



# Inclusive Value Chain Study for Lentil Sub-sector in Nepal

CRS NEPAL IN COLLABORATION WITH AGRICULTURE AND  
FORESTRY UNIVERSITY



# Acronyms

<b>ADD</b>	Agriculture Development Directorate
<b>ADS</b>	Agriculture Development Strategy
<b>AEC</b>	Agro-Enterprise Center
<b>AFU</b>	Agriculture and Forestry University
<b>AKC</b>	Agriculture Knowledge Center
<b>CDD</b>	Crop Development Directorate
<b>CIMMYT</b>	International Maize and Wheat Improvement Center
<b>CRS</b>	Catholic Relief Service
<b>DoA</b>	Department of Agriculture
<b>FFS</b>	Farmer Field School
<b>FG</b>	Farmers Group
<b>FGD</b>	Focus Group Discussion
<b>FNCCI</b>	Federation of Nepalese Chambers of Commerce and Industry
<b>GAP</b>	Good Agricultural Practices
<b>GESI</b>	Gender Equity and Social Inclusion
<b>GLRP</b>	Grain Legumes Research Program
<b>GoN</b>	Government of Nepal
<b>GP</b>	Gao Palika (Rural Municipality)
<b>HRRP</b>	Housing Recovery and Reconstruction Platform
<b>IEC</b>	Information, Education and Communication
<b>IFAD</b>	International Fund for Agriculture Development
<b>IFPRI</b>	International Food Policy Research Institute
<b>INGO</b>	International Non-Governmental Organization
<b>KII</b>	Key Informant Interview
<b>KISAN</b>	Knowledge-based Integrated Sustainable Agriculture and Nutrition
<b>MEAS</b>	Modernizing Extension and Advisory Services
<b>MFI</b>	Micro Finance Institution
<b>MoALD</b>	Ministry of Agriculture and Livestock Development
<b>MoLMAC</b>	Ministry of Land Management, Agriculture and Cooperatives
<b>NARC</b>	Nepal Agriculture Research Council
<b>NEAT</b>	Nepal Economic, Agriculture, and Trade Activity
<b>NGO</b>	Non-governmental Organization
<b>NP</b>	Nagar Palika (Urban Municipality)
<b>NSAF</b>	Nepal Seed and Fertilizer
<b>PACT</b>	Project for Agriculture Commercialization and Trade
<b>PIQA</b>	Program Impact and Quality Assurance
<b>PMAPMP</b>	Prime Minister's Agriculture Modernization Project
<b>USAID</b>	United States Agency for International Development
<b>VC</b>	Value Chain



# Table of Contents



<b>A. INTRODUCTION</b> .....	<b>1</b>
<b>A.1 Background</b> .....	<b>1</b>
<b>A.2 Objective and Methodology</b> .....	<b>1</b>
<b>B. KEY FINDINGS - LENTIL</b> .....	<b>2</b>
<b>B.1 Production and Marketing Analysis</b> .....	<b>2</b>
<b>B.2 Key Value Chain Practices and Barriers</b> .....	<b>3</b>
B.2.1 Production Practices .....	3
B.2.2 Harvest and Post-harvest Management .....	4
B.2.3 Marketing Practices.....	4
B.2.4 Cost of Production and Farmer Perceptions.....	5
B.2.5 Gender Roles.....	6
<b>B.3 Value Chain Mapping</b> .....	<b>7</b>
B.3.1 Value Chain Map .....	7
B.3.2 Value Chain Engagement and Barriers .....	8
<b>B.4 Government Initiatives</b> .....	<b>10</b>
<b>C. RECOMMENDATIONS</b> .....	<b>11</b>
<b>C.1 Production</b> .....	<b>11</b>
<b>C.2 Marketing</b> .....	<b>12</b>
<b>C.3 Business Development Services</b> .....	<b>14</b>
<b>D. REFERENCES</b> .....	<b>14</b>



# A. Introduction

## A.1 BACKGROUND

The Government of Nepal (GoN), through its Agriculture Development Strategy (ADS), has identified 15 potential value chains and prioritized five: dairy, lentil, maize, tea and vegetables. Selection criteria for value chains included poverty reduction potential, growth potential, low risk, profitability, time to first harvest and cross-cutting issues, i.e., Gender Equality and Social Inclusion (GESI), environmental sustainability, trade balance and geographical spread, etc.<sup>1</sup> The ADS's assessment of existing value chain studies and interventions highlighted the following key gaps<sup>2</sup> in value chain studies:

- Most recommendations in the value chain studies were vague and few recommendations could be used to implement smallholder<sup>3</sup> friendly interventions.
- Most studies and initiatives were biased toward production, and less attention was paid to product quality improvement, financing methods and marketing.
- There is a dearth of information linking implementation of value chain methodology to actual results achieved.
- Pronounced focus on working with farmers on the supply side to “push” products rather than working with businesses on the demand side to “pull” products to markets.



Based on available evidence, the current value chain studies, while striving to engage smallholders, are not intentionally poor-centric and GESI-responsive. There is a need to understand what would make value chain approaches and commercial agriculture less risky and generate sustainable outcomes for smallholders and women farmers. In contrast to previous value chain interventions in Nepal, ADS has recommended (1) developing all stages of value chain from seed to final products, production to processing, post-harvest technology and export; (2) strengthening linkages and effective investment through associations of farmers, traders, processors, input providers, etc.; (3) replicating and developing market linkages beyond districts for national impact.<sup>4</sup> With Nepal's governance transitioning from unitary to federal structure, there is now more devolution of power at the local levels; this is characterized by greater autonomy to design locally appropriate developmental programs and resource allocation. This provides a timely opportunity for development agencies to collaborate with and support local government units to allocate resources for value chain strengthening interventions to make them more profitable for smallholders and women farmers.

