CATHOLIC RELIEF SERVICES

Inclusive Value Chain Study for Ginger Sub-sector in Nepal

CRS NEPAL IN COLLABORATION WITH AGRICULTURE AND FORESTRY UNIVERSITY (AFU), NEPAL

Acronimum

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

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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 subsectors: 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.[1] The ADS's assessment of existing value chain studies and interventions highlighted the following key gaps[2] in value chain studies:Most recommendations in the value chain studies were vague, and few recommendations could be used to implement smallholder[3] 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.[4] With Nepal's governance transitioning from unitary to federal structure, there is now more devolution of power at the local levels which 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 proposed to conduct a comprehensive value chain study in Palpa and Dang districts in Province 5. Based on consultations with MoLMAC, Agriculture Development Directorate, Agriculture Knowledge Centers, National Grain Legume Research Program, National Ginger Research Program (Nepal Agriculture Research Council) and private sector actors, such as processors, millers and commodity associations in Province 5, CRS Nepal identified ginger as one of the commodities with the most potential for inclusive value chain strengthening opportunities. Ginger 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 cash crops due to less labor, irrigation requirement and high production;

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. 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 growth and access of farmers to value chains;
- Cross-cutting issues like social inclusion, gender, geographical spread and matching national priorities;
- Environmentally sustainable and can contribute to natural resource management;

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 was designed to povide 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 ginger value chains in Dang and Palpa districts of Province 5 to increase their income in a sustainable manner.
- Disseminate findings from the ginger 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 ginger 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 within government (targeted local municipalities, MoLMAC, ADD, Planning Division, Agriculture Knowledge Centers [AKC], Grain Legume Research Program – NARC, National Ginger Research Program – NARC), private sector (collection agents, wholesaler, processors, traders, etc.) and civil society actors (NGOs and INGO involved in value chain activities).

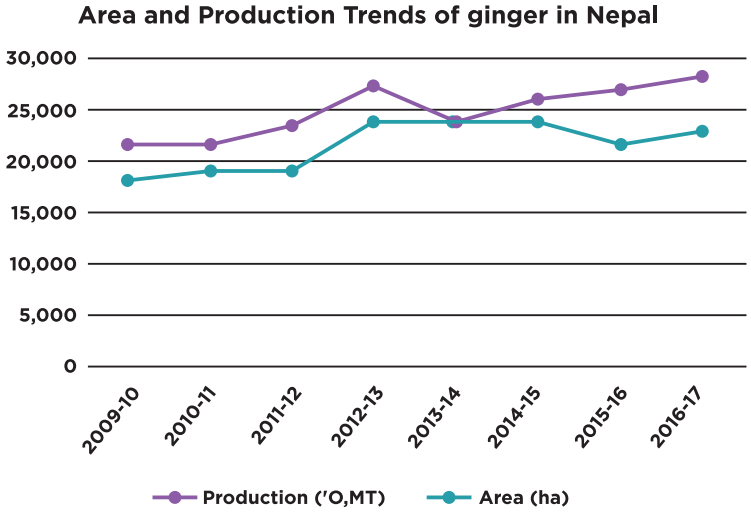
The **study geographically** covered three local municipalities – Tansen, Ribdikot and Bagnaskali in Palpa District for ginger. These locations were selected in consultation with MoLMAC and ADD based on parameters such as high production and area under production, presence of high proportion of smallholders and historically marginalized populations, poor performance across key development indicators (poverty rates, malnutrition, per capita income) and agro-climatic representation for Province 5 (Dang for Terai and Palpa for mid-hill).

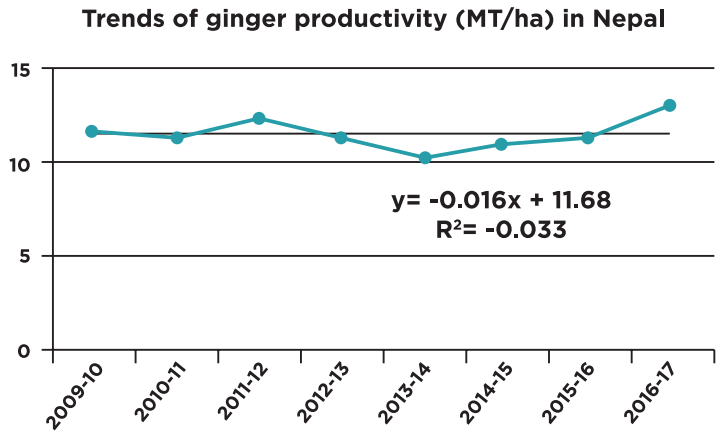
B. Key Findings - Ginger

B.1 PRODUCTION AND MARKETING ANALYSIS

Ginger (*Zingiber officinale*) is one of the earliest known major spice crops of Nepal, cultivated in the mid-hills having largest land coverage and production.[5] Ginger is a perennial herbaceous spice crop having great export potential, and is one of the prioritized crops for value chain development program in ADS. Nepal is the world's fourth largest producer of ginger after India, China and Indonesia, with a production of approximately 279,000 MT per year. Ginger is cultivated in 22,649 ha of land; productivity in the year 2016-17 was 12.34 MT/ha.[6] Within 7 years – from 2009-10 to 2016-17 – ginger production has been increased by 34%, area under production by 27% and productivity by 11%. Out of the total ginger production in Nepal, 39% is produced in the Eastern Development Region, followed by 25% in the Western Development Region.[7]

