



VALUE CHAIN/ MARKET ANALYSIS OF THE LENTIL SUB-SECTOR IN NEPAL

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Nepal Economic Agriculture, and Trade Activityô Value Chain/ Market Analysis of the
Lentil Sub-Sector in Nepal
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ACRONYMS

AAFC	Agriculture and Agrifood Canada
ANSAB	Asia Network for Sustainable Agriculture and Bioresources
MoAC	Ministry of Agriculture and Cooperatives
ANROPI	Association of Nepalese Rice, Oil and Pulses Industry
DADO	District Agriculture Development Office
DFTQC	Department of Food Technology and Quality Control
DDC	District Development Committee
DCCI	District Chamber of Commerce and Industry
FAO	Food and Agriculture Organization
EC	European Commission
FGD	Focus Group Discussion
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
FORWARD	Forum for Rural Welfare and Agricultural Reform for Development
GAP	Good Agricultural Practices
GMP	Good Manufacturing Practices
GoN	Government of Nepal
ha	Hectare
ITC	International Trade Centre
kg	Kilogram
LDC	Least Developed Country
LIBIRD	Local Initiatives for Biodiversity, Research and Development
MFIs	Micro Financial Institutions
MFN	Most Favored Nation
MRL	Maximum Residue Limit
MT	Metric ton
NARC	Nepal Agricultural Research Council
NARDF	National Agricultural Research and Development Fund
NEAT	Nepal Economic Agriculture and Trade Activity
NGO	Non-Governmental Organization
NPRs	Nepalese Rupees
NSC	National Seed Company Ltd
PSDM	Private Sector Dialogue Meeting
R&D	Research and Development
SEAN	Seed Entrepreneurs Association of Nepal
SAARC	South Asian Association for Regional Cooperation
SAFTA	South Asia Free Trade Agreement
SAPTA	SAARC Preferential Trade Arrangement
SPS	Sanitary and Phyto-sanitary measures
TEPC	Trade and Export Promotion Centre
USAID	United States Agency for International Development
VDC	Village Development Committee
WB	World Bank
WTO	World Trade Organization

EXECUTIVE SUMMARY

The Nepal Economic, Agriculture, and Trade (NEAT) Activity is a USAID funded project intended to promote economic growth, reduce poverty, and improve lives in Nepal. Under its component 2- encouraging competitiveness and exports in selected agricultural and non agricultural commodities or services, the Asia Network for Sustainable Agriculture and Bioresources (ANSAB) conducted a value chain/market study of the lentil subsector in Nepal.

Lentil has emerged as a potential exportable commodity for economic growth in Nepal. However, lentil exports have significantly fluctuated in volume and value over the last ten years, mainly due to lack of production and export diversification.

ANSAB conducted a value chain study on lentils to identify the in-depth value chain/market performance of this subsector, and to provide insights for intervention and program implementation to enhance competitiveness with a lead role from the private sector. Information was gathered through Focus Group Discussions (FGDs), key informant interviews, informal discussions, a stakeholders workshop, and other sources.

The current world market for lentils is worth approximately US \$1,667 billion, which is almost three times higher than what it was in 1999 (FAOSTAT and ITC, 2011). Because of the increased world market price, the growth of export value has far exceeded the growth of production. Yield is low in developing nations compared to the developed world due to a combination of technical and policy level constraints, primarily at the farm level.

A large number of market actors are involved in the lentil value chain in Nepal, playing different roles in input supply, production, collection, processing/exporting, wholesaling, and retailing. A total of about 600,000 farm households are lentil growers throughout the nation. The majority of farmers are smallholders, cultivating only about 0.2 hectares (ha) of land. It is estimated that 70 percent of lentil production is consumed by the domestic market in Nepal. It is also estimated that about 93 percent of national demand is fulfilled by national production. There are 10-25 small scale VDC-level collectors, 10-15 district-level large collectors, and 3-5 district-level commission agents in each district. There are about 18 large exporters and 5 district-based wholesaler/processors in Nepal involved in processing lentils.

A strong vertical and horizontal linkage was not found in the lentil value chain mainly due to a lack of communication and a poor functional relationship between independent actors. Exporters and large-scale collectors were found to dominate the lentil value chain. They store lentils for six months to one year in order to command a high market price in scarce seasons. As the lentil exporting begins, the price in the domestic market begins to increase, resulting in the importation of lentil from overseas, which then causes price fluctuations. The profit margin in the lentil value chain ranges from NPRs 1-9/kg for different actors. Exporters benefit from the highest profit margin of NPRs 9/kg while farmers earn a profit margin of NPRs 3- 4/kg of lentil.

There are a number of supply side constraints in the lentil value chain. Farmers lack improved inputs, technology, and skills for achieving a higher yield. Also, grading and storage systems are not efficient even at the processor level. Market information systems are also low-quality at the farmer and collector levels.

The input supply system should be strengthened to ensure the availability of high quality inputs at the farmer level. Government, non-government, and private sector actors should closely coordinate to achieve export-led economic growth. Private/public and cooperative partnerships should take a lead role in infrastructure development, such as warehouses, collection centers, and research and development (R&D). Examples of R&D investment opportunities include varietal improvements, seed multiplication, and enhancing quality standards. Provisions should be made for smallholder farmers and processors to receive incentives on capital, agricultural inputs, grading and cleaning tools, equipment, and micro-irrigation systems. Cooperation among market actors is the most essential factor for establishing a functional lentil value chain.

1. INTRODUCTION

1.1 Background

NEAT is designed to promote economic growth, reduce poverty, and improve livelihoods in Nepal. Under its components 2 - encouraging competitiveness and exports in select agricultural and non agricultural commodities or services - NEAT is supporting four sub-sectors including: lentils, off-season vegetables, ginger, and orthodox tea.

ANSAB is an independent, nonprofit, civil society organization working in South Asia since 1992. ANSAB is committed to biodiversity conservation and economic development through community-based enterprise oriented solutions. ANSAB is the pioneer in developing and applying new approaches to promote natural products-based enterprises and value-chain interventions in Nepal.

Lentil (*Lens culinaris*) is mainly grown in the lowland Terai region of Nepal in rotation with cereals based on the availability of residual soil moisture after the harvesting of rice. It is generally planted in mid October to November and harvested in March and April. Lentil is a short bushy annual legume with small purse like pods containing 1 or 2 lens-shaped seeds. Lentils were among the earliest domesticated plants about 10,000 years ago in the Near East (Cubero et al. 2009). Lentils play an important role in livelihood, food, and nutritional security. They are low in fat, low in sodium, cholesterol free, high in protein, and are an excellent source of both soluble and insoluble fiber, complex carbohydrates, vitamins and minerals. Lentil is also an important nitrogen fixing crop.

Lentil is the highest pulse in terms of both production areas and production quantity that covers more than 60percent of the total pulses produced in Nepal. It is also the largest exported item among agricultural commodities from Nepal with a share of about 2.3 percent of total national exports and about 3.1 percent of the total world export (ITC, 2010). Nepal is currently listed among the top 10 exporters and was 5th in 2009 and 2010 in terms of quantity and value in US dollar exported. Lentils from Nepal are receiving US \$1,364 per metric ton (MT) which is high compared to the lentils from other countries. The Nepal Trade Integration Strategy (NTIS) has prioritized lentil as one of the 19 commodities with export potential in Nepal.

Despite a high export potential, there are many constraints that are limiting the production and export of lentils. The major constraints to increase lentil production at farm levels are the lack of improved seeds, production technologies, micro-nutrients, chemical fertilizers, insecticide/pesticide management, and micro-irrigation. Also constraining export growth are

proper linkages with international buyers, compatible policies, information gaps, and quality standards and certification.

1.2 Objectives

The overall objective of this study is to carry out an in-depth value chain/market assessment of the lentil subsector and provide insights to NEAT for intervention with the ultimate goal of enhancing this subsector's competitiveness with a lead role from the private sector.

1.3 Scope of the study

This study focuses on the major functions, actors, enablers, and their relationships throughout the entire value chain map of the lentil sub-sector. The study identifies major gaps, opportunities, and leverage points within the value chain; reviews worldwide production and trade statistics of lentil; and draws conclusions to enhance the subsector's competitiveness.

The coverage of this study includes:

- Identification of all actors along the value chain; roles and existing relationships, and levels of trust;
- List of the contact details of lead firms/exporters/traders and estimates of their demand volume and/or importance (i.e., percent of market, major commodity supply areas) to the furthest extent possible;
- List of the contact details of foreign importers/buyers;
- Identification of the lentil production pocket areas in NEAT districts with there are direct linkages to processors and traders based on interviews;
- In depth market study with reliable monetary estimates of the full value chain; production, imports/exports, value addition, and value chain governance;
- Interviews with major lead firms/exporters identifying key opportunities and constraints;
- Meeting with other donors/projects that are active in the lentil sub-sector in Nepal in order to avoid duplication of activities;
- Facilitation of private sector dialogue meetings, bringing together key actors along the value chains, to discuss key opportunities and constraints and possible win-win activities for NEAT;
- Assessment of the willingness of actors to work together to enhance their competitiveness; and
- Identification of the strategies and implications for down and upstream actors along the entire value chain.

1.3.1 Location

This study involved market visits, interaction with stakeholders working in the lentil sector in Nepal, and consultation with traders, processors and exporters. Eight districts (Bara, Rautahat, Sarlahi, Kapilbastu, Dang, Banke, Bardiya and Kailali) of Terai were selected for the field study because the producer groups and processor/exporters of this subsector are mainly concentrated in Terai. VDCs were selected in consultation with the District Agriculture Development Office (DADO) and related NGOs working in respective districts. The input suppliers, producers, small collectors, wholesalers, and exporter/processors in the districts were also visited to better identify horizontal and vertical linkage throughout the

value chain map. Information on available value chain actors was validated and cross checked through interaction with district Chambers of Commerce and Industries (CCI), the Association of Nepal Rice Oils and Pulses Industries (ANROPI) and Agro-Enterprise Centers (AEC). The customs and quarantine offices at Birgunj, Krishnanagar, Mechi and Bhairawa were also visited for information on trade and quality certification. Further information was gathered by visiting the Trade and Export Promotion Center (TEPC), the Ministry of Commerce and Supplies (MOCS) and the Crop Development Directorate (CDD).

1.3.2 Information Collection

Checklists were prepared in advance to collect information from different market actors. For data collection at the producer level, two FGDs were conducted in each of the selected districts. The names of the collectors and local traders were gathered from producers/ sellers through village level FGDs. Similarly, names of processors/millers were acquired from local traders/collectors and also from CCI. All of these market actors were visited and interviews were conducted. Informal discussions were also held with some farmers, agro vet owners, cooperative members, executive members of seed producing coordination committees, owners of Seed Companies, and executives of research stations and retailers to collect information. Secondary sources were also used for the collection of quantitative information. Close coordination and collaboration was maintained with NEAT staff and public and private agencies including the Department of Agriculture (DOA) and the Nepal Agricultural Research Council (NARC); NGOs including the Forum for Rural Welfare and Agricultural Reform for Development (FORWARD) and the Global Agri-Tech Nepal (GATE), the Agro-Enterprise Center (AEC), the Federation of Nepalese Chambers of Commerce and Industry (FNCCI), the Delegation of Nepal Customs (DCCI), the Nepal-India Chambers of Commerce and Industry (NICCI), and ANROPI. The information collected from different sources was triangulated and validated through a private sector dialogue meeting (PSDM) conducted in Kathmandu.

1.3.3 Data Presentation

Data on lentil prices at value chain levels and commodity quantities are presented in a range because they fluctuate over time, even within a week. Additionally, there is a price difference between different regions (i.e. Eastern versus Western) because of transfer costs. Therefore, data might not precisely capture the trend or pattern to reflect market dynamics. The data is validated to the extent possible with different sources.

1.3.4 Limitations of the study

The following conditions define the limitations of the study:

- The study was confined to Nepal;
- There was little time to conduct a detailed value chain study of lentil across the entire country;
- It was more difficult to acquire information from processors and exporters than other value chain actors due to existing political, economic, and security situations;
- Lentils are intercropped with other crops in many parts of Nepal rather than grown as a sole crop. This could lead to overestimation of area and underestimation of average yield; and
- There may be gaps in the trade data reported by Food and Agriculture Organization of the United Nations (FAOSTAT) because much of their data is not updated in a timely manner.

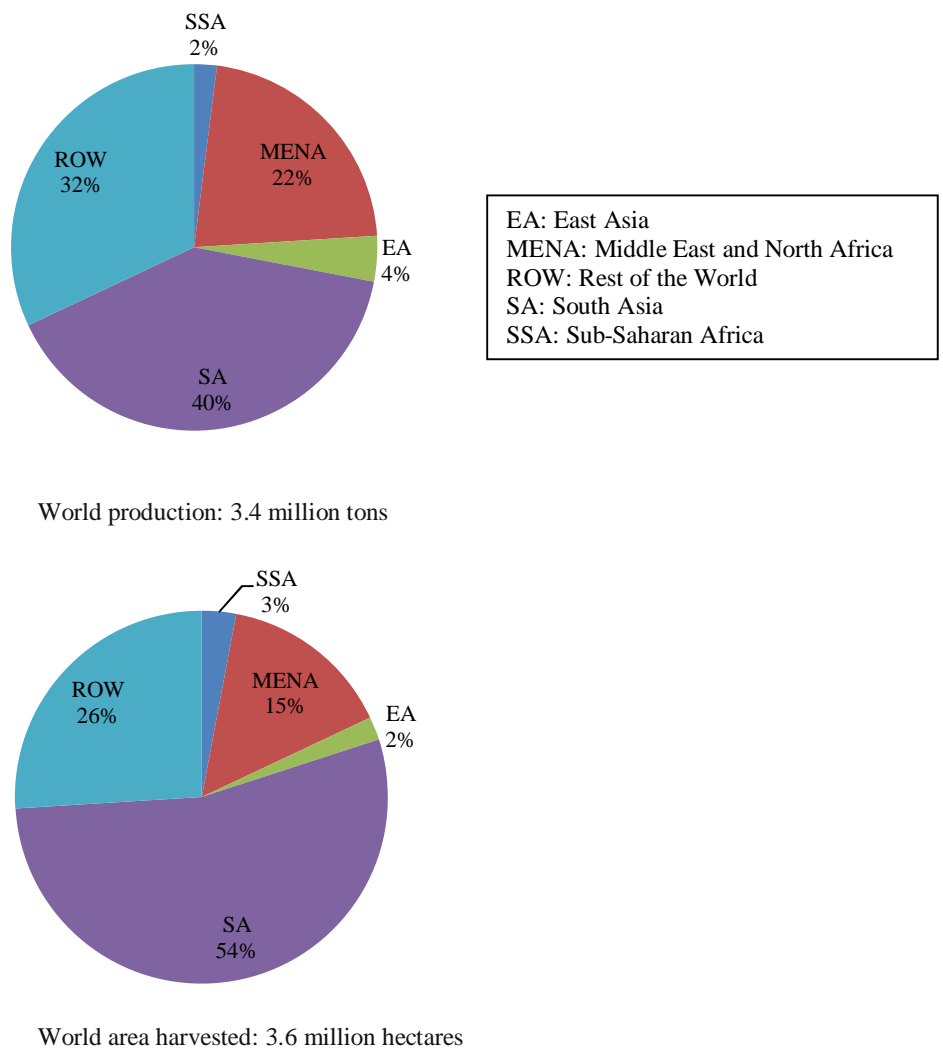
2. INDUSTRY ANALYSIS

2.1 World Market

2.1.1 World Production

Lentils are best produced in temperate zones or during the winter season in countries such as India, Australia, and Nepal due to their warmer winters. Lentils ranks sixth in global pulse production after dry bean, pea, chickpea, fava bean, and cowpea (FAO 2010). 60 million tons of lentils were produced in 2007-2008 which was 5.7percent of the total dry pulse production. The worldwide area harvest of lentil has increased by 6percent from 3.4 million ha in 1994 to 3.6 million ha in 2008. In the same period, the worldwide production of lentil has risen steadily by nearly four times (22percent) as a result of a 15percent increase in yields from 0.8 tons/ha in 1994-06 to almost one ton/ha in 2006-08.