CRS Nepal conducted a comprehensive value chain study in Palpa and Dang districts in Province 5. Based on consultations with MoLMAC, Agriculture Development Directorate, Agriculture Knowledge Centers, Grain Legume Research Program (Nepal Agriculture Research Council) and private sector actors, such as processors, millers, commodity associations in Province 5, CRS Nepal has identified lentils as one of the commodities with the most potential for inclusive value chain strengthening opportunities. Lentil was identified based on the following criteria:

- Ability of smallholder farmers to grow the crop, thus being more inclusive in nature;
- More profitable compared to other winter cash crops due to less labor and irrigation requirement;

---

1. ADS (2015-35), pages 99, 158, 208

2. ADS (2015-35), page 255

3. Smallholder term is used in this document to denote marginal farmers, women farmers and small farmers living in remote locations

4. ADS (2015-35), page 43

For any additional information on the report, please contact Katherine Price, Country Representative, CRS Nepal, (Katherine.price@crs.org), or K Krishna Mohan, Technical Advisor-Livelihoods, CRS Nepal (krishna.mohan@crs.org).

- Potential to reduce poverty and increase income of farmers in a sustainable manner;
- Potential to increase crop productivity and access of farmers to value chains;
- Cross-cutting issues like nutrition sensitivity, social inclusion, gender, geographical spread and matching national priorities;
- Environmentally sustainable.

CRS adopted specific ADS recommendations in the value chain study with a strong and intentional focus on making the observations and recommendations locally relevant and actionable rather than having a generic approach. In particular, the study provided in-depth recommendations on production, post-harvest management, demand-supply management, collective marketing, private sector engagement and regulatory environment with respect to smallholder and women farmers.

## A.2 OBJECTIVE AND METHODOLOGY

Following were the key objectives of the assessment,

- Develop a stronger understanding on gaps and opportunities for engaging smallholders, women, youth and socially excluded groups in lentil value chains in Dang District of Province 5 to increase their income in a sustainable manner.
- Disseminate findings from the lentil value chain studies to wider stakeholders across district, province and central levels.

The methodologies adopted for the study included:

A detailed **desk review** of existing literature on lentil value chain studies, agricultural data and relevant GoN policies was undertaken to develop a stronger understanding of the context, gaps and opportunities. The literature review also helped in identifying areas where there are maximum information gaps that the assessment needs to explore more deeply.

The **primary data collection** covered the whole gamut of value chain starting from producers to consumers, and from service providers to policy regulations. Qualitative tools like focus group discussions (mainly with farmer groups and cooperatives, with a particular focus on women and youth engagement) and key informant interviews were used for data collection. Tools were developed aligning with the assessment objectives of analyzing inclusion barriers and opportunities. CRS held consultations with key stakeholders Agriculture and Forestry University (AFU), within government (targeted local municipalities, MoLMAC, ADD, Planning Division, Agriculture Knowledge Centers-AKC, Grain Legume Research Program-NARC), private sector (collection agents, wholesaler, processors, traders, etc.) and civil society actors (NGOs and INGO involved in lentil value chain activities).

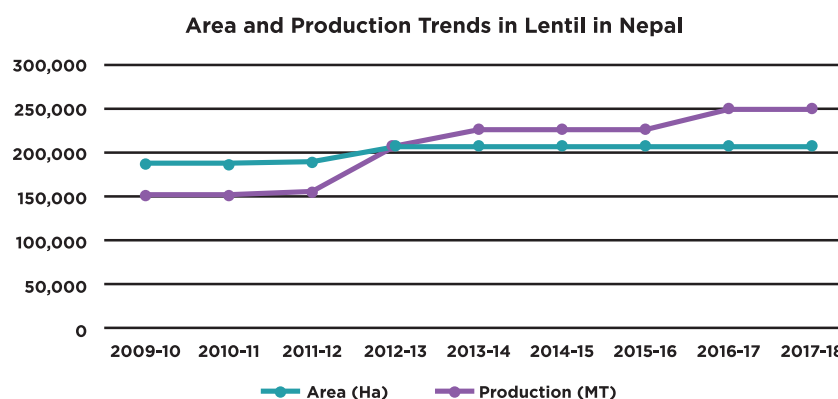
The study geographically covered two local municipalities - Rapti and Ghorahi municipalities in Dang District. These locations were selected in consultation with MoLMAC and ADD based on parameters like high production and area under lentil production, presence of high proportion of smallholders and historically marginalized populations and poor performance across key development indicators (poverty rates, malnutrition, per capita income).

# B. Key Findings - Lentil

## B.1 PRODUCTION AND MARKETING ANALYSIS

Lentil (*Lens culinaris*) is the major pulse in terms of both production quantity and area. It covers more than 60% of the total pulses produced in Nepal with 254,000 MT per year. Nepal is also the sixth largest producer of lentil in the world and second largest lentil producer in Asia after India,<sup>5</sup> Nepali lentil with its characteristic small grain size and bright pink color is highly sought after in domestic, as well as international, markets owing to its taste and high nutritional value. Lentil is produced in almost all the districts of the country, covering an area of 206,969 ha except for Manang and Mustang districts. However, the commercial production of lentil is concentrated in Terai districts (southern plains bordering India), such as Sarlahi, Rautahat, Bara, Dang, Kailali and Bardia, which account for nearly 90% of the production. The Nepal Trade Integration Strategy (NTIS) has prioritized lentil as one of the 12 commodities with high export potential in Nepal. Bangladesh is the largest buyer of lentil from Nepal, followed by Singapore, Sri Lanka and Germany.<sup>6</sup>