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





5. *Ministry of Agriculture Development/Government of Nepal (MOAD, 2016)*
6. *Ministry of Agriculture Development/Government of Nepal (MOAD, 2017)*
7. *Ministry of Agriculture Development/Government of Nepal (MOAD, 2015), Vegetable Statistics*

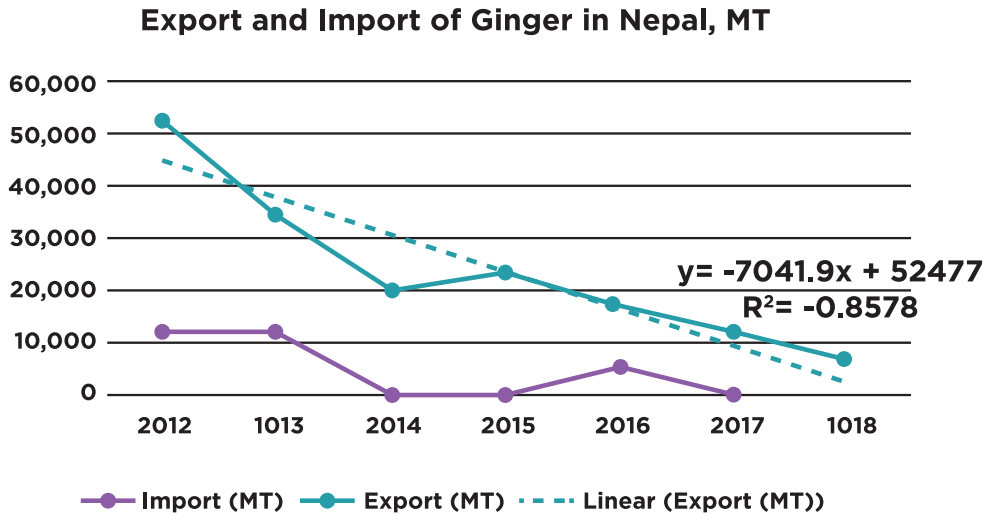
Table 1: Ginger area, production and yield trends in Nepal

Fiscal Year	Area (ha)	Production (MT)	Yield (Kg/ha)
2006-07	1,60,576	13,170	12.19
2007-08	1,61,171	14,007	11.51
2008-09	2,11,251	17,665	11.96
2009-10	2,10,790	18,042	11.68
2010-11	2,16,289	19,081	11.34
2011-12	2,35,033	19,376	12.13
2012-13	2,76,150	24,226	11.40
2013-14	2,42,547	23,826	10.18
2014-15	2,63,140	23,855	11.04
2015-16	2,71,863	21,869	11.40
2016-17	2,84,000	23,000	12.99

Source: VDD (2009 and 2014),[8] MESD (2015)[9] and MOF Economic Survey (2018)[10]

While the above national level data shows an overall increasing trend in area under ginger and production, there was a downward trend in the study locations over the last 10 years. Production of ginger was its peak from 2008-2012 when farmers reportedly made significant profits to the tune of 3,00,000 to 4,00,000 Nepalese rupees (about US$3,000-4,000) per year. Later the production decreased due to a combination of factors such as crop diseases resulting from use of same plot for ginger production (a decrease of 50-60%) and decrease in demand from India. Smallholder farmers gradually decreased their area under ginger production as prices fell down, while big farmers were more patient and were able to make a profit owing to larger volume.

Figure 2: Trends of export and import of ginger



Source: FAOSTAT, 2019)

8. Vegetable statistics (2009 and 2014), Vegetable Development Directorate, http://www.vdd.gov.np
8. Monitoring, Evaluation and Statistics Division (2015), Agri. Statistics Section, Ministry of Agricultural Development
8. MOF Economic Survey (2018), http://mof.gov.np/
9. Monitoring, Evaluation and Statistics Division (2015), Agri. Statistics Section, Ministry of Agricultural Development
10. MOF Economic Survey (2018), http://mof.gov.np/

Nepal shares about 0.5% of the world's exportable ginger and ranks 11th in terms of the value of export. In 2017, Nepal exported about 4,500 MT of ginger, with a value of US$3.97 million.[11] Almost 90% ginger produced in Nepal is exported to India only. About 75% of Nepalese ginger is traded in fresh form, and the remaining 25% is in processed form, mainly as sutho (ginger dried in a traditional way) and powdered ginger.[12]

Table 2: Import, export and price trends of ginger in Nepal

Fiscal Year	Import (MT)	Export (MT)	Price (US$/MT)
2012	12,129	52,477	-
2013	12,137	35,150	470.8
2014	459	19,964	445.1
2015	311	23,819	437.8
2016	5,509	17,694	406.5
2017	404	11,618	409.3
2018	-	6,766	386.9

