CASA
Commercial Agriculture for Smallholders and Agribusiness

Vegetable Sector Strategy – Nepal

CASA NEPAL COUNTRY TEAM

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UKaid
from the British people

Abbreviations

ADS	Agriculture Development Strategy
ADB	Asian Development Bank
AGDP	Agriculture Gross Domestic Product
AICL	Agricultural Input Company Limited
AEC	Agro Enterprise Centre
ANSAB	Asia Network for Sustainable Agriculture and Bioresources
BDS	Business Development Services
BFI	Banking and Financial Institutions
CASA	Commercial Agriculture for Smallholders and Agribusiness
DADO	District Agriculture Development Office
DFID	UK Department for International Development
FAO	Food and Agriculture Organisation
FY	Fiscal Year
FYM	Farmyard Manure
FEFVEN	Federation of Fruits and Vegetable Entrepreneurs Nepal
FWEAN	Federation of Woman Entrepreneurs' Association of Nepal
GAP	Good Agricultural Practices
GoN	Government of Nepal
GDP	Gross Domestic Product
gm	gram
HH	Household
ha	Hectare
IFC	International Finance Corporation
kg	Kilogram
MT	Metric Ton/Tonne
MoAD	Ministry of Agricultural Development
MFI	Micro Finance Institution
NPR	Nepalese Rupee
NGO	Non-Governmental Organisation
NARC	National Agricultural Research Centre
NACCFL	Nepal Agriculture Cooperative Central Federation Limited
NABIC	Nepal Agribusiness Innovation Centre
NPR	Nepal Rupee
NSB	Nepal Seed Board
ODA	Official Development Assistance
PQ	Plant Quarantine

PPP	Public Private Partnership
PHMD	Post-Harvest Management Directorate
PEAN	Pesticide Entrepreneurs Association Nepal
SDC	Swiss Development Cooperation
SHF	Small Holder Farmer
SME	Small and Medium Enterprises
SPS	Sanitary and Phyto-sanitary
SQCC	Seed Quality Control Centre
SEAN	Seed Entrepreneurs Association of Nepal
TEPC	Trade and Export Promotion Centre
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VDC	Village Development Committee
%	Percent
$	United States Dollar

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Executive summary

Vegetables in Nepal are considered very important crops, both for food security and as sources of income for smallholder producers.

Sector Description

Vegetable crops are an integral part of the farming system in Nepal and the sector has been growing rapidly in recent years. Many farmers are diversifying away from cereal crops in search of better returns. The increase in the number of vegetable farmers indicates that they have seen an opportunity to improve their incomes.

- It is estimated that over 3.2 million households are cultivating vegetables, of which 17% are headed by women. Currently the sector contributes 9.7% of the country's GDP and is dominated by small-scale subsistence production units, micro-to-small collection and processing units and a limited number of large-scale industrial processing units. However, there is a growing presence of SME actors responsive to emerging commercialisation trends.
- The major drivers of sector commercialisation are favourable climatic growing conditions, expanded road access, increasing involvement of the private sector and cooperatives, greater government interest, buoyant domestic demand and increasing competitiveness against imports.
- Despite the increasing interest among farmers and the significant increase in production, Nepal remains a net vegetable importer. The country produces around four million tonnes of vegetables annually and imports around three million tonnes, mainly from India[1]. This provides significant scope for market actors and smallholders to step up.
- While SMEs face various challenges in accessing commercial finance and investment to exploit opportunities, there is an emerging investment landscape including incubators for helping agri-businesses prepare for investment.

Analysis

The field assessment carried out in Provinces 3 and 4 by CASA Nepal revealed that the vegetable sector faces multiple challenges from both the supply and demand sides. On the **supply side,** the major constraints were found to be low productivity, poor market access, high post-harvest losses (estimated at 25% at producer level) and low revenue from the sale of vegetables. The weak market orientation of SHFs in Nepal stems from: (1) an acute lack of timely market information; and, (2) limited avenues to sell their produce beyond mandis[2] and local middlemen.

Farmers need seamless, efficient access to markets to drive growth, benefit from better prices and reduce post-harvest losses. Multiple profit-taking middlemen currently bridge the gap between farmers and markets without adding value, leaving very little for farmers on one end and overcharging consumers on the other. The unorganised supply-chain is characterised by inefficiencies in logistics and storage, resulting in food losses at the post-harvest stage. Farmers have limited information on demand, leading to frequent oversupply or shortages, which impact prices and exacerbate crop wastage. Post-harvest management is also poor, as the layers of small intermediaries in the supply chain invest very little in quality storage, packaging and transportation infrastructure.

[1] Vegetable worth NPR 14 billion imported in first six months, The Himalayan Times, March 2019
[2] Local marketplace

On the **market side**, central impediments to commercialisation of the sector are the lack of storage facilities in market centres and cooperatives, weak farmer organisations, limited access to finance and the limited ability of SMEs to innovate and diversify. More investment is required to develop modern supply chains and logistics services to handle high-value commodities, such as cold chains, reefer vans, and warehouses. The private sector has a greater role to play in terms of investment and strengthening the firm-farm linkages critical to scaling up processing and retailing operations. However, the risk appetite to innovate and invest among processors and SMEs is low due to the high cost of capital, low managerial capacity and an unfavourable business-enabling environment. Due to low investments, the sector has seen a low uptake of innovation and technology, which has resulted in low product diversification.

Accelerating commercialisation of the vegetable sector requires: (1) strengthening farmer organisations and connecting them with output markets; (2) improving SMEs' access to BDS and investment opportunities; (3) promoting the uptake of innovation and technology; and (4) improving post-harvest management practices throughout the value chain.

Responsive strategy

The vegetable sector strategy is founded on optimising engagement with SMEs seeking investment to drive growth, while addressing constraints to commercialisation. (In many cases these are business opportunities that are not taken up.) This is typically expected to involve a journey with partner SMEs, from preparations for receiving investment (including business model development and BDS support) through to matchmaking with commercial finance providers and impact investors. This in turn is expected to generate success stories that will contribute to CASA's overall evidence base for convincing donors and investors to channel more finance to SMEs that engage large numbers of producers in their supply chains. The strategy also focuses on strengthening producer aggregation to access commercial markets, as well as supporting key improvements in the business environment.

Four broad intervention areas have been identified as drivers of inclusive commercialisation. In projects defined under the current intervention areas, we estimate we will reach 60,740 producers. We anticipate it will be possible to scale to approximately 64,500 beneficiaries by expanding existing projects and identifying new intervention areas.

1 Background

1.1 CASA programme overview

DFID's approach to economic development and agriculture relies on an increasingly commercial approach to agricultural programming by:

- Boosting agri-business investment, financing agricultural infrastructure and supporting smallholder-farmer access to markets;
- Helping farmers and their families to have opportunities and jobs outside their farms, and supporting SMEs in rural areas;
- Supporting subsistence farmers without other economic opportunities, so that they avoid hunger, malnutrition and extreme poverty;
- Encouraging commercial approaches that reduce the cost of nutritious diets.

In support of this approach, DFID has launched the five-year, flagship Commercial Agriculture for Smallholders and Agribusiness (CASA) programme which seeks to change how investors, donors and governments view and invest in agribusinesses that work with smallholder supply chains. In doing so, CASA will increase economic opportunities for smallholders by:

a) Demonstrating the commercial viability of small and medium-sized (SME) agribusinesses with significant smallholder supply chains and attracting more investment into these businesses;

b) Deepening the smallholder impact of existing investments made by development finance institutions (DFIs, notably CDC), and impact investors;

c) Enabling poor smallholder farmers to engage with and trade in commercial markets;

d) Researching and communicating the case for successful engagement with smallholder-linked agribusiness.

CASA has three components, two of which (Components A and C) are managed out of Nairobi, Kenya by NIRAS-LTS in partnership with Swisscontact and CABI. CASA's component B is separately implemented by Technoserve and focuses on technical assistance and investment promotion for larger agri-enterprises involved in global development. In addition to its three components, the programme has three strategic cross-cutting components:

- Gender and social inclusion (GESI);
- Nutrition and food security;
- Climate change and the environment.

Component A will demonstrate high-impact interventions in the three target countries (Malawi, Uganda and Nepal) leading to: (a) mobilisation of investments for partner agri-businesses (which can include commercially-minded farmer associations and cooperatives) and expanded outreach to smallholders; and (b) improved access to markets for smallholders. The ultimate target group for CASA is the 'missing middle' of 'stepping-up' smallholders[3] – that is, those that wish to engage in commercial agriculture but have largely not done so to date. (Among the missing middle, 40% live on less than $2 a day, while 50% of women in the missing middle live on less than $2 a day).

[3] 'Stepping-up smallholder farmers are described as those that sell or wish to sell at least 50% of their cash crops/produce.

Component C is a learning and knowledge-sharing component. Among other things, it will leverage knowledge gains from Component A interventions and other research to inform donors and investors about the merits of investing in agribusiness SMEs with significant outreach to smallholders.

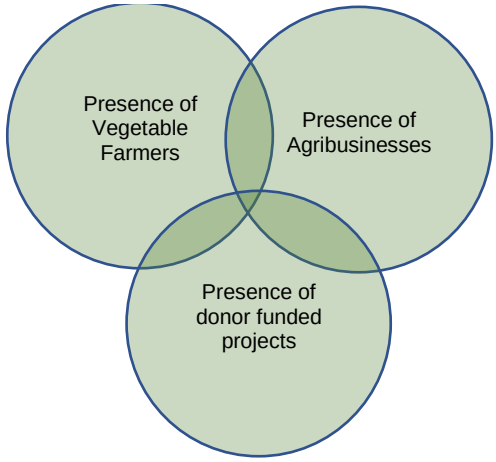
1.1.1 Focus of this report and information sources

The CASA Nepal Country Team has made efforts to consult with sector actors, especially in Province 3 and 4, to broaden understanding of the roles performed by various market actors, as well as problems and opportunities in the core market and the corresponding support and business-enabling environment functions. The report draws from multiple sources, including secondary information arising from the literature review, and primary information obtained through various focus group discussions and informant interviews. It has systematically aligned the sector analysis with CASA's Inclusive Markets approach. As such, this analysis aims to provide logic and rationale for market-based projects for the benefit of smallholder producers and SMEs in the vegetable sector in Nepal.