Figure 1: Trends of area, production and productivity of lentil in Nepal



Source: FAOSTAT, 2019

Table 1: Lentil area, production and yield trends in Nepal

Fiscal Year	Area (Ha)	Production (MT)	Yield (Kg/Ha)
2008-09	183,798	147,725	804
2009-10	187,437	151,758	810
2010-11	187,218	150,550	804
2011-12	190,957	154,733	810
2012-13	207,630	208,201	1,003
2013-14	206,522	226,931	1,099
2014-15	205,939	226,830	1,101
2015-16	204,475	227,492	1,113
2016-17	205,939	253,041	1,229
2017-18	206,969	254,308	1,229

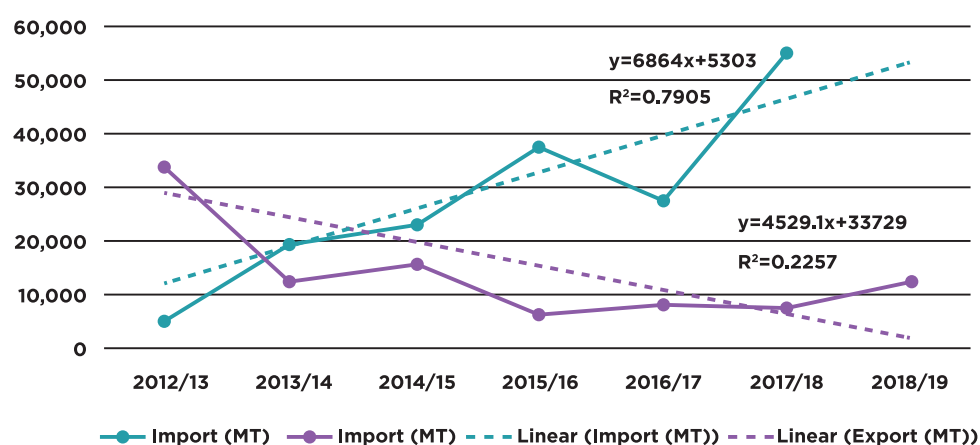
Source: FAOSTAT, 2019

5. <https://www.statista.com/statistics/722136/lentil-production-volume-by-country-worldwide/>

6. <https://kathmandupost.com/money/2016/11/18/nepal-worlds-5th-largest-lentil-producer-in-2014>

Over the last 10 years, Nepal has seen a consistent but slow increase in area under lentil production and yield. Introduction and adoption of improved high yielding lentil varieties, though limited, contributed to the increase in production and yield. Despite the increase in production and yield, the lentil export from Nepal has decreased over the last five years, while imports have witnessed an increase. Australia, Canada and Myanmar are the major sources of lentil import for Nepal. In 2008-09, lentil exports from Nepal stood at 56,767 metric tons, while it dropped to 7,611 metric tons in 2015-16. This is attributed to an increase in domestic consumption due to increased awareness of nutritional values of lentil and household income. There was also a temporary banning of exports by government due to anticipated food deficit in 2009-10.

Figure 2: Import and Export of Lentil from Nepal in MT




Source: FAOSTAT, 2019

## B.2 KEY VALUE CHAIN PRACTICES AND BARRIERS

### B.2.1 PRODUCTION PRACTICES

Lentil is a winter crop and typically sown (open broadcasting) after harvest of paddy or as a relay crop in rainfed areas. There are also cases in which farmers grow lentils as a mixed crop with other crops like chickpea and rapeseed. However, relay cropping seems to be the most preferred practice as it ensures timely sowing, maximizes soil moisture use, and reduces the risk of crop failure. The sowing time of lentil depends on the duration of paddy crop, and is typically delayed if farmers are growing long-duration hybrid paddy, which is a trend being increasingly observed. Discussions with smallholders revealed that there is gradual increase in area under lentil crop as wheat is being replaced by lentil in upland areas. At the same time, in low lying areas lentil is being replaced by winter maize. In both cases, market price and profitability play key roles in decision-making.

A large majority of smallholders and women farmers, especially living in areas farther away from markets, use their own stored seeds. Poor quality of stored seeds was reported as one of the main reasons for low production by smallholders. Use of improved varieties is limited to a small segment of large farmers. Smallholders, who grow lentil primarily for their own consumption and marginal sale, generally do not



invest in any inputs like fertilizers, pesticides, irrigation and weeding. Crops tend to be grown in residual winter moisture. Delay in sowing, rains, extreme cold conditions and diseases during flowering stage (wilt, blight) and water stress during grain filling stage are generally the key factors resulting in low production. Lentil is harvested 80-100 days after sowing depending on the variety. The current yield for smallholders was reported to be 600-700kg/ha, while for large and commercial farmers, the yield was about 1,000kg/ha.

### B.2.2 HARVEST AND POST-HARVEST MANAGEMENT

The common practice for harvesting is uprooting the plants. However, some farmers have adopted cutting the plant above the ground after learning the benefits of leaving the stubble in ground in terms of increasing the organic content in soil. Farmers, irrespective of type, follow very basic harvest and post-harvest management practices in lentil, which include manual harvesting, threshing, drying and cleaning. After drying, smallholders store lentil without dehulling. Dehulling and splitting is done in smaller quantities based on household need for consumption. The large farmers, on the other hand, sell lentil to millers who then take up processing activities like dehulling, splitting, polishing, packaging, etc. Sorting and grading of lentil by sieve are generally not taken up at farmer level due to the labor-intensive nature of the operations and no significant price appreciation for the sorted and graded lentils at the collector level.

