Limited investment often leads to compromise on what and how much to cook and feed the family</p> <p>Women most often need to rely on final decisions from me (e.g., which crop and variety to grow for family feed and for market)</p> <p>The services pertaining to production improvement are linked to the land-ownership which most often does not include women in the program planning, implementation, monitoring, and policy-making processes as actual farmer,</p> <p>Women psychologically withdraw when they have to compromise on what to cook, how to cook, when to cook, how much to cook, and who to feed what according to the health/age needs.</p>
Distribution of family and societal responsibilities	Deep rooted cultural and societal values, norms and practices	<p>Girls and women assume household responsibility not by choice, but as requirement which most often precludes other opportunities such as going for distance education, training, exposure, marketing, socialization etc.</p> <p>Girls in many cases are forced to assume tasks as expected by their in-laws, but not encouraged to pursue opportunities for their own growth,</p> <p>Women deprive themselves of basic dietary requirements in order to satisfy men and boys first</p> <p>Girls and women are expected to undertake pre-defined tasks and expected to perform equally, if not better. However, they are not given opportunities to enhance these abilities through education, knowledge, and food management skills</p>

<p>Political representation and voices</p>	<p>Patriarchal value system led policies, structures and behaviours</p>	<p>Legislative, judicial, and executive processes remain either gender-blind or gender-neutral regarding food governance issues, The food governance system is primarily managed by the market without women’s participation. This leads to monopolization of the resources by those who do not know hearts and minds related to food deals, Planning and monitoring of local and national level food discourses without women’s participation ignore the reality checks that can inform about actual need in particular communities of certain geography. This leads to poor policy-making.</p>
<p>Restriction on and scrutinizing mobility</p>	<p>Cultural behaviour and state of impunity</p>	<p>Girls and women have fewer opportunities to move freely to access food (e.g., collecting food from forest or far-away jungle), Women and girls withdraw psychologically on how to manage their time, including preparation of food and building social capitals, Women occasionally are forced to pay more to the local retailers as their access to distance market is restricted.</p>
<p>Access to equal employment and income opportunities</p>	<p>Dis-criminatory policies, institutions and practices</p>	<p>Girls are more often withdrawn from schools to assist in household work and thus lose competitiveness in the job market, Competitive job markets often do not count safety measures as an investment opportunity. Thus, girls and women are often forced to work in unsafe situations: night shift assignments, male-dominated, and closed environments, In many cases, women are paid less for equal work, Women are judged for their performances irrespective of their gender, Affirmative action provisions are not applied even throughout the job market, Assurance of safe working environment and accepting women’s leadership is still a challenge.</p>

Access to safe food and shelter	Weak State and Psyche of denial	Food alone is not sufficient. Nutrition is also a concern, The minimum quality standard set for food has yet to be realised in Nepal, Men who migrate for income, leave behind families with compromised safety and women are forced to work harder,
Valuing care economy	System error/fault	Women’s household and caring work is undervalued in economic terms and this affects morale. Such under-recognition gives the impression of sub-ordination and is promoted to younger people in that family
Access to special care	Psyche of denial	Women have specific gender needs such as menstruation and pregnancy; this calls for adjustments in their access to and composition of nutrition

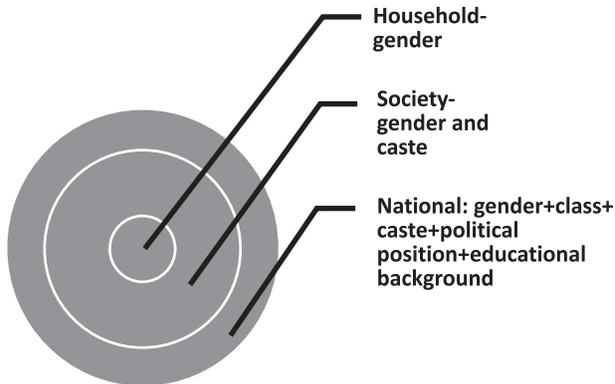
Source: Developed by author

5.4 Gender justice matters

Numerous cases which exhibit the pains of women with the denial of their rights to food, dignified livelihoods options, better employment and income opportunities, having technological skills, recognition of sharing of family responsibilities can be observed in different parts of the country, where the government responses to support the abandoned citizens are not yet adequate. Among many other forms, gender-based discrimination remains pervasive and perpetuated irrespective of class, caste, and other variables (Ghale 2008; WFP 2009; ADB et al. 2011; FIAN 2011). The nature and form of discrimination intensifies and grows more complex when girls and women search for opportunities beyond the household responsibilities. For an example, a *dalit* girl or a woman suffers from gender-based discrimination within the family. When they come out of household to pursue out-of-home opportunities, they face caste-based discrimination from the community. When women cross certain boundaries mentioned above, they have to face multiple and intersecting discriminations in the name of gender, caste, class, educational background, and place of their origin. In a nutshell, the space for girls and women is very much determined

by a hierarchical order that obstructs the normal process of career growth. Consequently, discrimination systematically undermines women's growth potential and prevents them from contributing their best to society. Figure 5.1 depicts levels of discriminations girls and women are facing as they aspire for upward mobility.

Figure 5.1 Multiplicity of discriminations



Source: Designed by author

Though all girls and women suffer from gender discrimination, the degree and nature differs, as does the individual capacity to deal with the consequences in the given context (FIAN 2011; CWLG 2011; WFP 2009). Figure 5.1 shows how the gender justice remains necessary to enable for upward growth for women. In this vein, there are many best cases where the positive impacts of equitable gender relations have been documented, shared and promoted in many parts of the country.

Gender justice is not a simple process: it requires diversified interventions and multiple approaches at different levels. Therefore, a deeper understanding of the context and the root causes of such discrimination require dealing with related systems, policies, and practices (Ghale and Bishokarma 2013). Generic application of classical measures would not be adequate to address gender justice issues and challenges.

5.5 Power relations governing food system: Participation, voice and rules of the game

The right to food is a fundamental right: life cannot exist without food. In the context of multi-faceted discrimination, establishing equitable production relations and ensuring access to production resources, employment, and income opportunities are major determinants in defining a gender-responsive food system (ADB et al. 2011). Historically, women are given the task of managing the family food and thus it is crucial to understand, analyse, discuss and devise common efforts to ensure rights of women and her family to be free from hunger.³ However, this does not mean that women should alone have responsibility for household food security assurance. It should be a shared responsibility. So we must consider if how the given roles and responsibilities can be challenged and shared more equitably.

The above scenario shows that various forms of discriminations related to enjoyment of right to food can be addressed with a deeper understanding of structural causes that exist in the system. Since the right to food is a political issue, the following elements are necessary to understand a holistic perspective related to gender and food security;

- a) **Democracy:** for the purpose of this chapter, democracy is interpreted as a process that respects and operationalises the principle of participation, equality, and human rights to ensure girls' and women's rights over food.
- b) **Governance:** governance in the context of this chapter is a system wherein action, power, and performances are guided by set of rules to ensure accountability, transparency, responsiveness, equality, and inclusiveness of all including the girls and women in the food system.

³ Hunger is the form of structural discrimination and perpetual impact at human's physical, social, economic, culture and psychological well beings. Hunger denotes the situation of helplessness, humiliation and frustration not being able to enjoy very fundamental universal rights. Hunger in the form of acute and chronic situation are to be understood very critically from the gender lens.

- c) Sovereignty:** the term literally connotes a “supreme power.” The term “food sovereignty” was first coined by a global movement of peasants (i.e., La Via Campesina) in 1996 to assert the rights of people over food systems. Therefore, girls and women, as one of the key actors, should remain at the centre of decisions related to food systems and policies, rather than corporations and market institutions that currently dominate the global food system.
- d) Empowerment:** empowerment refers to the capacity of girls and women to understand, analyze, contribute, and challenge the system so as to ensure their rights over food. Among the different forms of empowerment, one of the most critical aspects is a psychological health, which is often ignored in the food debate. Different aspects related to the above doctrines and their relations with food security are presented in the following paragraphs.

When a food governance system is insensitive, weak, or gender blind, it causes several social, political, economic, and psychological mal-factors to women and girls.

In the broader context, food governance is also related to land governance as land is the basis for the food production and touches upon women’s access to and legal right to own land. However, in Nepal land ownership is still highly skewed and discriminatory and not used as tool for structural transformation and sustained empowerment.

5.5.1 Valuing psychological wellbeing: Neglected dimension of food security

Psychological well-being is considered as the state of mind of girls and women in how they perceive food security while they are dealing with availability, access, utilisation, and stability of food within their roles as food managers.

The Food and Agriculture Organization (FAO) defines food security as a situation when every individual has physical and economic

access to sufficient, safe, quality, and nutritious food every day to meet their dietary needs for an active and healthy life (FAO 2004; 2006b; 2012) This definition includes four major aspects of food security: availability, access, utilization and stability. Many civil society groups advocate for consideration of cultural values of food as an important aspect of different castes, ethnicities, and religions. Indigenous communities, for example, have traditions of obtaining food from natural resources, such as forest and water (Shivakoti et al. 2005; Upreti and Ghale 2002). However, the psychological well-being of girls and women in relation to food by making special reference to international and national provisions needs further informed debate.

In most developing countries like Nepal, rampant poverty and discrimination limits food to disadvantaged communities like the land-poor, land-less, self-employed small farmers, and urban poor (Ghale and Bishokarma 2013). For these groups, food becomes a mere intake to fulfill the daily requirement for physical labour to sustain their lives. The specific requirements of a diversified food basket with the right balance of nutrition, portion size, and timeliness remains a far hope. Furthermore, during situations of human-induced emergency or natural hazards.

Increasingly, the dominance of a market-based food system has shifted power from producers to the market actors, enabling them to consolidate power over seeds, indigenous knowledge, and overall productive functions, where women have historical competence. The increasing role of the market in food system management forces women to compromise their daily food management. In some parts of Nepal, girls are pulled from school to provide extra labour to earn more money for food. Women sell their personal assets, purchase poor quality food, or prepare one meal a day to make ends meet. Additionally, the increasing concentration of land by multinational companies has pushed small-holders and growers like women to become agriculture wage labourers as their small plots are forced into mono-crop production as required by the market system (Locher et al. 2012). The trend also creates pressure on land right movements as how to establish and secure

tenure rights for women. The increasing trend of soaring food prices, land consolidation, and unforeseen climate changes further exacerbates the vulnerability of women. Increasing out-migration of men for additional income often are infected with diseases like HIV and AIDS. Once the infected men die, the wife and children are pushed out of home by the family without their share of property and resources (Subba and Singh 2010).

Figure 5.2 Inter-connectedness of psychological wellbeing with socio-cultural, economic and political aspects of empowerment of girls and women



Source: Developed by author

Whatever the causes that governs the food system that cause directly and or indirectly affects women's psychological well-being. The picture below depicts how the psychological well-being relates to the empowerment of girls and women to manage the

food system. The State of Food Insecurity Report 2013 of the FAO highlights that in many countries small holders, mainly women, face constraints in saving and investing in their farms. As a result, these women may need special support to overcome these barriers (FAO 2013). Therefore, it is important to consider the psychological well-being of women and girls for whom the response mechanisms can be created with legal and moral obligations. Following section will discuss on those instruments.

5.5.2 International instruments

There are important international instruments that specifically mention food security as a fundamental human right. “Nepal has ratified as many as sixteen international human rights instruments, including international conventions and covenants on women (United Nations [UN] Convention on the Elimination of Discrimination against Women, Beijing Platform of Action), child rights (UN Convention on the Rights of the Child), indigenous people’s rights (ILO Convention 169), and racial discrimination (UN Convention on the Elimination of Racial Discrimination). It has committed to international agreements on targets (Millennium Development Goals) set for women’s empowerment, education, drinking water, sanitation, health, hunger and poverty. Nepal has also agreed to UN Security Council Resolution 1325 that establishes legal standards governing the protection of women during conflict, their participation in peace and security processes, and their protection against multiple forms of violence” (ADB, DFID and WB 2011, p 19).

