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Strategic analysis and intervention plan for

potatoes and potato products

in the Agro-Commodities Procurement Zone
of the pilot Integrated Agro-Industrial Park in
Central-Eastern Oromia, Ethiopia

Project UNJP/ETH/092/UID

Technical Support for the Implementation of
an Integrated Agro-Industrial Park (IAIP)
in Ethiopia

Strategic analysis and intervention plan
for **potatoes and potato products**
in the Agro-Commodities
Procurement Zone of the pilot
Integrated Agro-Industrial Park in
Central-Eastern Oromia, Ethiopia

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PREFACE

The present document is the fourth one of a series of detailed analyses of the selected commodities that will lead to inclusive, sustainable and stronger value chains in the Agro-Commodities Procurement Zone of Central-Eastern Oromia.

Since 1981, FAO has been a strong partner of the Government of Ethiopia towards the achievement of national food security and economic growth goals. Today, FAO assistance in Ethiopia centres on three priority areas: (i) Agricultural productivity and competitiveness; (ii) Sustainable natural resource development and management; and (iii) Improved food and nutrition security.

With the current Second Growth and Transformation Plan (2015–2020), the Government expects the agro-industrial sector to play key role in economic growth of the Country. Accordingly, the creation of Integrated Agro-Industrial Parks has been identified as one of the key mechanisms for accelerating the development of the sector and the structural transformation of agriculture. Agro-industrial parks will play a significant role in transitioning Ethiopia from an agricultural-led into an industrial-led economy.

In this context, the development of Integrated Agro-Industrial Parks has been prioritized in Ethiopia's national development strategy and four Agro-Industrial Growth Corridors have been selected for piloting the establishment of four Integrated Agro-Industrial Parks. The initiative aims at driving the structural transformation of the Ethiopian economy while reducing rural poverty and creating a better environment for increased investments in agro-processing and allied sectors.

As a key partner, FAO is working closely with the Ministry of Agriculture and Natural Resources and with the Ministry of Livestock and Fisheries to empower value chain actors and to promote inclusive, efficient and sustainable agricultural value chains. In 2009, FAO contributed to the finalization of the agro-industry strategy, which detailed the key aspects for agro-industrial development in Ethiopia. In 2014–15, support was provided to the completion of the four "Feasibility studies and business plan for integrated Agro-Commodities Procurement Zones and Integrated Agro-Industrial Parks".

The project UNJP/ETH/092/UID "Technical Support for the Implementation of an Integrated Agro-Industrial Park in Ethiopia" is a continuation of this work, with a specific focus on the establishment of the pilot Integrated Agro-Industrial Park in Oromia regional state.

Specifically, the project aims at promoting efficiency and competitiveness of selected agricultural value chains (Milk and dairy products, Live animals and red meat, Wheat and wheat products, Potato and potato products and Fresh and industrial tomato) in order to ensure a reliable and timely supply of products from the Agro-Commodities Procurement Zone to the Integrated Agro-Industrial Park in the right quantity, quality and at a competitive price.

Ms Fatouma Djama Seid
FAO Representative in Ethiopia

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Critical support in collecting secondary data and information about the potato sector was provided throughout the preparation of this document by the Ministry of Agriculture and Natural Resources (MoANR), as well as by the Bureau of Agriculture and Natural Resources (BoANR) of Oromia Regional State. The Oromia Irrigation Development Authority (OIDA) provided valuable information and feedback that is reflected in this document.

In addition, the Ministry of Livestock and Fisheries (MoLF) and the Ministry of Industry (Mol) need to be acknowledged for their key role in the pilot project for the establishment of Integrated Agro-Industrial Parks.

Colleagues from the Agriculture and Livestock Team at the FAO Representation in Ethiopia ensured critical inputs. The gender-sensitive analysis was realised with support from the Social Policies and Rural Institutions (ESP) Division in Rome. In addition, thanks are due to FAO colleagues at the Sub-regional Office for Eastern Africa (SFE) in Addis Ababa, the Regional Office for Africa (RAF) in Accra, and the Agricultural Development Economics (ESA) and Nutrition and Food Systems (ESN) Divisions in Rome, for their guidance and feedback.

Finally, FAO is grateful to the Italian Republic for its financial contribution – through the Italian Agency for Development Cooperation – and to the United Nations Industrial Development Organization (UNIDO) for the long-standing collaboration in Ethiopia, strengthened also through project UNJP/ETH/092/UID “Technical Support for the Implementation of an Integrated Agro-Industrial Park in Ethiopia”.

ACRONYMS

ACPZ	Agro-Commodities Procurement Zone
ATA	Ethiopian Agricultural Transformation Agency
CSA	Central Statistical Agency
ETB	Ethiopian birr
FAO	Food and Agriculture Organization of the United Nations
GTP	Growth and Transformation Plan
IAIP	Integrated Agro-Industrial Park
MoANR	Ministry of Agriculture and Natural Resources
MoFEC	Ministry of Finance and Economic Cooperation
MoI	Ministry of Industry
MoLF	Ministry of Livestock and Fisheries
PCC	Primary Collection Centre
RTC	Rural Transformation Centre
UNIDO	United Nations Industrial Development Organization
USD	United States dollar

United Nations exchange rate at 1 February 2018 (ETB 1 = USD 0.03629013)



EXECUTIVE SUMMARY

Potato (*S. tuberosum*) is the world's fourth most widely cultivated food crop after wheat, rice and maize. It is one of the fastest expanding food crops in Sub-Saharan Africa and a nutritionally balanced food, which provides a high calorie intake and a substantial amount of vitamins. Ethiopia has considerable potential for potato cultivation, as 70 percent of its arable land is suitable - mainly highland areas above 1 500 meters of altitude. Also, the country is one of the major producers in Eastern Africa because of its suitable agro-ecology and its domestic consumption levels.

Due to its importance as source of food and employment, the Government of Ethiopia considers potato as one of the strategic commodities for ensuring food security in the country. In recent years, potato production has increased significantly, as well as the number of households engaged in and the area of land covered by its production. According to the Central Statistical Agency, the overall production of potato registered a 20 percent increase in the last two years, rising from 785 thousand tonnes in 2013/14 to 921 thousand tonnes in 2015/16. The average yield has also increased from 11.7 tonnes per hectare to 13.4 tonnes per hectare in the same two-year period.

Central-Eastern Oromia is one of the best performing areas in Ethiopia in terms of productivity, registering average yields of 19 tonnes per hectare. Smallholder farmers are the majority of producers and potato cultivation is an important part of the livelihood of communities. Rural households consume about 68 percent of their production and sell approximately 20 percent; the rest is kept as potato seed and/or for in-kind payments.

Potato production is characterized by scarce innovation or technology adoption for improving production and productivity. Major constraints are found across the production and the aggregation nodes of the value chain, although these constraints vary in intensity according to geographic zones and production systems.

The growing demand of potato products represents an opportunity for resource-poor producers to generate additional income by selling their produce. In particular, the piloting of an Integrated Agro-Industrial Park in Central-Eastern Oromia will create market opportunities for producers located within the Agro-Commodities Procurement Zones, and will represent a means to develop the potato value chain by increasing production and productivity and strengthening commercialization.



The majority of potato producers have low productivity, sometimes barely reaching 10 tonnes per hectare, while model farmers can produce up to 50 tonnes per hectare. Improving the supply and utilization of quality agricultural inputs and of good agronomics practices are key areas of intervention. Improved seed, fertilizer and agro-chemicals supply does not satisfy the demand, compromising the quality of the produce along the potato value chain. Increased access to extension services (e.g. agronomic practices and market information) and financial services is critical.

The aggregation node is of crucial importance in the value chain, especially for rural producers that have limited connectivity with markets. In Central-Eastern Oromia, the chain from producers to consumers is usually very long and includes many intermediaries; this results in high transaction costs, leading to low competitiveness. In addition, there is great potential for developing a processing industry as consumption of potato-processed product is constantly increasing, indicating that there are good opportunities for import substitution of highly demanded goods.