No separate post-harvest management practices are followed for lentil grains, which are to be used as seeds. Smallholders generally store lentils to be used as grain and seeds together. Only before sowing time lentil is cleaned and used as seeds. As seed requirement for smallholders is small, they don't feel the need to take extra precautions for seed storage and buy/borrow seeds from acquaintances if needed. This practice limits the smallholders' access to quality seeds as they have to adjust to whatever quality they get during sowing. This lack of priority for lentil crop is also one of the contributing factors for less adoption of high yielding and disease-resistant varieties. The large farmers generally sort and store their lentil seeds separately from grains after the drying process. Grains and seeds are stored in reusable plastic bags/bottles and other household containers like bins. Smallholders reported aphids and brown bugs to be the main pests causing storage losses (8-10%).

### B.2.3 MARKETING PRACTICES

For smallholders and women farmers, the lentil marketing channels are very informal and unorganized in nature. This is due to the fact that lentil does not contribute significantly to their income because these farmers don't sell more than 10-20% of their produce. In addition, farmers sell small quantities of lentil multiple times during the year based on their cash needs.

The following are some key marketing practices:

*Sales at local markets:* These sales are mostly women smallholder farmers having access to local weekly markets sell smaller quantities (2-3 kgs) of lentil directly to consumers. The small quantities mean that they are able to sell it during market hours. This channel is common for smallholders who grown lentil for grain purpose.

*Sales to local retailers:* This channel is opted when the quantity is higher (8-10 kgs), and is generally exercised by both men and women smallholders.

*Sale to cooperatives:* Large and medium farmers who are active members of agriculture cooperatives provide their lentil produce to cooperatives, who in turn sell the produce



to wholesalers and processors. This is the only example of collective marketing by farmers. This channel is typically opted by lentil seed-growing farmers.

Sale to wholesalers/processors: Large farmers with higher volumes sell their produce directly to wholesalers and processors. This was not reported frequently, and therefore not a typical scenario in the study area.

The following outlines the key differences in marketing behavior and practices between large and smallholder farmers.

Table 2: Large and smallholder farmers.

Smallholders/Women Farmers	Large Farmers
Decisions on sales of lentil are based on cash need and not on market factors, such as price, demand and supply.	Decision to sell is generally based on market factors, such as price, demand, supply, etc.
Small quantities and multiple sales transactions over a period of time; this reduces the price, especially for women farmers who have poor negotiation skills.	Fewer sale transactions with larger volumes; able to get higher prices.
Inability to hold their produce for favorable prices in future as they need cash.	Ability to hold their produce for favorable prices and participate in collective marketing through cooperatives.
No value addition activities undertaken to improve quality.	Value addition activities, including cleaning and sorting are undertaken.

High seasonal fluctuations in market price of lentil are observed, sometimes reaching up to 80-100% difference between price during peak harvest and lean seasons. Smallholders are not able to take advantage of this price fluctuation as they are not able to plan their sales according to market prices; however, large farmers, who many times also function as aggregators/wholesalers, are able to sell when the prices are high.


## B.2.4 COST OF PRODUCTION AND FARMER PERCEPTIONS

Table 3: Benefit Cost Analysis of Lentil (4Kattha)

Particulars	Unit	Quantity	Rate (NPR)	Scenario 1 Total (NPR)	Scenario 2 Total (NPR)
Expenses					
Seed	Kg	4	100	400	400
Land Preparation	Tractor Hrs	1	1000	1000	0
Seed sowing	Persondays	0.5	600	300	300
DAP/Potash	Lumpsum	4	60	240	240
Labor for harvesting	Persondays	4	600	2400	0
Labor for threshing, cleaning	Persondays	2	600	1200	0
Total cost				5540	940
Income					
Lentil production	Kg	150	60	9000	9000
Profit				4000	8600
Cost per Kg				40	6.2
BC ratio				1.7	9.5

*Scenario 1: Farmers pay for the inputs they use.*

*Scenario 2: Farmers use family labor and don't pay cash for any of the inputs.*



As shown in the benefit cost analysis in Table 3, lentil cultivation is a low cost and profitable option for smallholders and women farmers who invest less and use family labor for intercultural operations. The profitability and cost of production analysis further seems to justify the low investment strategies of smallholders in lentil production. Intensive use of inputs like improved varieties, fertilizers, labor, etc., can substantially lead to increase quantity and quality of yield, however, a certain economy of scale is also needed to realize sizeable gains which is not feasible for smallholders and women farmers.

Farmers, particularly smallholders and women who grow lentil for their own consumption, perceive lentil to be a low-risk crop as they don't have to invest heavily in terms of money or labor. Even when the crop fails due to various climatic factors, farmers don't feel the pinch because the loss is not considered significant, and, unlike cereal crops such as paddy and wheat, lentil loss does not pose a major threat to their food security. This is also one reason why smallholders and women are not motivated to invest in improved varieties or other inputs since lentil is not viewed as a cash crop and visibly contributing to their income.