1.2 CASA Vegetable Sector Locational Focus Overview

CASA Nepal has prioritised work in Provinces 2 and 5 to facilitate alignment with DFID's other programmes. Province 2 is Nepal's second most populous province and smallest province by area. It borders Province 1 to the east, Province 3 to the north, and India to the south. It has opportunities to export vegetables domestically to both the bordering provinces and has prospects to export to India. The large southern section bordering India provides a big business corridor, and around 40% of tariff collection is from border points located in this province. The province is very agro-based and is regarded as the grain basket of the country: an overwhelming majority of the population is engaged in agricultural activities. The provincial minister has also prioritised agriculture as the main driver of growth and has expressed a strong intention to welcome foreign direct investment (FDI). The province is formulating new laws that will be favourable for foreign investors to operate businesses and secure returns on their investments. But the province lags in food security, nutrition and the Human Development Index, strengthening the rationale for CASA to work to address these cross-cutting issues.

Figure 1: Selection Criterion for location



Similarly, Province 5 is best suited for agriculture production, as the land is very fertile and has a good source of irrigation. The province has a mix of Terai and High Hills, making possible the production of off-season vegetables and exports to domestic provinces and even to India. The province also has immense commercialisation potential, thanks to its high potential for economies of scale through land consolidation and better leasing arrangements.

CASA will also look for opportunities in other regions where the potential for commercialisation is ripe, especially Provinces 3 and 4. Province 3 has the highest consumption of vegetables of the seven provinces, but still has a food deficit. Hence, there is room to commercialise the vegetable production system to cater to unmet demand. The province also has numerous private sector actors willing to diversify and expand.

Province 4 has off-season vegetable production potential, good road connectivity and market hubs offering higher chances for value chain integration and the export of vegetables to other provinces. Moreover, growing cities, especially those involved in tourism, such as

Pokhara, are likely to increase demand for vegetables, thereby increasing consumption and the prices available to farmers. This provides a base from which to commercialise vegetable production further. Private sector interest is also high, with good potential for organic food production to cater to tourist hubs such as Pokhara and the Annapurna region.

2 Sector description

Worldwide production of vegetables has doubled over the past quarter century and the value of global trade in vegetables now exceeds that of cereals[4]. This increase stems from the rise in awareness of the health benefits of vegetable consumption, as well as increased global demand for food as the world's population expands. In 2016, more than 1.2 billion tonnes of vegetables were gathered throughout the world. The average global annual increase in vegetable production is 2% while the average for South Asia is 3.6% (the increase between 2006 and 2016 was about 29%.)[5] China is the largest vegetable producer, with 52% of global production, followed by India (14%). Nepal contributes 0.3%[6]. Yields in Asia are highest in the east, where the climate is mainly temperate and sub-temperate.

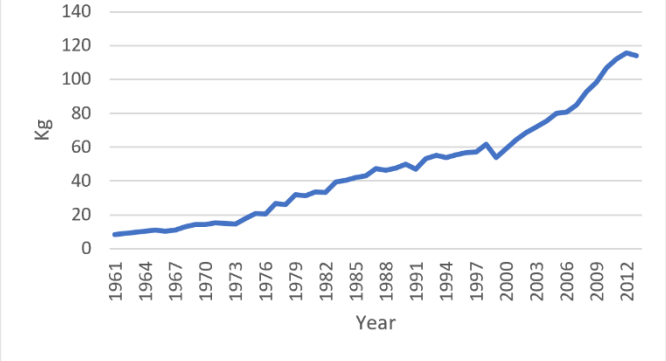
Table 1: Major neighbouring countries producing vegetables in 2016

Country	Area harvested (Ha)	Yield (tonnes/Ha)	Production (tonnes)
China	25,777,351	24.66	635,827,572
India	8,274,929	14.66	121,361,450
Nepal	277,721	13.48	3,743,796
Bangladesh	578,719	9.22	5,341,331
Afghanistan	313,945	9.01	2,829,233
Sri Lanka	81,593	11.45	934,864

2.1 National context

Nepal's demand for vegetables is increasing due to population growth, economic progress, and increased spending power from income growth and migrant remittances. Also, the emerging middle class is demanding fresher, healthier and processed foods. Per-capita vegetable consumption has increased to 114 kg per year from 60 kg over the last two decades[7].

Figure 2: Vegetable consumption trend in Nepal



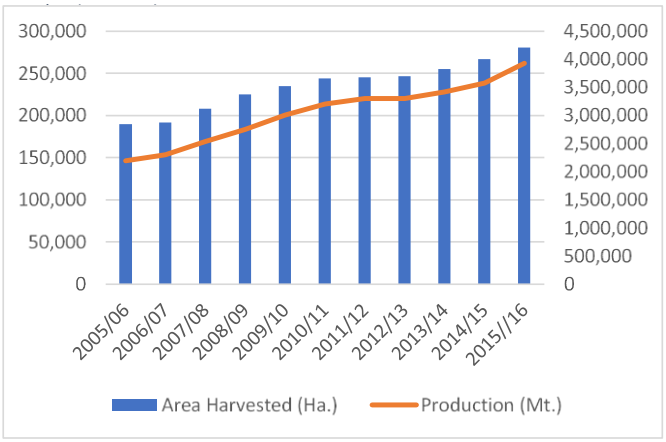
To meet this demand, vegetable production is also increasing. In 2005/06, total fresh vegetable production was 2,190,000 tonnes, which increased to 3,929,034 in 2015/16[8], a 79% increase. The land used for vegetable cultivation also increased, by 48% from 189,832 ha in 2005/06 to 280,807 ha in 2015/16[9]. Productivity increased by 21%, from 11,537 kg/ha in 2005/06 to 13,992 kg/ha in 2015/16[10]. Of the total 4,123,120 ha of cultivated agricultural land in Nepal, 7.35% is used to grow fresh vegetables[11]. Of Nepal's total production, it is estimated that 40% is used for household consumption, and 60% is sold in markets[12], where sectoral producer commercialisation

[4] Protected Cultivation: Future Technology for Vegetable Crops
[5] FAO Stat, 2018.
[6] FAO Stat, 2018.
[7] OUR WORLD IN DATA
[8] Department of Agriculture and Cooperation, Excludes potato
[9] Ministry of Finance (MoF), 2017.
[10] Agribusiness Promotion and Statistics Division (ABPSD), 2017.
[11] ABPSD, 2017.
[12] Central Bureau of Statistics (CBS) and Ministry of Agriculture and Cooperatives (MoAC), 2009/10

appears strong. The Terai, Mid-hill and High-Hills regions contribute 55%, 40% and 5%, respectively, to national vegetable production.

Vegetable farming is appealing because it ensures cash revenue within a short period of time, even from small plots of land. There are an estimated 3,243,521 households involved in vegetable cultivation, of which 17% are women-headed households[13]. An average household has 1.8 parcels[14] used for vegetable farming[15]. According to the National Sample Census of Agriculture 2011/12, most farmers (97%) cultivate vegetables on their own land, while the remainder cultivate on rented land. Furthermore, around 78% of households cultivate on less than one hectare of land, with higher proportions (53%) cultivating on land ranging in size from 0.2 to 0.5 hectare. Some 27.4% cultivate on 0.5 to 1 hectare.

Figure 3: Production and Productive Area of Fresh Vegetables (excluding potato) in Nepal (2015/16)



In terms of cultivated area and volume of production, the top five vegetable crops are, in order, cauliflower, cabbage, onions, radishes and tomatoes. Of Nepal's seven provinces, the area under vegetable cultivation and production is highest in Province 2, followed by Province 1. However, in terms of productivity, Province 3 is the top ranked, followed by Provinces 1 and 5. Some of the major commercial vegetable growing areas of Nepal lie close to the Kathmandu Valley, as it has the highest consumer population. In order of production volume, they are Kavre, Dhading, Bhaktapur, Lalitpur, Makwanpur, Kathmandu, Nuwakot, Sindupalchok, Gorkha, Dolakha and Rasuwa,[16] all in Provinces 3 and 4.

Most of these areas are in the Mid Hills and High Hills, and most have major vegetable areas that supply Kathmandu and other major cities, with Kavre, Dhading, Bhaktapur and Lalitpur, typically supplying the greatest volumes (See Table 2). With demand for fresh produce swelling in Kathmandu and other major cities, farmers in these districts have been encouraged to produce green vegetables year-round. In the past, most farmers grew vegetables in order to earn enough to meet their basic household needs. Now, with assured markets, they are increasing their production. For instance, nearly 10,000[17] farmers in 19 VDCs in Dhading district are involved in commercial vegetable production and together produce vegetables worth Rs 2.60 billion annually. Dhading alone fulfils 27%[18] of Kathmandu Valley's vegetable needs. Since all these districts are rapidly commercialising and fall in CASA's working districts, it plans to align its projects to link SHFs with the existing supply chain of SMEs and bring in more investment to further commercialise these areas.

[13] CBS 2010
[14] A parcel in agricultural holdings is any piece of land entirely surrounded by other land, water, road, forest, of other holdings, etc., not forming part of the holdings. A parcel may consist of one or more adjacent fields.
[15] CBS 2010.
[16] Samarth-Nepal Market Development Programme
[17] Harihar Singh Rathaur, The Kathmandu Post, Dhading produces veggies valued at Rs. 3 billion annually, Dec 2016
[18] Harihar Singh Rathaur, The Kathmandu Post, Dhading produces veggies valued at Rs. 3 billion annually, Dec 2016

Table 2: Production of vegetables in major commercial areas

Districts	Households	Total population	Area under vegetable cultivation (ha)	Vegetable production (tonne)	Average yield (kg/ha/season)
Kavre	80,720	381,937	9,699	133,678	13,782
Dhading	73,851	336,067	5,925	75,458	12,735
Bhaktapur	68,636	304,651	3,243	58,911	18,165
Lalitpur	109,797	468,132	2,476	48,630	19,641
Makwanpur	86,127	420,477	2,500	47,967	19,187
Kathmandu	436,344	1,744,240	3,030	39,248	12,955
Nuwakot	59,215	277,471	3,812	36,110	9,473
Sindhupalchowk	66,688	287,798	3,418	35,539	10,398
Gorkha	66,506	271,061	2,025	35,186	17,376
Dolakha	45,688	186,557	1,782	19,553	10,976
Rasuwa	9,778	43,300	998	9,906	9,923

Source: Government of Nepal Ministry of Agricultural Development (2014) Statistical Information on Nepalese

2.1.1 Vegetables: imports and exports

Imports

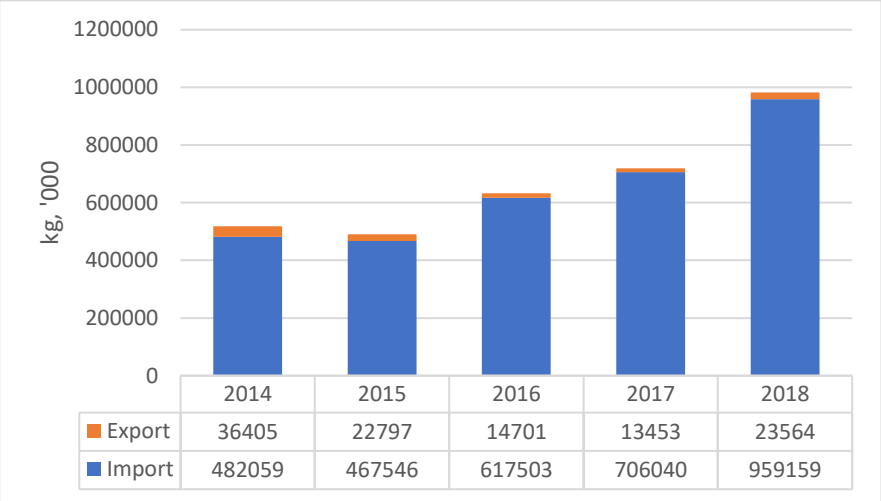
Nepal's vegetable imports have dramatically increased over the past five years, while exports have decreased[19]. Imports comprised around 70% of the total vegetable trade in 2011/12. Most of Nepal's vegetable trade is with India. This indicates that production had not grown fast enough to meet the rapidly increasing demand for vegetables in Nepal, which points to an opportunity for further commercialisation of Nepal's vegetable sector.