The piloting of an Integrated Agro-Industrial Park in Central-Eastern Oromia will create market opportunities in the near future for producers located within the Agro-Commodities Procurement Zone, and will represent a means to develop the potato value chain.

In this document, interventions are proposed across a number of areas. Undertaking these strategic interventions will significantly increase the likelihood of meeting the targets set in the Second Growth and Transformation Plan 2015-2020.

Specific targets to promote rapid and sustainable growth of the potato value chain in the Agro-Commodities Procurement Zones of the pilot Integrated Agro-Industrial Park in Central-Eastern Oromia are:

- i. increase the volumes of production** by 10 percent from 1.04 million tonnes to 1.38 million tonnes in 2020;
- ii. raise average productivity** by 33 percent from 19 tonnes per hectare to 25.4 tonnes per hectare in 2020; and
- iii. promote formalization** of the market (based on cooperative actions) to increase the volume of quality potatoes reaching commercial processors.

Production and productivity enhancement should be realized by targeting potato producers through: (i) supply of quality agricultural inputs – i.e. seeds, fertilizers and chemicals – and increased irrigation; (ii) improved production capacity of smallholder farmers, including mechanization; (iii) increased quality and coverage of extension/advisory services; and (iv) gender-specific interventions.

The strategy to strengthen commercialization of potato must focus on: (i) standardization and quality control of inputs and outputs; (ii) promoting formalization and business-oriented production through market linkages; (iii) enhancing management skills and business orientation of cooperatives; (iv) ensuring adequate technologies, equipment, machinery and agro-infrastructure for aggregation, storage and transportation; and (v) promoting access to credit and insurance.

Undertaking the strategic interventions recommended in this report will significantly increase the likelihood of meeting targets set for the potato sub-sector in the Second Growth and Transformation Plan 2015-2020.



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PART 1

INTRODUCTION

1.1 BACKGROUND

Ethiopia has an estimated population of approximately 100 million people. Its economy relies heavily on agriculture, which directly supports 85 percent of the population, constitutes 46 percent of the Gross Domestic product and accounts for 90 percent of the total export value (MoI and MoANR, 2015). Despite the large amount of agricultural products, the country remains dependent on imports of substantial amounts of semi-processed and processed food; products that have the potential to be – and in a limited amount of instances are – produced locally.

For the past 20 years, the Government has promoted the development of its industrial sector as a means of sustaining economic growth. Today, the development of agro-industries presents Ethiopia with an opportunity to accelerate economic development and to realize the industrial development goals of its Second Growth and Transformation Plan 2015–2020, towards becoming a leading manufacturing hub in Sub-Saharan Africa and achieving the lower middle-income status by 2025.

Based in part on the success of the Industrial Zone Development Programme for leather and textiles, the Government is spearheading the development of the Integrated Agro-Industrial Parks initiative to support the commercialization of the agricultural sector, and to accelerate the structural transformation of the economy.

A strong domestic agro-industry is of utmost importance, not only in order to decrease dependence on imported products, but also to drive the transition of the traditional supply-led subsistence agriculture towards an organized, high-tech, safe and demand-led agriculture (MoTI and MoARD, 2009).

The Integrated Agro-Industrial Park concept

An Integrated Agro-Industrial Park is a geographic cluster of independent firms grouped together to gain economies of scale and positive externalities by sharing infrastructure and by taking advantage of opportunities for bulk purchasing and selling, training and extension services. The primary feature of Integrated Agro-Industrial Parks is the clustering of essential **infrastructure, utilities and services** required for business operations and growth.

In addition, the Parks enable links with **global agricultural value chains**. Both processors and producers stand to benefit from better linkages between farmers and agro-industries. Moreover, increased integration with commercial value chains encourages the inclusion of informal economic actors into the **formal system**.

Technology transfer and **knowledge dissemination** are facilitated by grouping large- and small-scale businesses in the same location. These benefits reach out to producers and small-scale processors, ensuring higher product quality from farm to fork and integrating larger portions of the population into commercial agricultural value chains. Another key feature is **innovation diffusion**. By disseminating knowledge, skills and innovation, the Parks contribute to the overall upgrading of the agro-industrial sector and allow firms to become more competitive at regional and global levels.

The Integrated Agro-Industrial Parks provide the opportunity for producers to enter into binding **business-to-business arrangements** (e.g. contract farming) with processors. Inclusive and gender-sensitive business models strengthen the capacity of farmers in terms of production methods and technology; output quantity, quality and prices; and technical and financial assistance. In addition, Integrated Agro-Industrial Parks enable access to **financial services** for producers and small-scale processors that are encouraged to innovate and expand their business.

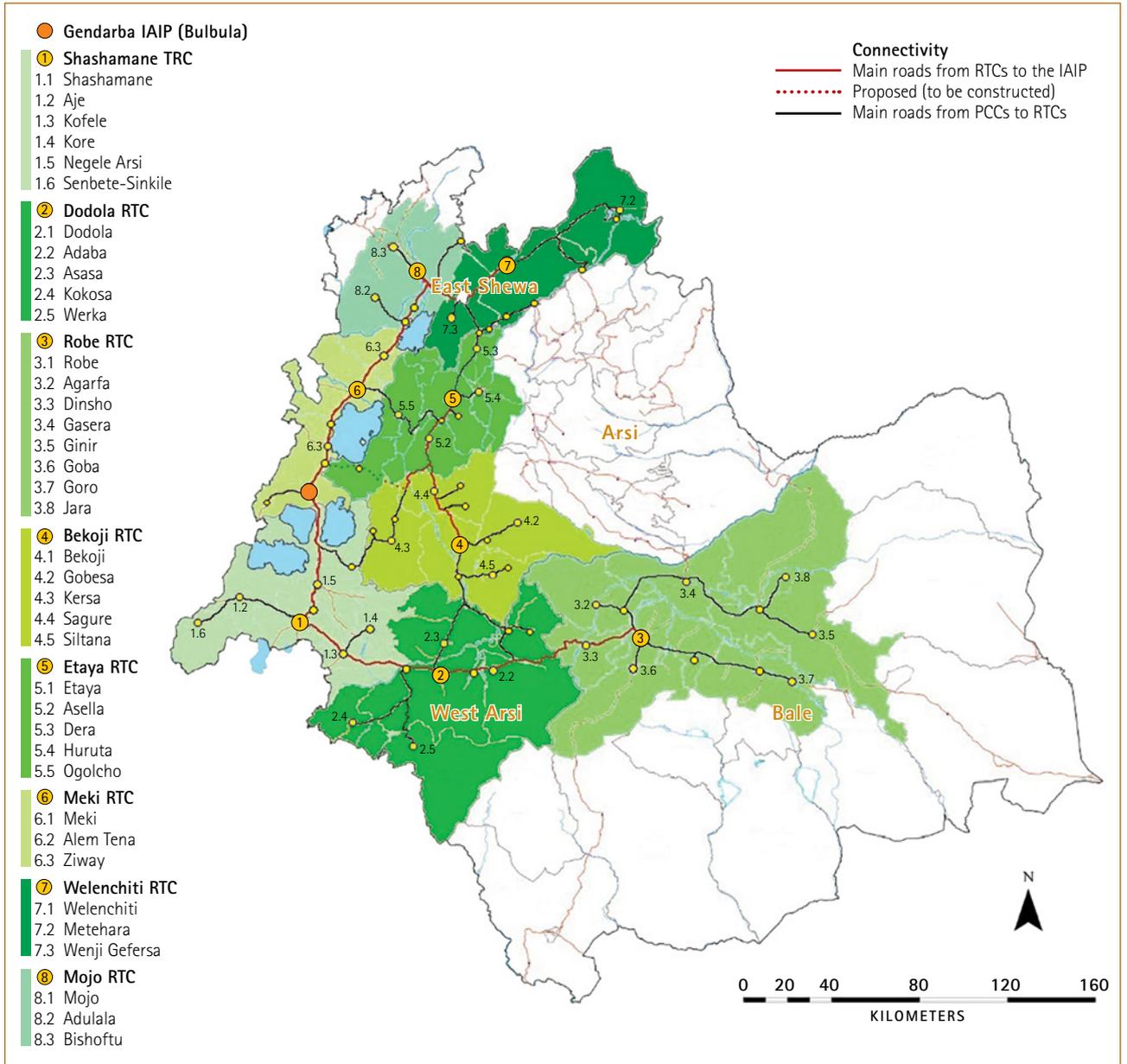
The last key feature of Integrated Agro-Industrial Parks is the promotion of **entrepreneurship and businesses** allied to agro-industry (e.g. specialized in sales, input supply, distribution and transport). By offering incentives, Integrated Agro-Industrial Parks promote specialization and growth of innovative businesses, also fostering **rural jobs creation** and generating important **off-farm employment** opportunities for women and men. Ultimately, the Parks can serve as an example to both domestic and international audiences of the capability of Ethiopia to achieve standards in food processing, from traceability of raw materials to ecological and environmentally friendly production.