### **B.2.5 GENDER ROLES**

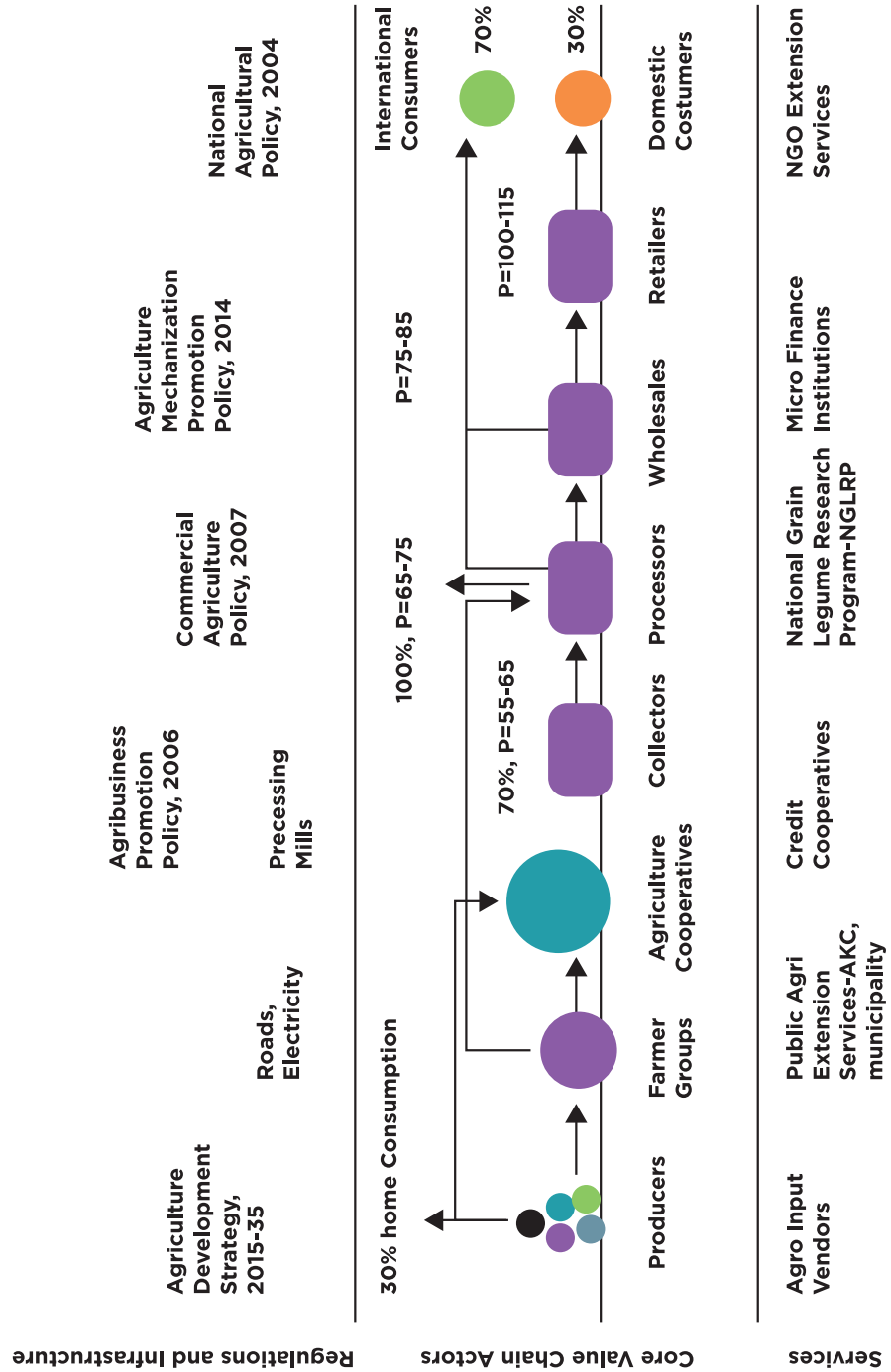
For a large majority of smallholder farmers, lentil is a secondary crop in terms of importance to their food security and income generation, though its significant role in nutritional security is acknowledged. Apart from sowing, where both men and women share workload, the rest of the activities like crop management, harvesting, drying, threshing and storage are primarily carried out by women members of the family with little or no involvement from men. Women are responsible for seed cleaning and sorting before sowing. Men in the family tend to have more awareness, and are key decision-makers regarding improved varieties and new management practices due to their higher mobility and participation in farmer group and cooperative meetings. The participation of women in marketing and sales activities is directly proportional to their farming status. Women in smallholder farming households take more responsibility in sales (visiting markets, interacting with buyers, price negotiations, etc.) compared to women in medium and large farming households. However, women farmers are severely limited in their marketing outreach as they face additional challenges, such as household responsibilities, caregiving activities and other livelihood tasks (including tending to farm animals). These responsibilities restrict their mobility, which, in turn, affects profitability as they are not able to access more profitable markets or buyers. Profitability is also affected due to the more limited bargaining power women have owing to poor literacy and outlook.

The participation of women in agriculture capacity-building activities was found to be minimal as most of the trainings organized by extension agents were attended by men. Similar barriers like limited mobility, poor literacy, existing workload, etc., were reported as reasons for low participation of women in training programs and exposure visits. These barriers were reported to be more stringent for women from smallholder farming households and those who reside in remote locations. Despite being reasonably aware of these barriers, extension workers (government, INGOs, NGOs, etc.) did not have any specific plans to mitigate them, which points to multiple causal factors, such as lack of sensitization, commitment and capacities of the extension workers to engage with women. Being a marginal crop for smallholders, there has been no focus on innovative and drudgery reducing harvesting and post-harvesting technologies in lentil.