Table 5.2 Summarises the main instruments that address women and food

International Instruments	Provisions related to food system
Universal Declaration of Human Rights (UDHR), 1948	Article 25: everyone has the right to food, shelter and clothing rights as a fundamental human right
International Covenant on Economic Social Cultural Rights (ICESCR), 1966	Fundamental right of everyone to be free from hunger. General Comment 12 further elaborates that states shall respect, protect, and fulfil the right to food, including obligations to facilitate food production and provide food, respect existing access to food, and ensure that companies or individuals do not block adequate access to food.
Child Rights Convention (CRC), 1989	Article 2: non-discrimination irrespective of sex and culture
Convention to Eliminate all forms of Discriminations Against Women (CEDAW), 1979	Article 11.1d: The right to equal remuneration, including benefits, and to equal treatment in respect of work of equal value, as well as equality of treatment in the evaluation of the quality of work; Article 14.2g: access to agricultural credit and loans, marketing facilities, appropriate technology, and equal treatment in land and agrarian reform as well as in land resettlement schemes.
FAO guidelines on food security	<p>Right to food</p> <p>Article 2.5: pursue inclusive, non-discriminatory, and sound economic, agriculture, fisheries, forestry, land-use, and, as appropriate, land-reform policies, all of which will permit farmers, fishers, foresters and other food producers, particularly women.</p> <p>Article 3.5: integrating into their poverty reduction strategy a human rights perspective based on the principle of non-discrimination.</p> <p>Article 3.9: define strategies to take into account the special needs of girls and women, combine short-term and long-term objectives.</p> <p>Article 7.4: strengthening the domestic law and policies to accord access by women heads of households to poverty reduction and nutrition security programmes and projects.</p>

	<p>Article 8.3: attention to the specific access problems of women and of vulnerable, marginalized and traditionally disadvantaged groups, including all persons affected by HIV/AIDS. States should take measures to protect all people affected by HIV/AIDS from losing their access to resources and assets.</p> <p>Article 8.4: promote agricultural research and development, in particular to promote basic food production with its positive effects on basic income and its benefits to small and women farmers as well as poor consumers.</p> <p>Article 8.10: take measures to promote and protect the security of land tenure, especially with respect to women.</p> <p>Article 10.10: establish methods for promoting food safety, positive nutritional intake including fair distribution of food within communities and households with special emphasis on the needs and rights of both girls and boys, as well as pregnant women and lactating mothers, in all cultures.</p> <p>Article 17.5: monitor the food security situation of vulnerable groups, especially women, children and the elderly, and their nutritional status, including the prevalence of micronutrient deficiencies.</p>
	<p>Right to land, 2012</p> <p>Article 3: equitable tenure rights and access to land, fisheries and forests, for all, women and men.</p> <p>Article 4: ensure that women and girls have equal tenure rights and access to land, fisheries and forests independent of their civil and marital status.</p> <p>Article 4.6: ensure equal tenure rights for women and men, including the right to inherit and bequeath these rights.</p> <p>Article 5.4: take measures to ensure that legal and policy frameworks provide adequate protection for women and that laws that recognize women's tenure rights are implemented and enforced.</p>

	<p>Article 5.5: develop relevant policies, laws and procedures through participatory processes involving all affected parties, ensuring that both men and women are included from the outset with gender sensitive approaches.</p> <p>Article 15.6: ensure equal treatment of men and women in redistributive reforms.</p> <p>Article 15.10: monitor and evaluate the outcomes of redistributive reform programmes on impacts on access to land and food security to men and women.</p> <p>Article 23.2: strive to prepare and implement strategies and actions in consultation and with the participation of all people, women and men.</p>
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Source: Compiled by author from different sources FAO (2004; 2006a; 2006b; 2012; 2013), CWGL (2013), FIAN (2011), WFP (2009), Adhikari et al. (2000), Bhandari et al. (2005)

5.6 Time to demystify some myths

Myth 1

Agriculture lands remain fallow as men out-migrate

Historically, women have managed a majority of agricultural tasks and perform this work even better in many areas such as seed selection and saving, resource management, and developing management skills. Since the mobility and migration of women is constrained and they



Source: HMRP, CIMMYT

lack additional help in the fields, they tend to utilise the available productive lands more intensively and efficiently. Hence, migration has brought an opportunity to transform the sector by promoting land tenure and management for women, and by providing

improved knowledge and skills to women as managers, not only cultivators.

Myth 2

Agriculture productivity declines as the sector goes in hands of women

In many cases, women can manage farms with higher productivity when they are given control over production resources and equipped with adequate services and inputs. It is important to examine the input and output ratio in farms managed by men and women before generalizing



Source: HMRP, CIMMYT

that farms managed by women are less productive. Expectation of better performance without adequate investment cannot be justified.

Myth 3

Adoption of technologies needs higher education and knowledge



Source: VSP, CEAPRED

There is a general understanding that technological innovations and the adoption of these tools correlates with a higher level of education and knowledge. However, in many cases women with little exposure to formal education and training manage important agricultural tasks

such as quality seed selection. Therefore, rather than challenge women's ability to manage new inputs, it is time to invest in girl's

education to so that they may succeed in agriculture by securing their space in technological choice and development.

Myth 4

Increase in women's workload is mainly due to due to additional jobs created through income generating activities

There is a general statement that many development activities have increased the workload of women. As well, household work that is believed to be the responsibility of women (e.g., child care) also adds to women's daily responsibilities. But these burdens should not be seen as reason to not include women in agricultural planning and development. Many women, in our research, report that they welcome the additional workload for the opportunity to interface with different actors such as government representatives, business people, and market actors. Plus, the additional income from selling surplus products has increased their level of confidence within the household. Therefore, it is more important is to debate how women's household work can be shared and how their involvement in local-level planning and monitoring can be promoted.

Myth 5

Women do not want challenging job in managing the food system

The history of Nepal has demonstrated that women have performed any challenging work assigned to them. Though women are burdened with many additional challenges, such as societal norms against their formal education, women aspire to take extra burden if they can realise better opportunities for employment, income and technical advancement. If women can have access to an enabling environment (i.e., child day care, longer schooling, health services, transportation, and safety measures in the workplace), women could perform more challenging jobs better within present food governing systems.

Myth 6

Waiver given in the land registration tax to women is a loss of revenue for the nation

There is a very strange misunderstanding at the policy level that the minimum waiver given in the registration fee while land is transferred in the name of women represents a loss for the revenue in the government's treasury. However, this perception overlooks that the added benefits in terms of women's social confidence, protection of children, family security, and overall social transformation through social justice. Empowerment gained through such minimal support could be better assessed by combining these ideas with other support required for improved food security of women and her family.

5.7 Conclusion

From the debate above, it can be concluded that food is a basic right of all people irrespective of sex, race, caste, ethnicity, and religion. To this point, there are many international and national provisions that respect, protect and promote the right to food. There is also an increasing demand and pressure over production resources and needed changes in the production process. However, production relations in terms of gender have not made adequate progress to date. On the contrary, women and girls are challenged to remain more productive in terms of their labour as well as to compromise on food security in different circumstances. Increasingly, the challenges and opportunities for women have been intensified by the migration of men, climate change, and market-led agriculture, all of which requires meaningful investment and adopt transformative approaches to secure food for all.

- a. Right to food is right to life. Therefore, securing food for all irrespective of sex, race, class, caste and religion is the obligation of each nation-state supported by international national actors. The State as rights bearer has the primary responsibility to respect, protect, and promote rights for people all the time. Girls and women need special

attention to recognise their special feminine qualities and responsibilities. During times of emergency and disaster, this special attention is even more important. Therefore, the policies and programmes in support of food security have to be understood from a rights-based perspective.

- b. The development of available international and national instruments and provisions has promise for respecting, protecting, and promoting food security for all. To make the nation state proactive and able to fulfil its responsibility, concerted effort through legislative reforms, judicial mechanisms, and executive competence is crucial. While doing so, taking the rights holders especially of girls and women on-board in the food debate is imperative so they can contribute at their level best.
- c. Discrimination specific to gender is rooted in patriarchal beliefs, values, norms and practices. As gender-based discrimination is the first step that hinders girls and women to aspire for their upward growth in securing employment and income opportunities, it requires holistic and structural transformation. In the prevailing quest for gender justice, girls and women are to be recognised as equal members of their families, society and the state in policy and practice.
- d. Understanding our food system in a comprehensive manner remains a challenge. Since agriculture and food security are very much linked, it is very important to understand the production relations and the need to transform the sector itself to make it gender-friendly. Current piecemeal efforts that promote feminisation of labour are insufficient.

The new phenomena of rapid out-migration of rural youth, climate change, and market-led agriculture have brought both challenges and opportunities to transform the system.

References

ADB [Asian Development Bank], DFID [Department for International Development] and WB [World Bank]. 2011. *Gender and Social*

Exclusion Assessment 2011, Sectoral Series: Monograph I. Kathmandu: ADB, DFID and WB.

- Adhikari R, Belbase N, Ghale Y.** 2000. *Seed of Monopoly: Implications of TRIPS Agreement on Nepal.* Kathmandu: Action Aid Nepal and Propublic.
- Bhandari S, Shrestha SM and Ghale Y.** 2005. *Nepal's Accession to the WTO: Opportunities and Challenges for Nepal.* Kathmandu: Action Aid Nepal and Law Associates Nepal.
- CWGL [Centre for Women's Global Leadership].** 2011. The Right to Food, Gender Equality and Economic Policy, Meeting Report, September 16-17, 2011.
- FAO [Food and Agriculture Organisation].** 2004. Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security, Adopted by the 127th Session of the FAO Council. Rome: FAO.
- FAO [Food and Agriculture Organisation].** 2006b. The Right to Food Guidelines, Information Papers and Case Studies, Rome: FAO.
- FAO [Food and Agriculture Organisation].** 2012. Voluntary Guidelines on the land, Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Rome: FAO.
- FAO [Food and Agriculture Organisation].** 2013. The State of Food and Agriculture, Food System for Better Nutrition. Rome: FAO.
- FAO [Food and Agriculture Organisation].** 2006a. The State of Food Security in the World. Policy Brief, Issue 2. Rome: FAO.
- FIAN[Food-first Information and Action Network].** 2010. Parallel Report, The Right to Adequate Food of Women in Nepal, combined fourth and fifth periodic report of the State Parties-submitted to CEDAW's 49th session.
- FIAN[Food-first Information and Action Network].** 2011. Parallel Report, The Right to Adequate Food of Women in Nepal, combined fourth and fifth periodic report of the State Parties-submitted to CEDAW's 49th session.
- Ghale Y, Bishokarma N.** 2013. Food security: A fundamental basis for human security. In: Upreti BR, Bhattarai R, Wagle GS, editors. 2013. *Human Security in Nepal: Concepts, Issues and Challenges.* Kathmandu: Nepal Institute for Policy Studies (NIPS) and NCCR North-South, Pp. 89-118.
- Ghale Y.** 2008. Women, Globalization and Land Based Exclusion in Nepal. In: Upreti BR., Sharma SR, Basnet J, editors. *Land Politics and Conflict in Nepal: Realities and Potentials for Agrarian Transformation.* Kathmandu: Community Self Reliance Centre, Human and Natural Resources Studies Centre, Kathmandu University and NCCR North-South, Pp. 161-196.