Figure 1: Shares in World Area and Production by Regions in 2006-08



Source: FAOSTAT (Accessed on June 2011)

South Asia (SA) is the largest lentil producing region in the world with a share of more than 50 percent in total area and 40 percent in total production. The other major lentil growing and producing regions are the Middle East and North Africa (MENA) with a share of 15 percent in total area and 22 percent in total production. Both East Asia and Sub-Sahara Africa (SSA) are comparatively minor regional players (although some countries in this region are among the top ten lentil producers in the world). The share of the Rest of the World countries (ROW) including Canada, Australia, and the US is more than one-fourth in total area and almost one-third in total production. The production area ratio is comparatively higher in ROW and MENA than SA while it is highest in East Asia (EA) with 2:1 between 2006 and 2008.

Table 1: Major Lentil Producing Countries

Country/Year	2006-07	2007-08	2008-09	2009-10	2010-11
	Production in '000 MT				
Canada	639	734	1,043	1,510	1,425
India	946	871	571	751	820
Turkey	623	580	88	280	550
USA	289	155	109	264	265
Nepal	165	162	148	152	166
Australia	52	131	51	143	155
China (not in top list)	124	133	128	142	150
Total Production	2,838	2,766	2,138	3,242	N/A

p: provisional forecast
f: forecast

Source: www.agr.gc.ca/gaod-dco

Table 1 presents a list of major lentil growing countries in the world. Lentil production for the major lentil producing nations has increased steadily over the past seven years from 2.1 million tons (MT) in 2002-2003 to 3.2 MT in 2009-2010. Among the main producers, production has increased in Canada and Australia, but has been highly variable and decreased in India, Turkey, and the United States. There are two groups of lentil producing countries – One-ton yield club countries including Australia, Canada, China, Turkey, and USA, and the lower yielding rest of the world, where production has not maintained the pace with global demand. Productivity is low even in developed countries due to cultivars, diseases, pest occurrences, and negligence on overall investment for the sustainable intensification of production system (Erskine et al, 2011). Table 1 also reveals that yield has significantly increased among major producing countries except India and Nepal.

Table 2: Yield of Selected Lentil Producing Countries

Country	2003	2004	2005	2006	2007	2008	2009
Canada	1.0	1.3	1.5	1.2	1.3	1.48	1.56
India	0.6	0.7	0.7	0.6	0.62	0.61	0.68
Turkey	1.2	1.2	1.3	1.4	1.3	0.66	1.43
USA	1.2	1.4	1.3	1.4	1.1	1.02	1.61
Nepal	0.8	0.85	0.85	0.86	0.86	0.85	0.80
Australia	1.2	0.4	1.6	0.3	1.2	0.54	1.37
China	1.5	2.1	2.0	2.2	1.9	2.1	1.9

Source: FAOSTAT, 2011

About 68 percent of the lentils produced in the world are consumed locally where they are produced while remaining 32 percent are exported (Erskine, 2009). Although specific data is not available on the types of lentils grown, an estimated 70 percent of world lentil production is the red type, 25% green type and 5% brown and other types depending on the market demand. Canada and the USA are the largest producers of the green type whereas the rest of the world produces mainly the red type (India, China, Australia, Turkey and Syria in particular). Production and consumption in South Asia and in the Middle East is essentially red lentil. Total worldwide lentil consumption has increased steadily during the last 10 years (AAC, 2010). It is also an important diet in many poor countries such as Bangladesh, Eritrea, Nepal, and Sri Lanka. Lentil consumption is the highest in Canada with 6 kg per person per year followed by Sri Lanka (4.5 kg) and Nepal (4.1 kg). In Nepal, lentil is the predominant pulse and its consumption is relatively high.

Table 3: Lentil Consumption (kg/cap/yr) in the Highest Consuming Countries

Country	Consumption	Country	Consumption
Canada	6.0	Lebanon	2.6
Sri Lanka	4.5	Algeria	2.3
Nepal	4.1	Jordan	2.2
Syria	3.7	Colombia	2.1
Turkey	2.9	Iran	1.5
Eritrea	2.9	Bangladesh	1.5

(Source: FAO 2010)

2.1.2 World Market

The world's export quantity has increased significantly from 1.09 million MT in 2000 to 1.93 million MT in 2010. However, there was a sharp fall in lentil exports from 1,646 million MT in 2007 to 1,319 million MT in 2008. It could be due to crop failure in some of the major exporting countries like Syria and Turkey over that period due to heat stress. In value, there is also a significant growth and the trend (14 percent) is even better than the one observed for quantity (5.8 percent). The world market is now worth about US \$ 1,667 billion which is almost three times more than the export value in 2000.

Table 4: World Export of Lentil

Year	Value (US \$ in millions)	Volume ('000 MT)	FOB price (\$/ton)
2000	445.6	1,098.2	\$406
2001	431.4	1,177.0	\$367
2002	355.6	1,018.9	\$354
2003	439.9	1,041.2	\$423
2004	497.9	1,127.7	\$448
2005	631.8	1,403.6	\$448
2006	629.5	1,553.5	\$404
2007	847.7	1,646.6	\$407
2008	1,249.7	1,319.9	\$948
2009	1,505.1	1,815.1	\$830
2010	1,667.6	1,935.7	\$860
Trend	14.1	5.8	

Source: FAOSTAT and ITC, 2011

2.1.3 Major Exporters and Importers

In terms of value, the major exporting countries of lentil are Canada, Turkey, USA, Australia, and Nepal while in terms of volume; USA is ahead of Turkey (Annex 4 and 5). According to the Table 5, Canada was the biggest exporting country with 58.8 percent of total world exports in 2010. The second biggest exporting country was Turkey with 13 percent of total exports, which was less than a quarter of Canada's export. Nepal accounted for only 3.1 percent of total worldwide exports in 2010. It is also observed that there is sharp fall in the export value of India with a negative annual growth rate (-31 percent) between 2006 and 2010. It could be due to a ban imposed by the Indian government to export lentil. Nepal's annual growth rate in terms of value is 82 percent which is significantly higher than world average. Similarly, the annual growth in terms of volume is 48 percent which is about 7 times higher than world average. These figures indicate that the unit price of Nepali lentil increased significantly between 2006 and 2010.

Table 5: World Export of Lentil (Trade Indicators)

Exporters	Unit value (USD/MT)	Growth in value p.a.2006-2010 %	Growth in quantity p.a. 2006-2010 (%)	Share in world exports (%)
World		30	7	100
Canada	829	42	15	58.8
Turkey	1113	10	-12	13
USA	711	35	14	8.9
Australia	793	12	-8	6.6
Nepal	1364	82	48	3.1
China	766	37	14	1.1
Sri Lanka	1123	433	336	1
Syria	624			0.9
India		-18	-31	0.7
UK	2249	20	11	0.2

Source: ITC, 2011

Among the major lentil exporting countries, Nepal has the highest unit price. Sri Lanka, Canada, and Turkey also achieve good prices in the world lentil market. Canada is the world leader with more than half of the total world's export. Turkey, India, UAE, Algeria, Sri Lanka, Bangladesh, and Pakistan are the major import countries of Canadian lentil (Annex 8). Canadian lentil represents 36.4 percent and 34.1 percent of the total lentil imports in Bangladesh and Sri Lanka respectively. The Nepalese lentil represents 30.1 percent in Bangladesh total lentil imports (Annex 10).

Table 6: World Import of Lentil (Trade Indicators)

Importers	Unit value (USD/MT)	Growth in value p.a. 2006-2010 (%)	Growth in quantity p.a. 2006-2010 (%)	Share in world imports (%)
World		30%	7%	100%
Turkey	922	76%	45%	11.5%
India	720	71%	41%	8.8%
Bangladesh	930	26%	7%	8.4%
Sri Lanka	964	37%	5%	7.7%
Egypt	475			6.7%
UAE	862	46%	17%	5.8%
Algeria	868	37%	7%	4.4%
Pakistan	805	18%	-3%	4.1%
Sudan	1,078	21%	-7%	3.4%
Colombia	736	31%	-1%	3.2%
Iraq	1,057	13%	-8%	2.9%

Source: ITC, 2011

Turkey, India, Bangladesh, Sri Lanka, and Egypt are the major importing countries in terms of value (Annex 6), while in terms of volume Egypt, Turkey, India, Bangladesh, and Sri Lanka are the major importing countries (Annex 7). Table 6 indicates that the annual growth in value (30%) is more than the annual growth in quantity (7 percent). This shows that there has been a significant growth in the world market price of lentil. The South Asia region represents the most important market for exporting countries. Turkey is the biggest importer of lentil with 11.5 percent of world's import in 2010. India accounts as the second largest importer of lentil with 8.8 percent of the total world imports, whereas Bangladesh and Sri Lanka are the third and the fourth largest importer with about 8.4 percent and 7.4 percent of the total world import. Table 6 reveals that Turkey and India have the highest annual import growth in value with 76 percent and 71 percent respectively between 2006 and 2010.

Nepal achieves premium lentil prices in Bangladesh and Middle Eastern countries compared to anywhere else. Data also shows that there is a high scope of lentil export in Pakistan, Sri Lanka, and India. Pakistan and Sri Lanka could be alternative markets for Nepal. In the long term, however, Nepali lentil entrepreneurs should target for more significant importers in the world market such as UAE, Egypt, and Algeria. There is further potential to make inroads in the EU market if Nepalese exporters can meet their quality requirements.

Because India, Sri Lanka, and Pakistan are major importer with increasing demand, it is necessary to seriously analyze trade indicators and the markets of these countries to export Nepali lentil. Australia and Canada are currently the largest suppliers of lentil to Sri Lanka. Nepal should compete with these countries in terms of quality, quantity, and price.

Most governments impose technical regulations or standards on (domestic and imported) products to protect human, animal, or plant life, as well as the environment. The agreements on technical barriers to trade and on sanitary and phytosanitary measures ensure that such requirements do not create unnecessary obstacles to international trade and provide certain rights to exporters. It is up to each exporter to find out about requirements in relevant foreign markets. The Nepalese lentil trade business can benefit of WTO, SAFTA and EU provisions to diversify the export of lentil. However, Codex Alimentarius SPS standard fulfillment is becoming stringent and affecting all WTO member developing countries.

2.2 Domestic Market

2.2.1 Yield, Production, and Area

Lentil in Nepal is mainly grown in the lowland Terai districts. The area that is used to produce lentils has increased slightly from 178.7 thousand hectares in 2000-01 to 187.4 thousand ha in 2009-10. Nepal experienced a growth rate of 0.5 percent in 2009-2010. The total yield of lentil stabilized at almost 0.80 ton/ha (See Table 7).

Table 7: Lentil Production, Yield and Area in Nepal (Time Series)

Year	Production ('000 MT)	Area (Ha)	Yield (MT/Ha)
2000/01	143	178.7	0.80
2001/02	148.3	180.2	0.82
2002/03	149.9	183.2	0.82
2003/04	158.6	187.7	0.84
2004/05	160.7	188.8	0.85
2005/06	157.9	183.1	0.86
2006/07	164.6	189.1	0.87
2007/08	161.1	169.4	0.85
2008/09	147.7	183.7	0.80
2009/10	151.7	187.5	0.81
Growth Rate (%)	0.5	0.5	0.1

Source: MOAC, 2009/10

Commercial production of lentils is concentrated in the Terai because of favorable climate, prevailing soil conditions, and most importantly easy access to main highway routes. There are approximately 700,000 farm households involved in lentil production throughout Nepal. According to Table 8, lentil production is highest in Dang district with 19,775 MT followed by Sarlahi with 19,005 MT and Rautahat with 16,355MT. The top ten lentil producing districts in Nepal share 78 % of national production and 72 percent of the lentil growing area. Average yield in these districts is 9 percent higher than the national average (810 kg /ha).

Table 8: The Ten Top Lentil Production Districts in Nepal in 2009/10

Districts	Area (ha)	Production(MT)	Yield (kg/ha)
Sarlahi	17,847	19,755	1,107
Dang	26,056	19,005	729
Rautahat	17,847	16,355	802
Bara	13,115	14,532	1,108
Kailali	18,305	13,186	720
Bardiya	12,962	10,525	812
Parsa	7,343	8,284	1,128
Banke	9,790	7,434	759
Sunsari	6,935	5,753	830
Chitwan	4,793	3,955	825
Total 10 districts	134,993	118,784	882
Share of 10 districts	72%	78.3%	9% higher
Total Nepal	187,437	151,758	810

Source: MOAC, 2009/10

2.2.2 Export/import condition

Nepalese lentils account for 90 percent of the total export of pulses. Overall, export of lentil rose considerably apart from a period of fluctuation from 2001 to 2010 where there was a significant growth in export value due to increased market prices. The export of lentil decreased to about 4,109 MT worth \$ 3.12 million in 2007 from 30,449 MT worth \$12.8 million in 2003. However, there was a sharp increase in the export of lentil from 2007 to about 56,768 MT worth \$73.1 million in 2009. The value of lentil in 2010 is more than three times the value of 2001.