Source: FAOSTAT

B.2 KEY VALUE CHAIN PRACTICES AND BARRIERS

B.2.1 PRODUCTION PRACTICES

In the targeted municipalities of Palpa, a large majority of farmers grow ginger in 2-3 ropani (0.10-0.15 ha) of land, wherein almost 70-75% of the produce is sold in fresh form to traders immediately after harvest; the remaining is either consumed and/or sold in local markets. Ginger is generally grown in marginal and slopy lands where other crops cannot be grown easily, which makes it a good option for smallholders and women farmers who do not have access to productive land. Land with red soil and exposure to good sunlight is preferred as ginger cultivated in such soil types is perceived to have less diseases and longer shelf life. Barring few cases, farmers predominantly use organic fertilizers like manure and compost from livestock waste. Land preparation is mostly done with bullocks, and use of power tillers and tractors is negligible. Planting is done generally January through February and harvested twice from August through September and in November and December.

Seeds are the most important inputs for ginger farming. Almost all smallholder farmers use their own saved seeds (9-10 years old in many cases), while large farmers sometimes procure improved seeds like Kapurkot 1/2, which are rot tolerant, from NARC Ginger Research Program – Kapurkot. Generally, a seed rate of 100kgs per ropani (0.05 ha) is followed by farmers, and production is almost 4-5 times the seed rate. Despite being aware that farmer-to-farmer seed exchange is good, such practices are generally not followed as farmers associate fluctuation in yield primarily with climatic factors and not use of seeds from same sources. However, farmers have adopted good seed selection practices. Seed treatment with Trichoderma and Pseudomonas is practiced by very few progressive farmers. The effectiveness of seed treatment is also under question as Trichoderma and Pseudomonas are sensitive to temperature of more than 25 degrees Celsius. The majority of farmers practice mixed and intercropping of ginger with crops like maize and turmeric. Crop rotation is generally done by large farmers every three

11. International Trade Center (2018)
12. Trade and Export Promotion Center (2017)

years as a disease management measure, but most of the smallholders do not follow this practice due to lack of enough land, which ultimately leads to decrease in yield. Ginger is grown in rainfed conditions, and irrigation is generally not applied. Smallholders do not employ labor for any of the crop operations and the practice of sharing labor for sowing, harvesting and transportation is prevalent.

Rhizome rot is the main disease impacting production of ginger in study areas, and is reported more in black soils with less exposure to direct sunlight. The incidences of rot diseases increased after 5-7 years of ginger cultivation in the same plots. One of the contributing factors for farmers decreasing their ginger cultivation is increased instances of rot disease. Farmers have adopted measures like burning crop residue in the farm to address rot problem, but without much success.

B.2.2 HARVEST AND POST-HARVEST MANAGEMENT

Generally, ginger is harvested and sold upon receiving confirmation from traders about price and date of procurement. In case of low prices or low demand, farmers keep the ginger unharvested in the soil. While keeping the ginger unharvested in the soil helps in better storage of ginger, farmers are unable to clear the land for other crops, which leads to losses. The practice of storing harvested ginger for sale at a later date for more favorable prices is almost nonexistent among smallholders as they need cash immediately after harvest. Lack of awareness of locally appropriate and low-cost storage techniques are also reasons for smallholders not storing ginger. Some large farmers do store ginger in underground pits; this is later sold as seed at a higher price (at least 3-4 times the price of fresh ginger).

There have been few cases where farmer groups and smallholder cooperatives undertook value addition like drying ginger, ginger powder, etc., but due to lack of adequate local demand and quality of products not meeting export quality requirements, these initiatives had limited success. Additionally, there is less incentive for farmers to maintain very good quality of ginger and carry out sorting, grading, etc., as they get the same price despite quality, unless the quality is significantly poorer. Ginger washing is generally not practiced due to challenges such as additional labor, water unavailability, lack of drying space, chances of decomposition in ginger and no price increase for washed ginger.

After harvesting, healthier seeds (i.e., matured, no physical damage, no external sign of fungus) are generally stored in gunny bags and placed in cooler places in-house. Seed losses in storage were reported to be about 10-15% due to moisture loss, pest attacks and decomposition. This also one of the reasons why smallholders in many cases don't store seeds.

Pit storage practiced by few large farmers showed lesser seed loss. Low cost, pit storage is not popular among smallholders as they don't store large quantities and don't feel the need to construct the pits. Additionally, the few trials conducted by farmer groups did not work well due to poor design (poor ventilation and higher depth) of the pits, and this has demotivated farmers to opt for pit storage.