The five-year data from TEPC indicates that Nepal's vegetable trade with India is increasing, while that with China is decreasing. The TEPC data shows there were no trade transactions between China and Nepal in the 2015/16 fiscal year, which might be due to the closure of Tatopani Port after the devastating earthquake in April 2015. Nepal started importing vegetables from Italy and Spain in 2015/16. After two encouraging years, in 2013/14 and 2014/15, the export of potatoes decreased. Imports increased in 2015/16 (See Figure 4).

[19] The trend of vegetable exports and imports has been taken from Nepal Foreign Trade Statistics 2014/15, published by Trade and Export Promotion Centre. The key word, "vegetable" was searched for in the software. Other related items of vegetables have been intentionally omitted for clarity.

In 2017 alone, vegetables worth 22.67 billion Nepalese rupees (NPR) were imported to Nepal[20]. In response to this, the government has prioritised increasing domestic production to substitute for imports, which benefit from tariff-free trade between India and Nepal under the 1996 Trade and Transits Treaty. Due to the scale of the Indian economy and the subsidies available to Indian farmers, Nepalese products are not competitive pricewise. Indian vegetables are cheaper than Nepali, although popularly reported to be less tasty and lower quality. However, consumers tend to buy vegetables based on price alone. This has reduced the incentive for private companies to enter into the sector, as the market is already flooded with cheap Indian products that enter Nepal without quarantine or pesticide checks.

Figure 4: Trend of Nepal's vegetable exports and imports over five years (edible vegetables and certain roots and tubers)



	2014	2015	2016	2017	2018
Export	36405	22797	14701	13453	23564
Import	482059	467546	617503	706040	959159

Source: Trade and Export Promotion Centre, 2019

Recently, the government made it mandatory for imported fresh vegetables and fruits to undergo chemical testing before getting customs clearance. Since most of the customs points bordering India do not have a dedicated chemical testing lab, hundreds of trucks loaded with imported vegetables and fruits from India were stranded at the border, waiting for test results from faraway laboratories. Some highly perishable vegetables were sent back to India before the results arrived, in the hope of selling them in India before they spoiled.

This development garnered mixed responses. Vegetable farmers were said to be happy, as they hoped that their produce will now fetch better prices. This would further incentivise them to engage in production. But consumers complained that such moves would increase vegetable prices rapidly. However, the government then revoked its decision, citing lack of preparation. Currently, the MoAD and Livestock Department are seeking NPR 250 million from the GoN to upgrade plant quarantine facilities and chemical testing labs in a bid to make the import process easier. But, according to Chakrapani Khanal, minister of agriculture and livestock development, it would take a minimum of nine months to complete arrangements for conducting such tests at the checkpoints even if the Ministry of Finance agrees to allocate the budget[21]. CASA can take this initiative forward and work with the government to expedite the process.

A more-strategic and systemic project for the government would be to identify and promote domestic vegetable production that has high import substitution potential. This way the sector would be more lucrative for farmers, as they would find easy access to markets, while from a macroeconomic perspective Nepal's import dependency would be reduced.

Exports

India is the largest export destination for Nepalese vegetables. However, SPS regulations pose a major problem for exports over land routes. The plant quarantine offices at the border normally check a sample of the export consignment and make sure that the plant products

[20] Nepal's Agro Import Bill, The Kathmandu Post, 2018
[21] All you need to know about the debate over Pesticide Residue Test, The Kathmandu Post, July 7,2019

meet all the criteria required by the Indian plant quarantine offices. But Nepali quarantine offices at the border lack the technical staff necessary to operate the laboratories, so most facilities are not functional, despite having modern equipment. As a result, vegetables are mostly traded to India informally and in small quantities through smaller vehicles such as bullock carts, rickshaws, pull carts, motorcycles and bicycles.

Apart from India, Nepalese off-season and pesticide-free used vegetables have recently been exported to Qatar on the private initiative of the company Alsamon International Pvt. Ltd. Similarly, vegetables from Ashapuri Organic Farm, the only internationally certified organic company in Nepal, have been exported to Germany, Singapore, Australia and China, as it has obtained USDA and European quality certificates. These vegetables are currently being sent through air routes. Bangladesh offers opportunities for the export of fresh vegetables and fruits, but their tariffs are higher than India's – as high as 25% for tomatoes, cabbage, lettuce, carrots, and all other green vegetables[22], which might make Nepalese vegetables less competitive pricewise.

While small quantities of vegetables from Illam and Panchthar Districts (Eastern region) are exported to India through Pashupatinagar Customs, the volume has been steadily increasing over the past five years. There was a nine-fold jump in 2014-15[23] attributable to the export of relatively high-value products, such as off-season cauliflower, cabbage and peas. Most green and leafy vegetables are exported to India informally, in small quantities. The quantity is not sufficiently large to be trucked in, and there are no collection and storage facilities in Nepal to warrant commercial consignments. Also, quarantine and food safety formalities are very time-consuming. Only a few items are exported in bulk, such as radishes, cabbage, cauliflower, squashes and green peas.

India's subsidisation of agriculture is often mentioned as a limiting factor for Nepalese agriculture's competitiveness. But this mostly applies to profitability in lower value crops, especially cereals, rather than higher value agricultural industries, such as vegetables, which have other competitive advantages.

Although the export market will be niche, there is still opportunity to better exploit potential export opportunities for Nepalese enterprises. In order to realise this, Nepal needs to upgrade SPS standards for plant quarantine and food safety to comply with international standards, or at least to the standards of the countries it is targeting for export. In addition, Nepalese farmers must adopt good farming and manufacturing practices, to comply with quality standards in export markets, so that their products are suitable for export. CASA will consider exports as a driver of commercialisation and will thoroughly investigate the export sector. It will coordinate with the government to ease the export barriers for the companies.

Trade dynamics, seasons and price

According to the Agribusiness Promotion and Market Development Directorate, there are a total of 74 wholesale markets (local, regional and national level) for trading agricultural products, and vegetables comprise the major traded products in these markets. Among the 74 wholesale markets, 13 are major wholesale markets, which are considered national level markets (one in the former Far-Western Development Region, two in the Mid-Western, three in the Western, five in the Central and two in the Eastern)[24].

Kalimati Fruits and Vegetables Market in Kathmandu is the largest organised terminal wholesale market in Nepal, where retailers, institutional consumers and other bulk consumers procure supplies. Alone it covers 60% to 70% of the Kathmandu Valley demand.

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[22] A study of vegetable and fruit export from eastern region of Nepal, SAWTEE 2016
[23] A study of vegetable and fruit export from eastern region of Nepal, SAWTEE, 2016
[24] Data provided are based on the five Development Regions that Nepal was divided into until 2015. These have been replaced by Provinces, and the distribution of wholesale markets will have to be reassessed by Province.

High volumes of vegetables come from five major regions to the Kalimati market. These are India, Dhading, Kavre, Makawanpur and Chitwan. The supply of vegetables is highest during December-March and July-September. There is year-round availability in the market of popular vegetables such as cauliflower, cabbage, tomatoes, potatoes and onions.

Generally, prices at Kalimati market in Kathmandu set the benchmark for prices across other market centres in nearby provinces. Middlemen and traders consider Kalimati their first choice for supply, as it is the biggest in terms of transaction sizes. So, if the prices are higher in Kathmandu than the local markets, traders tend to push their supplies to Kalimati, where demand is highest. Supply of vegetables is low in the off-season due to low production, and this directly increases prices. Some vegetables fetch higher prices due to location-specific popularity, for example potatoes from Mude.

In total, 31 custom offices are in operation in the regions of Nepal bordering India and China. Of all customs locations, Biratnagar is considered the major vegetable import point, followed by Mechi, Jaleshwor, Birgunj and Krishnanagar[25].

There is one National Plant Quarantine Office, five Regional Plant Quarantine Offices, eight check posts and two sub-check posts[26]. Around 50% of the PQ offices have been issuing import permits without phytosanitary certificates. Similarly, based on their data, some PQ offices (25%) have also issued import permits for unregistered seeds[27].

2.2 The vegetable market systems in Nepal

2.2.1 Donor landscape

Nepal has been mobilising foreign assistance for over six decades. The share of foreign assistance in the government's total budget, though uneven over the years, has been declining, aided by improvements in domestic resource mobilisation. In official development assistance (ODA), Nepal received $1,622.8 million in the fiscal year 2017/18. Of the total disbursement, 50.5% was in the form of loans, 35.1% in grants and 14.4% in technical assistance. $77 million was disbursed for the agriculture sector[28].

Input markets are often a key constraint when supply chains are weak. When input markets are not functioning, problems in supply follow. The overall vegetable market in Nepal is suffering from undersupply of domestic vegetables. As such, donors have prioritised working in input markets but have done so without real emphasis on output markets, so results have often been unsustainable. While work on the input side is necessary to increase supply, it is equally important that the output market is positioned effectively to absorb the increase in supply. There are cases where interventions in inputs have increased productivity, but the produce could not find markets due to oversupply.