Table 9: Nepal's Export of Lentil (Time Series)

Year	Quantity (MT)	Value ('000 US \$)	Unit value US \$/MT
2001	15,094	6,810	451
2002	22,785	6,022	264
2003	30,449	12,877	423
2004	15,252	6,992	458
2005	14,591	7,273	498
2006	7,778	4,670	600
2007	4,109	3,129	761
2008	16,417	22,075	1,345
2009*	56,768	73,115	1,288
2010*	37,560	51,244	1,364

Source: FAOSTAT & *ITC, 2011

Although Nepal is a major producer and exporter of lentils, Nepal also imports lentil in order to fulfil the domestic demand, especially during off-seasons. However, in recent years, the import of lentil has significantly decreased. The import unit price is also far below the export unit price.

Table 10: Nepal import of lentil from 2001 to 2010

Year	Quantity (MT)	Value ('000 US \$)	Unit value US \$/MT
2001	70	26	371
2002	280	100	357
2003	6,064	2,505	413
2004	2,151	1,033	480
2005	8,450	4,817	570
2006	6,958	3,740	538
2007	232	113	487
2008	263	234	890
2009*	32,260	12,976	402
2010*	7,645	3,149	412

Source: FAOSTAT & *ITC, 2011

The rise in exports recorded in 2008-09 shows that lentils are a potentially valuable commodity to narrow the increasing trade deficit in Nepal. Prices of food are increasing globally, therefore there is big potential for further lentil exports, provided there is an increase in national production.

2.2.3 Quality Standards

Nepalese exporters are not able to export large quantities of lentil to a number of Organizations for Economic Cooperation and Development (OECD) countries such as the USA, UK, Italy, Germany, Spain and France due to restrictive sanitary and phyto-sanitary measures (SPS). In developing countries; India, South Asia Free Trade Agreement (SAFTA), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and South Asian Association for Regional Cooperation (SAARC) regions, the SPS requirements are less stringent and currently there are no major obstacles for exports. However, Nepalese exporters are likely to soon face requests from importers of the South Asian region for certification and compliance with SPS Codex Alimentarius standards.

There is a need for Nepalese lentil exporters to anticipate the South Asian markets stringency on Codex Alimentarius standards, and design a short-term and long-term strategy to overcome regional SPS barriers for lentil exports. Until the Nepalese independent certification is internationally recognized, exporters will have to contract services with Indian certification institutions or with bodies from the countries of destination of their exports. If they do not do so, they will face obstacles: a) either the rejection of their exports, or b) complaints from the clients in the importing countries, based on internationally recognized laboratories tests, that could entail reduction in the prices paid or refusal of the consignment.

The Nepal Bureau of Standard and Metrology has fixed the following standards for split lentil in Nepal. The Department of Food Technology and Quality Control (DFTQC) provides quality and/or grade certification to sample providers.

Table 11: Lentil National Standards

S N	Quality	Standard A	Standard B
1.	Foreign materials not more than:		
1.a	a) Inorganic (sand, soil, concrete)	0.5%	1%
1.b	b) Organic (straw & materials)	0.5%	1%
1.c	c) Other foreign materials that can be eaten	3%	4%
2	Damage by insects	1%	2%
3	Damage due to other causes	1%	2%
4	Unbroken seed with seed coat	2%	3%
5	Unripe and wrinkled seed	5%	8%
6	Seed broken in small particles	2%	6%

3 VALUE CHAIN MAPPING

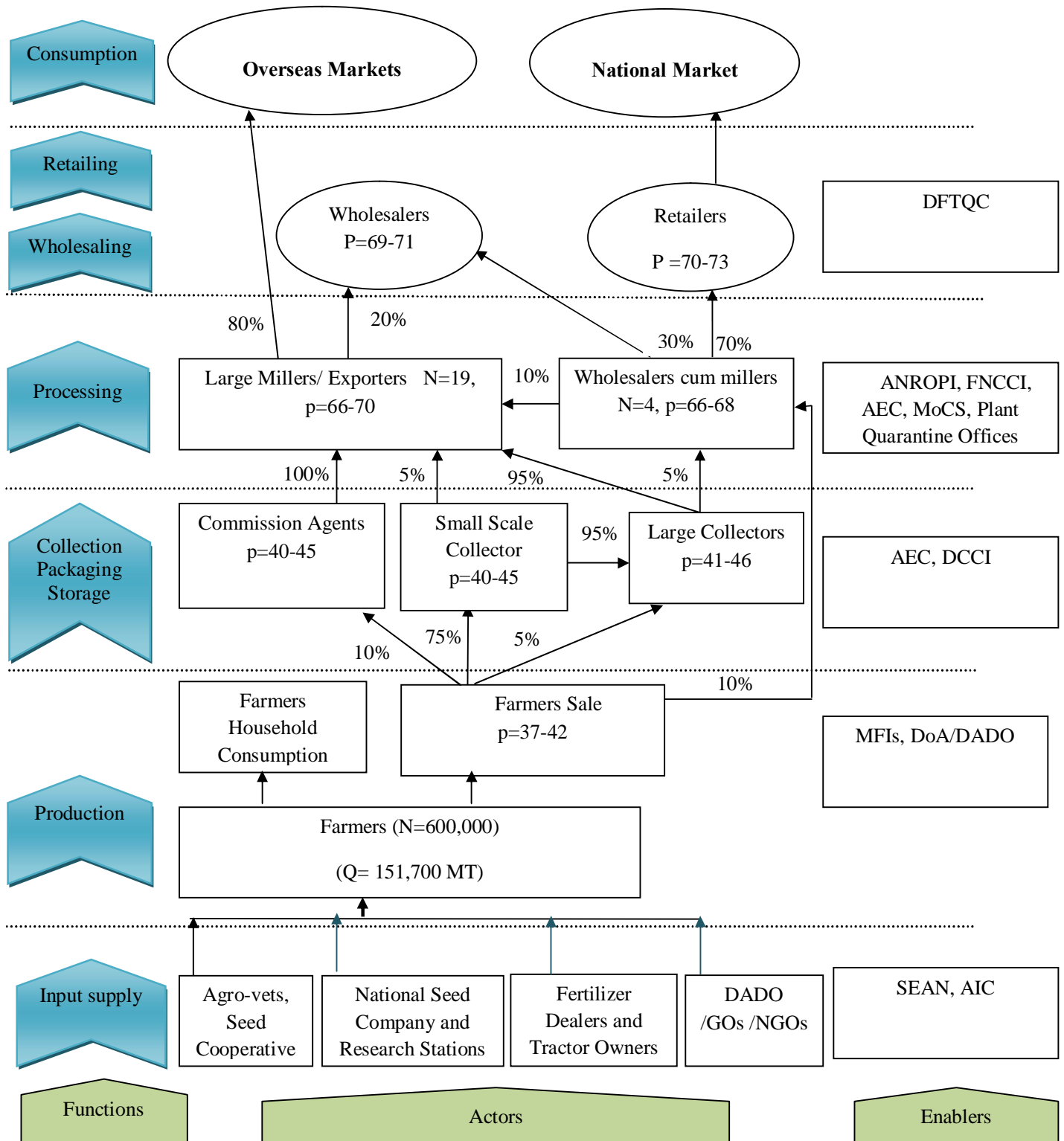
3.1 Value Chain Map

Lentil is the most important pulse crop in terms of production and area in Nepal. The majority of farmers (about 600,000) are involved in lentil production cultivating in an area of 0.2 hectare land. It is estimated that 70 percent of lentil production is consumed by the domestic market. Approximately 93 percent of lentil consumption in Nepal comes from domestic production and the remaining 7 percent comes from overseas markets.

The value chain map of lentil in Figure 1 (next page) depicts the major functions, actors, and their relationship in lentil marketing. The lentil value chain is characterized by a largely informal market system. A large numbers of market actors are involved in value chain. Lentil is marketed as a raw product up to the processors. After processing, it is marketed as whole or split lentil and goes to the consumers of overseas markets and the domestic market.

In the following map N, P, and Q stand for number of actors, product's price, and quantity respectively.

Figure 2: Value Chain Map of Lentil Subsector of Nepal



3.2 Actors and Roles

There are many actors in the lentil value chain including input suppliers, producers, collectors, processors, wholesalers, and retailers. This section describes the roles of each one.

Input suppliers

Agro-vets, agricultural tool dealers, seed producer cooperatives, fertilizer dealers, NARC, DADO, and the National Seed Company are major input suppliers in the lentil value chain. They supply inputs and also provide technical advice to farmers on cultivation techniques, improved seed varieties, and the use of pesticides and insecticides.

Producers

Farmers receive inputs required for lentil production from local and district level input suppliers. Farmers keep about 30 percent of their product for home consumption and the remaining quantity is sold in the market. About 65 percent of lentil is sold to small scale collectors known as *Baniyan*, 15 percent to district level wholesalers/millers, 10 percent to commission agents, and the remaining 5 percent to large collectors known as *gallawallas*. There is not a strong association among the farmers so they cannot collect large amounts at one place for bargaining higher prices with the collectors.

Collectors (small scale/large scale)

Most of the small scale collectors are permanent residents of their collection areas. In some instances they are also lentil producers. Around 10-25 small scale collectors from each VDC are involved in collection as Baniyans. Of the total amount they collect, about 95 percent is sold to district level large traders and the remaining 5% is sold to large millers/exporters. There are about 5-15 large scale collectors who sell the majority of their volume to large millers/exporters while a very small amount (about 5 percent) to wholesalers/millers. Collectors are primarily involved in collection, drying, and storage. There are also 3-5 commission agents in each district who collect lentils from producers and sell directly to large millers/exporters. Exporters/processors use commission agents for collection whenever there is price fluctuation in the market so that they can bargain with large collectors during the lentil procurement process.

Processors/exporters and wholesaler cum processors

There are about 18 large exporters; each with an operating capacity of 4-5 tons/hr, and 5 district based wholesaler/processors in Nepal involved in lentil processing. They fulfill various functions such as storing, grading, sorting, dehulling, cleaning, drying, splitting, and polishing. However, none have a proper grading system. About 15 percent impurity from variables such as weeds, dust, and sand is allowed by western processors when buying lentils, while it is 5 percent in the eastern region which is one of the major factors for variation in prices between the two regions.

Both exporters and wholesalers/processor use a sortex polishing machine to make their product export ready. Of the total volume they process, 78 percent is retained for further processing while 22 percent is produced as husk.

Wholesalers

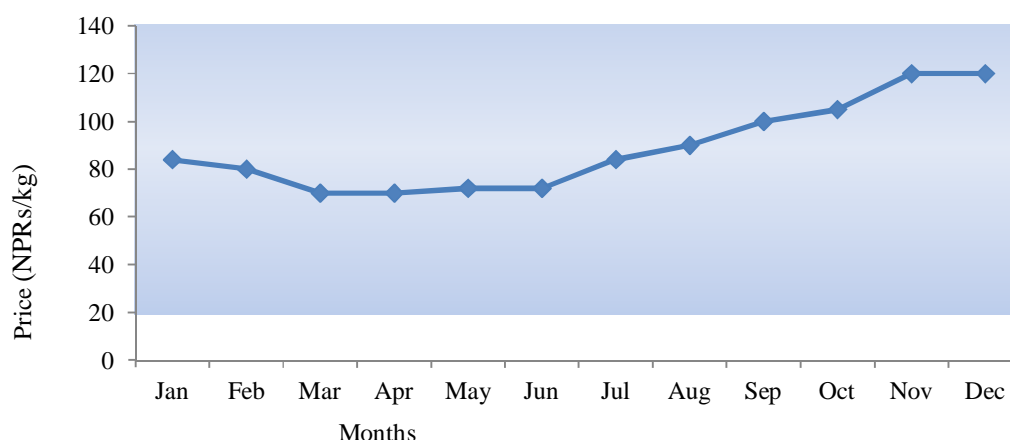
Wholesalers buy split lentil from exporters and other wholesalers/processors and sell it to retailers within and outside their respective districts. They are stationed in large markets including Bhairahawa, Nepalgunj, Lamahi, Birgunj, Gaur, Narayangadh, Pokhara and Kathmandu.

Retailers

Retailers buy split lentil from wholesalers and processors/exporters and sell it to the final consumers. The functions of retailers are weighing and retailing to consumers. There are lentil retailers in most of the lentil producing VDCs in Nepal.

3.3 Seasonal Market Variability and Price Trend

Figure 3: Seasonal Variation of Lentil Prices in Nepal



Harvesting and threshing of lentil is completed between March and April. This is also the peak time of lentil transaction between farmers and collectors. A large supply of lentil during this period results in a very low farm gate price. Small collectors generally do not hold lentils for a long period so they need to sell to large collectors in April /May. The majority of large scale collectors sell to the processors within June/July; however some of the large collectors have the ability to store lentils for six to nine months to get a higher price in the offseason.

The cross border marketing of lentil is not a big influence in the value chain due to export restrictions on the part of the Indian government. Lentil goes to Bangladesh and overseas countries from Nepal mainly through Mechi Customs after June/July which results in a sudden increase in domestic prices. As the lentil stock of the large processor/collectors diminishes, the price of lentil begins increasing in September and remains high until October. There is also import from India and other countries including USA, Russia, and Turkey during this period due to increased prices of lentil exports.

3.4 Profitability of the Lentil Business

There is a high variation in profit margins for market actors in the lentil business compared to other cereals and vegetables due to value addition and the fact that lentils are an exportable commodity. Lentil productivity is low, but farmers do not hesitate to agree that lentils are

more lucrative than cereal crops. The reason is that the cost of inputs is low and farm gate prices are appreciable. Farmers do not have a dominant role in pricing their produce; they have to agree with the price given by traders. Farmers suggest that the GON should provide quality inputs needed to produce lentils and market information of the lentil business directly to them.

Generally, farmers do not calculate profit margin. This year, farmers' share to consumer price is 56 percent. To make a reasonable profit from lentil cultivation, farmers need to increase their productivity and reduce the cost of production per unit area through optimization of production inputs and use of improved machineries.