B.2.3 MARKETING PRACTICES

Farmers in the study area reported selling almost 70-75% of the ginger in fresh form and retaining the rest for their own consumption and minor local sales, including as seeds. Marketing activities are typically led by aggregators/traders/middlemen in the

communities who have good relationships and networking with farmers, producer cooperatives and/or traders in key markets or trade hubs like Butwal, Bhairahawa and Nepalgunj. The traders/middlemen get purchase orders from larger traders in key markets, and then coordinate with farmers and cooperatives for the procurement of ginger. The aggregators/traders/middlemen play a very important role in providing a less risky marketing options for smallholders and bridging the gap between farmers and wholesalers. In some cases, the producer cooperatives play the role of middlemen, and play a crucial role in linking farmers with markets. The prices between trader/middlemen and farmers are negotiated in advance, and farmers are generally given a window of 6-8 days during which the price guarantee remains. In the majority of cases, the payments are made when loading the produce at the community level, while in some others, especially if there is liquidity crunch, the payments are made within 10-15 days. No difference in price and other terms was observed between male and female farmers. Generally, farmers and traders enjoy a good working relationship, but there are also incidences of malpractice by farmers wherein ginger is sold with mud, or low-quality ginger is concealed under good quality ginger in bags. This is one of the reasons for low price offered by traders.

Smallholder farmers generally do not have strong information or awareness about the markets, buyers, quality parameters and prices. Their role is confined to production and harvesting, while marketing is completely managed by the traders/middlemen. Few instances of collective marketing were reported, but it was limited to cooperatives and farmer groups in the urban and semi-urban areas. Cooperatives and farmer groups in remote locations had lower skills in networking with buyers in key trade hubs. The farmer groups and cooperatives, especially with large percentages of smallholder and women farmers, also lack skills in leadership and business development, and this results in lesser interactions among members before becoming completely inactive. On the other hand, big farmers with larger volume have contacts with traders in hubs/key markets and sell the produce directly.

India is the main market for fresh ginger, but the demand is inconsistent and depends on production levels in India and non-tariff aspects such as quarantine, phytosanitary measures, etc. Traders generally do not offer different prices based on quality, but in a few cases, it was found that traders offer a slightly higher price (NPR5/kg) for ginger procured from areas with red soil. Similarly, the price of fresh ginger is less than the older ginger since fresh ginger has a shorter shelf-life. Traders also offer transportation services to procure ginger from remote locations at a price (NPR2/kg). When the demand is high and there is competition among traders, farmers tend to get better terms, such as advance payment for their produce.

B.2.4 COST OF PRODUCTION AND FARMER PERCEPTIONS

Seeds are the key and most expensive of all the inputs used for ginger production. Home labor is used for land preparation, weeding and other intercultural operations especially for smallholder farmers. However, for plowing and other time sensitive activities like plantation and harvesting, hired labor is used and either paid in cash or kind. The cost of production of ginger was arrived at NPR26/kg considering all the costs for which cash is paid.[13] The sale price of fresh ginger demonstrates high fluctuation, primarily based on demand from India. Overall, the BC ratio for ginger production was observed at a healthy and profitable 1.7, taking into account a conservative sales price for ginger (NPR45).

13. Please note that inputs like own labor and land have not been monetized for inclusion in BC analysis.

Table 3: BC Analysis of Ginger

Benefit Cost Analysis of Ginger (2.5 Ropani)				
Particulars	**Quantity**	**Unit**	**Rate (NPR)**	**Total (NPR)**
Inputs				
Seed	250	Kg	100	25,000
Fertilizer/Manure	63	Doko (basket)	50	3,150
Pesticide (Trichoderma)	2.5	Kg	500	1,250
Labor				
Plowing	2.5	Pair bullocks	1,000	2,500
Plantation	5	Person days	700	3,500
Harvesting	5	Person days	700	3,500
Grand Total				**3,500**
Gross Return	1500	Kg	45	67,500
Net Return				28,600
B:C Ratio				1.7
Cost per Kg Production				1.7

Farmers' perception, however, regarding ginger profitability varied significantly from the BC analysis. Farmers, especially smallholders and women farmers, hardly keep a record of expenses nor do any profitability analysis. They usually compare the price received in the past, and that is considered a benchmark for current and future sales prices as well. Any drop in sale price, which is to be expected given the volatility in demand, is considered a loss. Such perceptions get accentuated further as there has been a steady decline in the price of ginger over the last six to seven years. The big farmers and traders, on the other hand, have a strong understanding of profitability analysis, and were almost unanimous in confirming that ginger is a profitable crop unless the price drops below NPR15 per kg. Such a significant difference in understanding of profitability is one of the main reasons why smallholders are gradually moving away from ginger production, while medium and large farmers are persisting with it. Due to such differences in perception and continuity with ginger crop, big and progressive farmers are able to scale up their ginger production with short notice to take advantage of demand spikes, while smallholders take longer time to access seeds to start ginger production, and in the process are unable to take advantage of market opportunities.