- Ghale Y.** 2010. Corporate globalisation: Hunger and livelihood insecurity in Nepal. In: Upreti BR, Muller-Boeker, editors. *Livelihood insecurity and social conflict in Nepal*. Kathmandu: RCO, Pp. 131-176.
- Locher M, Steimann B, Upreti BR.** 2012. Land grabbing, investment principles and plural legal order of land use. Issue No 65.
- Prügl E, Razavi S and Reysoo F.** 2012. *Gender and Agriculture After Neoliberalism*, Report of a Workshop organized by the United Nations Research Institute for Social Development and the Graduate Institute of International and Development Studies, Geneva.
- Sharma SR, Upreti BR and Müller-Böker Ulrike.** 2013. Negotiating Access to Land in Nepal. *Journal of Contemporary Asia*.
- Shivakoti G, Ghale Y, Upreti B.** 2005. The ecological dynamics of low external input agriculture: A case study of hill farming in a developing country. *The International Journal of Sustainable Development and World Ecology* 12(4):385-397.
- Subba S, Singh A.** 2010. *Documentation on the case of "HIV/AIDS Single Women's RtF issues in Rakam Karnali, Dailekh district"*. Kathmandu: FIAN Nepal.
- Upreti BR, Ghale Y.** 2002. Factors Leading to Agro-biodiversity Loss in Developing Countries: The Case of Nepal. *Biodiversity and Conservation* 11 (9):1607-1621.
- WFP [World Food Programme].** 2009. Women Shoulder Heaviest Burden in Food Crisis. Available at: <http://www.wfp.org/stories/women-shoulder-heaviest-burden-global-food-crisis>, retrieved on 29 January 2014.

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6.1 Context

Despite steady improvement in agriculture and food production in many parts of the world, a significant proportion of the global population continues to live with food insecurity and malnutrition. Therefore, the world is moving increasingly toward a world with more hunger and food insecurity, rather than making rapid progress toward achieving the target of reducing hunger (UNDP 2010). The world is still well above the target set by the Millennium Development Goal (MDG) of halving the proportion of undernourished people in developing countries from 20 per cent in 1990-92 to 10 per cent in 2015. Though the proportion of people who are undernourished has decreased, the number of undernourished people has increased. The Food and Agriculture Organisation's (FAO) State of Food Insecurity 2012 estimates that about 870 million people were undernourished (in terms of dietary energy supply) in the period 2010-12 (FAO 2013). This figure represents 12.5 per cent of the global population. Meanwhile, the share of undernourished people has increased from 32.7 to 35.0 per cent in South Asia between 1990/92 to 2010/12. The FAO's (2013) most recent estimates indicate that 12.5 per cent of the world's population (868 million people) is undernourished in terms of energy intake and has significant cost to the global economy caused by malnutrition. Other estimates state that malnutrition can result in the loss of as much as 5 per cent of global gross domestic product (GDP) through declined productivity and direct health care costs. This loss is equivalent to US\$3.5 trillion per year or US\$500 per person.

According to the International Food Policy Research Institute's Global Hunger Index (GHI), 26 countries suffer from alarming or extremely alarming levels of hunger (IFPRI 2011). South Asia has the highest regional GHI score in 2011 of 17.8. The region reduced its score by more than 6 points between 1990 and 1996, mainly through a large, 15 percentage-point decline in underweight children. But this fast progress could not be maintained. Stagnation followed and South Asia has lowered its GHI score by only 1 point since 2001 despite strong economic growth. The proportion of undernourished people has risen by 2 percentage points since 1995–97. Social inequality and the low nutritional, educational and social status of women, which is a major cause of child under nutrition in this region, has impeded improvements in the GHI score (IFPRI 2011).

The food insecurity situation does not result from the absolute scarcity of food (Allouche 2011; Thulin and Allegrini 2012). In purely quantitative terms, there is enough food available to feed the entire global population of 7 billion people (WFP 2010). An FAO report (2012) on trends of the world cereal market shows that 518 million tonnes of cereals are available in stock, a figure that represents 22 per cent of total production in that year. So we can see that food isn't easily translated into the access to food for needy people (Maxwell 1996; Webb et al. 2006). Since the first world food conference in 1974, the focus of food security has shifted from production to supply of food.

"The availability at all times of adequate world supplies of basic foodstuffs, primarily cereals, so as to avoid acute food shortages in the event of widespread crop failures or natural disasters, to sustain a steady expansion of production and reduce fluctuations in production and prices" (FAO 1974, p 1).

In 1974, the FAO wrote that food security depends upon the ability of nations to trade and transport essential food supplies from surplus areas to deficit areas through export and import. Thus, market and trade liberalization are considered core strategies to move food to deprived areas and people. Rutten et al. (2013) and Cormac

(2011) state that market and trade is the appropriate mechanism for effective distribution of food and is supported by the relative decline in food prices over the last 100 years due to productivity gains, increased competition, and trade (Wickramasinghe 2010). On the opposite side, scholars argue that the trade and market liberalization have been responsible for marginalizing the food security objectives of poor farmers (Ghale and Upreti 2008; Adhikari 2010). As well, the question of market access for the poor in the market hasn't been clearly answered yet (Attwood 2005; Barrett et al. 2009). Markets have been unable to serve those who are chronically under employed and undernourished (Attwood 2005), a condition that has made the poor more vulnerable (Shiva 2002; Ghale 2010). In addition, the growing reach of multinational corporations into agriculture is a major cause of increasing dependencies and diminished biodiversity (Ghale 2011). There are evidences that people who depended upon international markets for food were more vulnerable to price hikes during that time (Yang and Zehnder 2002; Rao 2009).

Since the 1990s, Nepal has grown reliant on food imported from India to feed its growing population. Rice, maize and wheat flowers are primarily imported from India, which has accounted for 99 per cent of Nepal's total imports in 2012/13 (TEPC 2013). The average annual import of rice has been around 75,000 metric ton (mt) and 4,700mt for wheat (Regmi 2009). These imported foods are more expensive than food produced locally (OXFAM 2011).

However, there is less evidences as to how trade and markets work in Nepal. What are the trends of food imports with different countries? What are the policy instruments and enabling environments needed to guide trade within and between countries? What are the barriers that limit the smooth functioning of markets and trade at national, bilateral, regional, and international levels? The remainder of this article discusses and analyzes the situations outlined above, including issues of food production, aid, and trade in Nepal. I will conclude with an examination of Nepal's food import and trade scenario, related policy instruments, and limiting factors.

6.2 Nepal: Food production, aid and imports

Food production

For the past several years, Nepal has become import-dependent in food, as its production growth rate is slower than the population growth rate (Adhikari 2010). By the early 1990s, Nepal's agricultural production was the lowest in the subcontinent (Tiwari 2007). Although the rice yield in Nepal has been increasing gradually since 1990, the overall growth rate is much lower compared to neighboring countries. From 1990 to 2005, the rice yield increase in Nepal was 13 per cent, compared to 47 per cent in Bangladesh, 37 per cent in Pakistan, and 20 per cent in India. Nepal's yield rates below at 7 per cent, 8 per cent, 11 per cent, and 22 per cent in Pakistan, India, Sri Lanka, and Bangladesh, respectively, based on the average from 2001 to 2005 (Thapa 2010). Thapa (2010) reports that the wheat yield in Nepal has grown faster (47% increase from 1990 to 2005) when compared to rice. However, the wheat yield in Nepal is much lower relative to India (25% lower) and Pakistan (15% lower) based on the five-year average from 2001 to 2005. The wheat yield per hectare in the mountains and hills in 2005 was 1.57 tones and 1.90 tones, respectively, compared to 2.25 tones in Terai.¹

In terms of food production in Nepal, the Terai produces a surplus of approximately 7 per cent, while the hills have a deficit of 36 per cent and the mountains a deficit of nearly 80 per cent (Gill et al. 2003). Out of a total of 75 districts in Nepal, forty districts were food deficit in the FY 2008/2009 (MoAC 2010) and among them the deficit was particularly severe in 13 districts in the mid- and far-western hills and mountains.

Since the early 1990s, Nepal has been facing a food deficiency. It is unable to meet its food requirements at the national level (Table

¹ The geography of Nepal is divided into three physiographic regions from south to north named terai (plains), hills, and mountain. The Terai is flat land in the southern part of country that borders India.

6.1). However, this should not be interpreted as a strict decline in production: rather the years are marked by peaks and valleys. In recent years, there were deficits of 132,910 and 329,972mt in 2008/09 and 2009/10 respectively. However, there was a food surplus of 334,468 and 943,161mt 2010/11 and 2011/12 respectively.

Table 6.1 Trends of cereal grain production and requirement of Nepal (in Metric Tonnes)

Year	Production	Requirement	Balance	Remarks
1989/90	3,549,587	3,559,011	-9,424	Deficit
1990/91	3,618,955	3,486,776	132,179	Surplus
1991/92	3,373,448	3,561,838	-188,390	Deficit
1992/93	3,293,126	3,633,724	-341,598	Deficit
1993/94	3,585,112	3,723,722	-138,610	Deficit
1994/95	3,397,760	3,882,915	-485,155	Deficit
1995/96	3,913,878	3,948,229	-34,351	Deficit
1996/97	3,972,587	4,079,135	-106,548	Deficit
1997/98	4,027,349	4,178,077	-150,728	Deficit
1998/99	4,097,612	4,279,491	-181,879	Deficit
1999/00	4,451,939	4,383,443	68,496	Surplus
2000/01	4,513,179	4,430,128	83,051	Surplus
2001/02	4,543,049	4,463,027	80,022	Surplus
2002/03	4,641,466	4,565,820	75,646	Surplus
2003/04	4,884,371	4,671,344	213,037	Surplus
2004/05	4,942,553	4,779,710	162,843	Surplus
2005/06	4,869,440	4,890,993	-21,553	Deficit
2006/07	4,815,284	4,995,194	-179,910	Deficit
2007/08	5,195,211	5,172,844	22,367	Surplus
2008/09	5,160,406	5,293,316	-132,910	Deficit
2009/10	4,967,469	5,297,444	-329,972	Deficit
2010/11	5,570,019	5,235,551	334,468	Surplus
2011/12	6,020,295	5,077,134	943,161	Surplus

Source: MoAC (2012)

To offset shortages in the national food balance, additional supplies through imports and aid have been required in Nepal.

Food aid

In Nepal, official food aid began in 1979/80 during a time of persistent crop loss from drought (Rawal 1983). Since then Nepal receives food aid through bilateral sources like Japan and France, and multilateral sources such as United Nations' World Food Programme (WFP). Bilateral aid is delivered through the mechanism of the Nepal Food Corporation, while the WFP supports of food for work (FFW) and cash for work (CFW) mechanisms. In times of emergency, the WFP also provides food aid that generates rural employment opportunities to the poor. Food aid is added on top of the insufficient cereal produced by poor and marginalized farmers. Food aid is also seasonal, particularly important in August and September when there is less work and summer crops have yet to ripen for harvest.

FFW and CFW programs have come under considerable scrutiny as to their overall effectiveness. Many observers say these programs lack support structures and appropriate targeting methods (Jayne 2001; Barrett and Maxwell 2005). The strength and limitations of FFW and CFW in the context of Nepal are summarized in Table 6.2.

Table 6.2 Strengths and limitations of FFW and CFW

	Strength	Limitations
FFW	<ul style="list-style-type: none"> • It reduces the price of food in local markets, providing improved purchasing power to the poor. • It may provide a better check on corruption. • Beneficial for women and children because it directly supports their food needs. • It provides short-term employment for un-employed people. • It supports the construction of long-term physical infrastructure such as roads, schools, and other buildings 	<ul style="list-style-type: none"> • Food distributed during emergency times is misused. • Lacks appropriate locations to distribute food effectively. • Provides low quality food, which has long term health impacts. • Like other aid, food aid is fungible; it can be given for one purpose but used for others.

<p>CFW</p>	<ul style="list-style-type: none"> • It increases normal trade by strengthening purchasing power. • Cash is easy to transport • Cash for work has important role to increase rural wages. • It provides short-term employment for un-employed people. • It also supports construction of long-term physical infrastructure. 	<ul style="list-style-type: none"> • Cash is more prone to corruption and misuse. • Cash is less safe; may prompt illegal behavior. • There are no clear criteria for wage and cash allocations.
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Source: Desk review and finding from author's Ph.D. study

Food import

Until the 1998/99, Nepal exported grains which provided a main source of income to the country. Today, rice is primarily imported from India, which has accounted for 93 to 100 per cent of the total imports during 1996/97 to 2003/04 (MoAC 2010). There has been wide variation in cereal imports from India ranging in value from NRs 16 million in 1998/99 to 277 million in 2000/01 (Regmi 2009). In 2013, Nepal exported 919,252 Kg of rice valued at 29,217,522 NRs. The import of rice over that same period was 529,913,576 Kg valued at 14,337,581 thousand NRs.