The net profit for collectors is approximately 1.62 NPRs per kg of lentils. Wholesalers/processors and exporters/processors have comparatively higher margins. Wholesalers/processors make a profit of 6 to 7 NPR per kg while processors have a margin of 8 to 9 NPR per kg. Processors make a higher profit for two reasons. First, they process lentils and add value by grading, packaging, dehulling, polishing and splitting. Second, they hold lentils for as long as one year and take advantage of high market prices. Processors are enjoying higher profit instead of focusing on increased sales that could benefit all the market players in the lentil value chain. Wholesalers make a profit of 1 to 2 NPR per kg while retailers make a profit of 1.50 to 2.50 NPR per kg sold to the domestic market. For wholesaler/processors, there is a higher profit margin for domestic sales when sold to large markets such as Kathmandu or Pokhara. Profit margins decrease for collectors and wholesalers with increased sales by retailers. Tables 12, 13 and 14 display net profits from lentil production and processing.

Table 12: Benefit-Cost Analysis of Lentil Production by Farmers (in Kattha)

SN	Particulars	Quantity	Rate (NPRs)	Total (NPRs)
	Expenses			
1	Seed (kg)	1.5	70	105
2	Ploughing (tractor in hrs)	10 min	800	134
3	DAP (kg)	1.5	40	60
4	Potash(kg)	1	28	28
5	Pesticides (ml)	10	3	30
6	Irrigation (hrs)	2	250	500
7	Harvesting and threshing labor	2	300	600
	Total cost			1457
	Income			
1	Total lentil production (kg)	40	40	1,600
2	Gross income			
	Net profit			257
	Producers' share			56%
	Net profit per kg			3.50

Source: Field Survey, 2011

Table 13: Benefit-Cost Analysis of Whole Lentil Production by Exporter/Processor

SN	Description	Total (NPRs)
	Cost per kg of lentil	
1	Buying cost	45
2	Weighing, load, unload, sacks, storage	2
3	Post harvest loss	4
4	Cost of depreciation, cost of space, grading, dehulling, drying, sorting, electricity, labor	9
5	Licensing, certification and transportation	2
6	Interest in input money	1
	Total cost	63
	Benefit per kg of rice	
1	Selling price of whole lentil	71
2	Benefits from byproducts (husk for animal feed)	1
	Total income	72
	Net profit	9

Source: Field Survey, 2011

Table 14: Benefit-Cost Analysis of Wholesaler cum Millers

SN	Description	Total (NPRs)
	Cost per kg of lentil	
1	Buying cost	45
2	Weighing, loading, unloading, sacks, storage	2
3	Post harvest loss	4
4	Cost of depreciation, cost of space, grading, dehulling, drying, splitting, electricity, labor	9
6	Interest in input money	1
	Total cost	61
	Benefit per kg of Lentil	
1	Selling price of whole lentil	67
2	Benefits from byproducts (husk for animal feed)	1
	Total income	68
	Net profit	7

Source: Field Survey, 2011

3.5 Enablers of the Value Chain

A number of public and private organizations are providing support to lentil production in Nepal.

Government and Non-Government Organizations

The Crop Development Division (CDD) of Nepal, Nepal Agriculture research Council (NARC), National Agriculture Research Development Fund (NARDF), District Agriculture Development Offices (DADO), Custom Offices, Quarantine Offices, Ministry of Commerce and Supplies (MOCS), and the Department of Food Technology and Quality Control (DFTQC) are enabling and facilitating government bodies in Nepal. Similarly Business Management Organizations (BMOs) like AEC/FNCCI, ANROPI, and Dhaka Chamber of Commerce and Industry (DCCI) have been supporting the traders for business issues. Some NGOs like FORWARD and Local Initiatives for Biodiversity Research and Development (LIBIRD) are also working in the lentil sector. Individual organizations have their own facilities and technology to support value chain actors. These organizations support value

chain actors in various aspects such as input supply, technology dissemination, infrastructure development, policy lobbying, and trade. There appears to be a lack of consolidated efforts among the many service providers in supporting the lentil value chain.

Financial institutions

There are more than five financial institutions in each lentil producing district in Terai providing loan services. However, they are reluctant to provide loan services to small holder farmers. Currently they are focusing their activities towards large traders and processors. The interest rate ranges from 12 to 25% per year depending on who the clients are and their business type.

3.6 Horizontal and vertical linkages

The lentil value chain is characterized by informal and underdeveloped market systems. Lentil is marketed as a raw product up to the processor level. After processing, it is marketed as polished whole and split lentil and goes to the consumers of the national and international markets. As the product moves through a series of different market channels, there are no strong vertical or horizontal linkages among the key market actors. Large scale collectors and exporter/processors dominate the lentil value chain. They have the ability to buy large quantities of lentils and hold them for a long period of time.

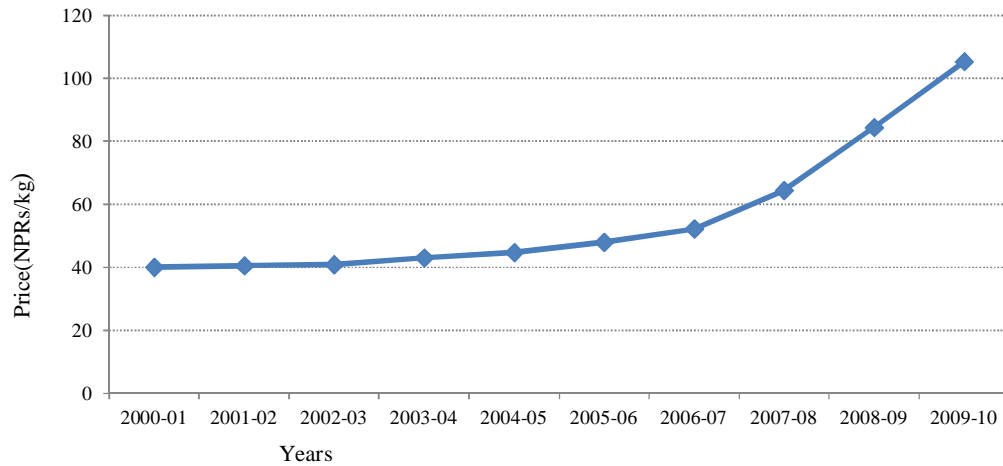
Farmers have good access to input service providers in the village, but improved varieties of seeds, fertilizers, and insecticides/pesticides/herbicides are increasingly in short supply.

3.7 End markets

Processor and exporters sell split lentils to the national market while polished whole lentils are exported mainly to Bangladesh. Some split lentils are also exported to countries in the Middle East. Member countries of the Organization for Economic Cooperation and Development (OECD) import a small volume of Nepalese lentils.

Middle class Nepalese citizens are consumers of lentils, but low income citizens rarely consume lentils from the domestic market. The domestic market is exhibiting an increasing trend in prices over the last decade due to the export market. The national average retail price of lentil increased significantly from 40 NPR/kg in 2000-01 to over 100 NPR/kg in 2009-10 (See Figure 4).

Figure 4: Trend of National Retail Price of Lentil



Source: MoAC, 2010

3.8 Value Chain Governance

The lentil value chain is characterized by an underdeveloped market system due to a lack of mutual understanding and trust among the key actors. Lentil producers work as individuals rather than as a large group which restricts their bargaining capacity when dealing with collectors. Large scale collectors and exporters dominate the value chain by holding large quantities of lentils in their storage facilities until the sale to market price fluctuates to a rate that suits them.

Exporters and processors interviewed for this analysis reported that they have adequate contact with international buyers, but they strongly complained about Bangladeshi buyers regarding tardiness in making payments.

4. COMPETITIVENESS ANALYSIS

The following competitive analysis identifies strengths, weaknesses, opportunities and threats within the lentil value chain. Strengths and weaknesses address the internal factors governing the lentil sub sector, while opportunities and threats refer to external factors in the business environment. The table below provides details of competitive analysis of lentil sub sector in Nepal (Table 15).

Table 15: SWOT Analysis of Lentil Subsector of Nepal

Strength	Weakness
<p>Production</p> <ul style="list-style-type: none"> ▪ Fifth largest producer globally ▪ Farm production capacity of around 187,437 MT, out of which 73 percent of total production are concentrated in ten districts of Terai ▪ Average national yield is higher than India and close to world's average • Grown intercropped with other companion crops to provide diverse food at the household level and security of production at the time of crop failure. • Common practice of relay cropping which provides more time for vegetative growth and reduce production cost due to zero tillage compare to sole cropping ▪ Low investment, low production costs and high potential for profitability <p>Processing</p> <ul style="list-style-type: none"> ▪ About 18 lentil processing mills have Sortex machine with attributes of grading and polishing, each has operating capacity of about 4-5 ton/hr ▪ Centrally located processing units close to markets and have access to transportation and communication facilities <p>Marketing</p> <ul style="list-style-type: none"> • Nepalese lentils are known as a red lentil that is small in size, tasty, and easily cooked; it is also organic, which is highly demanded and appreciated in South Asia and the Middle East, compared to lentils of other colors and from other country with large diameter. • Nepalese lentil get worldwide premium price due to quality and taste. <p>Enabling environment (Policy and Institutions)</p> <ul style="list-style-type: none"> • One of the priority products of NTIS • Availability of BMOs like ANROPI, AEC/FNCCI 	<p>Production</p> <ul style="list-style-type: none"> • Diseases (fusarium wilt, root rot and rust), insects (aphids and pod borer) and depleting soil moisture at the stage of grain filling • Lack of improved seeds, fertilizers and pesticide due to insufficient production and distribution • Unavailability of irrigation facility for critical stages of the growth • Less awareness among farmers on priming and rhizobium inoculums • Boron and Molybdenum deficiency in Terai region • Farmers not following appropriate crop management practices from sowing to harvesting for higher yield as compared to USA, Canada and Australia • Low seed replacement rate <p>Processing</p> <ul style="list-style-type: none"> • Grading and storage system is not efficient at processor level, since the processors are not using metal bins it is causing weight loss • Unavailability of storage facility at farmers level which causes high post harvest losses <p>Marketing</p> <ul style="list-style-type: none"> • Lack of reliable data and analysis on national and international market • Poor market information system at farm level • Lack of collective marketing at farmer's level • Lack of quality assurance lab and technology <p>Enabling environment (Policy and Institutions)</p> <ul style="list-style-type: none"> • Lack of established seed and rhizobium inoculums supply chain • Lack of trust among international buyers (Bangladesh) that is delaying timely payment

Opportunities	Threats
<p><i>Production</i></p> <ul style="list-style-type: none"> • New improved varieties (Khajura 1, Khajura 2, Simal and Sikhar) are available for whole terai and central hill, attainable yield is higher than the national average yield • Possibility to boost productivity of small farmers (priming - rhizobium culture treatment, insect pest management, irrigation at critical stages, weed and nutrient management) <p><i>Marketing</i></p> <ul style="list-style-type: none"> • Opportunities for value addition through cleaning and grading at farmers level • Possibility of import substitution • Increasing export markets, with prospects for the development of a niche market for organic, pure, natural lentil as a gift to international community • Increasing demand in new markets like UAE, Egypt and Sudan. • Sri Lanka and Pakistan could become potential neighbor markets apart from Bangladesh. • Export volume can be increased through price competitiveness <p><i>Enabling environment (Policy and Institutions)</i></p> <ul style="list-style-type: none"> • Provision of incentives in National budget for processor/exporter to minimize cost • Value chain aspect for commercialization highlighted in the three-years Interim Plan (2010-13) • Provision for preferential trading and subsidies to LDCs given by WTO and SAARC Preferential Trade Agreement (SAPTA) 	<p><i>Production</i></p> <ul style="list-style-type: none"> • Subsistence production among small holders have low incentives for increasing productivity • Farmers reluctant to adopt as sole crop due to economic condition, food security, traditional practice and also higher profitability in other crops such as sugarcane and vegetables • Pests and diseases <p><i>Marketing</i></p> <ul style="list-style-type: none"> • Australia, Canada and USA production and policies are targeting the South Asian markets • Price is volatile around the globe <p><i>Enabling Environment (Policy and Institutions)</i></p> <ul style="list-style-type: none"> • India, Nepal and Bangladesh have been rightly concerned to increase cereal production • Haphazard collection of district tax for local development seems to be obstacle for economic soundness • Codex Alimentarius, SPS standards fulfillment is becoming stringent in all WTO member developing countries, including India, SAFTA and SAARC

Source: Literature review and field Survey, 2011

5. CONSTRAINTS AND OPPORTUNITIES ANALYSIS

Major constraints and opportunities in the lentil value chain were identified through stakeholders meetings, Private Sector Dialogue Meetings (PSDMs), and focus group discussions. Major findings are summarized below:

5.1 Constraints

5.1.1 Input supply

Inadequate supply of quality inputs in production pockets: There is an inadequate supply of quality seeds, fertilizers, micro-nutrients, pesticides, and herbicides in production pockets. Most of the farmers use local varieties and traditionally produced seeds. Our research revealed that there is occasional support from District Agriculture Development Offices (DADOs) and the Agriculture Inputs Company (AIC) for quality seeds and fertilizers.

Lack of Rhizobium inoculums for seed treatment and seed supply: Rhizobium inoculums are not available for seed treatment before sowing which is necessary to increase the yield through nitrogen fixation in the soil. Furthermore, there is not an established or reliable seed supply chain at the farmer level. Generally, farmers we visited collect traditional cultivar seeds from the community which is not free of weeds.

5.1.2 Production

Low seed replacement rate: Seed replacement has a very low rate of 3.13% in Nepal which restricts improved varieties of seeds at the community level and has a negative impact on production.

Poor crop management practices: The existing national average yield of lentil is 0.81 MT/ha which is less than the attainable yield of 1.5 MT/ha in the country. This is because farmers in Nepal do not adopt appropriate crop management practices. They do a poor job of land preparation, understanding sowing dates, seed rate, seeding depth, crop harvest time, and other crop management options including weed control. Lentils are not irrigated at the critical stages. Zero tillage technology is not followed according to the soil type. There is not a practice of timely sowing with adequate provisions made for weed control. Seed priming is not practiced in Nepal although research on seed priming with improved varieties has shown that a 29-30 percent yield increase can be achieved (Ali et al. 2009).

Nutrient deficiency and widespread disease occurrence: Boron and Molybdenum deficiency is observed in soils of Nepal (Erskine et al, 2011). Therefore, lentils are often grown in soil with an imbalance of key minerals which restricts yield. Furthermore, Fusarium wilt, root rot, rust, and Stemphylium blight are the most widespread diseases in the lentil production fields of Nepal.

High interest rate for small holder producers: Farmers cannot afford loans from formal financial institutions due to very high interest rates for short durations. Farmers generally need capital to procure seeds.