CASA will build on other donors' input-related investments to commercialise vegetable production in Nepal. It will select working areas and partner with output market actors to establish a supply chain or aggregation relationship where other donors are investing in the agro-input area. It will finally bundle the agro-input intervention with output market actors.

For instance, although much of Sahaj's work has been in inputs markets, some of its models, like Paicho Pasal, are worth replicating and scaling up. The intervention under Paicho Pasal for Sahaj had an overall outreach to 3,000 farmers, of whom 31.11% were in woman-headed households and 5.93% were from disadvantaged groups.

[25] Sahaj-Nepal Market Development Programme
[26] (National Plant Quarantine Program, 2071)
[27] Sahaj-Nepal Agricultural Market Development Programme
[28] Development Cooperation Report, GoN, Ministry of Finance, Dec 2018

Similarly, KISAN II also trains many cooperatives and agribusiness (especially in Provinces 3, 4 and 5) in good agriculture practices, nursery management and integrated pest management (IPM). CASA Nepal will screen these various agribusinesses and producer organisations that have passed the phase of 'proof of concept' and are currently seeking rounds of finance for phased scaling up. CASA will coordinate with these projects to further support SMEs and agribusinesses to improve their market infrastructure and bolster support services. Then they will be able to remain competitive, absorb more products and improve market access for more farmers. CASA will also aim to connect these producers and entrepreneurs to domestic, regional and global markets – either directly or through links to other agribusinesses.

2.2.2 Market performance and drivers

These refer to factors and institutions that enable the growth of the vegetable sector. CASA can work with these institutions to reach out to farmers at scale or can work for the interest of companies to further drive the sector.

Geographical

Off-Season production potential

Geographically, Nepal is very rich and has a diverse range of micro-climates. Utilising these micro-climates, the same vegetable can be grown as seasonal in one place and off-season crop in another. Almost all types of vegetables can be grown in Nepal almost all the year round by adjusting the time of planting and the use of suitable varieties. The Hill areas have a comparative advantage in vegetable production during the summer/rainy season (July-August) for crops like tomatoes, chillies, onions, cabbage, cucumbers and cauliflower. This is the off-season for vegetable production in the Terai[29] area, where vegetables command higher prices during the summer months. The working provinces of CASA include off-season pocket areas, especially in hilly regions in Provinces 3, 4 and 5. Therefore, there are opportunities for CASA to work in these provinces to increase the supply of vegetables to the Terai, when demand and prices are high. The increasing demand for off-season vegetables in the Terai and cross-border Indian cities provides the rationale for hill farmer uptake.

Groups, cooperatives and associations

Farmer co-operatives and groups

There are around 1,030 agriculture cooperatives in Nepal. Currently, these groups focus on savings and credit activities. They have the potential to provide marketing and technical information as embedded services to their members and can aggregate and link them with input suppliers and traders. Many farmer cooperatives have some women members. Women have several incentives to participate in cooperatives. Selling their vegetables in a group can improve their bargaining power. Cooperatives can reduce the distance they must carry produce to collection. And they can provide them with otherwise-inaccessible technical, market and agricultural training and inputs. Some cooperatives and farmer groups help women obtain bank loans without the help of their husbands or fathers; many women struggle to get bank loans without collateral, as land is often in their husband or father's name. This is a major barrier to accessing finance for women.

While cooperatives accept people of all castes, some women are left out, due to cultural traditions that limit their activities. Some leaders of women's groups have reported that Dalit women have limited lifestyles that prevent them from leaving their households to join groups. But others say Dalit women are more industrious than other women. Opportunities lie for

[29] Vegetables are only cultivated during the winter months in Terai due to climatic conditions

CASA to work with these already established women's cooperatives and marginalised groups to connect them with commercial markets.

Associations

Associations, federations and unions play an important role in improving advisory services to farmers, as well as advocacy at the policy level. SEAN has 2,200 seed trader members and PEAN has 500-600 input trader members. FEFVEN is another prominent association with around 10,000 members nationwide. CASA can work with these associations to promote good general agricultural practices and provide knowledge on the crop-specific usage of inputs. Currently, the associations are organised to protect their members' interests and needs. They can be brought together to provide important advisory services to farmers and cooperatives, as well as to lobby to improve the wider business-enabling environment.

Growing private sector

Increase in private-sector service providers

The number of service providers, such as agro-vets, has increased over the years, resulting in increased competition among input suppliers and service providers. This is slowly incentivising input suppliers to strengthen their distribution channels by providing embedded technical services and promoting their products at the farmer level. However, many input suppliers still follow a push strategy through agro-vets and do not promote their products at farmer level. Only a few seed companies have realised this and assigned field staff to supervise vegetable-producing farmers as a marketing strategy to increase sales. CASA can work with other input suppliers to replicate or work with existing suppliers to expand their operations and further strengthen marketing and distribution channels.

Some women's group leaders have reported that many women are hesitant to engage with service providers, so do not benefit from those services. This limits their potential for growth.

Evergreen Flora and Vegetable Farm, which is a growing women-led agricultural enterprise, reports that ethnic groups are often located far from market centres, limiting their ability to sell produce. Furthermore, the greater the distance the produce travels, the more likely it is to be damaged, thus diminishing its market value. CASA can work with these women-led enterprises to bring more women into the supply chain, and work with service providers to serve more women, as most of the men have migrated, leaving women on the farm.

Trader associations

Traders offer another avenue to provide farmers with market information. While they are unable to provide actual technical knowledge, traders are the best sources of information about supply-demand balances – the quantity and variety of vegetables likely to be required by the market at specific times. If farmers make slight changes to the production time of certain crops based on these market forecasts, they can generate win-win returns, easing periods of low production and reducing waste and losses. Combined, these results support more-efficient market systems. CASA can work with existing traders associations to provide information on supply-demand balances that allows farmers to respond accordingly.

Increased government priority

Improvements in market infrastructure

In CASA's target locations for vegetables, market infrastructure is expanding. For the fiscal year 2019, Province 3 focused on the development of tunnels across different parts of the province, ring roads and other infrastructure. It also announced construction of the Pushalal Ring Road to connect 13 districts in the province[30]. Province 4 allocated more than 40% of its total budget for the development of physical infrastructure. Tourism, energy, agriculture,

[30] Seven Provincial Government present budget- The Himalayan Times, June 17, 2019

hydropower and irrigation were also prioritised in the budget[31]. These developments expand the scope for commercialisation and connect more farmers and companies with markets.

Focus of government

Vegetables and horticulture are a priority for the GoN, as outlined in the ADS, providing CASA with the opportunity to collaborate effectively with public-sector stakeholders.

Research and public extension services

Research by NARC on improved technology, including the development of new seed varieties is ongoing. New high-yielding seed varieties are in the pipeline which, if delivered in a timely manner at the farmer level, will improve vegetable production in target CASA districts. Some private companies are also conducting research on new technologies. N-Agro is currently researching appropriate greenhouse technology that specifically suits the climate of Nepal. After completion and testing, it plans to hand over the prototype, so that the government can provide farm-level subsidies to farmers for adopting the technology.

Similarly, upon implementation of the federal system in Nepal, top-down agricultural extension services were adopted. The local-level government, with some help from the provincial-level government, is responsible for the development of the agriculture sector. The central government influences the sector through the formulation of rules, regulations and international coordination.

The GoN is currently developing a new organogram for extension services to ensure their smooth delivery. In the meantime, some donors are supporting programs that focus on specific pocket areas of vegetable production. The Farmers Field School Approach operates with the understanding that one can learn by doing and that “seeing is believing.” This approach found success when implementing the Integrated Pest Management Program. Government organisations have also partnered with universities, NGOs, CBOs, media outlets and private organisations to deliver extension services effectively.

2.3 Agribusinesses and investment opportunities

The transformation towards a more commercialised vegetable sector requires a set of measures that focus not only on farmers but on agro-enterprises involved in the commercialisation of agricultural products and services. These enterprises include input providers, producer companies, marketing cooperatives, storage operators, logistics companies, agro-processors, importers and exporters of agricultural and food products, distributors, traders and agricultural service providers (including financial service providers, insurance providers, business service providers and others).

The following vegetable sub-sectors represent potential investment opportunities:

Fertilisers: The MoAD estimates that the annual demand for fertiliser in Nepal is approximately 700,000 tonnes, of which 500,000 tonnes comprises the current effective demand (where buyers are purchasing at the current market price). The existing supply, however, is only 300,000 tonnes. For 2015/16, the GoN allocated $57.4 million in subsidies for chemical and organic fertilisers[32].

According to National Biotech, the first internationally certified organic fertiliser producer in Nepal, there are 20 to 22 organic fertiliser manufacturing companies in Nepal and a further five companies that manufacture and sell biochemical fertiliser products. According to the company, the demand and supply of organic fertiliser are increasing at a good pace. Since its inception four years ago, National Biotech has increased annual manufacturing capacity from 20,000 to 200,000 kg.

[31] Seven Provincial Government present budget- The Himalayan Times, June 17, 2019
[32] Government of Nepal 2016

Much opportunity lies in the sector, as currently the import of chemical fertilisers is banned in Nepal. Only the state-owned AICL and Salt Trading Corporation can import and distribute. Despite long discussions, Nepal has no chemical fertiliser manufacturing facility. This is a good signal for national and international investors to establish chemical fertiliser factories targeting import substitution and a share of that growing market, which was worth nearly NPR 16 billion in FY 2014/15[33] (See Table 3). Moreover, the GoN intends to encourage such private investment. While this requires uninterrupted electric power, which is not currently available in Nepal, many energy projects are under construction or in the pipeline that could provide an electricity surplus during the summer season within a few years.

Table 3: Import of fertilisers

Fiscal years	NPR million	tonnes
2013/14	14,733	314,097
2014/15	15,708	327,409

Source: Trade and Export Promotion Centre

Seed: Seed is a major crosscutting sub-sector in which the private sector has shown interest. Domestic demand and supply of improved seeds are increasing. While loans extended by commercial banks to this sub-sector are nominal (around NPR 60 million[34]), considerable potential exists to increase investment in development of improved seeds, especially when awareness is increased among farmers (See Table 4). At present, vegetable seed is mostly marketed by traders and agro-vets. Over 1,854 seed entrepreneurs and 829 trained seed traders were registered with the NSB by 2010. Hybrid vegetable seeds are used in 60% of the commercial production pockets[35]. They are imported from Thailand, China, Korea, Japan and India. Currently, some 30 foreign companies are supplying seeds to Nepal for crops such as rice, maize and vegetables. On the demand side, there is a growing awareness among stakeholders of the benefits of using hybrid vegetable seeds.