Table 6.3 Trends of food export and import from different countries

Items	2008/09		2009/10		2010/11		2011/12		2012/13	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Rice export	81,817	2,019	12,132	364	305	6,516	47	338	29,217	919,252
Rice Import	1,854,779	104,151	2,635,826	102,847	133,489	2,408,635	9,288,121	398,482,902	14,337,581,	529,913,576
Wheat export	159,274	3,900	51,977	3,045	1,173	136,836	54,520	2,300,590	106,716	1,678,820
Wheat Import	1,079	26	8,975	254	19,591	403,457	84,191	3,436,279	335,004	12,366,110
Maize Export	10,985	272	2,698	34	0	82	827	84,160	186	15,500
Maize Import	122,954	16,465	656,253	47,799	160,815	2,285,542	3,708,407	204,369,919	4,866,673	220,243,427

Source: TEPC (2013)

Note: Values in Rs (000)
Quantity in metric tonnes

6.3 Food trade and market in Nepal

6.3.1 Trade scenario

Nepal has very limited trade with China and India up to the 1950s. From 1947 to 2011 Nepal has been party to the Bilateral Investment Protection Agreement (BIPA) among 17 countries, including the USA, China, and India. The main objective of this agreement was to improve trade between Nepal and these countries. The commerce policy 1993 has the stated objective to make trade more liberal, competitive, and market-oriented. To improve the export of Nepali products, Nepal drafted a new trade policy in 2009 which was prepared in 1982 first time and updated in 1992. Nepal also abides the Nepal Trade Integrated Strategy (NTIS) prepared in 2010. This strategy identifies 19 areas of comparative advantage for Nepal products. Of these 19 areas, seven are directly linked with agriculture and food security in Nepal. Work has begun to register a collective trademark for Nepali coffee and tea and improving cardamom production and processing procedures (MoF 2011). The trademark has been registered in 37 countries.

It is said that increasing imports of agricultural and food-based products are major factors for Nepal's trade deficit. Samad (2013) argues that high food import expenditures are responsible for Nepal's mounting balance of payments deficit. Nepal has been facing a trade deficit due to increasing imports after 2003/04. There has been widening gap between the export and import ratio. There was also a ratio of 1:1.5 during 1975/76, which increased to 1:2.6 in 2003/04 and then rose precipitously to 1:6.7 in 2013.

Unbalanced payments result in a reduction in national investment in agricultural development. Trade deficits caused by food imports also reduce the national investment in food production. The money expended for importing food has also meant reduced national investment, income, and employment opportunities (Thapa 2011). As major payments are fronted to food import costs, there is less money to invest in agricultural inputs needed for food production. There is a decreasing trend of proposed investment in

the agricultural sector in different plans. There was 16.8 per cent of the budget allocated for agricultural development in ninth plan (1997-2002), 13.8 per cent in tenth plan (2002-2007) and 12.2 per cent in the eleventh plan (2007-2010).

Also, import-intensives food baskets tend to lower the prices of local food, which is good, but these imports can also mean that farmers face numerous vulnerabilities in terms of price hikes. The WFP found that during the 2008–2009 food price crisis, the poorest rural families were forced to make drastic cuts to household budgets, to sell assets, and to take on debt which increased the intensity of poverty among them (WFP and NDRI 2008).

6.3.2 Food trade and market

In the early 1960s, Nepal had the highest level of agricultural productivity in South Asia. Rawal (1983) documented that in 1974 Nepal exported 472,409 metric tonnes of rice to India, Bangladesh, Singapore and Mauritius. More specifically, Nepal exported 221,000 and 65,000 metric tonnes of rice respectively in 1975/75 and 1978/79 to India to alleviate their food deficiencies in those years. By contrast, in 2010/11, Nepal's trade deficit in agro-based products (i.e. food items, live animals, tobacco and beverages) totaled 10.62 billion (MoF 2011) due to the shift in import/exports.

India is Nepal's leading trading partner, followed by Bangladesh and Pakistan. India accounts for roughly 75 per cent of Nepal's total agricultural trade. Nepal exports vegetable, ghee, and pulses along with livestock, cardamom, tea, sugar, and ginger. Vegetable ghee and live animals are major exports to India. Ginger has become one of Nepal's major food exports to India in the recent years. Pulses and cardamom are strong exports to Pakistan and Bangladesh. Tea is a major export to overseas countries outside South Asia. Sugar, a lesser traded item, has become a major export item in recent years. Nepal also exports major cereal products (particularly high quality basmati rice), but this sector has low potential as more often Nepal has to import more of these grains than they can export. Among the major cereal grains, Nepal is net importer of rice, maize, and other cereal products (TEPC 2013).

In certain food export sectors, Nepal sends different cereal crops to India, China and other countries, but overall, India dominates Nepal in these trades. Because of the porous border between Nepal and India, Nepal exports food grains and imports some grains through informal channels. Regarding rice trade in 2013, Nepal exported equal amounts of rice to India and China in 2012/13, while it imported 99 per cent of its rice from India. Then second largest volume of rice imported from Japan and remaining quantity from China, Vietnam, USA, Thailand, and Bangladesh in that year. Nepal imported 529,913,574 MT of rice in this year. Of which it imported 524320340 MT from India, 3659670 MT from Japan and 1933564 MT from other above-mentioned countries. Regarding trade of Maize, Nepal exported 100 per cent of maize to India while Nepal imported 99 per cent from India and left from China and Argentina. Nepal exported 15500 MT of maize while it imported 220,24 MT in the year 2013. Regarding wheat flour Nepal exported almost amount of wheat to China and some to UK while it imported 100 per cent of wheat exported from India. Nepal exported 1679620 MT while it imported, 12,366,110 MT of wheat in that year.

6.4 Barriers to food trade

Nepal's food market is poorly integrated with regional and international markets. As Nepal's major food trade is conducted with India, the limits and constraints of food trade that mark Nepal's relationship to India are also present in Nepal's trade with other countries. The limitations of Nepal's food market and trade can be summarized as follows.

6.4.1 Barriers to International trade

a. Supply side constraints

Informal market with India: Nepal is a virtual open economy vis-à-vis India with a long and porous border that enables informal trade to persist (See box 6.1). Trade in primary agricultural products is free of customs duties from both sides. Under the Nepal-India Trade Treaty, there are no quantitative restrictions of food grain to export

and import through either side. However, in the case of cereal grains and other foods, Nepal levies taxes at the border. In the case of cereals, the effective tax is much lower (5-6%) than the usual 9.5 per cent, since the import valuation used is often lower than actual import price. FAO and WFP (2007) argue that on the positive side the open market with India guarantees a large and growing Indian market for Nepalese agricultural products and on the negative side, the informal market is the worsening competitive position of Nepalese agriculture vis-à-vis India, in part due to high agricultural subsidies in India. The most important reason for the decline in competitiveness is the stagnation in agricultural productivity.

Box 6.1 Case: Informal trade between India and Nepal

Markets in India (Rupedhia and Gauri Fanta) play an important role for food security in the far-western region of Nepal. The food from Indian markets moves directly to the users in the terai and through wholesalers in the mountain and hill regions. From focus group discussions and market surveys in Fulbari, we found that food from India plays a significant role in the food security of poor people living in the village. In general, the informal markets present opportunities to obtain cheaper food. However, local people face many hurdles as Nepali security personnel of Nepal investigate these activities. On the flip side, Indian securities do not create any hurdles because the informal channels promote the market of Indian side.

Limited harnessing of comparative advantaged sectors: Nepal's Integrated Trade Strategy of 2010 identifies 19 areas of comparative advantage for trade. Of them, seven products such as cardamom, ginger, honey, tea and coffee, are directly linked with agriculture and food security in Nepal. However, the production of these products is limited in terms of quantity.

Nepal has been the member of WTO, SAFTA and BIMSTEC since 2004. Why hasn't the country better harnessed the benefits it could derive from these institutions? Productivity in agriculture is below one US\$ per laborer per day; this is insufficient for subsistence and for generating agricultural surplus to support the growth of manufacturing and trading activities (Thapa 2011). In addition, the inability of Nepal to link exportable products with productive sectors such as agriculture and food has limited the potential of international trading.

b. Policy and institutional barriers

Transport transit agreement: Per the India-Nepal Treaty of Transity, India provides port facilities to Nepal at Kolkata and specifies 15 routes over which Nepal can move its products to that port from the border. However, this agreement is only in theory. In practice, Nepali businessman face numerous transportation problems. Occasionally food grains are dumped and re-packaged while in transit and this reduces the quality of grains. According news story in the Kantipur newspaper, about eleven thousand quintal of rice sent by the Japanese government was destroyed with water while in transit through Kolkata.²

Quarantine policy of India in 2009: Phytosanitary conditions of the WTO may be a barrier to exporting vegetable and fruits because standardizing current plants and equipment to meet those conditions would be very costly for Nepal (Bajracharya 2013). Nepal lacks machines that can check the quality of food as required by multinational corporations (MNCs). For example, in 2004 Norway returned a shipment of Nepali honey saying that it contained traces of pesticides. Similarly, Europe has returned shipments of Nepali orthodox tea. India also has bio-security and sanitary and phytosanitary (SPS) requirements that impeded Nepal's ability to export profitably. Nearly all agricultural imports, including livestock and food products require some kind of SPS certificate and importing permit. Obtaining such certificates can often be time and resource consuming.

Information gaps: Individual Indian states have authority to make their own policies regarding food transport from one state to another. As movement of food from Nepal and India occurs through state borders with Nepal, the variation in policy often hampers food trade with India. Also, there is no clear mechanism of information flow between Nepal and different states of India. This information gap also hampers in pricing of Nepali food products.

² For detail see national daily, Kantipur. 'Kuhiyeko chamal 2 barsa dekhi godam maa'. Published on 6 March 2014.

c. Demand side barriers

Agriculture based trade: South Asian trade negotiations have yielded relatively fewer opportunities for agricultural trade likely because agriculture is a politically sensitive issue in most countries in the region (Samaratunga et al. 2007, p 35). Ghimire (2013) argues that almost all of the products exported from Nepal are agricultural, which comparatively have a low value. On the other hand, the cost of these productions within the country is high. Thapa (2010) argues that farmers incur a higher cost for production than in India. As a result, Nepali agricultural products are not competitive in national and international markets. Furthermore, Indian agricultural enterprises receive heavy subsidies compared to Nepal, which gives Indian farmers a decided competitive advantage. All these factors have serious consequences for food security.

High import tariffs: Import tariffs have generally come down across the globe, yet tariffs on agricultural goods remain much higher compared with other goods, particularly in the developed world (Nanda 2012). Due to the high import tariffs in developed countries the cost of agricultural products exported from Nepal means Nepali products can't compete with the products of other countries. On the other hand, Nepal has the lowest import tariffs in the SAARC region (Table 6.4) which encourages food imports against difficult food export conditions. The average tariff on agricultural products is 14.5 per cent. For processed or frozen products Nepal's import tariff ranges between 25-40 per cent. In 2002, the renewal of bilateral trade created problems when India decided to fix the value-added tax at 25 per cent during the first year with the provision for increasing it to 30 per cent for subsequent years. As well, India imposed tariff rate quotas. Quantitative restrictions have also been imposed on some items such as basmati rice, which has hurt Nepal's ability to compete with exports.

Table 6.4 Food import and export duty in Nepal

Food items	Import Duty (% except otherwise specified)		Export duty
	SAARC	General	
Rice Rice in the husk (paddy or rough) Husked (brown) rice Semi-milled or wholly-milled rice, whether or not polished or glazed Broken rice	9.5	10	Per Kg Rs. 1
Maize	9.5	10	
Wheat	9.5	10	Per Kg Rs. 1
Barely	6.5	10	Per Kg Rs. 1

Source: MoF (2013)

Bandhs and closures: Restrictions in cross-border movement of food also obstructs food trade (Sulleri 2009). India, the major rice exporter for Nepal, has imposed various restrictions on rice exports since October 2007. It imposes bandhs when the production of food becomes low in India and lifts those bandhs during surplus production. Then in February 2010, the Government of India agreed to export 50,000 MT of wheat to Nepal. The partial lifting of the ban on wheat exports indicated the Government of India had confidence about a higher wheat harvest. This fluctuation creates an unpredictable environment for Nepal to plan exports and imports as well as shore up their reserves for grain shortages.