In the model proposed by the Government of Ethiopia, each Integrated Agro-Industrial Park sources the raw material from an Agro-Commodities Procurement Zone, which is served by a network of Rural Transformation Centres that ensure constant flow of agricultural produce to the agro-industries located in the Park. This organized market infrastructure will be key to address one of the major constraints in Ethiopia, namely access to market.

At the Rural Transformation Centres, agricultural produce is collected, sorted, stored and may undergo primary processing before onward transportation to the Park. Producers sell their products to aggregators and purchase agricultural inputs, technical support and other services (e.g. small-scale financial services, as well as basic social services) from service providers. Support businesses and social infrastructure are also present, to cater for the needs women and men and to favour their effective involvement at different nodes of the value chains.

For most farmers, the Rural Transformation Centres are the main point of contact with commercial agricultural value chains and may represent key entry points to access opportunities for socio-economic development. In addition, this model could be complemented by Primary Collection Centres, smaller point of aggregation and delivery of basic services located deeper in rural areas, to better connect producers to the Rural Transformation Centres. In this regard, a key point will be the management of this newly created market infrastructure that will rely on cooperative actions to ensure shared benefit and inclusiveness along the value chains.

FIGURE 1: The Agro-Commodities Procurement Zone in Central-Eastern Oromia



Source: Authors' elaboration.

1.2 OBJECTIVE AND OUTPUTS

The objective of the study is to provide a **Strategic Analysis and a Intervention Plan for Potatoes and Potato Products in Central-Eastern Oromia**, based on a comprehensive and gender-sensitive examination of the Agro-Commodities Procurement Zone of the pilot Integrated Agro-Industrial Park, including constraints, strengths, weaknesses, challenges and opportunities for value chain actors and supporting institutions.

The study proposes specific recommendations for the pro-poor development of the potato sub-sector to ensure that women and men producers have the capacity and the incentives to sell raw materials in the right quantity and quality, timely and at competitive prices to the agro-processing industries in Central-Eastern Oromia.

Specific **outputs** are:

- the overview of the potato value chain in Central-Eastern Oromia (Part 2);
- the analysis of the systemic constraints and opportunities for upgrading (Part 3); and
- the strategy for improved competitiveness and growth of the sub-sector and its intervention plan (Part 4).

1.3 RATIONALE

The strategic analysis of selected agricultural commodities in Central-Eastern Oromia supports the effort of the Government to design a comprehensive strategy on Enhancing Production & Productivity and Commercialization in the Agro-Commodities Procurement Zone of the Integrated Agro-Industrial Park.

It builds upon three key resources:

- i. the Feasibility Report for the Agro-Commodities Procurement Zone and the Integrated Agro-Industrial Park in Central-Eastern Oromia, which was finalized by the Ministry of Industry and the Ministry of Agriculture and Rural Development in 2015;
- ii. the Four Years Strategic Plan (2017-2020) for the Supply of Raw Material to the Integrated Agro-Industrial Park in Central-Eastern Oromia, prepared in 2016 by the Ministry of Agriculture and Natural Resources in collaboration with the Ministry of Livestock and Fisheries and the Ethiopian Agricultural Transformation Agency; and

- iii. the Preliminary Analysis of the Required Agro-Infrastructure in the Agro-Commodities Procurement Zone of the Pilot Integrated Agro-Industrial Park in Central-Eastern Oromia that has been finalized by FAO in March 2017.

This Strategic Analysis and Intervention Plan complements the Feasibility Report and refines the Strategic Plan with the aim of providing the Government of Ethiopia with a competitiveness strategy and an intervention plan that should guide interventions and investments in support of the development of the potato sub-sector in Central-Eastern Oromia.

The value chain approach

The value chain approach is a systemic analysis tool that looks at how opportunities deriving from end markets can drive a sequential chain of value-adding activities, from production of raw materials to sales of final products to consumers.

The approach goes beyond the analysis of individual actors to examine the nature of horizontal and vertical linkages and their governance mechanism. Linkages are depicted in a **value chain map** with some indications on the numbers of agents, product-flow values and volumes and key points of leverage. The latter are points in the system at which many actors connect or through which high volumes of product flow (e.g. a large processor, a geographic cluster) or that affect the value chain as a whole (e.g. policy).

The analysis starts from understanding the characteristics and requirements of **end markets** in order to identify real market opportunities as well as the performance gaps within the value chain concerning meeting those requirements.

While end markets are the starting point and competitiveness in them is the primary performance indicator, generating increased profits from a higher level of competitiveness that benefits only a few or that exacerbate inequalities between women and men is an undesirable outcome if poverty reduction and food security are the objectives. Moreover, increasing competitiveness and profitability while irrevocably depleting natural resources could ultimately be a self-defeating strategy. In this regard, **sustainability** and **performance indicators** also need to be considered as well.

Once the inner workings of the value chain have been examined in sufficiently detail and understood, it becomes possible to prioritize a set of interlinked **systemic constraints**, including gender-based constraints, which need to be addressed and the **upgrading opportunities** that should be pursued in order to maximize the desired impact.

The impact can be derived from a **vision**, the development of which is essential for the design of a **competitiveness strategy**. This strategy needs clearly specified and quantified goal to be translated into a detailed **business plan** that specifies what should be done when and by whom.



FAO's value chain frameworks

The team availed itself of two analytical tools developed by FAO: the **Sustainable Food Value Chain** framework and the **Gender-Sensitive Value Chain** framework. The integrated use of these two conceptual frameworks allows for a holistic and comprehensive strategic analysis.

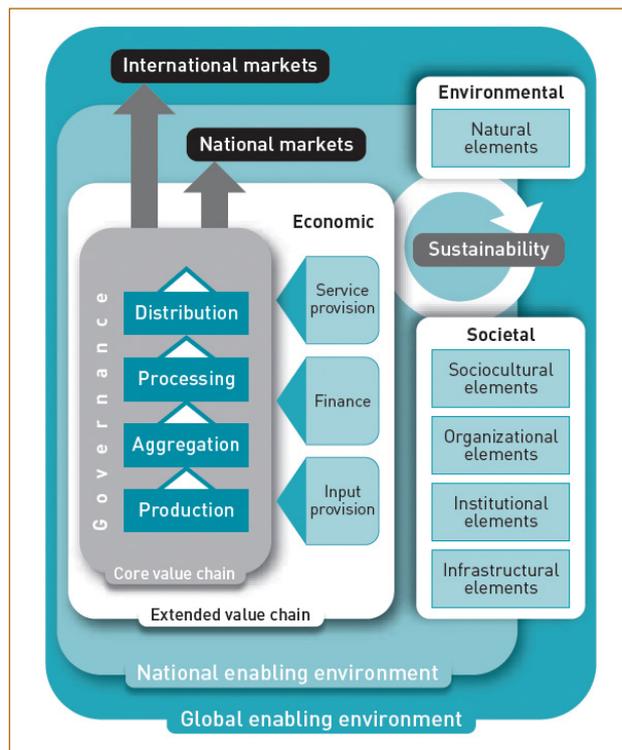
A Sustainable Food Value Chain is defined as:

the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society, and does not permanently deplete natural resources.