## B.3 VALUE CHAIN MAPPING

### B.3.1 VALUE CHAIN MAP

Figure 3: Value chain map and overlays of lentil in Dang district



### B.3.2 VALUE CHAIN ENGAGEMENT AND BARRIERS

Smallholder farmers are primarily engaged in production of lentil, and their active involvement in other aspects of the value chain is limited. Marginal and small landholdings, coupled with sub-optimal crop management practices, are leading to low production and low marketable surplus. This is the key barrier that strongly limits participation of smallholders higher up in the value chain. The underlying causes are explained further below.

Table 4: Underlying causes that limits smallholders participation on lentil value chain.

Value Chain Aspect	Situational Analysis	Key Barriers
Production	<ul style="list-style-type: none"> <li>Adoption of improved lentil varieties and general seed replacement rate is low among women and smallholder farmers.</li> <li>Less participation of women and smallholder farmers in various extension activities organized by public and private agencies to promote improved lentil management practices.</li> </ul>	<ul style="list-style-type: none"> <li>Less awareness and knowledge of improved lentil varieties, especially disease- and damp-tolerant varieties.</li> <li>Low access to improved lentil varieties as majority of vendors and agro-vets don't sell them, citing low demand especially in remote locations.</li> <li>Vendors have less confidence in quality of lentils seeds produced by farmers and prefer not to sell farmer-produced lentil seeds.</li> <li>Smallholders are less connected to cooperatives and farmer groups, which further inhibits their access to improved varieties.</li> <li>Seed cooperatives, which could play a strong role in farmer access to quality seeds, are not producing large quantity lentil seeds owing to less demand and lack of institutional support.</li> <li>Extension activities are not designed/ planned taking into account specific barriers (time limitation, mobility, cultural factors for residential courses, etc.) that smallholders and women encounter.</li> <li>Women and smallholders are generally not prioritized by farmer groups and cooperatives to participate in training programs as they are not proactive and don't participate in other activities.</li> <li>Frontline extension workers have limited skills in facilitating participatory learning exercises with focus on adult learning principles.</li> <li>Training programs on lentil and other pulses generally not prioritized by government and local municipalities as there is less demand from farmers.</li> <li>Unavailability of extension workers with experience on legumes in the local municipalities.</li> </ul>

Value Chain Aspect	Situational Analysis	Key Barriers
Marketing	<ul style="list-style-type: none"> <li>• Smallholders and women farmers are unable to participate in collective marketing to increase their returns from lentil production.</li> <li>• Very few farmer groups and agriculture cooperatives are engaged in the marketing of lentil.</li> </ul>	<ul style="list-style-type: none"> <li>• Low yield and production results in less marketable surplus, and does not incentivize engagement in complex activities like collective marketing.</li> <li>• Low marketable surplus also deters smallholders from investing effort in exploring more profitable markets.</li> <li>• Generally, smallholders and women farmers are not able to participate in activities of farmer groups and cooperatives actively and consistently, leading to lack of ownership and engagement.</li> <li>• Small scale of production does not incentivize smallholders to focus on quality of lentil, which is a key requirement for collective marketing.</li> <li>• Smallholders prefer to sell lentil in a staggered manner when they need cash and not in a synchronized manner with farmers, which is required for collective marketing.</li> <li>• Smallholders and women farmers located in remote places don't have the means to access the cheap and efficient transportation of goods needed for collective marketing.</li> <li>• There is low awareness of market prices and the profitability gains of collective marketing.</li> <li>• Cooperatives have limited cash resources and generally lack access to financing from formal financial institutions, which limits their ability to pay procurement prices to farmers and take up collective marketing.</li> <li>• Barring few large cooperatives, the small and medium cooperatives don't have the requisite skills on market identification, business plan development, group management, etc., to take up collective marketing, and don't instill confidence among farmers.</li> <li>• Price of lentil fluctuates significantly (up to 80-100%) based on a variety of factors, including volume, quality, season, place and buyer (wholesaler, retailer, processor, etc.). Farmer groups and cooperatives do not have the skills nor the system to access timely information regarding market prices or use this information to make decisions.</li> </ul>





## B.4 GOVERNMENT INITIATIVES

Lentil is one of the top 15 value chains prioritized by the government of Nepal under the ADS for further strengthening based on a set of criteria such as potential for poverty reduction, growth, systemic interventions and cross-cutting issues like GESI, including environmental sustainability and nutrition. Similarly, lentil is also on the list of 12 sectors that will receive in-depth focus under NTIS to strengthen export potential. At the province and district levels, too, the key government agencies like MoLMAC, ADD and AKC recognize the important role lentil plays in income and nutritional security of the communities. The Crop Development Directorate (CDD) has been implementing Lentil Promotion Program (LPP) since 2013-14 in key lentil growing districts with a focus on productivity improvement and seed production. Similarly, the Grain Legume Research Program (GLRP) of NARC is focused on development and release of varieties and relevant management practices for different legumes, including lentils. These programs are generic in nature and aimed at strengthening the lentil subsector as a whole; they lack an intentional focus on smallholders and women farmers.

While these central level programs are critical to advancing improved lentil technologies to farmers, there is absence of a similar thrust at the district and local municipality level on lentil promotion. Lack of demand for lentil programs by farmers is often cited as a reason for not having specific lentil programs at the local municipalities. Availability of adequate and trained frontline extension staff at the local municipalities to provide lentil cultivation advisory to farmers is also limited. AKC and local municipalities are exploring feasibility of pocket and block<sup>7</sup> areas to promote improved lentil production practices and commercialization under PMAMP, which is an encouraging sign.