6.4.2 Constraint to agricultural internal trade and market (Domestic factors)

Poor transport infrastructure: With difficult terrain through mountains and hills, road infrastructure is weak in Nepal which slows market integration. In Nepal's 75 districts, there are four district headquarters not yet linked to roads, and 25 districts have only seasonal road connections which hinder the movement of food to the mountain and hill regions, particularly during rainy season (GTZ 2006; Sharma 2012). Therefore, sufficient transportation services are necessary condition in order to promote the effective distribution of food. A poor road system also means higher prices

as companies have to spend more money bringing food to remote areas.

Poverty incidence: Poverty incidence among the rural population is estimated to be 32 per cent (CBS 2011). Prolonged poverty reduces purchasing power and trade potential among rural people. The issue of poverty is particularly severe in remote districts in the mid- and far-western hills and mountains where food insecurity is rampant. Low purchasing power of the population discourages commercial traders who might bring commodities to those areas.

Non-food market constraints: Food markets are also influenced by other constraints such as fuel pricing, anti-competitive market behavior, an uneasy labor market, and political unrest. These are other factors that limit the trade promotion of Nepal at internal and external level. Price hikes in fuel increases the price of food and limits food movement due to higher transportation costs. Simultaneously, corruption among customs personnel also undermines Nepali food trade from Nepal. For example, Kantipur Daily reported that a customs officer in Bhairahawa fixed lower price rates on grain, thus lowering tax revenues for those items.³ The customs officer in question fixed the price at Rs. 35 when the average market price hovered around 100 Rs. Thus, Nepal lost the potential to collect more tax that might be used for government programs.

Food deficit: Nepal lacks surplus rice and other food products for export. Nepal exports food grains only when the country has a surplus. On the other hand, Nepal sells cereals to Indian traders from the Terai during the pre-harvesting season at a cheaper rate. In turn, Nepal imports similar products that are sold at a higher price in the hill and mountain regions. However, Nepal has opportunities to benefit from India and China, if it would pursue shrewder import/export policies. China and India are presently in the takeoff stage of development, which means that agricultural products will decline in these countries as labour costs rise. This

³ For detail see national daily, 'Nyun Bhansar Mulyankanle daal ko abaid karobar'.
Published on 15 March 2014.

means that Nepal will have an opportunity—should it be able to improve crop production—to export more food to these countries.

6.5 Conclusion

Although food grains have been a main source of income of Nepal in the past, in recent years, the country has imported more food than it exports. The majority of food trade of Nepal occurs with India, albeit, the trade with other countries has also been increasing in recent years. Because of external limiting factors (e.g., high import tariffs; informal trade; poor quality assurance measure; poor infrastructure) Nepal lags behind neighbouring countries in food trade. However, Nepal does have opportunities for improving its non-cereal based food trade and can reap additional gains with value-addition through agro-processing and packaging. The three year agro-trade interim plan in 2010 stressed the development of marketing facilities in the hilly areas for livestock, horticulture, and specific crops. There is need to create incentives for greater private sector participation. This could take the form of transportation sharing and storage facilities.

For food security in Nepal, regional food trade is an essential component. There is also need for policy and strategies on how a land-locked country can benefit from regional food trade. For that a smooth trade corridor in South Asia may support the food trade of landlocked countries such as Afghanistan, Bhutan, and Nepal who are dependent on the neighboring countries for their international trade.

One major solution in food trade would be reducing the supply constraints. Nepal should focus on the production of food that has a comparative advantage. Nepal also needs to prepare to benefit from trade facilitation scheme in the global market. International market has been focusing on trade facilitation issues such as customs procedures, logistics, trade infrastructures, and the trade regulatory environment than on reducing other trade barriers, such as tariffs and quotas. Nepal can benefit through producing products such as organic product that has international consumer using these trade facilitation scheme.

References

- Adhikari J.** 2010. Food Insecurity, Conflict and Livelihood Threats in Nepal. *In:* Upreti BR, Muller-Boker U, editors. *Livelihood Insecurity and Social Conflict in Nepal*. Kathmandu: NCCR North-South.
- Allouche J.** 2011. The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade. *Food Policy* 36: 3–8.
- Attwood DW.** 2005. Big is ugly? How large-scale institutions prevent famines in Western India. *World Development* 33(12):2067–2083.
- Bajracharya S.** 2013. Trade and Transport Facilitation Assessment, Trade Insight Vol. 9, No. 2.
- Barrett CB, Bell R, Lentz EC, Maxwell DG.** 2009. Market information and food insecurity response analysis. *Food Security* (1):151–168.
- Barrett CB, Maxwell DG.** 2005. *Food Aid after fifty years: recasting its role*. London: Routledge.
- CBS [Central Bureau of Statistics].** 2011. *National Living Standard Survey-III*. Kathmandu: Central Bureau of Statistics.
- Cormac OG.** 2011. Famines Past, Famine's Future. *Development and Change* 42(1): 49–69.
- FAO [Food and Agriculture Organization].** 1974. *Report of the Council of FAO – Sixty-Fourth Session*. Rome, 18-29 November 1974. Available at: <http://www.fao.org/docrep/meeting/007/F5340E/F5340E00.htm#TOC>; retrieved on 2 May 2014.
- FAO [Food and Agriculture Organization].** 2012. *State of food insecurity in the world. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition*. Rome: Food and Agriculture Organization (FAO).
- FAO [Food and Agriculture Organization].** 2013. *The State of Food and Agriculture: d Systems for Better nutrition*. Rome: Food and Agriculture Organization (FAO).
- Ghale Y, Upreti BR.** 2008. Concentration and monopolization of seed market: Impact on food security and farmer's rights in mountains. Available at: <http://archive.mtnforum.org/rs/ol/browse.cfm?tp=au&st=list2&authorID=2902&authorName=Yamuna%20Ghale>, retrieved at 15 November 2012; retrieved at 2 May 2014.
- Ghale Y.** 2010. Corporate Globalization: Hunger and livelihood insecurity in Nepal. *In:* Upreti BR, Müller-Böker U, editors. *Livelihood Insecurity and Social Conflict in Nepal*. Kathmandu: NCCR North -South, pp 131-177.
- Ghale Y.** 2011. Right to food and food security in the changing context. *In:* Pyakurel KN, Upreti BR, editors. *Land, Agriculture and Agrarian Transformation*. Kathmandu: COLARP, pp 27-56.

- Ghimire IP.** 2013. Import challenges and potentialities. *Trade Information Services* 8: 1-2.
- Gill GJ, Farrington J, Anderson E, Luttrell C, Conway T, Saxena NC, Slater R.** 2003. Food Security and the Millennium Development Goal on Hunger in Asia. Working Paper 231. London: Overseas Development Institute (ODI).
- GTZ [Gesellschaft für Technische Zusammenarbeit].** 2006. Food Security Policy Advice: Summary of a Lessons Learned Study on three German TC Policy Advisory Projects in Cambodia, Ethiopia and Mozambique.
- IFPRI [International Food Policy Research Institute].** 2011. 2011 Global Hunger Index: The Challenge of Hunger, Taming Price Spikes and Excessive Food Price Volatility.
- Jayne TS, Strauss J, Yamono T.** 2001. Giving to the poor? Targeting of food aid in rural Ethiopia. *World development* 19(5): 887-910.
- Maxwell DG.** 1996. Measuring food insecurity: the frequency and severity of coping strategies. *Food Policy* 21(3): 291-303.
- MoAC [Ministry of Agriculture and Cooperative].** 2012. Statistical information of 2011/12. Kathmandu: MoAC.
- MoAC [Ministry of Agriculture and Cooperative].** 2010. Statistical information of 2009/10. Kathmandu: MoAC.
- Nanda N.** 2012. Agricultural Trade in South Asia, Barriers and Prospects, SAWTEE Working Paper No. 03/12SAWTEE.
- OXFAM.** 2011. Improving Food Security for Vulnerable Communities in Nepal: OXFAM Case Study. Oxford: OXFAM.
- Rao JM.** 2009. Challenges Facing World Agriculture: A Political Economy Perspective. *Development and Change* 40(6): 1279–1292 (2009).
- Rawal T.** 1983. Food policy issues. In: Sijapati BB, Rawal T, editors. *Institutional capacity in the food and agricultural sector in Nepal*. Kathmandu: MoAC.
- Regmi HR.** 2009. Rising food price and its consequences. *Journal of Agriculture and Environment* (9):93-97.
- Rutten M, Shutes L, Meijerink G.** 2013. Sit down at the ball game: How trade barriers make the world less food secure. *Food Policy* 38: 1-10.
- Samad G.** 2013. Overcoming trade facilitation challenges in South Asia. *Trade Insight* 9(2).
- Samaratunga P, Kamal K, Manoj T.** 2007. Mapping and Analysis of the South Asian Agricultural Trade Liberalization Efforts." In: *Agricultural Trade: Planting the Seeds of Regional Liberalization in Asia: A Study of the Asia Pacific Research and Training Network on Trade*. New York: United Nations, pp 33-74.
- Sharma SR.** 2012. Building a bridge towards development. In: Sharma SR, Upreti BR, Pyakurel K, editors. *Nepalese economy in 2030*. Kathmandu: NCCR-

North-South and Department of Development studies, Kathmandu University, Pp. 1-17.

- Shiva B.** 2002. Globalization of agriculture, food security and sustainability. *In:* Shiva B, Bedi G, editors. *Sustainable Agriculture and Food Security: the impact of globalization*. New Delhi: Sage Publication.
- Suleri AQ.** 2009. Food Crises in Developing Countries: The Role of National Governance. USA: The Frederick S. Pardee Center for. Available at www.bu.edu/pardee; retrieved on 18 November, 2012.
- TEPC [Trade and Export Promotion Centre].** 2013. *Nepal Foreign Trade Statistics 2012/2013 & A Glimpse of Nepal's Foreign Trade*. Kathmandu: Ministry of commerce and supplies.
- Thapa TB.** 2010. Issues and Challenges for Agriculture Sector, Development and Food Security in Nepal. Available at: <ftp://ftp.fao.org/TC/CPF/Country%20NMTPF/Nepal/proces/Microsoft%20PowerPoint%20-%20Final%20Issues%20and%20Challenges%20August%2027.pdf>, retrieved at 16 March 2014.
- Thapa YB.** 2011. Right to food and food security in the changing context. *In:* Pyakurel KN, Upreti BR, editors. *Land, Agriculture and Agrarian Transformation*. Kathmandu: COLARP, pp 201-230.
- Thulin KR, Allegrini M.** 2012. Excess, Access, and the Emerging Geopolitics of Food. The German Marshall Fund of the United States.
- Tiwari M.** 2007. Chronic Poverty and Entitlement Theory. *Third World Quarterly* 28(1): 171-191.
- UNDP [United Nations Development Programme].** 2010. *Beyond the Midpoints: Achieving the Millennium Development Goal. United Nations Development Programme*. New York: UNDP.
- Webb P, Coates JF, Edward A. Rogers BL, Swindale A, Bilinsky P.** 2006. Measuring Household Food Insecurity: Why It's So Important and Yet So Difficult to Do. *The journal of nutrition* 136:1404-1408.
- WFP [World Food Programme], NDRI [Nepal Development Research Institute].** 2008. *Passage to India: Migration as a Coping Strategy in times of Crisis in Nepal*. Kathmandu: WFP and NDRI.
- WFP [World Food Programme].** 2010. The Cost of Copping: A collision of crisis and the impact of sustained food security deterioration in Nepal. Nepal: WFP.
- Wickramasinghe U.** 2010. Intra-regional trade of agriculture and food products, CAPSA/ESCAP.
- Yang H, Zehnder AJB.** 2002. Water Scarcity and Food Import: A Case Study for Southern Mediterranean Countries. *World Development* 30(8): 1413-1430.