The Sustainable Food Value Chain framework is built around the **core value chain**, which relates to the value chain actors, i.e. those who produce or procure from the upstream level, add value to the product and then sell it on to the next level. Four core functions are distinguished in the chain: production, aggregation, processing and distribution (wholesale and retail). The aggregation step is especially relevant for food value chains in developing countries; efficiently aggregating and storing the small volumes of produce from widely dispersed smallholder producers is often a major challenge. A critical element of the core value chain is its **governance structure**, which refers to the nature of the linkages both between actors at particular stages in the chain (horizontal linkages) and within the overall chain (vertical linkages).

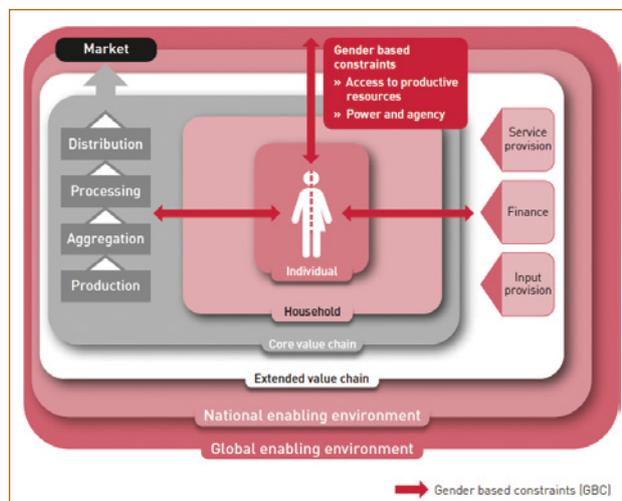
Value-chain actors are supported by business development support providers; these do not take ownership of the product, but play an essential role in facilitating the value-creation process. Along with the value chain actors, these support providers represent the **extended value chain**. Three main types of support provider can be distinguished as: (i) providers of physical inputs; (ii) providers of non-financial services; and (iii) providers of financial services.

FIGURE 2. The FAO Sustainable Food Value Chain framework



Source: From *Developing sustainable food value chains*, FAO 2014.

FIGURE 3. The FAO Gender-Sensitive Value Chain framework



Source: From *Developing gender-sensitive value chains*, FAO 2016.

Ultimately, value is determined by the consumer's choice of which food items to purchase on **national and international markets**. Value-chain actors and support providers operate in a particular **enabling environment** in which societal and natural environmental elements can be distinguished. Within the enabling environment, we can further differentiate between the national environment and the international environment. The **sustainability** of the value chain plays out simultaneously along three dimensions: economic, social and environmental.

The Gender-Sensitive Value Chain framework complements the above tool and aims to reinforce the dimension of social sustainability. It features two further levels of analysis: **individual and household** levels. The framework puts the dimension of the individual at the core, to acknowledge the diversity of women and men as value chain actors with unique characteristics, abilities and aspirations. Also, it highlights the importance of the household dimension, in which specific dynamics and power relations are in place.

Gender-based constraints affecting equal participation in and benefits from value chain mainly revolve around the interrelation of two key economic empowerment factors: (i) **access to productive inputs** and (ii) **power** (i.e. decision-making power) **and agency** (e.g. capabilities, self-confidence, etc.).

The extent of women's and men's access to, and control over, productive resources and benefits is often determined by socio-cultural norms and perceptions and may entail factors such as age, social status, level of education, ethnicity, policies and regulations. These norms and perceptions stem from individuals, bolstered at the household level and are likely to trigger inequalities along the core and extended value chains and to influence the national and global enabling environments. For these reasons, it is paramount to consider the individual and the household dimensions to identify gender-based constraints and to tackle inequalities that affect the efficiency and the inclusiveness of the value chain.¹

¹ For FAO gender equality is equal participation of women and men in decision-making, equal ability to exercise their human rights, equal access to and control of resources and the benefits of development and equal opportunities in employment and in all other aspects of their livelihoods.





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1.4 METHODOLOGY

Although there are quantitative elements to the strategic analysis, the methodology focused predominantly on a qualitative analysis. The aim is to identify the strategic bottlenecks and those upgrading opportunities that will drive the competitiveness strategy and the intervention plan to achieve the stated vision for the potato sub-sector in Central-Eastern Oromia.

The FAO team used a combination of four methods: literature review, key informants/experts consultation, field-based appraisals and a stakeholder's validation workshop. Key findings are incorporated directly in the document.

The **literature review** consisted in the examination of existing bibliography (i.e. papers, reports, strategies and policies) related to the potato sub-sector in Ethiopia, with specific attention to Central-Eastern Oromia. With this, the team generated an understanding of strengths, weaknesses, opportunities and threats faced by value chain actors.

Key experts/institutions were contacted based on consultations with Government officials (especially Ministry of Agriculture and Natural Resources), FAO staff and other stakeholders. Appointments were arranged with the following: Ethiopian Institute of Agricultural Research, Oromia Bureau of Agriculture

and Natural Resources, Oromia Irrigation Development Authority and Oromia Cooperative Promotion Agency.

A **field mission** to Arsi, East Shewa and West Arsi zones was organized on 19–23 February 2018 to validate information and to gather further evidence, including specific gender-based constraints at individual and household levels. The team relied on the accounts of a sample² of key actors, identified in consultation with zonal and *woreda* authorities along the core and the extended value chains, and employed the use of semi-structured individual interviews. The list of key informants interviewed during the field mission is provided in Annex 1.

The main activities conducted were:

- ◉ identification of key value chain actors operating in Central-Eastern Oromia and field-validation of secondary information gathered through the literature review (i.e. current challenges and gender-based constraints, available infrastructure, existing and prospect market opportunities, etc.); and
- ◉ individual meetings with key informants, i.e. producers; processors; service providers; and with Government officials at *woreda* and zonal levels.

The **first technical meeting** was organized on 1 February 2018 at the Ministry of Agriculture and Natural Resources in Addis Ababa. Participants were senior officials (directors and above). A **second technical meeting** was organized on February 20 2018 with experts from the Oromia Bureau of Agriculture and Natural Resources and from the Oromia Irrigation Development Authority. The lists of participants to both workshops are provided in Annex 1. During these meetings, the draft study was reviewed and commented on and additional technical inputs were collected.

Throughout the preparation and finalization of this study, FAO technical officers in Addis Ababa and Rome provided important feedback and comments. In addition, several Government officials provided technical inputs in their respective areas of expertise.

Finally, a **stakeholders' validation event** was organized in Addis Ababa, Ethiopia to validate the present study. Participants will include Government officials (both at federal and regional levels), researchers, development partners and Non-Government Organizations (international and local), representatives of producers' organizations and of private actors (service providers, processors, wholesalers, supermarkets and hotel, consumers, etc.).



² Convenience/non-probability sampling method.



PART 2

STRATEGIC ANALYSIS

2.1 THE POTATO SUB-SECTOR IN ETHIOPIA

Potato plays a key role in ensuring national food security and poverty alleviation. This section provides an overview of the

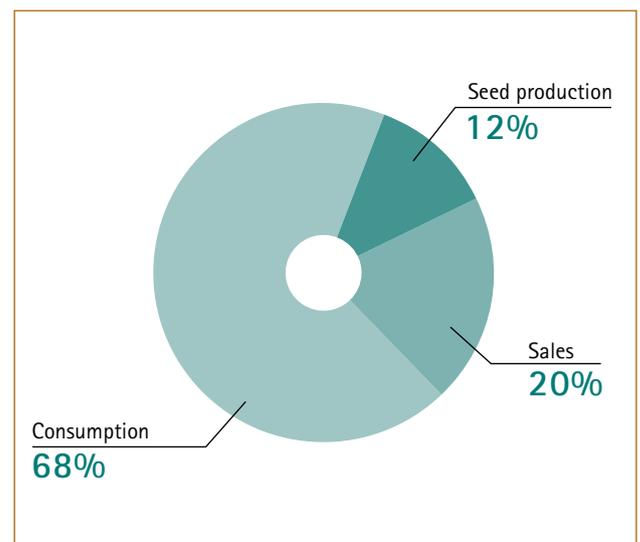
potato sub-sector, including its economic relevance to Ethiopia's economy and its growth potential.