Non cooperative formal financial institutions: Formal financial institutions require a mortgage to sanction a loan. Recently, the number of community based cooperatives has

risen at the community level which does help support the need that farmers have for credit, however they are not able to fulfil the total credit demand from their communities due to weak institutional management for capital formation and delivery services.

5.1.3 Processing

Unavailability of sorting technology for all types of weeds at the processor level:

Processing consists of a number of steps including mechanical separation, grading, decortications, splitting, and polishing. There are many processors in Nepal who lack appropriate facilities that feature sorting technology. This is especially important for sorting out weeds.

Improper cleaning and lack of grading at the farmer level: Lentils are very specific in terms of seed coat color, diameter, thickness, and uniformity in appearance. There is no provision of mechanical separation, cleaning or grading of lentils at the production level which diminishes profits.

5.1.4 Marketing

Lack of collective marketing at community level: Farmers do not practice collective marketing at the community level for price bargaining with collectors. Most of the farmers at the local level do not understand the benefits that could be harnessed through collective marketing.

Lack of trade and market related information at the producer and trader level: There is a lack of trade and market related information at the producer and local trader's level particularly on potential buyers, demand, prices, and quality requirements.

Trade is largely dependent upon Bangladesh: Bangladesh is the major destination of Nepalese lentil including about 83% of Nepal's total exports in 2010.

Lack of trust among Bangladeshi banks and Nepalese exporters: There is a poor linkage between Bangladeshi and Nepalese financial institutions. Bangladeshi financial institutions are not cooperative with Nepalese exporters and at times as much as six months can go by before Nepalese exporters receive payments.

Low bargaining capacity of farmers: Nepalese producers are unable to get reasonable price due to unavailability of storage facilities and collection centers. Due to this, farmers are reluctant to produce in large quantities and this is a detriment to their profits.

Low purity percentage: 85% purity is regarded as the optimum level in the western part of the country. About 15% impurity such as weeds, dust, and soil is allowed by western processor in buying lentil while it is 5 percent in eastern region which is one of the major factors for variation in farm gate price between two regions. Grading and separating facility is not available at collectors and farmers level. This impurity level is verified at processor level during procurement of lentil from collector. If there is more percentage of purity, collectors could get additional price but farmers don't receive purity gain.

Weak institutionalization of ANROPI: There is weak capacity of ANROP between market functionaries, line agencies, and other organizations at for planning, coordination and monitoring to achieve desired output in trade and marketing

No branding mechanism: Nepalese producers lack a brand and a marketing strategy for their lentils. This author believes that Nepalese producers should brand their product as natural and organic for export to niche markets.

5.1.5 Policy environment

No public-private and cooperative partnership in research and development (varietal improvement, seed multiplication, quality standards): The lentil value chain lacks support from a public-private and cooperative partnership for varietal improvements and seed multiplication.

No execution of announced budget incentives for lentil exporters: Last year, the GON announced 3% incentives for lentil exporter in the annual budget, but this incentive has not reached target groups.

Lack of political will: This export oriented subsector is not included in the national mission program for the export led economic growth of Nepal.

Multiple taxation and unofficial payment during transportation: Various District Development Committees (DDCs) along the way of transportation are charging taxes illegally.

Research output is not connected with extension: There is no link between research output and extension services. As a consequence, yield of lentil at the farmer's level is less than the attainable yield.

Provision of export tax in lentil: The GON imposed a 1NPR per kg export tax on lentils.

5.2 Opportunities

5.2.1 Input Supply

Availability of public and private service providers: There are public and private sector service providers including Agro-vets, seed companies, the Nepal Agricultural Research Council (NARC), and DADOs that are available to provide support.

Strong demand of quality inputs: There is a strong demand for quality seeds, fertilizers, micro-nutrients, rhizobium inoculums, effective plant protection measures, and technical knowledge available from lentil producers. There is a will to develop a seed and nutrients supply chain and also to strengthen agro-vets particularly for supplying plant protection measures. There are also various seed producing groups across lentil growing region to develop as a seed pocket area and link to the value chain enablers and farmers.

5.2.2 Production

High scope to increase productivity: Productivity can be increased by introducing high yielding seed varieties and improved cultivation practices like the use of quality seeds, weeding, applying nutrient management, and disease management. Many seed varieties can be grown throughout the Terai and mid hill districts of Nepal during the winter season.

Low amount of capital and skill required in lentil production and storage: Lentil crops do not need very much capital for production. Even small holders can grow lentil crops easily. Growers have to invest about 60 % of the total cost into irrigation and labor for harvesting, winnowing, and threshing. The cost is even lower if farmers use household labor and grow in low lands.

Availability of improved varieties: Normally, farmers select the seed of traditional cultivar due to a lack of knowledge about improved cultivars. There is a lot of room for improvement in terms of increasing yield simply by selecting the appropriate cultivar with high productivity.

Availability of financial institutions at district level: There are three or four financial institutions in each lentil growing district. The number is even higher in central Terai districts.

Provision of financing at cooperative level: There are community level cooperatives in each district. Additionally, new cooperatives have been emerging in each lentil growing district every day. Many times, cooperatives will offer financing at a low interest rate.

Availability of research and extension services: There are many NGOs and government institutions working in the lentil sub-sector including: DADOs, FORWARD, LIBIRD, PACT, NARDF and NARC. Resources can be optimized through coordination and collaboration among these programs and projects.

5.2.3 Processing

Availability of high-tech processing technologies: Currently, about 18 high-tech processing mills are operating in Nepal. These processing units are centrally located close to the Indian boarder and have access to transportation and communication facilities with the entire world. Each processing unit has a capacity of about 4-5 ton/hrs with sorting and grading abilities.

5.2.4 Marketing

Value addition through cleaning and grading at farmer's level: In order to attain competitive prices, farmers must follow basic post-harvest handling practices like cleaning, drying, grading and packaging. These activities are simple, but many farmers are reluctant to put in the extra effort.

Scope to develop a niche market for organic and natural lentil: Currently, the use of pesticides, chemical fertilizers, and herbicides in lentil crop is almost non-existent at the farm level. There is increasing trend for consuming organic lentils, particularly in developed countries. Nepal can harness this opportunity through exploring Nepali organic lentil; particularly in EU and U.S. markets.

Increasing global demand: There is an increased demand for lentils in the world market. The annual growth rate observed for value is even better than the one observed in quantity.

Proximity of the major lentil importing countries: Bangladesh, Pakistan and Sri Lanka are major importers of lentil. Even India has emerged as one of the big importers of lentil. Nepal should seize the opportunity of being in such close proximity to these lentil importing countries.

Availability of service providers: Public/private bodies such as TEPC, AEC, and strong business member organizations like CCI/FNCCI and ANROPI can support work on trade and the marketing of lentils.

5.2.5 Policy Environment

Government's priority on value chain aspect for commercialization: The Three-Year Interim Plan (2010-13) has prioritized value chain aspect in national plan for commercialization of agriculture for the first time.

Lentil ranked as one of the important export potential products: The government has recently launched a Nepal Trade Integration Strategy (NTIS) in June 24, 2010 with the objectives of strengthening trade negotiations, technical capacity of domestic non-tariff barrier and other business institutions, export capacity, and GON's capacity to coordinate and manage Trade-Related Technical Assistance and Aid for Trade. NTIS has placed, lentil as one of the export potential products among overall 19 products including 5 agricultural products.

Provision for preferential trading and subsidies: Nepal can take advantage of the provisions of SAFTA for free transportation across regions. Nepal also has the opportunity to explore export markets in the EU by using EU provisions for duty free access to agri-products of LDC.

6. NEAT STRATEGIC INTERVENTIONS

There are both short-term and long-term strategies that should be applied to enhancing this sub-sector. The effects of the short-term strategies will be seen as outcomes of the NEAT project while the interventions for long-term strategies will require buy-in from various stakeholders within the value chain, as well as private and public sector partners.

6.1 Short-term Interventions

6.1.1 Production

Develop supply chain for quality seeds and Rhizobium: Nepalese lentil varieties are mostly native and are cultivated traditionally. There are quality seeds available within government institutions and private dealers although in less volume. Private sector companies like GATE can supply rhizobium inoculums as per demand. However, there is no functional supply chain to distribute these important inputs. NEAT should provide support in making rhizobium inoculums available to producers.

Support to seed producing groups: There are many groups in study areas formed by government offices and development agencies for producing seeds. Most of the groups are not aware of improved practices for seed production. Support is required for producing qualitative seed and maintaining seed cycles.

Support for production of more foundation seeds: Seed replacement rates are very low. Total national seed production is far below the required amount. Currently, Nepalese lentil varieties are mostly native and are cultivated traditionally. Activities should be conducted with joint collaboration of Nepal Agricultural Research Council (NARC) and private seed company to produce more foundation and certified seeds.

Package training on production: There should be a complete package of production training focusing on improving seed rates, spacing, priming/rhizobium culture, seed sowing time, harvesting time, weed management, post harvest handling, and nutrient application methods. NEAT can train the lead farmers as local resource persons (LRPs) and the small farmers can be trained by using these LRPs.

Provision of incentives: There should be provision for incentives through producer groups and cooperatives. Small incentives could lead to large impacts regarding yield and production.

Entrepreneurship development and business planning at the farmer level: Farmers generally show frustration when the price falls in a particular year. Farmers only refer the price of previous year as a benchmark and expect the same price for the next year. There is a major need for entrepreneurship skills training including preparing budgets and basic business management skills.

6.1.2 Processing

Introduce cleaning and grading equipments at cooperative level: With the introduction of cleaning and grading equipment at the community level, farmers can add value to the lentil and achieve higher prices from collectors.

Provision of incentives to processor for up gradation and modernization of processing equipments: Many collectors lack the latest technology of sorting equipment particularly for grading all types of weeds. Therefore, it is recommended to provide minimum incentives for installation of modern equipment to the entrepreneurs who are mostly conducting export business.

6.1.3 Marketing

Support farmers for collective marketing through establishing collection centers and storage facilities: The study has found that the local traders are collecting lentils from the farmers located near them and storing the product in storage houses to bargain for the best prices with processors. It is strongly recommended to build collection centres and storage houses at road heads in lentil production pockets. If we also analyze the price variation in different seasons, the price of lentil during offseason is almost double to that during their harvesting season.

Support exposure visit for traders to Bangladesh, Pakistan, and Sri Lanka: The key neighboring markets for Nepal are the Bangladeshi, and Indian markets. There is also a big market potential for Nepalese Lentil in Pakistan and Sri Lanka. However, Nepalese exporters have limited access to these countries.

Invite international buyers to Nepal and conduct buyer-seller meetings with the support of ANROPI and FNCCI: NEAT should facilitate a series of meetings to increase the trust between exporters and international buyers. This type of meeting can be facilitated by ANROPI and FNCCI by collaborating with their counterparts in India, Bangladesh, and Middle Eastern countries.

Develop linkage/networking with banks in importing countries especially with Bangladesh through government negotiation: NEAT Activity can facilitate meetings between the two countries' financial institutions regarding the issuance of a letter of credit for timely payment. This type of meeting can be facilitated by the Government of Nepal and FNCCI.

Initial support for establishment of a MIS (Market Information System): Market and trade related information for lentil is not available to most of the value chain actors. NEAT can initiate its support for the establishment of MIS at DCCI and ANROPI. DCCI is an appropriate place for information while ANROPI should be equipped with marketing intelligence for export marketing.

Business meetings: There is a huge mistrust between farmers and their buyers regarding price and quality of the products. To increase the trust between buyers and farmers, frequent meetings are required.

6.1.4 Policy and Institutions

Strengthen ANROPI for marketing and trade: ANROPI should understand their role in the export oriented growth of lentil. It is found that exporters dominate the lentil value chain particularly because they manage the lentil price. Exporters have a tendency to hold the lentil stock until they can harness the highest profit margin.

Develop lentil and cash crop network in the district: There is no tendency of information sharing in production, marketing and services among all value chain actors and enablers. So, NEAT Activity can facilitate to develop a network representing the stakeholders of lentil and cash crop sub sectors. It will ultimately increase coordination and collaboration among lentil value chain actors.

Facilitate micro-finance linkages with producer groups for input procurements: Formal financial institutions generally do not cooperate with poor farmers. NEAT should collaborate with financial institutions and develop a mechanism for financing lentil producers.

Facilitate government level dialogue for the implementation of a trade friendly treaty: To diversify the market, NEAT Activity should support the implementation of a trade friendly treaty such as SAFTA and BIMSTEC. NEAT Activity can support inter-government level dialogue meetings with the involvement of private sector partners. ANROPI and FNCCI can take a lead role for the conduction of multilateral and bilateral meetings between nations.

Advocacy and advertising to use improved cultivar and seed multiplication: Nepalese consumers are unaware of the nutritional importance of lentil. In addition, farmers do not know about the improved cultivar and their attributes. Interestingly, most of the seed suppliers don't have information about seed requirement at field level. Therefore, advocacy and media campaigns should be launched to sensitize concerned stakeholders in the said area.

6.2 Long-term Interventions

6.2.1 Production

Work on nutrient and disease management: Authorities such as the Plant Pathology Division and Soil Science Division under NARC should focus research to address the present problems of mineral imbalances and widespread diseases. NEAT can support these organizations for research activities and conduct an awareness campaign.

Declare seed and lentil production pockets in each main lentil producing district: NEAT can support DADOs in project districts to declare seed and grain production pockets and advertise them with the government channel.

6.2.2 Processing and Marketing

Initiate work on GAP and GMP: Nepali lentil can target the more lucrative markets of EU and the USA. To introduce the products in those markets, Good agricultural Practices (GAP) and Good Manufacturing Practices (GMP) will be the pre-requisite.

6.2.3 Policy and Institutions

Explore public private and cooperative partnership for seed multiplication and bio-fertilizers: The yield of local seeds is comparatively low and is also prone to diseases. Organic fertilizers such as rhizobium inoculums are difficult to find. Support should be extended to establish organic fertilizer and quality seed producers.

Establish accredited laboratories for quality standard: Nepal gets premium prices for its lentils due to quality and taste. Nepal is in a favorable position in the international market due to less use of pesticides and chemical fertilizers. To use this position to its advantage, NEAT should support the establishment of accredited laboratories and quality standards.

Establish research units at the national level for export diversification: Export can be diversified through meeting international demand and quality requirements. There is lack of information regarding how to diversify to the needs of the export market. Market research is required to know alternative trade routes, price information, quality requirements, and demand levels of lentil importers.