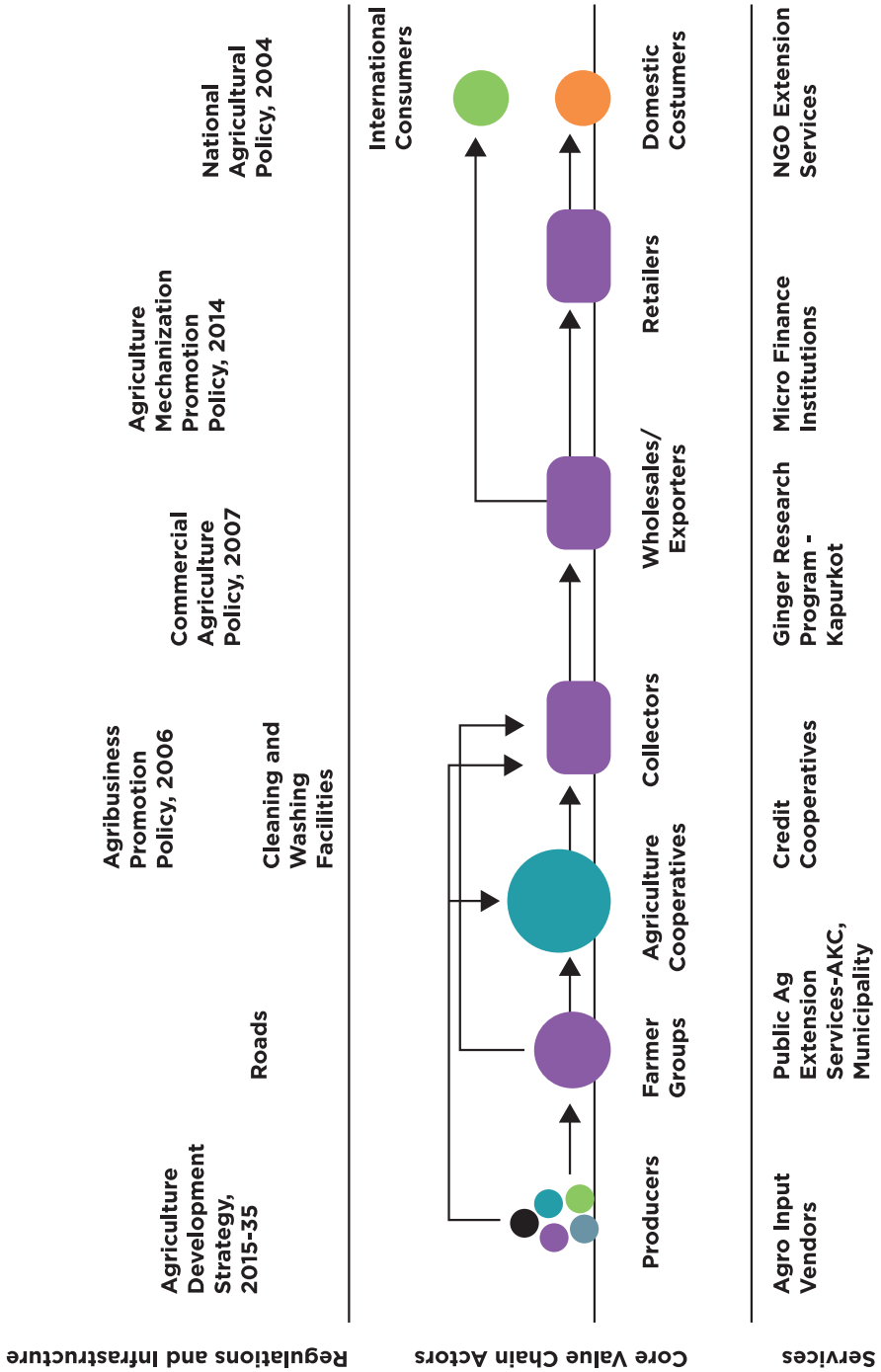
B.2.5 GENDER ROLES

Women play a very active role across all stages and activities of crop development. Some of the activities like planting, compost application, weeding, harvesting, cleaning and seed storage are almost exclusively performed by women members in the family. While more men are involved in sale activities, women are well aware of the quality considerations, sale prices, trader contacts and other terms. The role of women in ginger farming is increasing due to better connectivity, mobility and increased migration of men. However, there are still considerable gaps in terms of participation of women in training programs, active leadership roles in farmer groups and cooperatives. Women, specially smallholders and those living in remote locations, are constrained by increasing workloads (productive, social and caregiving, etc.) and balancing their various priorities to participate in trainings (especially trainings organized outside of the village) and meetings of cooperatives/farmer groups. While migration of men has increased their decision-making power, it also has increased their workload.

B.3 VALUE CHAIN MAPPING

B.3.1 VALUE CHAIN MAP

Figure 3:



B.3.2 VALUE CHAIN ENGAGEMENT AND BARRIERS

Smallholder farmers are primarily engaged in production of ginger, and their active involvement in other aspects of the value chain is extremely limited.