Economic relevance

Potato (*Solanum tuberosum*) is a valuable crop for smallholder farmers in Ethiopia, serving as both cash and food security crop. It is a nutritionally balanced food crop, which provides a high calorie intake and a substantial amount of vitamins. Due to its nutritional value, potato is considered by the Government of Ethiopia as one of the strategic commodities for ensuring food security. Also, potato is one of the most productive food crops in terms of nutrition (edible energy and good quality protein) and in terms of yield per hectare (approximately double that of grains).

There are substantial amounts of micronutrients present in the potatoes to tackle nutrient deficiencies, vitamin C in particular, as well as being a crop that requires less irrigation than other horticulture crops. Also, compared to cereals, potato is less affected by international price fluctuations, ensuring a nutritious source of food at a relatively stable cost. It provides a viable alternative to Ethiopia's substantial grain importations, costing an annual average of USD 500 million per year over the past five-year period.

FIGURE 4: Potato utilization among smallholder farmers in Ethiopia



Source: Central Statistics Agency, 2014/15.

Ethiopia has considerable potential for potato production, as 70 percent of the arable land is suitable for its cultivation – mainly in highland areas above 1 500 meters of altitude. Over 1.3 million households grow potatoes, for both consumption and income generation. Own consumption is predominant, as about 68 percent of the total production is consumed at household level. About 20 percent is sold in the market and the remaining 12 percent is kept as potato seed. This trend remained constant over the years despite the increased market demand.

Growth potential

The Government of Ethiopia projects the potato sub-sector to expand in the coming years through private investments and appropriate policy interventions. Potato production has increased significantly in recent years, as well as the number of households engaged in production and the acreage of land covered by the crop. According to the Central Statistical Agency, the overall production of potato registered a surprising increase in recent years rising from 1.6 million tonnes in 2013/14 to 3.6 million tonnes in 2015/16. The average yield has also increased from 9 tonnes per hectare to 12.3 tonnes per hectare in the same two-year period. Nevertheless, potato model farmers in Ethiopia showed that yields of up to 50 tonnes per hectare are achievable.

Similarly, the demand for potatoes has increased in the last decades and it is estimated to increase further through 2020 and beyond. In addition, the consumption of processed potato products such as chips (thin slices of potato that have been deep fried or baked until crunchy) and fries (fried elongated pieces of potato), is increasing steadily in Ethiopia because of urbanization, population growth and increased incomes. This growing demand represents an opportunity for resource-poor potato growers to generate additional income by selling their produce.

In the framework of the Second Growth and Transformation Plan (2015–2020), investment opportunities will predominantly arise in the agricultural and industrial sectors. This initiative opens up opportunity for modernisation of the farming sector, moving towards high value crops, advanced irrigation, better quality seeds, increased fertilizer use and strategies to yield multiple harvests a year.

Benchmarking

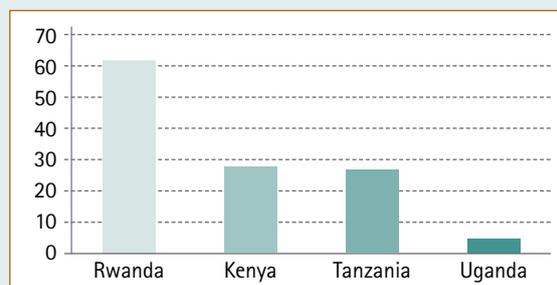
The production of potatoes in Sub-Saharan Africa is far behind that of other countries and regions in the world, although potatoes are an important food and cash crop for Sub-Saharan African farmers. Potatoes play an important role in remote areas in particular, where incomes are low and access to markets and inputs is limited. Increased productivity of potatoes can improve the livelihood of smallholder producers in countries like Kenya, Uganda and Ethiopia and is required to meet the growing demand, since populations in the area are doubling every 25 years and urbanization will increase by 13 percent in the year 2020 for Eastern African countries. In Eastern Africa, potato has steadily gained importance as a cash crop in the past 20 years. Countries like Kenya, Rwanda, Tanzania and Uganda registered a steadily growing demand for potatoes and potato products. There is a fast-growing market especially linked to an emerging processing industry.

Box 1: Potato consumption in East African countries

Potato consumption levels in Eastern Africa are related to income, age and household size. Low-income households mainly consume boiled potatoes in their traditional dishes, while wealthier households – particularly higher income families living in urban and peri-urban areas – consume more potato products such as chips and fries.

With the exception of Rwanda, where potato is clearly a staple food, consumption of potatoes in Kenya, Tanzania and Uganda is closely linked to processed.

FIGURE 5: Potato consumption (kg) per capita per year in four Eastern Africa countries



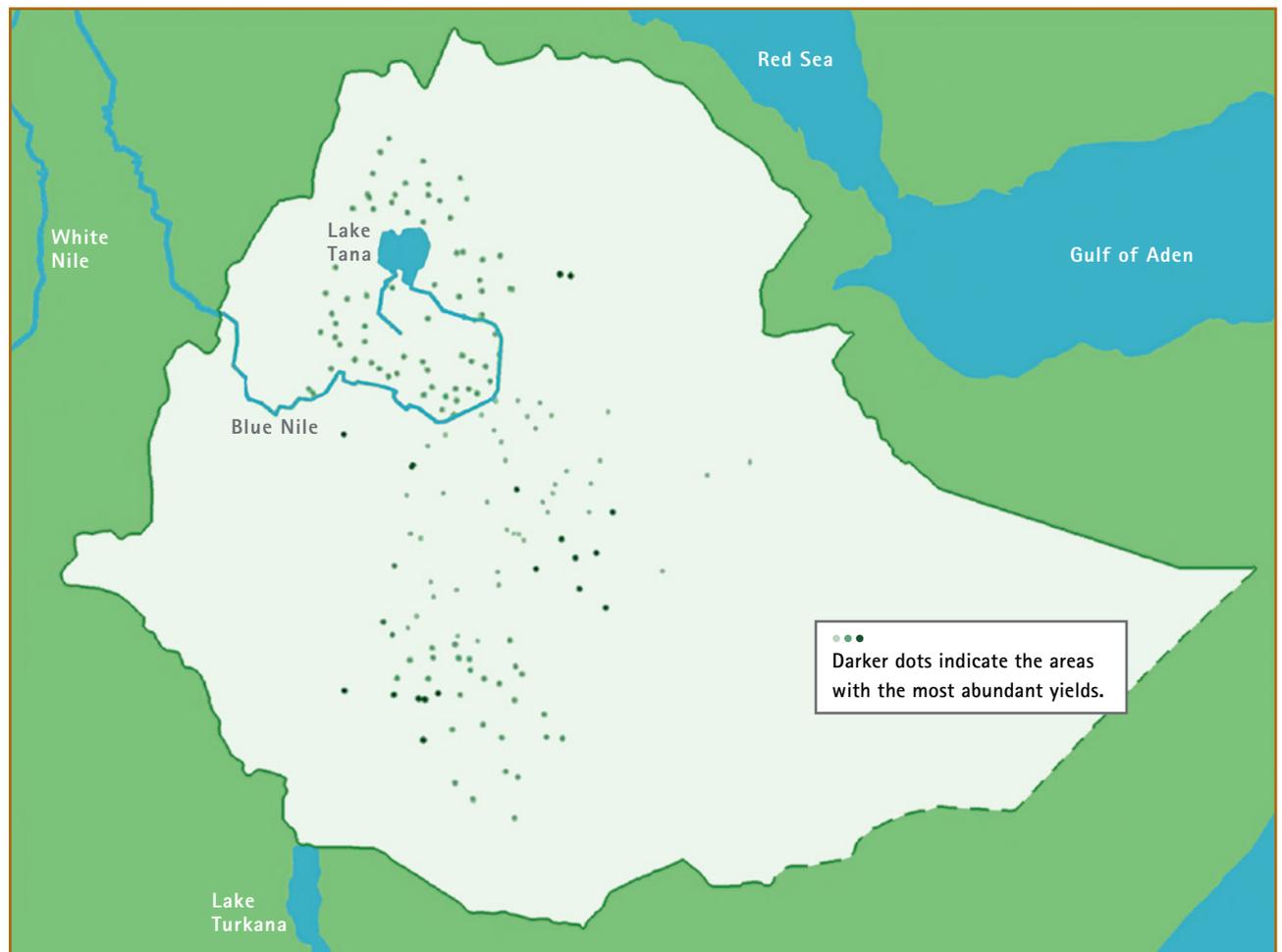
Source: FAOSTAT, 2018.