Table 4: Domestic supply of improved seeds and growth

Fiscal years	Supply (tonnes)	Growth
2011/12	2964	-
2012/13	3670	23.8%
2013/14	7290	98.6%

Source: Economic Survey (2014-15)

Agro-product storage: Almost all entrepreneurs and representatives of commodity associations consulted during the investigations cited a lack of proper warehousing facilities, especially with controlled temperatures, as one of the primary drawbacks in the vegetable sector. Cold storage is an indispensable part of perishables' farm-to-market chain to retain and add value to commodities. In the widespread absence of appropriate storage facilities, farmers are compelled to sell their produce at low prices at harvest. Storage of agro-products would contribute to stabilising market prices by evenly distributing goods on both a demand and time basis.

Currently, there are only 49 cold storage facilities in Nepal, with an average unit storage capacity of 3,000 tonnes. Demand exists for at least 25 similar additional facilities[36]. The unit facility construction and equipping cost is estimated at NPR 50 million, excluding the cost of land. There is scope for attracting private investment in cold storage in partnership with large

[33] Scaling-up Investments in Agriculture in Nepal, ADB 2016
[34] Scaling-up Investments in Agriculture in Nepal, ADB 2016
[35] Sahaj-Nepal Agricultural Market Development Programme
[36] Scaling-up Investments in Agriculture in Nepal, ADB 2016

cooperatives and the government in the form of PPPs, whereby the company would charge fees to traders, cooperatives and farmers using the service. Commercial banks have extended close to 2% of total agriculture loans (NPR 1.6 billion) to this sub-sector[37].

Processing of domestic agro-products: This sub-sector has also received significant attention from BFIs, which have lent almost one third (NPR 26.7 billion) of their total agriculture loans to this sub-sector[38]. There are many processing companies for tea, coffee, ginger and fruit in Nepal. As for vegetables, there is increasing interest among private companies in forward and backward linkages between agriculture and the industrial sector. This area is at an early growth stage and is a potential investment opportunity.

Expanding the domestic market for organic and safe vegetables: There has been a growing trend among urbanites for organic products, especially vegetables – a niche market with growth potential and prices that are not affected by the Indian market. An increase in education and awareness about health have increased the demand for organically cultivated vegetables in urban areas, as has the quality of organic food and urban consumers' purchasing power and willingness to pay for healthy foods. Many of the selected locations in Provinces 3, 4 and 5 offer organic vegetable production. Catering to this demand, a few companies involved are reportedly performing well.

As the organic agriculture sector gains momentum in Nepal it has the potential to be competitive. Nepal is home to many potential products, namely spices, essential oils and medicinal plants, fresh fruits and vegetables. The enabling environment for the sector also seems to be favourable, with the recent establishment of the National Organic Agriculture Accreditation body (NOAAB) and the National Coordination Committee for Organic Agriculture Production and Processing System (NCCOAPPS), as well as policies supporting organic agriculture. A national standard for organic agriculture has been established and endorsed by the government, and working guidelines for two certification systems (the Internal Control System and the Participatory Guarantee System) are being developed. Both will serve as important instruments for taking advantage of international and domestic markets. The latter is a certification scheme particularly for small farmers whose products are in high demand in the local market, but who cannot meet the high cost of certification.

The recent low supply of Indian vegetables, due to strict surveillance along the Nepal-India border on account of high pesticide residue, and the resulting popularity of safe foods among the growing urban population offers CASA a new opportunity to work on more-specialised production segments like organic. CASA can work among multiple stakeholders within this niche segment to maximise production, ease the certification process, provide market incentives, help producers and companies to connect with domestic and global markets and institutionalise the Nepalese organic movement. Such work would also address some key cross-cutting issues in climate change and nutrition, as organic agriculture has a well-documented role in addressing food security and enhancing soil fertility and nitrogen inputs. Also, a participatory assessment of organic agriculture by ANSAB, based on current price rates and growth potential, shows the sector's high potential to generate income in peri-urban areas. It can also involve youth and reduce the current alarming rate of youth migration to urban areas and overseas in search of better livelihoods and higher incomes.

Priority sector of the GoN: The GoN has identified the importance of agriculture and its commercialisation to meet economic challenges. The GoN launched the ADS in November 2015 to guide the development of the Nepalese agriculture sector over the next 20 years.

To transform the sector, as envisaged by the ADS, significant medium- and large-scale investments are required. Agro-processing and mechanisation present significant commercially viable opportunities for larger-scale investments. Such upstream investments

[37] Scaling-up Investments in Agriculture in Nepal, ADB 2016
[38] Scaling-up Investments in Agriculture in Nepal, ADB 2016

in the value-chain also need innovative and well-conceived agribusiness plans to appeal to BFIs. However, attracting innovative entrepreneurship to the sector requires appropriate responses from the government and the development sector to promote increased investments in commercial agriculture. Matching investments, for example, could help agribusiness entrepreneurs to benefit from reduced costs and increased productivity, contributing to better economies of scale.

Investments in agriculture have largely been through micro and rural development, where the financing organisations undertake activities such as social mobilisation, capacity building, technical training and networking support. In corporate financing, banks do not provide technical assistance and have different due-diligence processes.

2.3.1 Access to finance in agriculture

Current financing policies

Nepal Rastra Bank[39] has mandated that commercial banks lend a minimum of 12% of their total loans and advances to the agriculture and energy sectors (See Table 5).

Table 5: Composition of bank lending in agriculture

SN	Agriculture sub sector	% of total loans
1.	Agriculture and forestry	4.23
2.	Fishery-related	0.10
3.	Agriculture-related machinery/tools	0.07
4.	Fertilisers	0.12
5.	Seeds	0.01
6.	Animal and poultry feeds	0.24
7.	Agro product storage	0.13
8.	Processing of tea, coffee, ginger and fruits	2.24
	Total	**7.13**

Source: Nepal Rastra Bank (unpublished data)

Most bank loans to the agriculture sector have been for processing firms such as mills, poultry, feed, dairy products, cold storage and compost fertiliser. Lending into production is low, as most agriculture production is subsistence and is deemed risky.

Women, in particular, face difficulties when trying to acquire financing for agricultural enterprises, due to the high probability that their land is under their husband's or father's name. This means they cannot use the land as collateral, so they cannot personally get loans and must instead rely on whoever has the land in their name. Some women's groups have organised group loans, using group accountability rather than land. The lack of finance is a major constraint for women farmers' expansion and commercialisation.

Commercial banks' financing of the agriculture sector

With the government's recognition of agriculture as a priority, bank sector lending into agriculture has been increasing: the fact that agriculture now accounts for over 7% of total banking credit is encouraging. GoN has also subsidised agricultural loans in order to foster commercialisation of the sector. However, much of the money dedicated to agriculture has been exploited by businesses pretending to work in agriculture, for the sake of acquiring agri-loans. These misdirected agri-loans do not fulfil their designated purpose, which is to

[39] Nepal Rastra Bank is the Central Bank of Nepal.

support agriculture development. Also, the process of procuring loans is also challenging, lengthy and inconvenient for agribusinesses due to requirements for documentation and many in-person visits to banks.

However, given the proportion of the population that relies on agriculture, the sector's contribution to the economy and its inherent growth potential, the credit investment level is still very low, especially in production. Although bank lending to the sector has been gradually increasing over the years, there is a lack of more-appropriate, farm-friendly policies and measures to facilitate the transition from subsistence to commercial farming.

2.3.2 Investment landscape

Funding organisations and individuals

Although private equity and venture capital are still in nascent in Nepal, offshore private equity and venture capital firms (PE/VC) have entered in recent years, such as Business Oxygen, One to Watch and Dolma Fund. There have also been more domestic funds, such as True North Associates, I-Capital, Team Ventures, Safal Partners (See Table 6).

Table 6: Major funding organisations operating in Nepal[40]

Name of fund	Priority sectors	Range of investment	Target CASA enterprises
Business Oxygen	NA	£80,000 – £400,000	SMEs, large processors
Dolma Impact Fund	NA	£400,000 – £3 million	Large processors
One to Watch	NA	£240,000 – £800,000	Medium to large processors
True North Associates	NA	£240,000 and above	SMEs, large processors
M&S Holdings	NA	£8000 – £160,000	Production units, SMEs
I-Capital	NA	Up to £80,000	SMEs
Safal Partners	NA	£1000 – £8,000	Production units, micro enterprises

There is also an increasing trend of local investment companies looking for opportunities to invest in start-ups and growth-oriented SMEs. At the recent second Nepal start-up meet, investment companies such as NICL Investment Company, Hathway Investment and Kathmandu Capital expressed interest in investing in new companies[41]. Many of these local funds are registered as local investment companies with the prime objective of investing in public company shares or real estate. Some institutions are also trying to collaborate with other stakeholders to develop prototype investment instruments, such as debt instruments, Simple Agreements for Future Equity (SAFE) and equity seed investments.

Local angel investors have also grown in recent years. They have deep pockets, business knowledge and risk-taking capacity, and they are looking for opportunities to get involved in new business ventures. Institutions such as Safal Partners have been able to connect with such angel investors and draw up a funding structure in which these angel investors pool funds to provide much-needed seed capital to SMEs.

In March 2019, GoN introduced the Specialised Investment Fund Regulation 2075 to promote alternative investments such as PE, VC and hedge funds. This has led several fund

[40] "Mapping of Nepal's Evolving Startup Ecosystem", Nepal Economic Forum/SDC, June 2019.
[41] "Mapping of Nepal's Evolving Startup Ecosystem", Nepal Economic Forum/SDC, June 2019.

management companies, such as Panaya Advisors, to establish their own investment funds. For the current fiscal year, GoN has received five applications to establish local funds, of which four are expected to be approved[42].

Development agencies have launched a series of challenge funds to support the development of entrepreneurship in Nepal. These include UNCDF's Nepal Innovation Challenge AgriTECH and Women MSME in Fin TECH Innovation; and DFID-backed Sakchyam's Access to Finance Programme and Skills for Employment Programme (SEP). In the budget for fiscal 2017/18, the Ministry of Finance also announced a NPR 1 billion challenge fund for start-ups to provide innovative entrepreneurs with seed capital. However, the eligibility criteria are vague, and the fund limits itself to businesses that are socially responsible and create employment. Under the new Foreign Investment and Technology Transfer Act 2019 (2075), the minimum investment by a foreign investor has been set at NPR 50 million (about $450,000).