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8. ANNEXES

Annex 1: Lentil producing pocket areas of visited district

SN	District	VDCs
1	Bara	Maheshpur, Matiwarwa, Balirampur, Kotwahi, Manarwa, Sapahi
2	Sarlahi	Sudama, Chhatona, Mirjapur, Balara, Achalgadh
3	Parsa	Mudali, Jagarnathpur, Masiyani, Basantapur, Pokhariya
4	Rautahat	Partappur paltuwa, rangapur, laxmipur, Dumariya (maitauna), Santapur (Matiaun), Mathiya, Dharampur, Jaynagar, Futuha Maheshpur
5	Chitwan	Ayodhyapuri, Bachhyali, Bagauda, Madi Kalyanpur, Gitnagar, Khairkhani, Sukranagar,
6	Dang	Gadhawa, Bela, Gangaparaspur, Bijauri, Manpur, Duruwa Dharna, Saudiyar, Hapur, Narayanpur, Phulbari, Urahari
7	Banke	Narainapur, Betahani, Banakatwa, Manikikapur, Kamdi, Belbhar, Khajurakhurda, Sonapur Betahani
8	Bardiya	Mahamadpur, Jamuni, Dhadhawar, Taratal, Sanashree
9	Kailali	Joshiapur, Munuwa, Tikapur, Bhajani, Hasuliya, Phulwari)

Source: Field Survey, 2011

Annex 2: List of Lentil Exporter/Processor in Nepal

1. Tribeni dal & Oil Industries P. Ltd. Birgunj, Nepal Tel: 977-051-525465, 4224074 (ktm) Fax: 977-051-521668	2. Ram Dal Udyog Birgunj, Nepal Tel: 977-01-4270730, 4272879, Fax : 977-01-4270973, Post Box N. 929	3. Narayani Modern Pulses Industries Birgunj, Nepal Tel: 977-051-525556, 977-01-4226068, 4240048 Fax: 977-01-4220804
4. Shree Adhunik Dal Udyog Birgunj, Nepal Tel: 977-051-4225124, Fax: 977-01-4220804	5. Adhunik Dal Udyog Birgunj, Nepal Tel: 977-01-4273401, 4273402 Fax: 977-01-4270083, Post Box N. 8033	6. Gyan Food Product Nepalgunj, Nepal Tel: 977-01-4437991, 4437993, Fax: 977-01-4437990 Post Box N. 1991
7. Kohinoor Agro Industries Mohanpur, Dhangadi Tel: 977-01-4244352, 4225009 Fax: 977-01-4248695 , Post Box N. 485	8. Amrit Pulses Industries Nipanimal, Bara (Parwanipur) birgunj, Nepal Tel: 977-01-4244352, 4225009, Fax: 977-01-4248695	9. Pooja Dal Mill Dhangadi, Nepalgunj Tel: 977-01-4244352, 4225009, Fax: 977-01-4248695 Post Box N. 485, .Email: tmdugar@group.com.np
10. Hitesh Dal Udyog P.Ltd. Nepalgunj, Nepal Tel: 977-021-525627, 4250001, Fax: 977-01-4249723 Post Box N. 363	11. Roongata Processing Industries Mr. Suresh Kumar Rungata Adarshanagar, Birgunj 051-521248, 524630 051-521248, 521630	12. Shree Shyam Modern Dal Mill Mr. Sandeep Agrawal Padsari VDC-1, Rupandehi 071-521467, 522517

13. Manoj Modern Food & General Industries Mr. Govinda Pd. Goenka Anandban, manigram, 071-560851, 540651	14. Siddhatha Adhunik Dal Udyog Mr. Rishi Kesh Agrawal Kaitaiya, Padsari-8, Rupandehi 071-523590, 521592	15. Om Agro Product P. Ltd. Mr. Suresh Kumar Rungata Adarshanagar, Birgunj 051-521248, 524630
16. Chandanbala Khadya Udyog Mr. Keshri Chand Bothra Atithi Marg, Biratnagar-17 021-435096, 436096	17. Krishna Modern Dal Udyog Mr. Ghanashyam Agrawal Lipnimal, Bara 051-521622, 522219	18. Durga Modern Dall Mill Mr. Brijesh Kumar Agrawal Gallamandi-6, Bhairahawa 071-520360, 521939, 523285

Annex 3: Importers of Bangladesh

SN	Name of Company	Address
1	Adiba Enterprise	55/1, Purana Paltan (7th Floor), Dhaka Bangladesh
2	Sami Tex Bangladesh	319/4 East Goran, Road No 10, Dhaka Bangladesh
3	Mascot Global Inc	House 11/a, Road-41, Gulshan-2, Dhaka, N/A, Bangladesh
4	Banikbiz - Bangladesh	20/c k b Fazlul Kader Road (Azi Kasem, Chittagong, Bangladesh
5	Orion Associates	44/21, North Dhanmondi (Ground Floor), Dhaka, N/A Bangladesh
6	M/s Lucky Enterprise	9 /2 Gogon Babu Road , Khulna. Bangladesh
7	Exim Bangla Corporation	116 Strand Road, Banglabazar, Chittagong, Bangladesh
8	S.S.Trading	184/C, Khatungonj,, Chittagong, Bangladesh
9	M/s Roba Enterprise	House # 20, Road # 18Banani, Dhaka, Bangladesh
10	Ali Stores	319, D.T.Road, P.O: Pahartali , Chittagong +88031751053 +88031-751053

Annex 4: World Export trend (in terms of value in '000 USD)

Exporters	2006	2007	2008	2009	2010
World	702,848	901,970	1,348,255	1,505,188	1,667,610
Canada	241,631	447,700	802,475	918,504	981,090
Turkey	158,374	126,719	101,249	175,003	216,605
USA	48,351	60,796	114,351	127,828	148,648
Australia	66,483	54,522	71,118	60,206	109,390
Nepal	4,670	3,139	22,075	73,115 (4.8%)	51,244 (3.07)
China	5,298	5,732	13,417	12,330	17,711
Ethiopia	161	5,824	8,601	11,839	17,643
UAE		5,188	33,462	30,699	17,001
Sri Lanka	47	123	12,425	19,793	15,997
Syria	39,577	144,111	69,551	10,146	14,987
India	90,104	4,322	69	492	11,650

Source: ITC, 2011

Annex 5: World Export Trend in Terms of Quantity

Exporters	2006	2007	2008	2009	2010
World	1,656,629	1,687,543	1,911,921	1,815,050	1,935,748
Canada	683,031	922,056	1,360,118	1,240,798	1,183,025
USA	130,986	122,774	193,815	184,077	209,131
Turkey	301,329	186,271	70,340	130,064	194,549
Australia	173,036	101,605	76,026	67,116	137,981
Nepal				56,768	37,570 (1.94%)
Syria	79,759	243,165	44,026	9,817	24,016
China	14,753	12,058	17,965	18,134	23,125
Ethiopia	423	9,606	10,799	12,947	17,640
UAE		8,599	36,612	24,814	15,097
Sri Lanka	65	312	7,212	16,286	14,251
India	159,769	6,268	55	430	13,477

Source: ITC, 2011

Annex 6: World Import Trend in terms of value ('000 USD)

Importers	2006	2007	2008	2009	2010
World	684,797	883,785	1,273,231	1,436,831	1,678,829
Turkey	30,660	18,464	243,967	133,519	193,831
India	21,530	114,183	29,953	152,998	147,261
Bangladesh	55,969	107,444	35,251	155,521	141,501
Sri Lanka	37,555	59,551	108,308	112,502	129,566
Egypt			75,627	93,519	112,475
UAE		31,184	81,204	101,756	97,238
Algeria	20,680	32,525	56,828	51,665	74,196
Pakistan	39,554	34,048	34,370	57,716	69,001
Sudan	43,480		1,100	17,149	56,333
Colombia	16,088	22,939	35,211	31,403	53,098
Iraq	53,221	10,016	6,283	45,094	49,264

Source: ITC, 2011

Annex 7: World Import Trend in Terms of Quantity (MT)

Importers	2006	2007	2008	2009	2010
World	1536785	1592180	1280241	1612988	1968494
Egypt			59316	91475	236745
Turkey	69071	30979	191683	141541	210289
India	51613	225365	36003	197328	204557
Bangladesh	128626	174043	49379	177673	152230
Sri Lanka	107781	103206	102710	107983	134340
UAE		64540	82537	125089	112868
Pakistan	95265	78851	51853	73157	85684
Algeria	55799	66661	61094	60555	85484
Colombia	67471	68935	56061	56919	72186
Sudan	74229		1958	30918	52257
Spain	62283	52907	53851	47637	50823

Source: ITC, 2011

Annex 8: Canada Export to the World (trade indicators)

Importers	Share in Canada's exports (%)	Unit value (USD/unit)	Exported growth in value between 2006-2010 (% , p.a.)	Exported growth in qty between 2006-2010 (% , p.a.)	Tariff (estimated) faced by Canada (%)
World	100	829	42	15	
Turkey	16.9	791	80	52	9.7
India	11.1	725	83	45	30
UAE	7.3	893	44	15	5
Algeria	7.1	875	37	7	5
Colombia	6.1	867	36	3	10
Sri Lanka	6	855	119	80	6
Bangladesh	5.2	764	55	31	5
Egypt	4.4	791	40	18	0
Pakistan	3.8	702	31	9	0

Source: ITC, 2011

Annex 9: Sri Lanka's Import from the World (trade indicators)

Exporters	Share in Sri Lanka's imports (%)	Imported quantity 2010	Unit value (USD/unit)	Tariff (estimated) applied by Sri Lanka (%)
World	100	134340	964	
Australia	40.5	54816	957	6
Canada	34.1	44809	987	6
Singapore	8.8	11737	968	6
UAE	7.6	9987	989	6
USA	5.8	8734	866	6
Turkey	1.6	2104	975	6
India	1.2	1663	945	6
Hong Kong, China	0.1	181	807	6
China	0.1	129	1,016	6
Thailand	0.1	87	1,161	6

Source: ITC, 2011

Annex 10: Bangladesh Import from the World (Trade indicators)

Exporters	Imported value 2010 (USD thousand)	Share in Bangladesh's imports (%)	Unit value (USD/MT)	Imported growth in value between 2009-2010 (% , p.a.)	Tariff (estimated) applied by Bangladesh (%)
Total	141,501	100	930	-11	
Canada	51,450	36.4	764	-47	5
Nepal	42,558	30.1	1390	-3	5
Australia	25,699	18.2	796	214	5
Turkey	20,837	14.7	1,000	344	5
Ethiopia	748	0.5	941	33	5
USA	186	0.1	608	-78	5
Sri Lanka	23	0	958		5

Source: ITC, 2011

Annex 11: Overseas Export of Lentil from Nepal (Value in NPRs 000,000)

Country	2000/01		2001/02		2002/03		2003/04		2004/05		2005/06		2008/09		2009/10	
	MT	NPRs	MT	NPRs	MT	NPRs	MT	NPRs	MT	NPRs	MT	NPRs	MT	NPRs	MT	NPRs
Bangladesh	1429 2	481.2	5588	199.5 7	5364	207	7590	294.6	2708	103.9	4680	191.7 1	3480 1	3411. 69	3062 5.1	3110
Korea	210	7.94	146	6.09	65	2.98	0	0	0	0	0	0	71.4	6.90	0	0
USA	108	3.77	288	10.75	0	0	0	0	0	0	0	0	1602. 62	172.5 8	1624. 63	175.5
UK	484	17.52	0	0	0	0	0	0	0	0	0	0	381.7 7	38.27	125	13.41
Baharain	0	0	0	0	0	0	0	0	0	0	0	0	66	7.52	48	5.07
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	562.7	57.07	4.8	0.07
Labanon	0	0	0	0	0	0	0	0	0	0	0	0	154	17.17	0	0
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	189.9 04	22.42	929.6 7	90.7
Oman	0	0	0	0	0	0	0	0	0	0	0	0	87.96	4.04	0	0
Qatar	0	0	0	0	0	0	0	0	0	0	0	0	68	7.68	0	0
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91.5	10.48
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	806.9 4	91.17	95.97	10.98
Singapore	0	0	0	0	0	0	0	0	0	0	0	0	1619. 46	172.6 9	197.5 8	17.54
Sri Lanka	0	0	0	0	0	0	0	0	0	0	0	0	1151. 99	138.3 4	1778	95.26
UAE	0	0	0	0	0	0	0	0	0	0	0	0	3769. 18	355.0 2	748.7 5	78.85
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	2331. 12	241.8 1	0	0
Morocco	0	0	0	0	0	0	0	0	0	0	0	0	72	9.81	0	0
India	1520 6	484.7	1691 7	610.0 8	1940 2	749	1261 9	519.2	1525 2	585.6	1459 1	602.6 6	1129. 61	111.5 4	169	15.84
Sudan	0	0	0	0	0	0	0	0	0	0	0	0	565.2 7	67.33	0	0
Sierra Leone	0	0	0	0	0	0	0	0	0	0	0	0	220.9 9	24.39	216	23.59
Guadeloupe	0	0	0	0	0	0	0	0	0	0	0	0	120	3.55	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	48	4.78	0	0
Canada	0	0	0	0	0	0	0	0	0	0	0	0	768.2 7	78.64	355	39.11
Suriname	0	0	0	0	0	0	0	0	0	0	0	0	618.0 1	82.77	162.0 5	17.2
France	0	0	0	0	0	0	0	0	0	0	0	0	65	7.6	0	0
Germany	0	0	0	0	0	0	0	0	0	0	0	0	120	12.4	0	0
Italy	0	0	0	0	0	0	0	0	0	0	0	0	700.7 9	72.59	298.9 2	31.21
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	4154. 76	365.2 8	0	0
Australia	0	0	0	0	0	0	0	0	0	0	0	0	520.1 2	75.66	0	0
Bhutan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	9.95
Total	3030 0	995.2	2293 9	826.4 9	2483 1	960	2020 9	813.8	1796 0	689.6	1927 1	794.3 7	5676 6	5660. 71	3756 9.9	3745

Annex 12 Nepal Export of Lentil (trade indicators)