Table 4: Situational Analysis and Key Barriers

Value Chain Aspect	Situational Analysis	Key Barriers
Production	• Smallholders have limited or no access or no access to improved inputs (quality/disease-free planting material, mulching material, seed treatment chemicals and manure/compost). • Smallholders follow poor agronomic practices (land rotation, companion cropping, mulching practices, time of input application). • Crop losses experienced due to diseases like Rhizome rot and infestation by white grubs. • Quality of ginger produced is inferior compared to that of large farmers. • Have limited access to business services like loans and extension advisory. • Smallholder farmer groups and cooperatives are not able to perform collective production of ginger. • Smallholder have limited access to agriculture extension services.	• Low awareness of improved seed varieties and inputs like Trichoderma. • Distant markets are not accessible to smallholders in remote locations for buying inputs such as seed. • When prices are favorable, smallholders sell both mother and baby ginger to increase income, and face seed shortages the following season. • Smallholders have very few livestock. leading to shortage of manure/ fertilizer. • Small farm size makes it difficult for plot rotation. • Small landholding is a disincentive for farmers to invest in quality inputs as net impact on income is low. • Smallholders do not have solutions to manage diseases like Rhizome rot, and are not able to adopt preventive measures like land rotation, use of quality seeds, etc. • Lack of monitoring of standing crops for disease detection (especially for seed purpose) since harvested ginger will not show signs of disease. • Sometimes farmers use undecomposed manure, which leads to white grub infestation. • Quality constraints are mainly due to use of poor-quality seed, lack of disease management and poor harvesting skills. • Smallholders are not prioritized for trainings because they are generally less active in farmer groups and cooperative events. • Unlike risk-averse smallholders, farmers who are proactive and willing to take risk by adopting improved practices receive training opportunities. • Participation of women farmers is very low in trainings due to lack of prior information, training locations outside of village and lack of time. • Existing trainings are more classroom type (not demonstrations or field schools) with less impact on skill building. • Loans from formal financial institutions require lengthy procedures. • Financial institutions have loan products with monthly repayment schedules that are not suitable for ginger farmers.

Value Chain Aspect	Situational Analysis	Key Barriers
Production		• Existing farmer groups and cooperatives are not able to meet loan requirements of large numbers of farmers. • Municipalities are yet to come up with clear guidelines on promotion of leasehold farming and contract farming. • Extension workers at the municipalities do not have specialized skills on ginger production. • Extension workers are often mandated to cover large areas, which makes it difficult for them to cover especially remote locations. • Agro-vets, who generally serve as first points of contact for smallholders, have lesser interest in ginger because less inputs are demanded and sold related to ginger.
Marketing	• Low volume of production by smallholders coupled with lack of collective marketing severely limits direct engagement with markets. • Inability of smallholders to store ginger and sell in bulk immediately after harvest reduces profitability. • Smallholders do not take up any value addition (drying, sorting, grading, product diversification) to fetch higher prices. • Cooperatives are unable to hold their produce or unable to explore more profitable markets for higher returns.	• Lack of timely access to quality seeds, low adoption of improved ginger production practices. • Farmer groups and cooperatives of smallholders, especially in remote locations, do not have skills regarding collective marketing and are generally less active due to preoccupation with other priorities. • Smallholders pay less attention to quality, and lack of consistent quality across is a constraint for collective marketing. • Acute dependence on very few traders for marketing and price information. • Lack of skills on low-cost, improved ginger storage techniques. • Absence of cold storages and warehouses for safe storage of ginger. • Lack of access to affordable credit and the need for cash immediately after harvest. • Lack of access to credible price information and too much uncertainty over price forces smallholders to sell their produce at earliest as they are risk averse. • Significant dependence on India for export of fresh ginger and inadequate exploration of domestic and international markets beyond India. • Cooperatives do not have cash reserves, nor are they able to access larger loans (for lack of sound financials) to be used as working capital for procuring ginger.

B.4 GOVERNMENT INITIATIVES

All three local municipalities in the study area strongly acknowledge the importance of ginger as a key cash crop, particularly for smallholders, and are committed to rejuvenating ginger farming in their areas. Currently the local municipalities are offering and/or planning to offer the following support to ginger farmers:

- Identification of key crops, including ginger, for each ward to provide targeted support.
- Allocation of funds for seed support to farmers.
- Provision of seeds to single women and other vulnerable households at 50% subsidy, while other farmers get 30% subsidy subject for planting at least 50 kg seeds.
- Some municipalities are planning to facilitate lease farming for ginger through technical and financial support specially aimed at youth and returnee migrants.
- Provision transport subsidy of NPR2/kg to increase farmers' access to markets.
- Facilitate registration and renewal of farmer groups as a precondition for accessing any support from municipalities.
- Set up inter-municipality coordination mechanism to facilitate movement of ginger seeds and produce for ease in marketing.
- Work with commercial banks to provide loan guarantee for agriculture and business loans for producer cooperatives.
- Develop guidelines for leasehold farming, and facilitate ginger seed production.
- Facilitate leasehold farming for smallholders and poor without any lease fee.
- Design and launch output-based subsidy for ginger.
- Establish collection centers to facilitate marketing of ginger.
- Develop warehouses for safe storage of ginger, and facilitate warehouse receipt funding in collaboration with commercial banks.
- Provide training at hamlet, village or tole level from current ward level to facilitate participation from women and smallholders.