2.2 END MARKETS FOR POTATOES AND POTATO PRODUCTS FROM CENTRAL-EASTERN OROMIA

In this document, the value chain analysis starts with an overview of domestic production and market for potatoes and potato products in Central-Eastern Oromia. This approach is necessary to make sure that the strategy for the development of the value chain outlined afterwards is anchored to concrete opportunities that can drive the sustainable and inclusive growth, by absorbing the current production and the future surplus from enhanced production & productivity and strengthened commercialization.

With ideal climate and abundant rainfall, emergence of fast-growing urban centres and expansion of road networks, power and water supply, Central-Eastern Oromia is competitive in terms of timely delivery of goods and services and cost of transportation, and offers opportunities for agribusiness and agro-industry development with great potential for the development of a thriving potato sub-sector. Also, Central-Eastern Oromia is uniquely situated in the proximity of Addis Ababa, which can serve as permanent markets for potatoes and potato products.

FIGURE 6: Map of major potato producing areas in Ethiopia.



Source: Own Elaboration from International Potato Centre (CIP), 2006.

Domestic market and consumption levels

Potato is one of the main food items consumed in Ethiopia. In rural areas, approximately 68 percent of the total production is consumed at household level, while only 20 percent is sold in the market.

In rural households of many Eastern African countries, including Ethiopia, consumption of boiled potato is dominant. potatoes are also prepared in the form of sauce in mixture with other spices called *dinich wot*, one of the most popular cultural dishes in Ethiopia.

The consumption of boiled potatoes and *wots* is higher among elder consumers as compared to younger ones. Production and consumption of other potato products like chips and French fries is still limited compared to other countries, although young consumers are gradually replacing boiled potatoes with fried products. Likewise, the emerging middle-income households consume more chips and French fries, compared to the lower income groups. As incomes and urbanization are on the rise in Ethiopia, prospects for diet diversification and increased demand are decidedly positive.

Addis Ababa is the main market for potatoes produced in Central-Eastern Oromia, while other important markets are major cities like Adama, Bishoftu, Hawassa and Shashamene.

Export markets

Ethiopia exports mainly fresh and chilled potato, followed by a relative small portion of potato seed. The exports of potato grew substantially in recent years, both in terms of quantity³ and value.

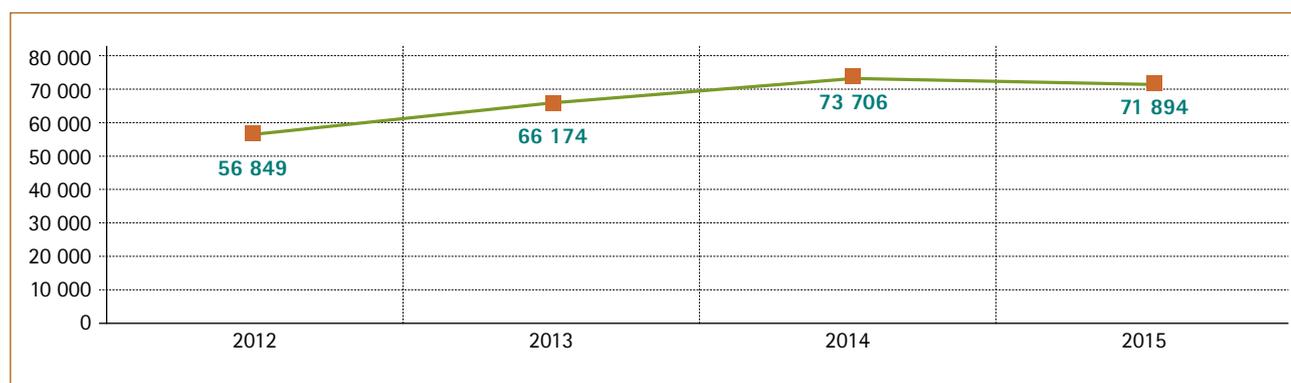
In 2015, Ethiopia exported approximately 71 thousand tonnes of potato to regional markets. Djibouti is by far the largest market outlet, absorbing approximately 80 to 90 percent of Ethiopian's potato export. Somalia is the second largest market, receiving 8 to 15 percent of the total. Other regional markets such as Sudan, Yemen and Saudi Arabia import small quantities of potatoes from Ethiopia.

Marketing channels

In Central-Eastern Oromia, agricultural products reach consumers through both informal and formal marketing channels. The **informal channel** is dominant, especially in rural areas. Smallholder producers sell or exchange potatoes with no regulatory oversight. Non-licensed traders (aggregators) dominate the informal channel, usually determining prices with

³ The volume of potato exports in 2001 was roughly 6 000 tonnes.

FIGURE 7: Trend in potato exports (tonnes) from Ethiopia



Source: Ethiopian Revenue and Customs Authority, 2015.

limited or no transparency due to the lack of market alternatives. Smallholder producers sell ware potatoes at low farm-gate prices, due to lack of storage facilities and unavailability of transportation services. Often they are forced to sell their products rapidly to cover for other needs and expenses.

The informal channel is often characterized by the absence of adequate infrastructure for aggregation. This results in major issues related to quantities and quality of potatoes that reach the main markets. Limited storage facilities and poor road conditions lead to considerable post-harvest losses and produce deterioration, which ultimately affects selling prices.

On the other hand, the **formal channel** usually involves primary cooperatives and unions as aggregation points, as well as rural wholesalers and licensed traders that supply institutional buyers and large retailers (e.g. supermarkets) in urban areas.

Market prices

Potato is not prone to speculative trading on global markets. Prices are more likely to be set by local supply-and-demand conditions and, being potato in Ethiopia a seasonal crop, prices for ware potatoes in Central-Eastern Oromia are volatile.

The average farm-gate price for ware potatoes usually ranges between ETB 300–600 per quintal, depending on the season. During over-supply periods, the price may drop to ETB 150 per quintal. In Addis Ababa, one kilogram of ware potato is sold at the retail price of ETB 15.

Homemade potato chips without standard packaging are commonly found in urban areas at price of ETB 80 per kilogramme. The factory gate price of locally processed potato chips is around ETB 140 per kilogramme, while their retail price in local supermarkets is approximately ETB 280 per kilogramme. The retail price of imported potato chips at supermarkets and mini-markets is around ETB 700 ETB per kilogramme.