On the marketing front, there are multiple policies and guidelines developed by MoALD and MoLMAC to facilitate commercialization, market-oriented competitive agro-business development and strengthening of business services, especially around quality agro-inputs and infrastructure development, and to increase participation of women in agriculture programs, etc. Some of these policies are:

- National Agriculture Policy, 2004
- Agribusiness Promotion Policy, 2006
- Commercial Agriculture Policy, 2007
- Agriculture Mechanization Promotion Policy, 2014
- Agriculture Development Strategy, 2015

Out of the above key policy guidelines, ADS has very strongly articulated and advocated for inclusion in value chains to ensure participation of marginalized groups such as women, smallholder farmers, disadvantaged groups (e.g., Dalits and Janjatis) and farmers located in remote locations. However, with the recent federalization of governance and agriculture extension predominantly falling under the ambit of local municipalities, there is an opportunity and a need to contextualize the policy guidelines and design specific provisions to maximize impact for smallholders and women farmers.

---

*7. To promote commercialization of key crops, PMAMP has designed a graduation model consisting of super zones (more than 1,000 ha), zones (more than 500 ha), blocks (more than 50 ha) and pockets (more than 10 ha).*

# C. Recommendations


In order to make the lentil value chain more inclusive, a holistic approach is needed to address key barriers from production to marketing. Smallholders and women farmers are generally risk averse, and take longer to accept new technologies; therefore, it may not be possible for them to adopt a wide range of new practices and behavior changes across production and marketing at the same time. A phased approach starting with focus on production and yield improvements and then graduating to marketing is a more realistic strategy.

## C.1 PRODUCTION

There is a strong potential to increase the yield from current 600-700kg/ha to 1,500kg/ha while the attainable yield is estimated to be around 1,200 kg/ha for smallholders and women farmers by adopting following measures:



- There are at least 11 improved lentil varieties that have been released in Nepal over the last 20 years or so with various disease resistance and high-yielding characteristics. **Access to these improved varieties** for smallholders can be increased through a decentralized multiplication of seeds by engaging with farmer groups and cooperatives. Foundation and breeder seeds should be provided by AKC and municipalities in coordination with GLRP. Strong in-field technical backup and mentoring support needs to be provided by municipality extension workers and AKC, while higher level guidance and oversight on quality monitoring and certification can come from ADD and MoLMAC. Local municipalities and AKC can provide coordinate support to link seed-producing groups with NGOs and private sector like agro-vets and seed companies.
- Skill building of smallholder farmers on specific **productivity enhancement** areas include adoption of improved varieties, use of quality seeds and seed treatment with Rhizobium. While there are established best management practices around fertilizer application and weeding, it is very unlikely that smallholders and women farmers will adopt these cost-intensive behavior changes in the beginning. These higher level behavior changes can be introduced once the initial gains have been made and farmers are more receptive to other ideas. Timely sowing also has impact on yield; however, adoption of this practice will require a system-based approach that involves paddy crop as well, and may not be appropriate in all contexts. This is also an opportunity to align with GAP for future international trade opportunities.
- Since seed quality is the most crucial factor for yield increase and considering smallholder preference to use their own stored seeds, there is a need to promote **improved and low-cost seed storage** techniques like hermetic storages. Where appropriate, PICS bags and GrainPro bags can be promoted, but it may not be realistic for smallholders and women farmers to buy these bags, and availability may also be an issue. In such cases, other low-cost options like jerry cans, plastic reusable bottles, etc., can also be promoted for hermetic storage.
- Where required and feasible, local municipalities should facilitate **leasehold farming** by farmer groups owned by smallholders and women farmers. This will help farmers who are marginal landowners to increase their lentil production and marketable surplus and participate in collective marketing activities.

- 
- Based on market demand, smallholders need to be trained on various **lentil quality** parameters that are sought after by buyers to facilitate adoption of clean processing methods. These include:

- Absence of foreign material, including sand, straw, weed seeds and other types of pulses,
- Damage by insects,
- Broken pieces and other physical damage,
- Unripe and wrinkled grains.

Provisioning cleaning and grading equipment by local municipalities will help farmers adhere to the above-mentioned quality parameters.

- **Capacity building of frontline extension workers** of local municipalities and lead farmers is key to ensuring that smallholders have easy access to information when needed. More important is to build a network of skilled lead farmers (both male and female), and provide them with regular skill-building and mentoring support as they are more accessible to women farmers who have mobility constraints.
- Intentional efforts are needed to ensure that smallholder and women farmer are able to actively participate in the lentil extension activities. To this end, capacity building of extension workers and lead farmers on **participatory training methodologies** is important. This includes use of simple and audience-appropriate communication messages, conduction of FFS, using pictorial-based IEC material, etc. Extension officials need to be sensitized on participation barrier that smallholders and women face, such as limited mobility, workload, limited literacy, cultural factors, etc., so that training schedules are designed taking these barriers into consideration. In other words, training methodologies should be given as much importance as the technical training content.

## C.2 MARKETING

Any interventions on lentil marketing are less likely to have visible impact on smallholders and women farmers until they are able to increase production and marketable surplus. The below recommendations on lentil marketing should be implemented after gains in production are made. Alternatively, marketing strengthening interventions can be initiated with medium and large farmers with an intentional strategy of including smallholder and women farmers at some stage.