Challenges faced by non-banking investors

The pool of investors remains limited compared to the increasing number of SMEs and start-ups**.** The mismatch in demand and supply means investors are in a better position to negotiate deals. There is also a mismatch between the state of businesses and the ticket size of available funds*.* Most SMEs' funding requirements are somewhere between £8,000 and £80,000. However, the PE/VCs in Nepal have a much larger ticket size[43].

Existing laws restrict PE/VCs (both domestic and offshore) from providing capital in the form of debt. Hence, these funds invest in SMEs through equity or equitylike instruments and look for an IRR of more than 20% on their investment. Equity investments are expensive forms of financing, unlike debt instruments offered by banks, which have a fixed rate of interest. However, businesses are not in a position to access funds from banks, because lending is based on collateral and not on cashflow or future enterprise value. The majority of entrepreneurs have accepted unfavourable terms of financing without properly analysing the implications on their future growth. In most cases, the terms of equity financing are similar to debtlike instruments, which are aggressive and favourable only to the investors.

Many businesses that received equity investments said that investors expect an internal rate of return of 15-20%, which is very high. Despite the high expectation, businesses rely on private investors because of the difficulty of securing funds from the banking system and because such private investors bring other benefits, such as market access and networking.

Bureaucratic hurdles exist, as the amount of time taken for due diligence of an enterprise is very time consuming. In addition, getting FDI approval from the government can take as much as nine months, during which period the enterprise may have incurred losses and missed business opportunities. A few of the investors, such as BO2, have a technical assistance fund component to be used for capacity building. But due to delays in FDI approvals, they have not been able to make full utilisation of the technical assistance fund. In some instances, the entrepreneurs themselves searched for experts and solutions that would otherwise have been covered by the technical assistance funds.

Supporting organisations and individuals

SME and start-up supporting entities include incubators, accelerators, business development services and individual mentors. There are also organisations that run acceleration programs as well as managing funds, such as TNA, Chaudhary Foundation, and Idea Studio. However, the acceleration program and the funds are considered and operated as separate entities: that is, the acceleration program is mainly aimed at providing a pipeline of

[42] As per CA. Aashish Dhakal, Global Equity Fund.
[43] GBP 250,000 and bigger

investment-ready companies for the funds. At the same time, the organisation is also a fund manager, and the funds under its management are subject to strict investment rules.

The majority of these programmes are concentrated in Kathmandu Valley, making it difficult for businesses outside Kathmandu to use their services. A few exceptions exist. For example, Nepal Communitere and Antarprerana have the Chitwan Chamber of Commerce, which launched a six-month incubation program in Chitwan, I-Cube Chitwan. Similarly, Chaudhary Foundation's Nepal Social Business runs incubation programs in districts in mid-western and far western Nepal.

Weaknesses of supporting organisations

Recent studies reveal that the main objective of entrepreneurs joining an incubation and acceleration program was to obtain funds for the business. A few start-ups also mentioned that they pledged equity share as a payment for enrolment with acceleration programs.

However, many businesses that have undergone incubation or acceleration programs have not been able to secure funding. Firstly, applicants have been deemed too risky and there is limited funding available and many opportunities for investment. Secondly, entrepreneurs try to negotiate deals with investors for an unrealistic value – that is, they overvalue the company. Thirdly, a majority of the entrepreneurs have failed to persuade investors that their team is capable of taking the company from a small great idea and turning it into a clear and scalable business with high return on their investment. Lastly, entrepreneurs do not have a clear go-to-market strategy that demonstrates the sustainability of the business.

The quality and sourcing of entrepreneurs has been a major challenge for a majority of incubators and accelerators. There is a misconception among many of the entrepreneurs around what is really involved in becoming an entrepreneur. There are loads of individuals and companies applying to incubators and accelerator programs, but their quality is still not up to the standard required by investors and funding organisations.

CASA can help identify potential businesses, invest in their capacity building and support the testing of innovative business models. However, CASA's support will also be guided by the criteria that investors set to make businesses investable.

Legal and regulatory environment

Key acts and policies governing entrepreneurship and investments in Nepal include the following: Company Act 2017; Insolvency Act 2006; Income Tax Act; Foreign Investment and Technology Transfer Act 2019; The Foreign Investment and Technology Act 2019 (FITTA); Industrial Enterprise Act 2016; Securities Act 2007; Partnership Act 1964; Foreign Exchange (Regulation) Act 1962; Specialised Investment Fund Regulation 2075.

2.4 Crosscutting areas

2.4.1 Gender and social inclusion

The agricultural and forestry sectors in Nepal account for 34% of GDP and employ 68% of Nepal's workforce. One study indicates that in 2010, 72.8% of women and 60.2% of men were engaged in agricultural activities[44]. However, participation in farming varies widely by region, gender, caste and ethnicity.

Likewise, gender roles in agriculture vary enormously. Significant male out-migration for employment opportunities is shifting agricultural labour to women. Women generally perform the same agricultural activities as men – apart from ploughing – and women often provide

[44] Tamang et al (2014) "Feminisation of Agriculture and its Implications for Food Security in Rural Nepal" in Journal of Forest and Livelihood.

more agricultural labour. There is significant opportunity to elevate women's agricultural activities by addressing the constraints and opportunities that women farmers face. In some cases, however, women are adopting less-intensive farming practices or abandoning their agricultural land. This can lead to a reduction in food production, causing shortages. In other cases though, overall household wealth is improved thanks to remittances.

Studies on women's decision-making power suggest that women in many rural households, particularly in extended families, experience low agency. Women tend to have less education, fewer assets, less access to finance, limited decision-making authority, higher rates of illiteracy and weak knowledge of their legal rights. Cultural norms ensure that women, rather than men, are responsible for household and care work. In 2011, 28.2% of all households were headed by women[45]. In many locations, women initiate discussions with men on farming, and share experiences, messages, and ideas readily with other women. Membership in farmer groups increases the propensity to adopt improved varieties, as does training in improved technologies. Younger, better-educated farmers, larger households and nearness to extension services all positively influence adoption, but the converse of these reduce it, as does migrant off-farm work .

Women often manage vegetable gardens (alongside, increasingly, cereals, livestock, and microbusinesses) and have historically played a key role in managing vegetable seed flow and genetic diversity. Women increasingly sell their produce, see themselves as professional farmers and actively seek agricultural information. At the same time, a study in Mid-Hills showed non-migrant men are increasingly taking a lead in commercial vegetable production, with great differences in women's participation by caste[46]. Despite the importance of home gardens, their small size means that they have often been overlooked by policymakers and planners and thus not linked to broader commercialisation initiatives. There is therefore scope to promote women's economic empowerment via the development of the vegetable value chain by focusing on increasing production, improving aggregation and marketing.

2.4.2 Food security and nutrition

About 28.6% of Nepal's population is poor, with 9.6% suffering "severe poverty." The 2016 Global Hunger Index scores Nepal at 21.9, which is considered "serious". Key contributing factors include the following:

- 7.8% of the population is considered undernourished;
- 11.3% prevalence of wasting in children under 5 years;
- 37.4% prevalence of stunting in children under 5 years;
- 3.6% mortality rate for children under 5 years.

Poverty is highest in rural areas, concentrated in the Western and Mid-Western Development regions of the country[47]. Vegetables play an important role in food security. They provide micro-nutrients, vitamins, minerals, fibre, and slow-release carbohydrates. On average, Nepalese households sell a little over half of the amount they produce. The minimum per-capita per-day requirement of vegetables is 300 gm. But consumption in Nepal is low, with a deficiency of 60%[48].

Findings by the Women's Empowerment in Agriculture Index (WEAI) show a significant and positive association between women's autonomy in agricultural production and almost all

[45] Nepal: Country Value Chain and Market Analysis Report FINAL
[46] Nepal: Country Value Chain and Market Analysis Report FINAL
[47] Nepal: Country Value Chain and Market Analysis Report FINAL
[48] ANSAB (2011) Value Chain/ Market Analysis of the Off-Season Vegetable Sub-Sector In Nepal, USAID.

maternal and child outcomes, including child nutrition. However, these associations do not hold for women's own nutrition. An analysis of Nepal Demographic Health Survey (2006) data on the relations between women's participation in intra-household decision-making and their own healthcare, major and daily household purchases, and visits to their family or relatives showed that 37% of married women participated in all four decisions, while 31% did not participate in any. Other researchers have reported similar findings. Interventions to increase the nutritional impact of vegetable production should focus on strengthening the entitlement of women and children to nutritious food within nuclear and extended households and not just on maximising income from vegetable sales. A large number of studies have linked women's income and greater bargaining power within the family to improved nutritional status, which in turn influences health outcomes and educational attainment.

2.4.3 Climate change and environment

Nepal is highly vulnerable to climate change. It is considered at "high risk" from climate change impacts over the next three years, fourth out of 16 countries[49]. Given that it is a net importer of food, it is essential to implement a productive and sustainable agricultural system to ensure food security for an ever-growing population. However, although agriculture is a significant contributor to the economy, the national agricultural research services lack sufficient capacity for timely delivery of large-scale, location-specific agricultural technologies. A major portion of Nepal is mountainous; the country is home to eight of the 10 highest mountains in the world, including Mount Everest. Glaciers cover about 9.6% of Nepal's total land area, and they are particularly susceptible to changing temperatures.

Nepal is experiencing average temperatures rises of 0.04 to 0.09◦C per year, and the warming is greater at higher altitudes. Higher temperatures accelerate the melting of glaciers, creating glacial lakes, some of which may burst and cause flash floods in lower valleys. Glacial lake outburst floods may be one of the most important water-induced hazards in Nepal; they have the potential to cause large socio-economic impacts. Since women are so prominent in agriculture, both livestock and vegetable, yet have lower decision-making power and lower access to resources, they are likely to find it harder to adapt to climate changes.

Climate change presents an important threat to production due to Nepal's general vulnerability to it. Vegetables are sensitive to extreme environmental conditions, so high temperatures and reduced soil moisture are the major causes of low yields. Increased ultraviolet radiation also impacts vegetable production. One study reported that farmers felt winter temperatures had increased, affecting germination and development. Earlier planting is resulting in earlier harvesting, but plants are more vulnerable to drought, pests and diseases, so pesticide use is increasing.

[49] Chatterjee &Thirumdasu (2015) "Climate Change Mitigation Through Organic Farming in Vegetable Production," in Agricultural and Sciences Journal, American Institute of Science.