While the above support interventions are welcome, the municipalities are able to cover only a very small percentage of farmers due to funding constraints. Also, the funding or subsidy support is not always accompanied by extension, technical mentoring and marketing assistance, which would have been more effective. The local municipalities are still in the process of hiring agriculture extension staff.

The province government, through MoLMAC, is conceptualizing a wide range of agriculture development and extension programs to support farmers to increase their production and productivity. Particularly for ginger, there is a plan to set up a system through which farmers can get quarantine and sanitation certificates that will help in easing exports. ADD under MoLMAC is also focusing on developing a domestic market for ginger, including provision for minimum support price. Once the Agribusiness Promotion Act is approved, ADD is planning to support municipalities in operationalizing the same. Some other proposed interventions are around quality seed production using virgin lands and provisioning seed treatment material; however, no specific programs on increasing smallholder engagement in ginger value chain have yet been launched.

NARC's Ginger Research Program – Kapurkot works with producer groups and cooperatives through a community-based seed production program for ginger seeds, and there is also a plan to have a more centralized seed production system for better quality control. NARC is also working on promotion of low-cost (US$400-500 for 3-quintal capacity) raw brick pit storage for safe storage of ginger seeds.

Nepal has recently transitioned from a unitary to federal form of governance characterized by three tiers of government – the central level, the province level and the local level. All three levels of government have distinct roles to play in agriculture sector development with a strong collaborative approach. The new governance and coordination structure is still evolving, and new guidelines are being put in place that will pave the way for strong agricultural growth in coming years. The brief analysis of government initiatives needs to be looked into from this perspective.

C. Recommendations

Smallholders are primarily constrained by their low volume and quality of production to engage higher up in the value chain to increase their returns. Low volume does not incentivize and motivate smallholders to invest in skill building and/or additional efforts in marketing; so, production enhancement is the focal entry point for making the value chains more inclusive. Any interventions that focus only on marketing are less likely to have the desired impact on smallholder income. Local municipalities have the primary mandate and, in most cases, resources to support smallholders and their collectives to increase their profitability from ginger. Most recommendations, therefore, have been developed with local municipalities as the primary stakeholders.

C.1 PRODUCTION

Production, productivity, quality improvements and increase in marketable surplus can strongly contribute in increasing income of smallholders from ginger.

- The Ginger Research Program under NARC has already developed and released rot-tolerant ginger varieties, such as Kapurkot 1 and Kapurkot 2. Large-scale and decentralized production[14] of these varieties through cooperatives and farmer groups will increase farmer **access to quality seeds**. Strong linkages between the seed producing groups and government and private sector can be facilitated to ensure availability of a market for seed producers. AKCs[15] can play a strong role in providing technical assistance to the seed-producing groups, and at the same time coordinate with other AKCs for movement of ginger seeds across districts based on demand. Similarly, local municipalities should focus on procuring improved variety seeds from producer groups and cooperatives that are supported by Ginger Research Program – NARC for distribution to farmers under their seed subsidy programs. This will not only increase farmers access to quality seeds, but also provide business to seed-

14. Ginger Research Program of NARC is already supporting farmer groups for ginger seed production, however more farmers could be reached through scaling this model

15. Agriculture Knowledge Centers (AKCs) are district level government agencies mandated with undertaking field research and also provide technical support to local municipalities

producing groups. There is also a need and potential for collaboration among local municipalities, NARC, AKCs and ADDs to share information about seed availability in different parts of the country to facilitate movement of seeds.

- Local municipalities can **facilitate leasehold farming and contract farming** for ginger production by smallholder farmers through farmer groups and cooperatives, women's groups and youth because leasehold farming will provide a platform for collective procurement of inputs and increase cumulative production and marketing of produce. The communities have strong women's savings groups that can take up leasehold farming. Similarly, youth migrant returnees are also a potential group for such leasehold farming.
- While regular **crop rotation** can contribute significantly to reduction in disease incidences in ginger, it is also one of the most difficult behavior changes for smallholders to adopt as it impacts their income in the short term. A series of awareness programs, including profitability analysis, demonstrations on crop rotation and the long-term benefits of crop rotation can help change smallholders' perceptions regarding crop rotation.
- **Promotion of low-cost storage techniques** such as raw brick storage and pit storage will help farmer groups and cooperatives save ginger seeds if the demand is low. Based on estimates by Ginger Research Program – NARC, these storage models are cheap (NPR5,000-6,000 for a 3-quintal capacity pit). At the farmer level, the focus should be on promotion of this technology with large/progressive farmers to start with. With current levels of production and the need to sell ginger immediately after harvest, storage may not be a feasible option for smallholders.
- AKC and local municipalities should work together to identify and **promote locally appropriate improved production practices** specially aimed at smallholders. The study identified the following key practices that have a strong potential to increase production:

  • *Plant selection to facilitate monitoring* of Rhizome rot disease during the vegetative stage and discard plants with disease symptoms. This is particularly recommended for seed-producing groups.

  • *Seed selection* to ensure that farmers are using disease-free planting material.

  • *Seed treatment*[16] with Trichoderma in locations where a supply chain exists for such materials.