2.3 THE POTATO VALUE CHAIN IN CENTRAL-EASTERN OROMIA

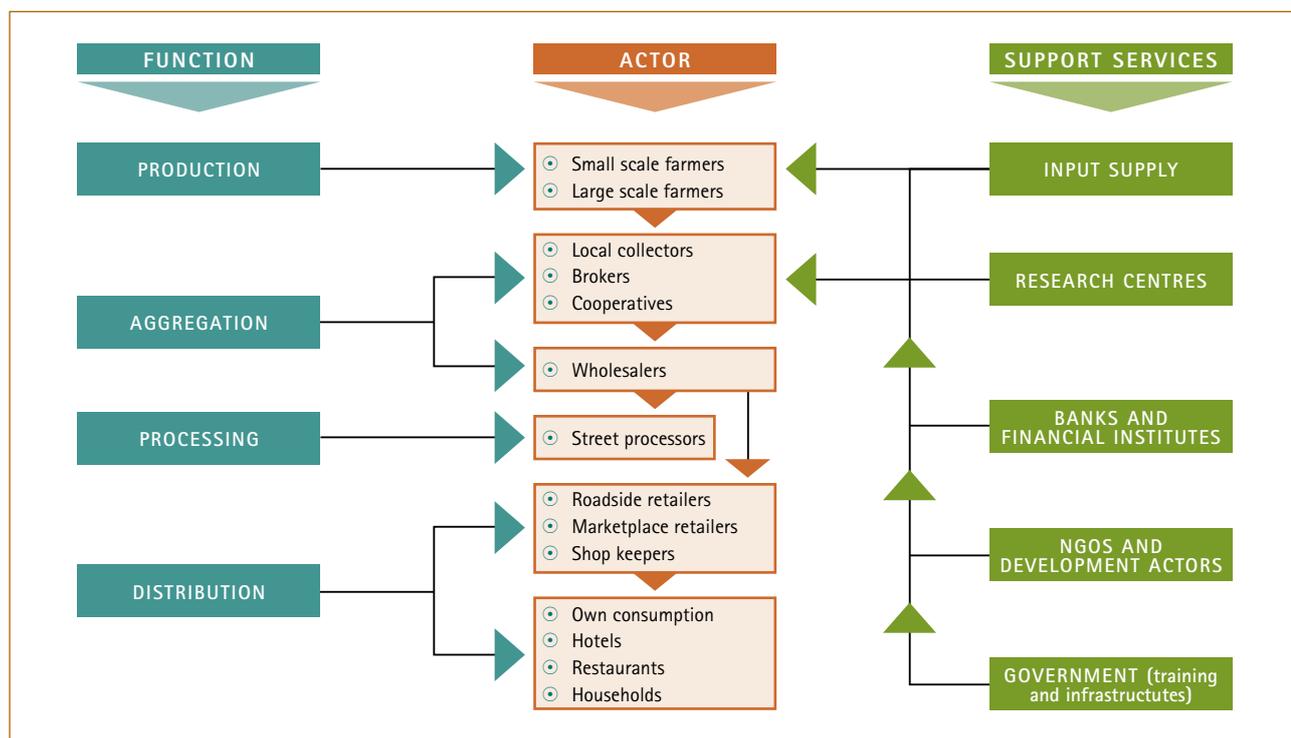
This section provides an overview of the potato sub-sector in Central-Eastern Oromia. Smallholder producers, local collectors and wholesalers, processors and retailers are key actors along

the potato value chain; likewise, extended value chain actors play an important role.

2.3.1 Maps and channels

The map below illustrates the value chain dynamics, in terms of product flow and interaction between actors.

FIGURE 8: Map of the potato value chain in Central-Eastern Oromia



Source: Authors' elaboration.

2.3.2 Production

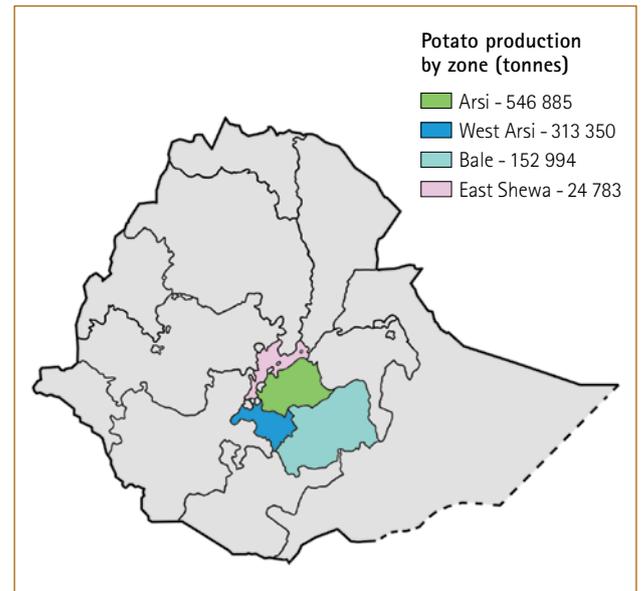
Central-Eastern Oromia falls within the agro-ecological zone of the Ethiopian highlands and of the Rift Valley, characterized by a bi-modal rainfall pattern with mean average rainfall of 900–1 000 millimetres per year. Temperature variation is low, ranging from 15–22 °C throughout the year. Seasons are mainly distinguished by the intensity of rain, which is highest in August and lowest in December. In rain-fed agriculture, precipitation patterns allow two harvesting seasons: *Belg* (from March to August) and *Meher* (from September to February).

In most parts of Central-Eastern Oromia, farmers produce potato twice a year due to the bimodal rainfall patterns. Potato is cultivated in two short production cycles of about 4–5 months and provides high yields on small plots of land. Being a short-cycle crop, it performs well even when rainy seasons are short. Moreover, small- and large-scale irrigation is relatively developed in some parts of Central-Eastern Oromia, making it one of the highest potato producing areas in Ethiopia. Additionally, at highland altitude, the incidence of certain potato diseases such as late blight is limited.⁴

Different potato varieties are planted in Central-Eastern Oromia. *Jalene* and *Gudene* varieties are widely grown. Maturation, disease resistance and post-harvest durability are all factors taken into account, alongside productivity, for the selection of varieties. Despite its supply is still inadequate, *Belete* variety was recently introduced in the area, especially in West Arsi zone, recording remarkable yields (up to 70 tonnes per hectare) and blight resistance. Producers also plant local varieties such as *Agazer*, *Nech Ababa* and *Wechecha*. Some producers in Arsi zone plant *China* variety because of its short maturation terms, even though it provides lower yields. Also, *Menegasha* variety is preferred by a number of farmers in East Shewa zone because of its resistance to rust contamination.

⁴ Ecological conditions affect distinct stages of the pathogen life cycle, influencing late blight (*P. Infestans*) development. There is a considerable amount of data on the ecological requirements of *P. Infestans* and it would be reasonable to assume that the different stages of the pathogen life cycle could have developed different ecological requirements in warmer regions, making more plausible its adaptation to lowland areas or hot summer seasons.

FIGURE 9: Potato production in Central-Eastern Oromia



Source: Own elaboration from Oromia Irrigation Development Authority's data.

In Arsi zone – the one with the highest productivity in Central-Eastern Oromia – potatoes are produced mainly during the main rainy season, while in West Arsi zone most of the potato production occurs during *Belg* (the small rainy season) as producers rotate potatoes with other crops throughout the year.

In Central-Eastern Oromia there were 54 453 hectares dedicated to potato cultivation, with an average yield of about 19 tonnes per hectare.⁵ As reported by the Oromia Irrigation Development Authority, 1.03 million tonnes of potatoes was produced in Central-Eastern Oromia in 2016/17. Arsi zone has the largest volumes of production with 546 thousand tonnes, followed by West Arsi zone with 313 thousand tonnes and Bale zone with 152 thousand tonnes. Digeluna Tijo *woreda* in Arsi zone is considered one of the best performing areas, with good prospects for potato surplus production.

⁵ The yield per hectare ranges between 18 tonnes in Bale zone and 24 tonnes in East Shewa zone.



Smallholder producers

Smallholder farmers are the majority of potato producers in Central-Eastern Oromia. On average, potato production is characterized by scarce innovation and low technology adoption. Despite the presence of suitable soils and favourable agro-ecological conditions, poor agronomic practices (i.e. the incorrect use of inputs – especially fertilizer and seed – and the inability to overcome plant diseases and parasites) result in low productivity, sometimes barely reaching 10 tonnes per hectare. On the other hand, model farmers in Arsi zone are able to produce up to 50 tonnes per hectare, with good agronomic practices and adequate inputs such as improved seed varieties, fertilizer and other agro-chemicals.

Smallholder producers have limited access to chemicals and pesticides. Most potato producers access fertilizers through cooperatives and only a few purchase from local traders. The majority of smallholder farmers rely on locally produced potato seed and receive little or no support from other value chain actors (e.g. input suppliers). In addition, although fertilizer is supplied by most of primary cooperatives, usually there are delays in distribution and inadequate amounts per hectare.

Box 2: Example of smallholder potato producer in West Arsi zone

In West Arsi zone, a typical smallholder producer utilizes half of his land (approximately 1 hectare) for potato cultivation. Over a yield of 10 tonnes, approximately 15 percent is used for household consumption and 80 percent is sold to the market. The rest is kept as potato seed.