Importers	Exported value 2010 (\$ '000)	Share in Nepal's exports (%)	Exported quantity 2010	Unit value (USD/unit)	Share of partner countries in World imports	Total import growth value of partner countries between 2006-2010 (%p.a.)
World	51,244	100	37,570	1,364	100	30
Bangladesh	42,558	83	30,625	1,390	8.4	26
USA	2,401	4.7	1,625	1,478	1.3	11
Sri Lanka	1,304	2.5	1,778	733	7.7	37
Malaysia	1,241	2.4	930	1,334	0.2	51
UAE	1,079	2.1	749	1,441	5.8	46
Canada	535	1	355	1,507	1	33
Italy	427	0.8	299	1,428	1.9	19

Source: ITC, 2011

Annex 13: Nepal's Import of Lentil (trade Indicators)

Exporters	Imported value 2010 (USD thousand)	Share in Nepal's imports (%)	Imported quantity 2010	Unit value (USD/unit)	Imported growth in value between 2009-2010 (% p.a.)	Export growth in value of partner countries between 2006-2010 (% p.a.)
World	3,149	100	7,645	412	-76	30
India	2,924	92.9	7,205	406	-77	-18
USA	142	4.5	251	566	468	35
Russia	45	1.4	110	409		83
Turkey	37	1.2	79	468		10

Source: ITC, 2011

Annex 14: Lentil Seed Replacement Rate of Nepal in 2009/10

SN	Producer	Production (MT)
Foundation seed		
1	NARC	9.12
Certified seed		
1	District seed sufficiency program	41.5
2	Private company	150.48
3	Nepal seed company	6.245
4	Lentil NGO	5.610
5	Community seed company	17.545
Total seed production		230.5
Seed requirement		7352
Seed replacement rate		3.13%

Source: CDD, 2066/67

Annex 15: List of the Groups/Industries/People Interviewed During Field Study

SN	Name/group/ company	Title	Address	Phone No.	Remarks
1	Baburam Acharya	Trader	Ganga Khadhya Bhandar, Taratal	9848082596	
2	Baburam Choudhary	Local level trader		91540229	
3	Badri Prasad Yadav	District Manager, NEAT	Dhangadhi, Kailali	9844090612	
4	Bal Krishna Shah	JT	DADO, Dang	9847825503	
5	Baurimai Agriculture Cooperative Ltd	Lentil seed and grain producer	Bara	9845128976	FGD with cooperative
6	Bharat Choudhary	Contract farmer of Laligurans secondary school land	Baniyabhar, Jogipur,		FGD meeting at Taratal
7	Bhola Pandey	Agriculture Field Officer, NEAT	Dhangadhi, Kailali	9849701800	
8	Bhuvan Bhatta	Regional Manager, NEAT	Butwal, Rupendehi	9841243955	
9	Binaya Mishra	Junior Technician	DADO, Sarlahi	46520030	Meeting in DADO
10	Binod Shah	Wholesaler cum millers	Kaliya, Bara	9855022170/550021	10 ton split lentil sell to KTM
11	Chandradev Mandal	Crop Development Officer	DADO, Bara		Meeting in DADO
12	Chhedilal Modi	Manager	Ram Dal Udhyog, branch of KEDIA group	081-520460	
13	Devendra Prasad Timilsina	Trader	Himalaya khadya kharid bikri Kendra	9848082595	
14	Dhakaram Lamichhane	Trader	Taratal-3, Bardiya	9848151255	FGD meeting at Taratal
15	Dilli Raj Sharma	Executive Director	DCCI, Kailali	091521237/ 9858420537	
16	Govinda Prasad	Wholesaler cum miller	Adhunik dal Industry	055-20269	1000 ton/yr
17	Gyanlal Mandal	Planning Officer	DADO, Parsa	051-522304	Meeting in DADO
18	Jahir Khan	Treasurer	Krishak Upakar Cooperatives, Betahani Banke	9728167615	
19	Janak Bahadur Chand	Chief Custom Officer	Bhairahawa custom, Rupendehi		
20	Janak Lal Choudhary	Local level trader	Dhangadhi	91525547	Annual transaction: 300- 400 quintal
21	Janjyoti Seed producer group	Seed producer	Jamuniya-5		Informants interview
22	Kapildev Das	Plant Protection Officer	DADO Dang		

23	KD Surana(KD Babu)		Pooja Dal Mill (Tularam Dugad group)	081-521129	
24	Kedar Koirala	Custom officer	Birgunj custom		
25	Kisan Uthan group	Producer	Haripur-5, Sarlahi		Informants interview
26	Krishan Pranami Mahila Krishi Sahakari Sanstha	Producer	Dumariya-2, Rautahat	9845223133	Informants interview
27	Krishna Bahadur Bhandari	CM	Nagade bali krishak Sahakari Sanstha	9748521395/ 9847976387	FGD at Dharna
28	Krishnaji Kannadi	Exporter	Krishna Modern Dal Industry, Adarsanagar, Birgunj	522219	3000 ton/yr
29	Lalit Ram Jaiswal	Trader	Bibek Khadya Kharid Bikri Kendra	9748002084	
30	Madan Lal Tatere	Manager	Hitesh Khadhya Udhog branch of Golchha organization		Annual transaction about 300-400 MT
31	Mahendra Kumar Shrestha	President, DCCI, Rupendehi	DCCI, Rupendehi		Meeting in CCI
32	Masalal Choudhary	Local level trader	Baliya	91540228	Annual transaction: 200-300 quintal per year lentil
33	Mr. Brijesh Kumar Agrawal	Proprietor	Durga Modern Dall Mill	98570520161	2000 ton/yr
34	Nagendra yaduv	Custom officer	Custom office, Krishnanagar, Kapilvastu	9806874019	
35	Om Prakash Sethia	Manager	Shraddha Daal Mill, Geta, Kailali	9801700802	Annual Transaction: 1.5-2 Lakhs Bora
36	Pateshwory Prasad Barma	Acting Chairman	Krishak Upakar Cooperatives, Betahani Banke	9814525818	
37	Pawan kishor Shah	Agro-vet owner	Kaliya, Bara	9845042144	
38	Pradeep Kediya	Exporter	Mahabir Adhunik Dal Udhoyg, Parsa Birgunj	525512	4000 ton/yr
39	Prakash Adhikari	DCCI, General Secretary	DCCI, Sarlahi	046-520423	Meeting in DCCI
40	Prakash Darai	Research Scientist	Nepal Agricultural Research Project (NARC)		
41	Raj Kumar Shah	General Secretary, DCCI/Bara	Kaliya, Bara		Meeting in DCCI
42	Rajesh Khandawal	Exporter	Tribeni dal & Oil Industry, Adarsanagar, Birgunj	521668	5000 ton/yr

43	Ram Lochan Yadav	Field Technician, NEAT	Dhangadhi, Kailali		
44	Ram Prasad Acharya	Trader	New Laxmi Khadya Bhandar	9855061039/ 084440106	
45	Ram Sewak Thakur	Crop Development Officer	DADO, Rautahat	055-520228	Meeting in DADO
46	Ram Shankar Dubedi	Plant Quarantine Officer	Plant Quarantine Office, Nepalgunj		Informants interview
47	Rameshwor Prasad Raidas	JT	Plant Quarantine Office, Nepalgunj		Informants interview
48	Ramjanaki Farmer's group	Producer	Kadena-1, Sarlahi		FGD
49	Ramnath Shah	Traders & DCCI vice president	Kaliya, Bara	9855020636	150 ton sell to birgunj
50	Sandeep Agrawal	Proprietor	Shree Shyam Modern Dal Mill, Padsari VDC-1, Rupandehi	98570520371	4000 ton/yr
51	Satomai Agriculture Cooperative Ltd	Lentil seed and grain producer group	Balirampur-4, Bara		FGD with cooperative
52	Satya Narayan	Trader	Mahabageshwory rice mill	9848026684	
53	Seed Coordination Committee	Seed supplier	Balirampur, Rautahat	9845060064	250 kg
54	Shiv Lal Lamichhane	Sanoshree-6, Shantitole		9848217280/ 084440048	
55	Shiv Pd. Gupta	Trader	Gupta trading centre	9848067098	
56	Sonalal Shah	Traders	Kaliya, Bara	9845024907	50 ton sell to Birgunj
57	Srijanshil Krisak Samuha	Producer	Dumariya-2, Rautahat	9845058873	Informants interview
58	Surendra Saud	Field Technician, NEAT	Dhangadhi, Kailali		
59	Yadav Padyouti	Planning Officer	District Agriculture Development Office (DADO)		Meeting with DADO

Annex 16: List of Nepali Lentil Importers of Bangladesh (in 2010)

S N	Month	Trading House (Importers)	Contact Address	Contact Person	Contact Telephone	Imported Qty (MT)
1	January	Sonali Flour Mills				108.250
2	„	Aman Trading				417.75
3	„	R.K Trading	Dharanda, Dinajpur Road, Bangla Hili, Hakimpur, Dinajpur	Shoshi Traders	01736742277	219.00
4	„	S.R Corporation				730
5	„	S & M Trading co.	69, Khatungonj, Chittagong	S.K Impox	01190309464	108
6	„	City Flour Mills				147.5
7	„	Deena Enterprise				51
8	„	Mojumder Enterprise	Station Bazar, Jessore	Shoshi Traders	01736742277	367.75
9	„	A Zaman & Brothers				614
10	„	Mohammad Iqbal				200
11	„	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	416
12	„	Syam Sundar Agarwal				102
13	„	Hena Enterprise				70
14	„	Bagdad Trading				120
15	„	Islam Brothers and Co.				448
16	„	Subarha Traders				51
17	„	R.S and T. International				200
18	„	D.P Enterprise				51
19	„	A.K Enterprise				45
20	„	S.K Trading				181
21	„	Lamya Fabrics				60
22	„	Sujan Kumar				102
23	„	Prime International	31, Dinajpur Road, Syedpur, Nilphamari	Habib Inter	01196112564	200
24	„	R.G Traders				108
25	„	Smah Ltd.				60
26	„	IMTeaz Traders				100
27	„	Ajmir Vadar				120
28	„	Shahad Traders				100
29	„	A. Nawaz & Co.				54
30	„	Brothers & Co.				100
31	February	Majumder Enterprise	Station Bazar, Jessore	Shoshi Traders	01736742277	119.750
32	„	Shapla Traders		Shoshi Traders	01736742277	100
33	„	Risa Traders		Rezaul Karim	01715219373	46.750
34	„	A. Nawaz & Co.				60
35	„	Nurul Islam & Brothers				120

36	„	Islam Brothers and Co.				221.75
37	„	City Flour Mills				50
38	„	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	173
39	„	S.R. Corporation				100
40	„	D.K. International				60
41	„	Aman Trading & Co.				125
42	„	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	120
43	„	Jerin Enterprise				276
44	March	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	172
45	„	Islam Brothers and Co.				252.750
46	„	Aman Trading & Corporation				131.500
47	„	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	102
48	„	S.R. Corporation				305
49	April	Aman Trading & Corporation				74
50	„	Prime International	31, Dinajpur Road, Syedpur, Nilphamari	Habib Inter	01196112564	57.500
51	„	R. S & T International				55.500
52	„	S.R. Corporation				577
53	„	Labbayak Trading				160
54	„	Shyamal Kumar Das				105
55	„	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	262.750
56	„	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	100
57	May	Haque Enterprise				100
58	„	Risa Traders		Rezaul Karim	01715219373	200
59	„	Majumder Enterprise	Station Bazar, Jessore	Shoshi Traders	01736742277	120
60	„	Nisha Trade International				19.2
61	„	Arif Traders	8/Ka Devi Das Ghat Lane, Dhaka	Rezaul Karim	01715219373	100
62	„	Sahad Trader Inter.				100
63	„	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	302
64	„	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	220
65	„	Syam Sundar Agarwal				51
66	„	Mabco Foods		Rezu Enterprise	01190309365	90
67	„	Aman Trading & Corporation				100
68	„	Aimar Vandar				120

69	”	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	100
70	June	Shamal Kumar Das				320
71	”	Majumder Enterprise	Station Bazar, Jessore	Shoshi Traders	01736742277	51
72	”	D.P Enterprise				1344
73	”	Islam Brothers and Co.				511
74	”	S.R. Corporation				100
75	”	S & M Associates	Building -5, Flat-8, Kalyanpur Housing Estate, Dhaka	Rezaul Karim	01715219373	398
76	”	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	120
77	”	Sadia Traders				240
78	”	Bismillah Flour Mills				52
79	”	ESA Enterprise				68
80	”	Rahul Traders				50
81	”	City Flour Mills				234
82	”	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	257
83	”	S. H International				240
84	”	S. K. Trading	69, Khatungonj, Chittagong			51
85	”	A. Nawaz & Co.				60
86	”	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	440
87	”	Brothers Enterprise				35
88	July	D.K. International				34
89	”	Risa Traders		Shoshi Traders	01736742277	300
90	”	S.R. Corporation				393
91	”	Islam Brothers and Co.				1022
92	”	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	202
93	”	Bayejeed Traders				102
94	”	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	120
95	”	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	600
96	”	Sahad Trader Inter.				100
97	”	Rashib & Sons				68
98	”	City Flour Mills				100
99	”	Barat Traders				45
100	”	Majumder Enterprise	Station Bazar, Jessore	Shoshi Traders	01736742277	100
101	”	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	270
102	August	Fahim Trading				102
103	”	Shapla Traders	20, Kalibari Road, Khulna	Shoshi Traders	01736742277	100

104	„	Islam Brothers and Co.				204
105	„	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	750
106	„	S.R. Corporation				218
107	„	A. Nawaz & Co.				60
108	„	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	302
109	„	S & M Associates	Building -5, Flat-8, Kalyanpur Housing Estate, Dhaka	Rezaul Karim	01715219373	51
110	„	Risa Traders Inter		Rezaul Karim	01715219373	102
111	„	S.K Trading				51
112	„	D.P Enterprise				51
113	„	Prime International	31, Dinajpur Road, Syedpur, Nilphamari	Habib Inter	01196112564	68
114	„	Taju International	Baganchara Bazar, Sharsha, Jessore	Rezu Enterprise	01190309365	50
115	„	Abdur Rashid & Sons	200, Water Workers Road, Rahamatgonj, Dhaka	Rezaul Karim	01715219373	85
116	„	Anil Kumar Agarwal				50
117	„	Rokeya Automatic Flour Mills Industries	JaMTale Bazar, Amnura, Chapainawabgonj	Rezu Enterprise	01190309365	504
118	„	Rokeya Food Processing Industries	Chapainawabgonj	Habib Inter	01196112564	400
119	„	City Flour Mills				100
120	September	Islam Brothers and Co.				2053
121	„	Shapla Traders	20, Kalibari Road, Khulna	Shoshi Traders	01736742277	100
122	„	S & M Trading co.	69, Khatungonj, Chittagong	S.K Impox	01190309464	153
123	„	S.R. Corporation				453
124	„	Prime International	31, Dinajpur Road, Syedpur, Nilphamari	Habib Inter	01196112564	200
125	„	Majumder Enterprise	Station Bazar, Jessore	Shoshi Traders	01736742277	100
126	„	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	200
127	„	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	100
128	„	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	950
129	„	Rokeya Food Processing Industries	Chapainawabgonj	Habib Inter	01196112564	400
130	„	M.S International				100
131	„	Rokeya Automatic Flour Mills Industries	JaMTale Bazar, Amnura, Chapainawabgonj	Rezu Enterprise	01190309365	150