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7.1 Introduction and context

"Seventy-five per cent of the world's poor live in rural areas. The evidence that growth in agriculture is on average at least twice as effective in reducing poverty as growth outside agriculture is thus no surprise. Agricultural growth reduces poverty directly, by raising farm incomes, and indirectly, through generating employment and reducing food prices" (WB 2008, p 1)

"Agriculture has to meet this change [of a rapidly increasing population], mainly by increasing production and on land already in use and by avoiding further encroachment on land that is only marginally suitable for cultivation" (Chapter 4. 1).

"The priority must be on maintaining and improving the capacity of the higher-potential agricultural lands to support an expanding population" (Chapter 14. 3). Agenda 21, Earth Summit. Rio de Janeiro.

The issues of global food insecurity and food crisis garnered the attention of world politicians and development practitioners during the mid-1970s. At that time, the emphasis was largely on food supply, and to some extent on the price of basic food items at the international and national levels. The World Food Conference of 1974 paved the way for institutional arrangements on food security and food policy issues. Now the established definition of food security is taken as a situation when "safe and nutritious" food is available as well as affordable to the people throughout the year (WFP 2009). Food insecurity is recognized as a global issue and it afflicts the poor communities throughout the world. According to FAO (2009) food insecurity prevails in the world mostly due to non-availability or inadequate access to food even though many developing countries own a food surplus. Thus, the reasons for food insecurity in these nations point to various factors related

to affordability and food governance (Rose and Oliveira 1997). Nevertheless, achieving food security and combating hunger remains a challenge for most of the developing countries and the governments of South Asia are also struggling to control this problem as it can have serious social repercussions.

Agricultural productivity and food security are closely interconnected to each other. The primary role of agricultural productivity in food security is making food available and affordable for the people (FAO 2013). Smallholder farmers in developing countries face multiple problems and constraints such as pre- and post-harvest crop losses due to diseases, insects, weeds, declining soil fertility and droughts etc., which result in low and unstable yields (UNCTD 2011), and consequently food availability and prices fluctuate. South Asia is characterized with large human population coupled with high population growth besides substantial proportion is living below poverty line. Though some countries of the region have registered good economic growth during the past decade, but a majority of the rural population still depends on agriculture for their livelihoods.

Table 7.1 provides one illustration of the food challenges facing rural areas. The majority of the population in all South Asian countries lives in rural areas but arable land per person is very low as compared to the world average. Though crop and food production indices for this region are comparatively better than the world average, the cereal yield (a staple crop) per hectare in India, Nepal, Pakistan, Maldives and Bhutan is rather low when compared with the world average. As well, the share of agriculture in GDP in most of the South Asian countries (except for Maldives and Sri Lanka) is substantial, which makes these countries vulnerable to climate-based and disaster-based shocks.

Table 7.2 demonstrates that regardless of the fact that majority of population of South Asian countries lives in the rural areas and that agriculture holds significant position in the rural economy, the prevalence of food inadequacy and malnutrition is rather high. For instance “Dietary Energy Supply,” which is an important indicator of nutrition security is considerably lower in most of countries when compared with the world average of 2860 kcal/caput/day. Likewise prevalence of undernourishment is much higher (except for Maldives) compared to world averages. The data

regarding population with access to improved sanitation indicates comparatively better situation in Sri Lanka and Maldives but in other countries of South Asia, a majority of population is without access to improved sanitation.

Table 7.1 Agricultural and rural development indicators of South Asian Countries (2011-12)

	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	World
Land area (000 sq. km)	130170	38394	2973190	300	143350	770880	62710	
Rural population (% of total population)	72	64	69	59	83	64	85	48
Agricultural land (% of land area)	70	13.5	60	23	30	34	42	38
Arable land (% of land area)	59	2.5	53	10	16	27	19	11
Arable land (hectares per person)	0.05	0.13	0.13	0.01	0.09	0.12	0.06	0.20
Forest area (% of land area)	11	85	23	3	25	2	29	31
Crop production index ¹	135	112	134	82	124	112	120	119
Food production index ²	132	108	131	85	122	121	120	118
Cereal yield (kg/hectare)	4185	2663	2864	2507	2481	2946	3503	3660
Agriculture, value added (% of GDP)	18	16	18	4	38	26	12	3

Source: Compiled by authors from different sources

¹ Crop production index shows agricultural production for each year relative to the base period 2004-2006 (=100). It includes all crops except fodder crops

² Food production index covers food crops that are considered edible and that contain nutrients. Coffee and tea are excluded because, although edible, they have no nutritive value. (base period 2004-2006 = 100)

Table 7.2 Some food security indicators for South Asia

	Population (millions)	People un nourished (million)	Dietary energy supply (kcal/caput/day)	Prevalence of under-nourishment %	Prevalence of food inadequacy %	Population with access to improved sanitation %
Bangladesh	152.4	24.8	2430	16.3	25.3	55
Bhutan	0.8	--	--	--	--	45
India	1258.3	213.8	2330	17.0	27.0	35
Maldives	0.3	0.0	2600	5.4	10.9	98
Nepal	31.0	5.0	2370	16.0	23.6	35
Pakistan	180.0	31.0	2410	17.2	24.3	47
Sri Lanka	21.2	4.8	2420	22.8	30.7	91
World	7051.0	842.0	2860	12	18.4	64

Source: Compiled by authors from FAO website

Until recently, the issue of food insecurity had been misunderstood by many developing countries as limited to the availability of food in the market and the health of food production systems. But we have learned that food availability does not ensure food security in any particular country because what is available in the market may not be accessible to many marginalized and poor groups in the same country (Anderson 2009; WFP 2009). Nevertheless, it is commonly accepted that agriculture occupies a central role in improving nutrition by making food available at affordable prices and by improving the income of the farmers through enhanced agricultural productivity (DFID 2004; FAO 2013)

Population has become an enormous challenge in the context of food security. More mouths to feed make the situation more vulnerable and susceptible to shocks that lead to food insecurity because resources are limited to produce more and more food (Collodi and M'Cormack 2009). Insalubrious food is also a particular issue. In the dense population of South Asian countries, population control strategies are being implemented amidst great protest. However, an increase in population can trigger a situation of competition in which hunger becomes a predicament. Thus, the production of food requires heavy investments in terms of inputs and other interventions.

The lack of sound policies regarding the demand and supply of food items has also emerged as menace in the developing countries in general and South Asia in particular. The dilemma is that when the production of food commodities is higher, there is a concomitant risk of deterioration and spoilage of food because of insufficient distribution and storage. On account of lack of proper storage, there is an associated problem of using surplus commodities in regulated fashion in order to keep the food supply consistent. Affordability is another matter of concern, when the available food becomes out of reach on account of high prices and inflation rate also directly influence the purchasing power of poor communities regarding food commodities.

7.2 Agriculture and food security: Global debates

It has been acknowledged by many studies that agriculture – food production – is linked directly as well as indirectly with food security and hunger (for detail see Arif 2008; DFID 2004; UNCTD 2011). Nevertheless it has also been widely recognized that producing more food does not automatically lead to food security as production covers only a segment of food security. Development practitioners, researchers, and policy makers frame agriculture's contribution to food security with two key criteria (DFID 2004):

- i. Increasing food availability at affordable prices.
- ii. Providing jobs and better incomes that will give poor people the means to afford food.

In most developing countries, food accounts for more than 50 per cent of total household expenditures and any increase in food price leads to either reduced access to food or a decrease in other necessary expenditures such as education and health (Asenso-Okyere and Jemaneh 2012). Enhanced availability of food can lead to price reductions and ultimately better access. Most of the developing and least-developed countries are agricultural economies with majority of the population is engaged with farming and at the same time most of the rural population in these countries is food insecure (UNCTD 2011). Therefore pursuit of food security

must be a priority in these areas. Agricultural growth also improves food security and reduces poverty by creating employment opportunities for the rural poor (WB 2008). DFID (2004) also endorsed that higher food grains production in a country can lead to a reduction in prices and this is of direct benefit to the rural and urban poor. Godfray et al. (2010) in their widely cited paper argue that the trends in world food prices are indicators of the trend in food availability, at least for those who can afford it and have access to world markets

More recently Keats and Wiggins (2014) elaborated that the world's food supply, particularly dairy and fruit, is far from ideal regarding nutrition. They found that substantial increases in the consumption of animal produce, modest increases in the consumption of cereals, fruit and vegetables, but a decline in the consumption of pulses/lentils. Therefore, meeting the needs of food deficient people require producing more food – particularly animal-based food. Food production is generally dependent on water and land resources. Rice-wheat is the most prevailing cropping system in South Asia and a successful cropping season implies higher food availability and stable price, but due to various factors (explained in section 7.3) the productivity of rice-wheat system is stagnant and its sustainability is dubious (Arif 2008). Asenso-Okyere and Jemaneh (2012) have emphasized that meeting the food demand is a crucial precondition for successful socio-economic and political development, and it can be achieved through either local production or food imports.

7.2.1 Agricultural productivity and food security in South Asia

Wheat, rice and maize are the main food crops in South Asia and availability of food relies heavily on its production. The statistical data from FAO indicates a gradual increase in the area and production of wheat, paddy and maize in the South Asian countries.³ For instance, in Nepal, rice was cultivated over an area of 1,111,000 Ha in 1965 and increased to 1,531,493 Ha by 2012.

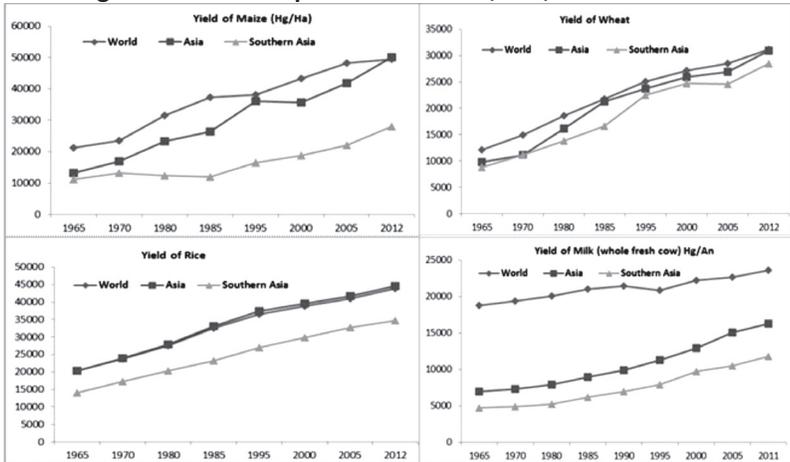
³ For detail see <http://faostat.fao.org/site/567/default.aspx#ancor>

Similarly rice was cultivated in Pakistan and Bangladesh at an area of 541,880 and 9,360,480 Ha in 1965, and increased to 2,700,000 and 11,700,000 Ha by 2012 respectively. Regionally, the overall average yield of wheat, rice and maize in South Asia in 2012 was 28,455, 34,649 and 27,926 Hg/Ha, respectively, but compared to the world average the average yield is substantially lower as the world average yield for wheat, rice and maize in 2012 was 31,153, 43,945 and 49,443 Hg/Ha, respectively (Figure 7.1). These data demonstrate that South Asia lags behind the rest of the world regarding yield per hectare on staple crops. An observation of fruit production and yield tells the same story.

Dairy products also represent a major element in daily food intake. According to FAO, most of the expansion of milk production since 1970s remains in South Asia. India is the largest producer of milk with 16 per cent of global production and Pakistan ranks fourth in the world. There is progressive increase in the yield of whole milk (cow) over the last few decades worldwide, but that increase is lower in South Asia over the same time period (Figure 7.1). Nevertheless, yield of buffalo milk per animal is comparatively better in South Asia than rest of the world.