3 Analysis

3.1 Problems in the core functions and underlying problems

For vegetables, the general problem of lower productivity, due to limited access to quality inputs and information on their proper usage, exists among both “hanging-in” and subsistence farmers. Many hanging-in farmers live far from market hubs, with poor road access and have limited motivation to commercialise. However, our initial investigation shows that stepping-up and commercial farmers are willing to invest in expansion once market access is assured. The main challenge for these farmer groups to commercialise, therefore, is limited market access and low market prices for their produce.

3.1.1 Low farmer revenue from vegetables

Farmers involved in vegetable cultivation generally have low sales revenue due to low prices, poor market access and high post-harvest losses.

Low prices for vegetables

SHFs are largely unorganised, which limits their bargaining power in price negotiations with local traders and collectors. There are three reasons:

a) **Lack of market competition based on price and quality:** The vegetable market countrywide is largely defined by a lack of product differentiation. That means there is an absence of market competition based on the price and quality of vegetables.

b) **Long and inefficient supply chains:** For individual SHFs, there are several steps before the vegetables reach consumers, involving profit-taking middlemen that exploit SHFs. Farmers’ vegetables are initially aggregated by collectors, who offer low prices. The vegetables are then transferred to larger traders, before being moving onwards to regional wholesalers for supply to retailers. It is understood that at least 10% or 20% mark-ups are added in each step, without any real value addition. The consumers thus pay more for nutritious food, while farmers receive low prices.

c) **The majority of farmers produce similar vegetables:** Some farmers generate profits by planting first and then looking for a market for their crops, rather than basing crop choices on market information. This strategy is extremely risky. There are many farmers in Nepal who choose their crops based solely on what vegetables can be produced in that season, without researching and considering market demand. They later complain that they did not receive good prices. Kashi Raj Dahal, joint secretary of the MoAD, says that around 40% of the vegetables produced in different parts of the country come to the Kathmandu Valley. Unfortunately, at least 10% of the vegetables supplied to the Valley are wasted due to oversupply from a combination of the following factors:

- Limited information of market demand: There is a dearth of knowledge and awareness among SHFs regarding the exact varieties and cropping patterns of vegetables demanded by the markets. During our field visits, one of the farmers recalled a recent season when imports of onions and tomatoes from India were low but most Nepalese farmers were producing cauliflower and cabbage only.
- Weak information sharing between traders and farmers: Normally, farmers’ decisions on which crops to plant are based on the best prices fetched the previous season. Vegetable wholesalers interviewed believe this situation can improve if farmers consult them about planting cycles and the types of vegetables they should grow.

3.1.2 Poor market access

Limited market access exacerbates several challenges that farmers face when trying to sell vegetables for profit. Major reasons for poor market access are:

- **Poor road connectivity:** Although road access has been improving in the last five to 10 years, many parts of the country remain poorly connected. Challenges persist, especially in rural transport. In hill areas, one-third of residents must walk more than four hours to reach an all-season road. Circumstances are even worse in the mountain regions[50].
- **Trader monopolies:** Many local vegetable collectors and aggregators create local monopolies, which become the status quo for SHF clients for the following reasons:
  - Farmers have no connection with non-local traders: Farmers tend to focus solely on farming and do not have time to interact with traders in the market. Most SHFs interviewed report that they only go to market when buying seeds, fertiliser and other inputs, and that their visits are confined to agro-vets and district government offices.
  - Trust issues in payment: The market price for the same vegetables varies across district market centres. However, farmers continue to sell their produce to their local middlemen, as they do not know new traders elsewhere and fear payment default.
  - Limited options for farmers to sell: The limited presence of private companies and the poor performance of many cooperatives in marketing limits SHFs' options.
- **Limited direct commercial market linkages:** Ideally, traders and SHFs would enjoy mutually beneficial relationships, in which traders provided market information to farmers who responded with appropriate, timely produce. However, several elements are missing;
  - Aggregation: Farmers are largely unaware of the benefits of organisation and product aggregation, and they tend to sell their produce at the individual level, in local markets, even though the prices they receive are often low. Also, farmers are spatially dispersed. So both producers and traders suffer from high transaction costs.
  - Volumes and products: Currently, there are either too few of the right products at the right time or an oversupply of wrongly-timed products.
  - Private sector investment: This is not happening at the pace needed to meet vegetable demand and compete favourably with imports. Contributing factors include competition from Indian imports, limited availability of BDS, limited access to finance and investment and weak policy support.
  - Cheap Indian imports: 50% to 60% of vegetables consumed in Nepal are imported from India to major market hubs and market centres. In Pokhara Wholesale Market, the biggest market centre in Gandaki region, around 70% of vegetables come from India. Indian traders are present in all major market centres, and their imports are cheaper, as Indian vegetable farmers enjoy high subsidies from their government. Indian vegetables also benefit from duty-free access to Nepalese markets because of the trade treaty between the two nations.
  - Limited availability of BDS: Subject to further scoping and validation by the CASA Team, there appears to be limited availability of BDS to support agro-entrepreneurs with services such as market feasibility studies; new product innovations; accounting/accounts preparation; marketing/promotion and branding; mentoring; preparation of business plans and projections; and investment facilitation. Available services are largely restricted to urban areas.
  - Lack of access to capital: One of the biggest hurdles faced by agribusinesses in Nepal is the lack of access to capital to support their growth. The supply of debt is inadequate: 56%

[50] ADB, Strengthening Connectivity in Nepal, 2017

of all businesses in Nepal report that they are not served adequately by the banking infrastructure, and only 1% have a commercial bank as a source of financing[51].

- Lack of supportive policies: The recent 20-year Agriculture Development Strategy (2015-2035) has a vision of a self-reliant, sustainable, competitive and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and nutrition security. It is the most structured approach to agri-sector roadmaps in the history of Nepal. However, the GoN is lacklustre in terms of the timely delivery of policies that would boost commercialisation.

3.1.3 High post-harvest loss

Fresh vegetables are highly perishable and need to be handled with the utmost care to avoid substantial post-harvest losses. At present, post-harvest losses in vegetables from producer to retailer are estimated to be between 25% to 50%. While more than 30% of post-harvest loss occurs when transporting the vegetables from the farm to wholesalers, the losses increase to 50% as the products move to consumers[52].

Another study[53] shows that vegetable farmers in Nepal face post-harvest losses of up to 33% at different stages from harvesting to marketing, and tomatoes suffer the highest losses. Farmers involved in vegetable production do not have proper knowledge of post-harvest GAP, including cleaning, grading and sorting. Government agencies mainly provide production knowledge. Traders who buy from SHFs are not able to provide such information. Reasons include:

- Lack of proper incentive structure to adopt proper post-harvest GAP: Farmers do not foresee any need to adopt post-harvest skills, as current market mechanisms do not offer them premium prices. Ideally, at least 20% to 25% of losses could be saved by traders if proper post-harvest GAP, like sorting, grading and packaging, were done at the farmer level before collection. Traders at major market hubs claim that they incur losses of around 25% due to the supply of sub-standard products. They also advise that these losses are factored into consumer prices, thus making important nutritious products more expensive. However, neither party sees any pressing need to adopt post-harvest GAP.
- Inadequate post-harvest infrastructure: Inefficient development of post-harvest management technology and of the entire value chain from farm to market, has been one of the stumbling blocks to commercialisation and raising farmer margins. Even with improvement in postharvest management by farmers, gains will be limited if, at collection centres, infrastructure is inadequate, crop handling is deficient or marketing is poor.

3.2 Growth constraints for marketers (output market constraints)

Vegetable marketers are the major drivers of commercialisation, as they provide secured markets for farmers. Hence, the development of markets and trade is an important prerequisite to move vegetable producers from subsistence to commercial agriculture. Vegetable agribusinesses fall into three categories: i) wholesalers and traders; ii) processors and exporters; and iii) supermarkets, retailers and emerging online companies.

Wholesalers and traders comprise the biggest group, which is a vital link in the vegetable supply chain. These are the market actors who buy huge volumes of vegetables. Both traditional and organised retailers are dependent on wholesale markets for procuring their supplies. Hoteliers who buy for commercial consumption also procure their vegetables from the wholesale market, as it offers both sufficient volumes and varieties.

[51] Business Oxygen
[52] Samarth-Nepal Market Development Programme, 2015
[53] Sahaj-Nepal Agricultural Market Development Programme

Processors and exporters generally have their own production farms and are engaged in branding, packaging and selling through their outlets. There are also a few small processors that buy from wholesale markets and process vegetables to make kimchi, ketchup, gundruk etc. There are also a few companies engaged in supplying fresh, ready-to-cook vegetables in packaged form to top hotels and restaurants. The sale of organic vegetables is also on rise.

The third category comprises local retailers, supermarkets and online companies that trade vegetables. The local retailers are unorganised small shopkeepers and kirana (mom and pop) stores managed by families or individuals who procure vegetables from wholesale markets.

3.2.1 Problems at the wholesaler level

Commercialisation of the vegetable sector will let Nepalese vegetable farmers find easy access to markets with better prices.

Indian imports are cheap and convenient

Nepalese wholesale markets import tonnes of vegetables from India. These enjoy duty-free access to Nepal, big government subsidies and few quarantine checks at the border, so they are cheaper than Nepalese vegetables. Indian vegetables also have good packaging, making them attractive. India supplies nearly 40% of the total demand of the central vegetable market in Kalimati.

Sub-optimal profits from local vegetable trading

Wholesalers have smaller margins when trading domestic vegetables due to high post-harvest losses and a lack of storage facilities. Fresh vegetables are highly perishable and need to be handled with the utmost care to avoid substantial post-harvest losses. Qualitative losses are reductions in quality and, consequently, value. Quantitative losses are reductions in weight (mainly due to unsorted and unclean products) and thus total product value.

Reasons for post-harvest loss

Transport methods

The most popular type of transport used is pick-up vans and local buses. Transportation by bus contributes to serious losses because of exposure to the sun and wind abrasion on top of the bus.

Types of containers used

Crates protect vegetables from damage during transport. However, traders also have to accept vegetables packed in dokos[54] and sacks, which can bruise and cut the vegetables.

Lack of storage facilities

None of the traders at the marketplace have access to storage. At the end of the day, they just cover their produce with sacks and plastic sheets, and then go home. Most vegetables are delicate and either bruise easily or cannot withstand harsh weather.

High transaction costs

Traders and SMEs require certain volumes and varieties of vegetables to conduct business profitably. However, the vegetable supply chain is full of SHFs who offer small volumes and normally sell individually to middlemen. Middlemen increase transaction costs. The main reasons are that SHFs are generally scattered and produce small volumes, as well as the difficulties of aggregation and poor road transport.