132	„	Risa Traders Inter		Shoshi Traders	01736742277	100
133	„	Aman Associates				100
134	October	Mabco Foods	9, Rajuk Avenue, Ali Bhaban, Dhaka	Rezu Enterprise	01190309365	100
135	„	M.S International				530
136	„	Rokeya Food Processing Industries	Chapainawabgonj	Habib Inter	01196112564	350
137	„	Islam Brothers and Co.				1004
138	„	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	100
139	„	Abdur Rashid & Sons	200, Water Workers Road, Rahamatgonj, Dhaka	Rezaul Karim	01715219373	226
140	„	Shoma Enterprise	Ghospara, Sherpur, Bogra	Habib Inter	01196112564	1300
141	„	Prime International	31, Dinajpur Road, Syedpur, Nilphamari	Habib Inter	01196112564	150
142	„	Risa Trade International		Shoshi Traders	01736742277	100
143	„	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	91
144	„	Toma Construction Ltd.	67/9, Kakrail, 14th Floor, Dhaka	Habib Inter	01196112564	450
145	„	S & M Associates	Building -5, Flat-8, Kalyanpur Housing Estate, Dhaka	Rezaul Karim	01715219373	51
146	„	S.R. Corporation				142
147	„	Aman Associates				100
148	November	Abdur Rashid & Sons	200, Water Workers Road, Rahamatgonj, Dhaka	Rezaul Karim	01715219373	96
149	„	Rokeya Automatic Flour Mills Industries	JaMTale Bazar, Amnura, Chapainawabgonj	Rezu Enterprise	01190309365	1000
150	„	Islam Brothers and Co.				204
151	„	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	108
152	„	Shoma Enterprise	Ghospara, Sherpur, Bogra	Habib Inter	01196112564	300
153	„	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	104
154	„	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	708
155	„	S.R. Corporation				250
156	„	Belal and Sons	9, Begum Bazar, Dhaka	Rezaul Karim	01715219373	60
157	„	Masume Begum	Borogola, Katnarpara, Bogra	Habib Inter	01196112564	34
158	„	M.S International				200

159	„	Mabco Foods Ltd.	9, Rajuk Avenue, Ali Bhaban, Dhaka	Rezu Enterprise	01190309365	220
160	„	Toma Construction Ltd.	67/9, Kakrail, 14th Floor,Dhaka	Habib Inter	01196112564	450
161	„	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	550
162	„	S & M Associates	Building -5, Flat-8, Kalyanpur Housing Estate, Dhaka	Rezaul Karim	01715219373	102
163	„	Eastern Trading Corporation	2000, Moulvibazar, Dhaka	Rezu Enterprise	01190309365	60
164	„	New Generation	334, Dr. Kudrati Khoda (Elephant Road), Dhaka	Shoshi Traders	01736742277	90
165	„	Prime International	31, Dinajpur Road, Syedpur,Nilphamari	Habib Inter	01196112564	50
166	„	Al-Modina Enterp.	Baliadighi, Sonamgojid, Shibjonj, Chapinawebgonj	Rezaul Karim	01715219373	150
167	„	Bristy International	Nazrul Islam Sarani, 3/1-C, 3/1-D Purana Paltan, Room-206, Ali Raz complex (3rd Floor), Dhaka	Rezu Enterprise	01190309365	200
168	„	Rokey Construction & Builders	166-167, Sahid Syed Nazrul Islam Sarani, 3/1-C, Purana Palton, Dhaka	Rezu Enterprise	01190309365	250
169	„	Hazi Dana Miah & Sons	27, Dilkhusa, C/A Dhaka	Rezaul Karim	01715219373	200
170	December	Dhaka Trading House	27, Bijoy Nagar, Flat-C/1, Dhaka	Rezaul Karim	01715219373	570
171	„	Dania Zaman Food Products	165 A/2 Tejkunipara, Tejgaon, Dhaka	Habib Inter	01196112564	350
172	„	S & M Trading Co.	69, Khatungonj, Chittagong	S.K Impox	01190309464	360
173	„	Toma Construction Ltd.	67/9, Kakrail, 14th Floor,Dhaka	Habib Inter	01196112564	715
174	„	Risa Trade International	107/130 Sir Iqbal Road, Khulna	Shoshi Traders	01736742277	200
175	„	Sigol Brothers	Rupayan Center, 72, Mohakhali C/A, Dhaka-1212	Rezaul Karim	01715219373	200
176	„	S & M Associates	Building -5, Flat-8, Kalyanpur Housing Estate, Dhaka	Rezaul Karim	01715219373	51
177	„	Rokeya Food Processing Industries	Chapainawabgonj	Habib Inter	01196112564	100
178	„	New Generation	334, Dr. Kudrati Khoda (Elephant Road), Dhaka	Shoshi Traders	01736742277	270
179	„	Shoma Enterprise	Ghospara, Sherpur, Bogra	Habib Inter	01196112564	400

180	”	Kibria Traders	Station Road, Bogra	Habib Inter	01196112564	100
181	„	Aman Associates				419
182	”	Bristy International	Nazrul Islam Sarani, 3/1-C, 3/1-D Purana Paltan, Room-206, Ali Raz complex (3rd Floor), Dhaka	Rezu Enterprise	01190309365	250
183	”	Masume Begum	Borogola, Katnarpara, Bogra	Habib Inter	01196112564	34
184	„	M.S International				170
185	„	City Flour Mills				100
186	”	Azad Dal and Flour Mills	151, Water Woakers Road, Dhaka	Rezaul Karim	01715219373	240
187	”	Prime International	31, Dinajpur Road, Syedpur, Nilphamari	Habib Inter	01196112564	34
188	”	Rokey Construction & Builders	166-167, Sahid Syed Nazrul Islam Sarani, 3/1-C, Purana Palton, Dhaka	Rezu Enterprise	01190309365	150
189		Krishan Food Ltd.	803 Bitul Hossain Building, 27 Dilkhusa C/A, Dhaka	Rezaul Karim	01715219373	
190		Maa Baniijya Vandar	Bhairab Stand Road, Bora Bazar, Khulna	Habib Inter	01196112564	

Annex 17: List of PSDM participants

SN	Name of Participants	Organization	Designation	Phone No.	Email
1	Sonalal Prasad	Baurimai Agriculture Cooperative Ltd , Bara	Manager	9845128976	
2	Satya Narayan Verma	Krisak Upakar Multiple Sahakari S. Banke	Management	9728147016	
3	Ishwor Pd. Rijal	National Plant Quarantine Program	Chief	9841574505	ip_risal@yahoo.com
4	R.K. Shrestha	Trade and Export Promotion Center	Ex. Director	9851024975	rameshkumarshrestha@hotmail.com
5	Laxman Pd. Paudel	Agri Product Export Promotion Program	Sr. Agri. Economist	9841553860	
6	Gam Bahadur Gurung	FORWARD Nepal	Program Director	9845394170	gb1gurung@yahoo.com
7	Ram Krishna Neupane	FORWARD Nepal	Sr. Program Manager	9841643888	
8	Chandeshwor Raut	Adhunik Dal Udhyog	Coordinator	9802031727	
9	Dr. D.B. Shakya	Manager BEE	NEAT		
10	Dr. Suraj Pokhrel	Crop Development Directorat	Program director	9841045804	surajpokhrel@yahoo.com
11	Badri Khanal	MOHC	Agri-economist	9841811355	badri.khanal@gmail.com
12	Bhishma P. Subedi	ANSAB	Executive Director		
13	Kabir Sthapit	ANSAB	Program Officer	9849275909	
14	B.B. Mathema	NEAT	DCOP	9851108452	
15	Ananda Ghimire	NEAT	VCO	9741195574	
16	J. D. Ranjit	NARC, Agronomy	Chief	9841293002	
17	Durga Pd. Adhikari	SEAN	General Secretary	9851066946	seanseed@ntc.net.np
18	Manoj Singh	Chachan Group	Officer	9841222269	chachan@narayani.wlink.com.np
19	Hemlal Devkota	MOCS	S. Officer	9841284508	hem_devkota@yahoo.com
20	Virendra Nath Uprety	NEAT	Reg. Manager	9841150151	vupraity@neatactivity.com
21	Ajay Parajuli	ANROPI	Ex. Secretary	9851019232	parajuliajaya@gmail.com
22	Arun K. Khetan	Sidhartha Tail Udhyog		9851031574	
23	Navin Raj Sharma	Trade and Export Promotion Center	Senior Officer	9841055731	navinrajshrestha@hotmail.com
24	Puspa Lal Ghimire	ANSAB	Manager		
25	Kiran Adhikary	ANSAB	Manager		
26	Sudarshan Khanal	ANSAB	Communication Officer		
27	Anju Katuwal	ANSAB	Officer		

Annex 18: List of Interested Actors (Exporters/Traders/Firms) to work with NEAT Activity

SN	Name/group/ company	Title	Address	Phone No.	Remarks
1	Baburam Acharya	Trader	Ganga Khadhya Bhandar, Taratal	9848082596	
2	Baburam Choudhary	Local level trader		91540229	
3	Baurimai Agriculture Cooperative Ltd	Lentil seed and grain producer	Bara	9845128976	FGD with cooperative
4	Chhedilal Modi	Manager	Ram Dal Udhyog, branch of KEDIA group	081-520460	
5	KD Surana(KD Babu)		Pooja Dal Mill (Tularam Dugad group)	081-521129	
6	Krishnaji Kannadi	Exporter	Krishna Modern Dal Industry, Adarsanagar , Birgunj	522219	3000 ton/yr
7	Madan Lal Tatere	Manager	Hitesh Khadhya Udhyog branch of Golchha organization		Annual transaction about 300-400 MT
8	Pateshwory Prasad Barma	Acting Chairman	Krishak Upakar Cooperatives, Betahani Banke	9814525818	
9	Rajesh Khandawal	Exporter	Tribeni dal & Oil Industry, Adarsanagar, Birgunj	521668	5000 ton/yr
10	Ramnath Shah	Traders & DCCI vice president	Kalaiya, Bara	9855020636	150 ton sell to birgunj
11	Sandeep Agrawal	Proprietor	Shree Shyam Modern Dal Mill, Padsari VDC-1, Rupandehi	98570520371	4000 ton/yr
12	Ram Babu Neupane		GATE Seed Company, Nepalgunj	081-630112	
13	Trilochan Regmi	Trader	Bageshwori Traders, Guleria	084-420450	
14	Chandeshwor Raut	Adhunik Dal Udhyog	Coordinator	9802031727	
15	Arun K. Khetan	Sidhhartha Tail Udhyog		9851031574	
16	Ajay Parajuli	ANROPI	Executive Secretary	9851019232	parajuliajaya@gmail.com

Annex 19: Cost/Benefit Analysis of Lentil

Note: No = No immediate benefit; Low = Immediate benefits will be less than the initial costs; Medium = Benefits will be similar to the initial costs; High = Benefits exceeding costs

SN	Intervention	Cost (USD)	Benefits			Remarks
			Year 1	Year 2	Beyond the project period	
A	Short term					
1	Develop supply chain for quality seeds and rhizobium	30,000	Low	High	High	Meeting, contract, technology
2	Support to seed producing groups and maintain seed cycle	20,000	Low	Medium	High	Training and linkage with NARC
3	Facilitate for production of more foundation seeds	20,000	Low	Medium	High	
4	Package training on production	70,000	Medium	High	High	
5	Provision of incentives	30,000	Medium	High	High	micro irrigation equipment, seed and rhizobium inoculums as demonstration
6	Entrepreneurship development and business planning at farmer's level	50,000	Low	High	High	Can be done jointly with other crops
7	Introduce cleaning and grading equipments at group/cooperative level	45,000	Low	High	High	Demonstration in three places
8	Provision of incentives to processor for up gradation and modernization of processing equipments	100,000	Low	Medium	High	Study, subsidy in technology
9	Support farmers for collective marketing through establishing collection centre and storage facilities	100,000	Low	High	High	20 centres with infrastructure support
10	Conduct exposure visit of traders program to Bangladesh, Pakistan and Sri Lanka	30,000	Low	Medium	High	3 events
11	Invite international buyers in Nepal and conduct buyer-seller meetings in the support of ANROPI and FNCCI	20,000	Low	Medium	High	2 events

12	Develop linkage/networking with banks in importing countries especially with Bangladesh through government negotiation	30,000	Low	High	High	Meeting with government and bank representatives of Bangladesh and initiation can be done by FNCCI and MoCS
13	Initial support for establishment of MIS	20,000	Low	High	High	10 centres ó one in each district
14	Business meetings between farmers and their buyers	10,000	Low	High	High	Two meetings in each district
15	Strengthen ANROPI for marketing and trade	20,000	Low	Low	High	Meeting and visit
16	Develop lentil and cash crop network in the district	15,000	Low	Medium	High	One each district
17	Facilitate micro-finance linkages with producer groups for inputs procurement	10,000	Low	High	High	Meeting and agreement with MFIs
18	Facilitate government level dialogue for the implementation of trade friendly treaty	20,000	Low	Medium	High	Meetings, workshop and treaty draft
19	Advocacy and advertising to use improved cultivar and seed multiplication	20,000	Low	High	High	Use of local FMs and newspaper
B	Long term					
1	Work on nutrient and disease management	50,000	No	Low	High	Collaboration with NARC
2	Declare seed and lentil production pockets in each main lentil producing district	30,000	No	Medium	High	Study, meeting and workshop
3	Initiate to work on GAP and GMP	30,000	No	Low	High	Develop the guideline
4	Explore public private and cooperative partnership for seed multiplication and bio-fertilizers	40,000	No	Low	High	
5	Upgrade laboratories for quality standard	50,000	Low	Medium	High	
6	Establish research unit at national level for export diversification	100,000	No	No	High	Potentiality study, secretariat establishment