- Local municipalities and AKCs should conduct a **mapping exercise to identify select agriculture cooperatives and farmer groups** that are well placed to take up lentil collective marketing activities based on their locations, current and potential membership outreach (especially smallholders and women members) and relationships with buyers and markets. This strategy will help in focusing investments on few high-impact farmer groups and cooperatives rather than spreading the resources (financial and human) thin across a large number of such institutions.
- Capacities of the selected cooperatives and farmer groups should be built on **collective marketing** with particular emphasis on group management (holding meetings, election of executive committees, feedback mechanisms), financial management (business plans, profitability analysis, basic accounting and



bookkeeping) and marketing management (market identification, price monitoring, quality management) because these dimensions form the backbone for any collective marketing interventions. However, care should be taken to ensure that the training content is kept simple and limited to bare essentials rather than overwhelming the participants. Resources like the SMART Skills Manual<sup>8</sup> developed by USAID, CRS and MEAS can be contextualized and used for this purpose. The following topics are recommended:

- Orientation and **skill building on group management** needs to be prioritized as it impacts the extent to which the groups are inclusive, responsive to GESI, democratic in decision-making, participatory in conflict resolutions, transparent, accountable and sustainable.
- In addition to formal trainings, the local municipalities and AKCs should provide strong **accompaniment and mentoring support** to cooperatives and farmer groups as they take up collective marketing. This mentoring support, at least in the initial two to three years, is critical for sustainability of outputs. Some key areas on which to focus are:
  - Create linkages with buyers, such as processors, millers and exporters is key as farmer groups and cooperatives of smallholders and women may not have the required skills and resources to take a lead in this.
  - Facilitate access to affordable financial services such as loans from formal financial institutions as working capital is a critical requirement to implement collective marketing. The local municipalities can also provide grant and revolving funds support to farmer groups and cooperatives to meet some of the financial requirements.
  - Ensure democratic governance at farmer groups and cooperatives by facilitating active participation of smallholders and women farmers in the decision-making process by intentionally taking into consideration their limitations such as skills/capacities, existing workload, mobility constraints and cultural factors.
- In order to provide mentoring support on marketing to farmer groups and cooperatives, it is imperative to build the **skills of frontline extension workers** on these topics. Discussions with ADD, AKC and local municipalities show that the production remains the focus of training for frontline extension staff, and marketing aspects are not prioritized. ADD and AKC should allocate resources for more capacity-building activities on value chains for extension workers.
- The local municipalities should invest in creating **necessary marketing infrastructures**, including collection centers and warehouses, which will enable farmer groups and cooperatives to store lentil to get favorable prices and mitigate high seasonal price fluctuations. To ensure inclusion and benefit for smallholder and women farmers, local municipalities should strategically develop these infrastructures in a decentralized manner to ensure that smallholder farmers in remote locations are able to access and benefit from them. When feasible, management and usufruct rights of these infrastructures can be transferred to women's savings groups, farmer groups and cooperatives.

---

8. [https://www.crs.org/sites/default/files/tools-research/smart-skills-for-rural-development\\_0.pdf](https://www.crs.org/sites/default/files/tools-research/smart-skills-for-rural-development_0.pdf)

### C.3 BUSINESS DEVELOPMENT SERVICES

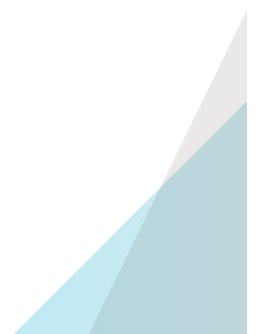
Focusing on improving business development services will help enable easier access to production- and marketing-related technical needs for smallholders and women farmers. The providers for business development services can be public and private agencies.

- **Output-based subsidy** can be a good strategy to encourage smallholders to increase their productivity and lentil production. Local municipalities can promote such mechanisms wherein a fixed amount of money per kg can be provided to farmers, and collected quantity can sell to the processor/millers/wholesalers at auction as large-scale processors are more interested in purchasing in bulk from specific areas rather than from multiple collectors in different locations and also ready to pay rate of collector to the farmers. Meanwhile, central government already announced that they will fix minimum floor prices for high-value crops, including lentil, and are planning for the assessment for the same. Appropriate features can be added to the subsidy to further incentivize farmers; e.g., an output-based subsidy can be provided to only those farmers who are able to maintain certain quality standards or adopt certain improved production and post-harvest practices like seed treatment, cleaning, grading, etc. Such strategies will incentivize farmers to adopt improved product and post-harvest practices.
- With the new federal structure in place, the junior technical assistants (JTAs) under the municipal agriculture office are the first points of contact for an **extension advisory**, especially for smallholders, and the JTAs have generic skills on agriculture as a whole. **Local municipalities** can identify JTAs in areas that have high potential for lentil production, and with technical support from AKCs and GLRP-NARC, train them more specifically on lentil production-related issues. Apart from technical issues, the JTAs need to be sensitized on challenges that smallholders and women farmers face in accessing extension services and trained appropriately on participatory and inclusive extension delivery mechanisms particularly on marketing and business development.
- Acknowledging that JTAs would be limited in providing timely extension services to smallholders, especially in remote locations, it is important to **develop local lead farmers** (women and smallholders), who can provide timely and on-site mentoring and troubleshooting support to smallholders and their collectives. Lead farmers are also a more feasible option for women for accessing farm advisory.

## D. References



- Agriculture Development Strategy (2015-2035), MoALD, Government of Nepal
- Value Chain/Market Analysis of the Lentil Sub-sector in Nepal, Nepal Economic Agricultural and Trade Activity (NEAT), USAID Nepal, August 2011
- Nepal Trade Integration Strategy (2016), Ministry of Commerce, Government of Nepal
- Bhattarai, Basundhara and Leduc, Brigitte. Engendering Value Chain Development, ICIMOD, November 2009
- Country Gender Assessment on Agriculture and Rural Sector in Nepal, FAO, 2019





---

Catholic Relief Services | 228 W. Lexington Street, Baltimore, MD 21201, USA | [crs.org](http://crs.org) |