It is an established fact that accelerated agricultural productivity always has positive implications for rural development, even if it does not necessarily solve all instance of food insecurity. Evidence shows that increases in agricultural productivity enhance the income and living standard of smallholding farmers and related supply chain actors (DFID 2004). Similarly, higher agricultural productivity also leads to the reduction of food price. In this regard, Bangladesh provides a stirring example: “Between 1980 and 2000, the production of rice and wheat increased from less than 15 to over 25.7 million tonnes, increasing per capita availability over the same period from 425 to 510 grams per day, despite population increasing over the same period from 90 to 191 million people. Real wholesale prices of rice and wheat consequently fell dramatically, with the price of rice in Dhaka’s market falling from just over Taka 20 to around Taka 11 per kg over the two decades” (DFID 2004, p9).

Figure 7.1 Yield comparison for wheat, rice, maize and milk



Source: From official web site of FAO

Improvement of crop yield is one of the most viable options for increasing food availability. Andersen (2009) argued that to eliminate hunger, malnourishment and food insecurity, food production and affordability (purchasing power) need to be improved in the countries of global South and North so that grain can be supplied to the poor at affordable price. At the same time, Andersen agreed that the arable land and water are limiting factors regarding food production; therefore the only doable option is to increase the yield of food crops. By 2020 the farmers would have to grow 40 per cent more grain in order to accommodate rising population.

The affordability of food items is, of course, a matter of concern when the available food is out of reach due to high prices. High inflation rates also directly influence the purchasing power for food commodities. Nevertheless, higher production can partly alleviate the problem. But according to Godfray et al. (2010, p 813) "There is wide geographic variation in crop and livestock productivity, even across regions that experience similar climates. The difference between realized productivity and the best that can be achieved using current genetic material and available technologies and

management is termed the yield gap.” Godfray’s assertion can be applied to the South Asian context as there are pockets of land within the South Asian countries where yield of major crops is modest and comparable to developed countries. Bridging the yield gap in South Asia can significantly improve the supply of food but there are various limiting factors in this regards.

7.3 Increasing agricultural productivity: Challenges and options

Agriculture sector in South Asia faces many challenges and as already discussed in the previous sections of this paper that overall performance of agriculture performance has been poor in the region when compared with other Asian countries. Raising the growth rate of agriculture in South Asia which contributes a substantial portion to the GDP of most countries is one of the key elements of achieving food security. Majority of the farmers in South Asia are smallholders and therefore the trend of agricultural growth needs to take care of the needs of the rural poor particularly smallholders, transhumant, nomadic and the landless farmers. However there are various aspects which need immediate attention for improving the performance of agriculture sector and maximizing the agricultural productivity in the region. Some of such factors have been elaborated in this section.

7.3.1 Agricultural knowledge and innovation system

Yield gaps in South Asian countries for most of the grain crops are prominent (See table 7.1) and a matter of serious concern. Diversification and a shift towards higher value-added agricultural crops has been limited. This can be partly attributed to an over-focus on conventional crops and traditional cropping systems by agricultural scientists and policy makers. There is consensus among the researchers, policy makers and practitioners that innovation and technology can play a huge role in accelerating agriculture growth and reducing food insecurity. The agricultural knowledge and innovation system which is traditionally based in research-extension-farmer troika needs to be revisited because in the post-

green revolution era the farming system has become complicated by the arrival of many new actors on the agricultural scene. Now we have to consider a whole array of stakeholders in agriculture, including the private sector, multinational companies, NGOs, banks, academia, farmers’ organizations, and local governments. An enabling environment needs to be created in the context of agricultural knowledge and innovation where all stakeholders can work together for the progress of agricultural system in the region. Research on high value crops, precision farming, fisheries, livestock, forests, post-harvest handling, and water management need to be given much passionate priority.

Table 7.3 Agricultural research indicators across South Asia (2008)

Indicators	Bangladesh	India	Nepal	Pakistan	Sri Lanka	China
Public Agric. R&D spending (million 2005 PPP dollars)	131	2121	24	188	39	4048
Agric. R&D intensity ratio	0.34	0.4	0.27	0.25	0.34	0.5
Agric. Researchers per million farmers	64	43	35	142	164	86
Volatility coefficient of yearly Agri. R&D spending growth (2001-2008)	0.14	0.06	0.22	0.1	0.11	0.09

Source: Flaherty et al.(2013)

Some of the indicators regarding agricultural research and development (R&D) are shown in Table 7.3. These indicators are based on the data collected by a team of researchers from International Food Policy Research Institute’s Agricultural Science and Technology Indicators (ASTI) initiative (Flaherty et al. 2013). It is evident from the table 7.3 that India is the leading country in South Asia in terms of spending on agricultural R&D; however, when compared to neighboring China, the spending is considerable lower. A more pragmatic way of measuring country’s agricultural R&D commitment is to calculate its agricultural research spending

relative to agricultural GDP. Within South Asia this indicator, known as the R&D “intensity ratio” (Flaherty et al. 2013), is highest for India. For every 100 dollars of agricultural GDP, India spent 0.4 dollars on public R&D in agriculture followed by Sri Lanka and Bangladesh with 0.34 dollars each. Sri Lanka has maximum number of agricultural researchers (164 per 1 million farmers) while Nepal has fewest (35 per 1 million farmers). Another indicator regarding agricultural research and development is the volatility co-efficient. This measure indicates change in agricultural R&D spending, and can be a useful instrument for evaluating funding volatility within a country, which provides insights into the main drivers of funding shocks (Flaherty et al. 2013). It can be seen from table 7.3 that Nepal has the maximum volatility co-efficient which indicates short-term and donor-funded or project oriented spending on agricultural R&D.

Agricultural R&D spending in South Asia lags behind other regions of developing world. All other South Asian countries are spending less than 0.5 per cent of their agricultural GDP on agricultural research. If South Asia is to meet the goal of increased crop productivity and to reduce food insecurity (by ensuring food price stability), investment in agricultural R&D need to increase.

7.3.2 Technology transfer/dissemination

Issues with a poorly and inefficiently organized agricultural knowledge system are exacerbated by inept extension systems in most South Asian countries. A dearth of competent and well-trained extension personnel is a major issue in this regards (APO 2003). Most South Asian countries (e.g. India, Pakistan, Nepal, and Bangladesh) have a large extension field force but their effective linkage with large number of small farmers is limited. Consequently, the extension system remains sluggish in disseminating new technology to farmers. Also, they have a limited role in providing appropriate response on issues and problems to the research system. The extension system is hampered by an apparent divide between the rural and urban area, as poor literacy in the rural areas complicates the conveyance of knowledge between

technical experts and stakeholders. Furthermore, farmers with poor education are less inclined to adopt agricultural innovations.

The media also plays (or could play) a crucial role in agricultural innovation. Optimally, media (print and electronic) could occupy a central role in creating awareness and disseminating knowledge of innovation among farmers.

However, access to media in rural areas is lacking, thus farmers living in rural areas are unable to harness the full potential of media for improving their agricultural knowledge (Irfan et al. 2006; Khan et al. 2010). We have to rethink how to better harness media for informing the associated publics about agriculture and development. While more effective media coverage might improve production, it can also give proper attention to socially-pertinent issues in agriculture such as farmer protests and suicides

7.3.3 Land related issues

Land degradation is a multidimensional issue that transforms productive land into low value land in terms of yield (Scherr et al. 1997). On one side, growing multiple crops several times a year seems like common sense for production,

Box 7.1 Complexity of land conflict

Pons-Vignon and Lecomte (2004) have extensively documented the relationship between land, violent conflict, and its effect in agricultural development. Similarly, the Ireland Refugee Documentation Centre (2011) documented the land conflict in Pakistan. Syed Mohammad Ali (2010) argues that land rights are critically important for Pakistan's stability, as it is directly linked with conflict as of poorer sections of society are angry about unequal distribution of land and unfair owner-tenant contracts. Ali further argues that landlessness in rural Pakistan is an important cause of poverty and hunger as many farmers in the rural area do not own land, while the government cannot fully address this inequality. He further argues that as a consequence of the land disparity, landlords and wealthy farmers disproportionately benefit from agricultural subsidies, improved irrigation benefits, access to fertilisers and improved seed varieties. As well, landlords and landowners have better access to clean drinking water, sanitation, quality education, healthcare, and energy that may consequently eroded the overall food security of the country. Telesetsky (2011) argues in similar vein that resource conflicts over arable land in food insecure states are creating deep food insecurity. He recommends a United Nations ombudsman to review the situation.

however, this also takes a sharp toll on the land as essential soil elements are depleted, thus diminishing the potential for future years. Furthermore, the increased use of fertilizer exacerbates soil maturity in later years.

Most South Asian countries also face the challenge of soil erosion. The removal of the fertile layer of soil leaves the land in poor condition for future growing years. In the severe cases of soil erosion may render land totally unfit for growing crops. Soil erosion is also a critical problem in various areas of South Asian countries (like Nepal) as mountain areas are more exposed to water erosion (Shrestha 1997). Likewise, water logging and salinity transform the land and impede the cultivation of crops which intensify the situation regarding food security (Burton *et al.* 2012). In addition, mismanagement practices pertinent to irrigation intensify the harmful effects of water logging and salinity (Bilal and Sarwar 2008). On the other hand, the reclamation of such land is hard nut to crack. In developing countries like Bangladesh, there is a need to trigger the people towards soil conservation, but this often comes at the cost of better productivity. In South Asia, there is also a need to move toward management practices that are eco-efficient for improving the degraded soils so that the potential yield can be obtained (Lal 2010). For moving on the path of food security, judicious agricultural management practices should be adopted to maximize production while doing least harm to the agro-ecosystem (Arshad and Shafqat 2012).

Conflict over land is another major predicament in the way of agricultural production. Conflicts among the farmers divert the farmers' attention to compete with one another instead of concentrating upon the potential synergies of crop production activities. They spend money in litigation and fighting and the resultant loss of money puts farmers under a debt burden. Conflicts erupt for a variety of reasons: unequal distribution of irrigation water, property line disputes, caste systems conflicts, and landlord and tenants conflicts. Each of these conflicts destroys physical and human capital in the process, inflicting financial and psychological crises on families. Moreover, farmers engaged in conflict do not

act as efficient and effective farmers. Most conflicts tend to arise around water. Irrigation water is a vital determinant for agricultural commodities. Growing more crops requires more irrigation water. Hence, future remediation efforts should focus more on water.

The inheritance system of land distribution among the farmers' also precipitates conflicts among farmers, as these cases are frequently occupied by litigation. Land tenure is another source of conflict. For example, when farmers rent the land they farm, the interests of tenants and owners will differ. Owners tend to think primarily in terms of production and rent, while farmers take a longer-term view to soil productivity. In some cases, landlords exploit their tenants, leaving them with only a meagre quantity of their produce. The deprived and unprivileged tenants and their families are put into jeopardy in terms of food insecurity.

7.3.4 Marketing and supply chain

Farmers are the prime mover in the agricultural sector; without farmers it would be impossible to maintain an agricultural sector. However, farmers face a number of problems pertinent to marketing and supply of food. Farmers tend to be exploited by middle men in the supply system, who offer low payments but charge high prices at the end market (Roy 2012). This phenomenon has a spiraling effect that contributes to lower investment at the next round of crops and, eventually, a decline in crop production.

In the South Asian context, there is dire need to improve management strategies pertinent to harvesting, storage, and transportation of agricultural produce (Mittal and Sethi 2009). Poor transportation in rural areas makes it difficult to ensure food availability on account of poor mobility. Perishable food items spoil before they reach the nearest market. Rising transportation costs are an added burden on poor farmers which can only be compensated by selling at lower prices or foregoing storage, which can result in spoilage.

7.3.5 Water

Most cultivable land in South Asia is either irrigated or dependent on rainfall. However, inefficient water management for both

production systems results in low water productivity and economic prosperity.

The timely availability of irrigation water in the required quantities is indispensable for growing crops. However, in South Asian countries the problem of water scarcity has become an enormous challenge of this era. Reservoirs for water storage are lacking. Moreover, most of the available water of rivers and canals are wasted through mismanagement.