[54] Dokos are large baskets made out of cane

Low access to financing

One of the biggest hurdles for agribusinesses is SMEs' and processors' lack of capital to investment in equipment, working capital, skills and knowledge. All agri-businesses consulted in the second round of scoping said they were having problems accessing loans. Most wanted loans to establish storage facilities and open more outlets. But BFIs believe that financing agriculture means high costs of operation, high risks and low returns on investment. Commercial banks have traditionally shied away from the sector because of uncontrollable and systemic risks, high costs and fears of unknown risks for bankers who are not familiar with the sector and setting. Although the government has a mandate to provide agriculture loans at subsidised interest rates, the acquisition of such loans by SMEs has been troublesome.

Limited managerial capacity for business planning and market orientation

Most entrepreneurs involved in vegetables are farmers-turned-entrepreneurs. Many face difficulties expanding because of a lack of commercial guidance and technical knowledge. Many SMEs owners and managers lack managerial training and experience and are ill-prepared to face changes in the business environment or to plan appropriate changes in technology. But companies providing mentorship, guidance and business advisory services are lacking.

Lack of labour and land

There is a dearth of skilled manpower to hire in Nepal, as migration for foreign employment has become a major source of income for many households. Agriculture has been hit hard by this shortage, and companies are having difficulty finding and hiring labourers for further growth. There is also a lack of land available for farming. Even if land is available, it is often very expensive to own or lease, as fertile valleys and plains are being occupied by settlements and industries.

Limited access to physical markets

A lack of proper packaging compared to imports makes products less attractive. This reinforces retailers' perception that local products are not good enough to sell, and companies have limited access to outlets to which they can sell customised and local products.

3.2.2 Problems at retailers, supermarkets and online traders

High post-harvest loss

Supermarkets, retailers and online traders tend to procure their supplies from wholesale markets and are not allowed to sort and grade while purchasing. This forces them to dispose at least 20% of the total volume procured due to damages and bad quality.

Short shelf life

Vegetables are perishable and must be sold within a few days to realise good profits. But many unsold vegetables are thrown out, as proper storage facilities are unavailable or expensive.

Low volume of sales

The penetration of organised retail (supermarkets and online traders) faces fierce resistance from traditional retailers. Although more consumers are buying vegetables from supermarkets, the majority still prefer local retailers, as they feel supermarkets are expensive.

4 Strategy for change

CASA's vegetable sector strategy is founded on optimising engagement with SMEs seeking investment to drive growth while addressing binding constraints to commercialisation and engagement of more smallholder producers.

4.1 Process Leading to Strategy and Project Outlines

During the inception phase, CASA employed the Inclusive Markets approach to arrive at the inception deliverables of this Inclusive Growth Strategy document and the Project Outlines within. Supported by the project's technical advisors, the CASA country teams completed the following steps of the IM approach:

i) Development of the sector dynamics and institutional landscape (combination of desk research and key informant interview);
ii) Analysis of systemic constraints and underlying causes, including validation with market actors;
iii) Development of the inclusive growth strategy for stimulating greater investment in poultry sector along with theory of change and vision of change;
iv) Mainstreaming of CASA crosscutting areas in (i) and (ii) above;
v) Identification of intervention areas and design of outline projects, including initial interactions with potential SME and other partners and service providers, and completing pre-due-diligence assessments of SMEs;
vi) Developing an initial list of potential sources of finance and investment for SME matchmaking, including accelerators and incubators for potential BDS and support to SMEs for investment readiness preparation.

The next steps in the IM process are: (a) scoping of at least five project concept notes[55] (first three months of implementation), including mainstreaming of CASA crosscutting areas; (b) design of project plans, including mainstreaming of CASA crosscutting areas and monitoring and results measurement activities, as well as partner due-diligence exercises, negotiations and contracting; (c) implementation, monitoring, results measurement and evaluation (most projects expected to commence from 1 April 2020 but possibly some quick wins beforehand); and (d) collaborating with Component C on preparing vegetable SME success stories and engaging with investment actors.

For DFID to agree that a project is relevant, it may be necessary to make some changes to the outline vegetable projects portfolio during scoping of the project concept notes and, subsequently, for the second round of projects.

CASA employs the following criteria to select relevant projects for producers, SMEs and the enabling environment:

- Does the project directly or indirectly target smallholders, especially women, with the capacity to step up – that is, increase production, productivity and quality to meet market requirements?
- Are there suitable actors available to partner with?
- Does the project avoid distortion of the market and create a sustainable market?
- Does the project create access to commercial markets for target smallholders?
- Does the project demonstrate a business case or new business model that will attract investment to commercialise smallholder supply chains?
- Is the project feasible, sustainable, scalable and relevant (in terms of factors such as resources and timelines)?
- Are the cross-cutting issues incorporated where relevant?

CASA employs the following criteria to select SME partners:

- Annual turnover under $2.0 million, or less than 50 employees;

[55] Initial samples of project concept notes were provided to DFID during the Inception Phase for feedback.

- Must want finance in the range of $100,000 $1,000,000 either immediately or in the foreseeable future. (Exceptions could be possible to the lower limit, where there is expected to be a second round of finance meetings or the limit is expected to be exceeded during the life of the CASA project);
- Ideally has not received finance in the past. (An exception may be an SME seeking finance within the above range for a new stage of expansion);
- Engages/potentially engages large numbers of smallholders in supply chain; and,
- Passes CASA's due diligence assessment.

4.2 Market potential, opportunities and growth potential

As mentioned earlier, Nepal's vegetable cultivation area has been steadily on the rise, as farmers are increasingly find out that the product offers better returns. Its cultivation area jumped by 40% between 2005 and 2015[56]. Vegetables have higher commercialisation rates—30% to 50% higher—than maize and fruits. They also have a higher cost-benefit ratio of 1:3 compared with 1:1.5 for cereals[57]. More noteworthy, vegetables, especially off-season varieties, have emerged as an effective means of reducing poverty: demand is increasing, and they fetch higher prices.

Hence, of late, off-season vegetables are being recognised as a major agriculture commodity with a comparative advantage for export to India and other countries. It is estimated that 5,950 kg of vegetables a day are exported through Nepal's major custom points in the rainy season, as it is lean season in India[58]. To formalise exports to India, GoN is working on harmonising food quality standards between Nepal and India. A few companies have applied and obtained quality certifications: Ashapuri has acquired USDA, and Alsamon International has complied with Qatar's quality standards. These companies are already exporting fresh vegetables to countries including China, Germany, Australia and Qatar. Market potential is crucial for CASA to establish a business case for significant investment, and the vegetable sector's growth trajectory is a positive sign.

4.3 Vision of change

4.3.1 Overall vision for the sector

- *"Drive inclusive commercialisation in the vegetable sector by linking smallholders and semi-commercial farmers to markets through increased investments in SMEs and major players in the sector."*

4.3.2 The vision of change for wholesalers, SMEs and processors

- *"Wholesalers prefer and procure reliable and consistent supplies from domestic cooperatives and producer groups."*
- *"Large SMEs and processors access finance and investment and grow their operations."*
- *"Processors and exporters grow from increased investment and trade high quality vegetables for both domestic and niche overseas markets."*

[56] MOAD, 2015
[57] More detail analysis of cost and benefit of planting vegetables can be found out in the report titled 'Costs and Returns of Grain and Vegetable Crop Production in Nepal's Mid-Western Development Region' by Erik Katovich and Asin Sharma, WINROCK INTERNATIONAL, USAID, August 2014
[58] SAWTEE, Export potential of fresh vegetables to India and other countries

4.3.3 The vision of change for the producer groups and cooperatives

- *"Producer groups and cooperatives aggregate quality vegetables and engage in group marketing and post-harvest practices with strong backward and forward linkages to high-value markets and attract investments for growth."*

4.3.4 The vision of change for the smallholders

- *"Smallholder farmers, especially women, increase their income by increasing production, productivity and quality thanks to climate-smart production practices and access to commercial markets."*
- *"Smallholder farmers, especially women, increase their income from competitive vegetable markets through increased use of quality inputs and improved post-harvest practices and storage."*

4.3.5 The vision of change for the desired systemic changes in the sector

- *"The vegetable sector grows due to improved technologies and the involvement of more farmers, and it attracts public and private investments and ultimately commercialises smallholder supply chains."*

4.4 Intervention areas and project outlines

To reach the vision described above, the CASA team employed an Intervention Logic Analysis Framework (ILAF). After identifying potential projects and activities linked to each core problem and considered as relevant where the problems are business opportunities not taken up by SMEs, the team further streamlined the activities across all the ILAFs and grouped them into four broad intervention areas that cut across all the ILAFs. These and their linkages to growth drivers and investment are summarised in Table 7.

Table 7: Project areas and links to growth and investments

Intervention area	Link with drivers for growth	Project	Link to investment readiness	Possible investors in future
Facilitating smallholder access to commercial markets and finance	Growing urban demand Import substitution	Technology BDS to make farmer organisation investment ready Value addition and stronger links to output markets New technologies through financing for cooperatives	Prepare for investment: Improving access to BDS, Acceleration support, Matchmaking with BFIs, de-risking and grant support	BFIs, Muktinath Development Bank, Anterprerana
Supporting agribusinesses in expansion, product diversification and innovation	Growing consumer demand Import substitution	Improve business model to attract investments Facilitate access to BDS, finance and investments Investments in agro-retail outlets	BDS to develop and strengthen business models, Acceleration and incubation support, De-risking Matchmaking with investors	M&S Holdings, True North Associates, BO2, iCapital, BFIs
Facilitating PPP and investments to institutionalise post-harvest practices throughout the vegetable value chain	Demand from producers and wholesalers/traders Growing consumer demand	Improve market centre conditions and establish cold storage Better-quality packaging materials and better handling practices	BDS support to develop and strengthen business models Matchmaking with investors	Equity investors, Provincial government, government subsidies
Support the creation of an enabling environment for inclusive business growth and commercialisation	Demand from farmers, producer organisations, SMEs	Dialogue to regulate flow of vegetable imports and promote competitive products	N/A	N/A

CASA

Commercial Agriculture for Smallholders and Agribusiness

The CASA programme makes the commercial and development case for investing in agribusinesses that source produce from smallholders. It does this by demonstrating how this can be done effectively, by bridging evidence gaps and by ensuring investors and policymakers have access to the right information and people to make inclusive agribusiness models succeed.

By showcasing successful models for businesses that source produce from smallholders and pulling together the evidence base supporting the commercial and development impact of their business models, CASA will attract more investment into the sector, boosting economic growth and raising demand for smallholder produce.