  • *Raised bed* for Rhizome rot management.

  • *Plot rotation or crop rotation* at least every three years.

  • *Mother ginger* (bruni) harvesting techniques to increase the quality.

  • *Techniques for production of well-decomposed manure/compost*.
- The aforementioned practices should be promoted using **inclusive and participatory extension methods** with a focus on participation of smallholder and women farmers:

  • Decentralized demonstrations and farmer field schools at hamlet and tole level.

  • Selection of women lead farmers and smallholders to lead the farm demonstrations.

  • Strong focus on mentoring and on-field accompaniment support, especially for women and smallholder farmers, to facilitate behavior change.

16. There are mixed opinions on the effectiveness of Trichoderma in preventing Rhizome rot; therefore, a final call on this should be made based a more rigorous consultation with NARC and other authorities.

- Organize **membership enrollment drives** to facilitate the inclusion of women and smallholders, especially in remote locations, to join farmer groups and cooperatives. Where needed and feasible, new groups should be formed; this is particularly important since membership in registered farmer groups or cooperatives is mandatory to receive any inputs from government. In addition, there should be a focus on facilitating "meaningful" leadership roles for smallholders and women in these groups; this is generally challenging and requires long-term mentoring support from NGOs and local government.

C.2 MARKETING[17]

- Every ginger crop-related intervention for smallholders must include **strong orientation on profitability analysis** (and cost of production) and building the skills of smallholders on **decision-making** based on evidence regarding profitable crops. The orientation profitability analysis should be undertaken along with nonfinancial factors, such as risks and ease in cultivation and marketing, etc.
- Explore and **develop the domestic market** for fresh ginger given the substantial uncertainties associated with international market. Considerable price variations for ginger have been observed in Nepal, with price key urban markets peaking at NRP300/kg (US$3/kg) and the price in ginger-producing areas hovering around NPR100-150/kg (US$1-1.5/kg). Such a situation necessitates the timely movement of ginger from surplus areas to deficit ones to provide better prices to smallholders.
- Capacity building of cooperatives and farmer groups on **collective marketing** with a focus on quality management, business plan development, profitability analysis, etc., can help member smallholders access more profitable markets. Given that a large majority of cooperatives and farmer groups, especially when management is led by smallholders, any intervention of collective marketing should allocate at least four to five years of mentoring and accompaniment support in addition to formal trainings. Short-term interventions on marketing support are less likely to be sustainable.

C.3 BUSINESS DEVELOPMENT SERVICES

- Establishment of infrastructures, such as **warehouses and cold storages** by **local municipalities**, will provide safe and affordable storage options for smallholders and their collectives. Such facilities will help smallholders store ginger, and will also help them mitigate price fluctuations. However, a detailed cost-benefit analysis needs to be undertaken to ascertain the final feasibility of this recommendation.
- **Local municipalities** can collaborate with financial institutions to launch financial services like **warehouse receipt funding**, which can be extremely useful for cash-starved smallholders. By availing themselves of such services, smallholders can take loans against their ginger produce, especially immediately after the harvest when the prices are generally low. This will serve multiple purposes, including providing cash to smallholders immediately after harvest to meet their liquidity needs, help smallholders hold their produce for a better price later, and help achieve financial inclusion for smallholder and women farmers.
- **Loan guarantee instruments** such as first loss deficiency guarantee (FLDG) can be provided by **local municipalities** to financial institutions, which will then enable cooperatives to take larger loans. These loans can be given to smallholders to invest in improved ginger production practices such as buying improved variety seeds. Alternatively, the loans can be used as working capital to procure ginger from farmers.

17. Previous ginger value chain studies have well documented the gaps and opportunities related to international markets and the export potential of Nepalese ginger. The current study focuses more on how smallholder engagement in marketing can be strengthened.

- **Local municipalities**, with technical and coordination support from MoLMAC, can develop and **operationalize a floor price system (or minimum support price)** for ginger. The floor price can be fixed based on an estimation of production costs and differential amounts can be paid to farmers when market prices drop below cost of production. Such a mechanism will help smallholders cope with market price fluctuations and continue with ginger production at the same time.
- **Output-based subsidy** can be a good strategy to encourage smallholders to increase their productivity and ginger production. **Local municipalities** can promote such mechanisms wherein a fixed amount of money per kg can be provided to farmers. Appropriate features can be added to the subsidy to further incentivize farmers. For instance, output-based subsidies can be provided to only those farmers who are able to maintain certain quality standards or adopt certain improved production practices, for example, raised beds, seed treatment, etc.
- With the new federal structure in place, the junior technical assistants (JTAs) under the municipal agriculture office are the first points of contact for **extension advisory**, especially for smallholders, and they have generic skills on agriculture as a whole. **Local municipalities** can identify JTAs in areas that have high potential for ginger and, with technical support from AKCs and NARC, train them more specifically on ginger production-related issues. In addition to technical issues, JTAs need to be sensitized to challenges that smallholders and women farmers face in accessing extension services, and then trained appropriately on participatory and inclusive extension delivery mechanisms.
- 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

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