7.3.6 Inputs (Seed, Fertilizers)

Inputs pave the way towards better crop production (Ahmad 2009). However, there are some crucial predicaments in this area. Impure seed has had a drastic impact on the production of crop. When farmers use impure seed, weed infestation follows and resulting crops lack proper nutrients. Similarly, when impure seed is mixed with seed varieties of the same crop, managing the crop becomes unpredictable (Burton et al. 2012; FAO 2012).

Low yields are also caused by the use of non-recommended seed varieties. Recommended varieties are well-tested and suited for higher yield. However, farmers turn to off-brand varieties when they lack money or when recommended seed varieties are not available. As well, inappropriate sowing of crops not only delays the output but also declines the yield. Adulterated fertilizers also pose a crucial problem. In this context, farmers spend their money on fertilizer only to have that investment wasted on impure inputs. The dual loss is obvious: on the one side the essential nutrients (macro or micro) are not supplied to the soil, thus affecting fertility. On the other side, monetary resources are wasted.

Adulteration in pesticides transforms the farmers' efforts into an abortive attempt to kill pests. Farmers cannot afford such resources when these pesticides produce no results and hinder crop production. Many farmers blindly use pesticide without considering the economic threshold level of this activity. Depending more on chemical control of pests also deteriorates the quality of produce. Moreover, this trend is also disturbing the balance of the ecosystem. Application of pesticides also kills beneficial insects

along with the harmful pests. Weeds, on the other hand, are the real competition to crops, as they snatch vital nutrients and water from crops.

7.3.7 Energy

Energy resources are also required for smooth and efficient farming. However, the fluctuation in fuel (diesel, petrol) prices and lack of available energy (electricity) hinder various important practices which ultimately hamper production. Like other sectors, agricultural sector is also directly or indirectly dependent on the provision of energy.

7.3.8 Livestock and poultry

Livestock is an essential feature of farming in South Asia. The livestock sector has great potential to be a driving force in food security and rural development (FAO 2012). The livestock sector contributes milk and meat which are integral parts of a wholesome diet. Hence, livestock farmers need to improve the production of meat and milk combating the food insecurity. However, due to poor management, continuous supply of livestock products becomes a predicament when proper preservation techniques are not observed. Livestock farmers can improve production of meat and milk for combating the food insecurity by adopting modern and innovative technologies in this regard (Rao and Birthal 2008). The marketing of livestock produce is challenge to livestock farmers who need judicious strategies to help them earn maximum benefits and opportunities (Ahuja 2013). Poultry is also for the rural communities regarding food provision. However in many countries of South Asia, poultry disease is a serious issue which causes heavy loss to the poultry farmers.

7.3.9 Climate change and calamities

Climate change has become a global challenge. Like other countries of the world, South Asian countries are also facing this enormous challenge. There is a need to ponder the issue of climate change in

South Asia (Basu and Shaw 2013). The abrupt change in temperature and rainfall affects the agricultural sector. The catastrophic impact of flood, made more common by climate change, is very obvious as floods destroy various assets including agricultural land (Rahman and Khan 2011). In South Asian countries, the vulnerability to flood is especially sharp during monsoon seasons. Farmers become food insecure and entrapped in poverty (Ali and Khan 2013). Moreover, the loss of crops and livestock also triggers impacts on the victims' livelihoods, putting pressure on other sections of society to rehabilitate the affected.

7.4 Conclusions and way forward

This paper has highlighted various issues which impeded agricultural productivity and food security in South Asia. Despite having agriculture-based economies, high yield gaps in South Asian countries for staple crops are prominent. Agricultural research and development spending in South Asia lags behind other regions of developing world. Though most South Asian countries have a large agricultural extension service available, their efficiency is below par and their linkage with small farmers is limited. As well, there are also many land-related issues which hamper agricultural productivity, such as land degradation, soil erosion, lack of proper crop rotation, and conflict. Water and energy scarcity are also significant issues.

A paradigm shift in the overall vision of agricultural development is required to move beyond increasing crop yields to a more holistic food security and livelihood-centric approach. To date, agricultural development has focused on increasing the productivity of major crops while relatively less attention has been paid to other crops, livestock and poultry. Likewise, there has been less concern regarding associated components of agriculture and rural development, such as improving rural income and employment, efficient use of scarce resources, and climate change. Likewise, improving the efficiency of livestock sector is critical to achieving food security and agricultural development.

New models for agricultural technology transfer are evolving based on the fact that agricultural innovation comes from several sources including the private sector and farmers themselves. Farmers need to be appreciated not as inactive recipients of technology but as active learners. New extension approaches, such as Information Communication Technology (ICT), Village Service Centers, and Farmer Field Schools (FFS) need to be mainstreamed in the rural areas of South Asia.

Water management also needs substantial improvement. Many rainfed areas in the region have the potential to be converted into high-value horticulture zones where appropriate technologies are introduced with necessary investments.

There is also a dire need to adapt to variable weather patterns that are emerging in the region, particularly in mountainous areas. A series of actions are required in this regard, ranging from improvement in infrastructure, better flood management systems, and farming and cropping systems that can adapt to weather conditions.

Finally, rationalized and updated land records are pre-requisites for resolving land-related conflicts and improving land markets. In South Asian context, there is dire need to improve the management strategies pertinent to harvesting, storage and transportation of agricultural produce.

References

- Ahmad F.** 2009. Food security in Pakistan. *Pak. J. Agri. Sci* 46(2):83-89.
- Ahuja V.** 2013. Asian Livestock: Challenges, opportunities and the response. Proceedings of an International Policy Forum held in Bangkok, Thailand, 16-17 August 2012.
- Ali A, Khan MA.** 2013. Livestock ownership in ensuring rural household food security in Pakistan. *The J. of Animal & Plant Sci* 23(1): 313-318.
- Andersen P.** 2009. Food Security: Definition and Measurement. *Food Security* 1:5-7.
- APO [Asia productivity Organisation].** 2003. *Integration of agricultural research and extension.* Report of the APO Study Meeting on Integration of Agricultural Research and Extension Philippines, 18–22 March 2002.

- Arif M.** 2008. Agriculture and food security in Pakistan. Thematic paper. Available at: http://sappk.org/sites/default/files/publications/eng_publications/Agriculture_and_Food_Security.pdf, retrieved on 16 April 2014.
- Arshad S, Shafqat A.** 2012. Food security indicators, distribution and techniques for agriculture sustainability in Pakistan. *International Journal of Applied Sciences* 2(5).
- Asenso-Okyere K, Jemaneh S.** 2012. Increasing agricultural productivity and enhancing food security in Africa. Washington DC: International Food Policy Research Institute (IFPRI).
- Basu M, Shaw R.** 2013. Water policy, climate change and adaptation in South Asia. *International Journal of Environmental Studies* 70(2):175-191.
- Bilal SM, Sarwar T.** 2008. Effect of tube well drainage on water logging and Salinity in Kafur Dheri unit Peshawar. *Sarhad J. Agric* 24(1):49-58.
- Burton M, Fileccia T, Gulliver A, Qamar MK, Tayyab A.** 2012. *Pakistan: Priority area for investment in agricultural sector*. New York: FAO/World Bank.
- Collodi J, M'Cormack F.** 2009. Population growth, environment and food security: what does the future hold? IDS, Horizon, July 2009.
- DFID [Department for International Development].** 2004. *Agriculture, hunger and food security*. London: Agriculture and Natural Resources Team of the UK Department for International Development (DFID) London.
- FAO [Food and Agriculture Organization].** 2012. *World livestock 2011: Livestock in food security*. Rome: FAO.
- FAO [Food and Agriculture Organization].** 2013. *The State of Food Insecurity in the World: The multiple dimensions of food security*. Rome: FAO.
- Flaherty K, Stads GJ and Srinivasacharyulu A.** 2013. *Benchmarking agricultural research indicators across Asia-Pacific*. ASTI Regional Synthesis Report, July 2013. Washington DC: International Food Policy Research Institute (IFPRI).
- Godfray H Charles J, Beddington JR, Crute Ian R, Lawrence H, Lawrence D, Muir JF, Pretty J, Robinson S, Thomas SM, Toulmin C.** 2010. Food Security: The Challenge of Feeding 9 Billion People. *Science* 327 (5967): 812 -818.
- Irfan M, Muhammad S, Khan GA, Asif M.** 2006. Role of mass media in the dissemination of agricultural technologies among farmers. *International Journal of Agriculture and Biology* 8(3):417-419.
- Keats S, Wiggins S.** 2014. *Future diets; Implications for agriculture and food prices*. ODI Report. London: Overseas Development Institute.
- Khan GA, Muhammad S, Chaudhary KM, Khan MA.** 2010. Present status and future preferences of electronic media as agricultural information sources by the farmers. *Pak. J. Agri. Sci* 47(2):166-172.

- Lal R.** 2010. Enhancing eco-efficiency in agro-ecosystems through soil carbon sequestration. *Crop science* 50 (1): 120.
- Mittal S, Sethi D.** 2009. Food Security in South Asia: Issues and Opportunities Working Paper No. 240. Indian Council for Research on International Economic Relations.
- Mohammad Ali S.** 2010. *Addressing conflict means looking into land rights in Pakistan*. Available at: <http://www.commongroundnews.org/article.php?id=28459&lan=en&sp=0>; retrieved at 14 September 2010.
- Pons-Vignon N, Henri-Bernard SL.** 2004. *Land, Violent Conflict and Development*. Working Paper No. 233. Paris: OECD.
- Rahman A, Khan AN.** 2011. Analysis of flood causes and associated socio-economic damages in the Hindukush region. *Natural hazards* 59(3):1239-1260.
- Rao PP, Birthal PS.** 2008. Livestock in mixed farmingsystems in South Asia. National Centre for Agricultural Economics and Policy Research. New Delhi: International Crops Research Institute for the Semi-Arid Tropics, Patancheru, pp 156.
- Refugee Documentation Centre.** 2011. *Pakistan: Information on land disputes in Pakistan*. Available at: <http://www.refworld.org/docid/4ea00a3625.html>, retrieved at 23 March 2014.
- Rose D, Oliveira V.** 1997. Validation of a self-reported measure of household food insufficiency with nutrient intake data. Washington DC: United States Department of Agriculture.
- Roy M.** 2012. Agricultural marketing: new challenges. *Int. J. of Humanities and Applied Sci. (IJHAS)* 1(2): 54-57.
- Scherr SJ, Yadav S.** 1997. Land degradation in the developing world issues and policy options for 2020. International Food Policy Research Institute (IFPRI).
- Telesetsky A.** 2011. Resource Conflicts over Arable Land in Food Insecure States: Creating an United Nations Ombudsman Institution to Review Foreign Agricultural Land Leases. *Goettingen Journal of International Law* 3 (1): 283-316.
- UNCTD [United Nations Conference on Trade and Development].** 2011. Sustainable agriculture and food security in LDCs. Least Developed Countries Series No. 20/C May 2011.
- WB [World Bank].** 2008. Agriculture and poverty reduction. Agriculture for Development, Policy Brief. World Bank .
- WFP [World Food Programme].** 2009. *Defining food security and vulnerability. Vulnerability analysis and mapping-VAM*. Available at: One.wfp.org/operations/vam/vam_in_action/saf_key_0204. Dated: 13-07-2013.

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About the book

Food security has emerged as a major global concern due to changes wrought by climate change, demographic dynamics, political power struggles, and rapidly globalizing economic processes. In the case of Nepal, current efforts to rebuild the state after a decade-long insurgency have added another challenging dimension to food security. The Interim Constitution 2007 enshrined the 'right to food' as a fundamental right for Nepali citizens. Hence, post -conflict debates in Nepal have focused significantly on food issues. This book, "Food Security in Post-conflict Nepal: Challenges and Opportunities," devotes its pages to important issues and perspectives that help illuminate the complexity of food security in Nepal while also pointing ways forward to insure better livelihoods for rural and urban Nepalis alike. This informative text explores issues ranging from gender and markets to the current push for genetically-modified seeds—all of which exert a challenging influence on the sensitive matters of food and agricultural productivity in post-conflict Nepal.



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