The bargaining power is very low during harvesting season when trading activities reach peak levels and the market is saturated. The price at farm gate is approximately ETB 400 per quintal, during harvesting time. This is set directly by local collectors, since the farm is isolated from town markets and not equipped with a storage facility.

Source: Direct field observation.

According to the Irrigation Authority in Dugda *woreda*, East Shewa zone the cost of inputs (i.e. improved seed, irrigation, fertilizers, herbicides, fungicides, etc.) per hectare is around ETB 200 000. Most smallholder producers in Central-Eastern Oromia cannot afford such investment. Nevertheless, when they do and follow good agronomic practises, profits could reach up to ETB 700 000 per hectare.

2.3.3 Aggregation

The aggregation node is of key importance in the potato value chain, especially for rural producers that are located in remote areas and have limited connection with markets. Adequate infrastructure for aggregation are often lacking in Central-Eastern Oromia, resulting in key issues related to the volumes, sales, price, and quality of potatoes.

Post-harvest handling includes a number of important activities that determine the profitability of potato production, specifically: sorting, grading, packing, storing, transportation, and loading and unloading of the produce. Potato producers and traders are the most important actors at aggregation node.

Household storage

Smallholder producers rarely store their produce within the household for three main reasons: (i) immediate cash needs; (ii) dependency on traders that buys only at harvesting time; and (iii) reliance on traditional storage systems with high post-harvest losses.

When producers store their potatoes, they do so inside their houses. They separate damaged and undamaged tubers and use the bruised ones for household consumption. Medium and large-sized potatoes are kept for sale, while small-size potatoes are commonly used for potato seed.

Some producers use a traditional storage method, which consists of a granary-like structure built inside the house. Although this is the most efficient low-cost practice for storing potatoes, such method is not enough to avoid produce deterioration; potatoes are likely to rot and/or sprout during wet periods.

TABLE 1: Proportion of potato producers using different storage methods in Shashamene (West Arsi zone)

	Sacks	In-house storage	Underground	Warehouse
Storage Method	12%	72%	4%	12%

Source: Emana *et al.*, Potato Value Chain Analysis and Development in Ethiopia.

Local aggregators

Small-scale traders gather potatoes from smallholder producers at village markets or directly at the farm gate. They assemble, sort, re-pack and transport potatoes to markets located in larger villages and towns. Mostly, local collectors are part-time producers or non-licensed traders; they act as the first link between potato producers and the market. Often, most local traders act as agents for rural wholesalers. They use their knowledge (i.e. understanding of surplus areas and prices)

to establish linkages with producers. They play a key role in the value chain as they engage in multiple activities like aggregation, transportation and marketing.

Some small-scale traders buy potatoes and store them in view of selling at a negotiated price to wholesalers and retailers. Nevertheless, this business is highly risky as there is no market guarantee and significant price fluctuations.

Cooperative actions

In 2018, there were a total of 476 horticulture cooperatives (mainly producing potatoes, tomatoes and onions) registered under the Irrigation Development Authority in Arsi, Bale, East Shewa and West Arsi zones – with a total current and fixed assets of ETB 30 174 708. Primary cooperatives in Central-Eastern Oromia usually own storage facilities and perform aggregation activities for their members. However, most of the warehouses are small and lack a standard design.

Women participation as cooperative members is significant but still small when compared to male participation.⁶ In addition, women are heavily underrepresented at management level where the inequality is even more evident.⁷ Nevertheless, examples exist of women-dominated cooperatives in some contexts in Central-Eastern Oromia.

2.3.4 Processing

Potatoes are an integral part of the diet of many Ethiopians, from urban dwellers to rural population. Many potato dishes are part of the traditional Ethiopian cuisine as well as new trends, especially in urban areas. *Dinich wot* (potato stew), potato bread, mashed and boiled potatoes, potato chips and fries are widely known and consumed.

In Central-Eastern Oromia, potatoes are commonly processed (boiled or fried) by small-scale street vendors and cottage processors. In the streets of cities like Shashemane, Adama and Bishoftu it is possible to buy freshly processed French fries from street vendors with a small fryer as their sole equipment. Hotels and restaurant also include French fries in their menus.

⁶ The number of members of the 476 primary cooperatives in Central-Eastern Oromia was 30 112 (80.4 percent males and 19.6 percent females).

⁷ As reported by the founder of a female-dominated multipurpose cooperative in West Arsi, the task of financial management is yet performed by men given women's low levels of literacy and numeracy.

Box 3: Example of a primary cooperative in West Arsi zone

KELO DURO PRIMARY COOPERATIVE

Kelo Duro is a multipurpose cooperative active in Arsi Negele *woreda*, West Arsi zone. It serves six villages, namely Adaba, Tita, Sayo Maja, Danshe, Marero Hawilo, Gonde Gurati and Wetera. It was established in 2002 and currently has 1 172 members (88.8 percent males and 11.2 percent females). Kelo Duro is a member of the Uta Wayyu union since 2006.

The major crops grown by members are cereals (wheat, barley, teff) and potatoes. This primary cooperative was established with the objective of providing inputs (improved seeds, fertilizers and agricultural tools), marketing and access to market information, and credit services (input finance) to members. On average, the land holding size of a member is 1.55 hectares.

Source: Primary Cooperatives Gap-Assessment to Link with MFIs for Input and Output, Agriterria, 2018.

Box 4: Example of commercial potato processing in Ethiopia

SENSELET FOOD PROCESSING

Senselet Food Processing was established in Ethiopia by Veris Invest, an impact investor in food and agri-chains. The company process, sale and market potato products (i.e. potato chips).

The factory is planning to source potatoes from 2 500 smallholder producers by 2022. The quality criteria include size, firmness of the skin, form, degree of dust, and stains. Since the factory needs a year-round supply, the presence of irrigation system is critical during the identification of producing areas.

Another company, Solagrow Plc, delivers potatoes to the Senselet factory. Fresh potatoes are sourced mainly from Ziway and Meki areas in East Shewa zone, where Solagrow has its own land and promote an out-growers scheme with local smallholder producers.

Source: Direct interview and web-site.

Commercial processors

Large-scale (industrial) potato processing is non-existent in Central-Eastern Oromia. Nevertheless, in Ethiopia there is one processing plant, located near Addis Ababa, which sources potatoes from East Shewa zone.

2.3.5 Distribution

In the informal channel, potatoes are distributed directly from producers to consumers, or pass through one or more intermediaries up to small-scale retail shops in village markets and rural towns (when transport is available and affordable). No license is required to operate, implying low cost of transaction but high producer price compared to formal market operations.

In the formal channel, potatoes are distributed from primary cooperatives to licensed wholesalers, which then sell to a wide range of retailers in urban areas. The influence of these actors on the value chain is, at times, over-emphasized, although wholesalers' role must not be underestimated as they are key players.

Transportation influences significantly the level of competitiveness of the potato value chain. Given the short post-harvest life of potatoes, losses are frequent during transportation. Often, producers carry potatoes to marketplaces using horse or donkey carts, resulting in long journeys that can take even days, especially during the rainy seasons.

Rural (small-scale) wholesalers

Rural wholesalers are licensed traders who collect potatoes from smallholder producers and local aggregators. In Central-Eastern Oromia, small-scale wholesalers buy potatoes in bulks at village markets and resale them to other *woredas* and main urban markets such as Asella and Etaya in Arsi zone. Usually, they own storage facilities where they keep potatoes for a short period.

On average, rural wholesalers have better storage facilities, transportation means, and access to information than small-scale traders and primary cooperatives. Often, they have links

with large-scale (regional) wholesalers, which distribute in large towns like Adama and Shashamene; sometimes these links are guaranteed by intermediaries.

Intermediaries play a role in potato marketing because they tend to set market prices and earn extra profit in the process. They do not possess trading licenses but manipulate prices and, as a result, influence the efficiency of the potato value chain.

Large-scale wholesalers

Large-scale wholesalers operating throughout Central-Eastern Oromia handle bulk transportation and distribution at regional level. They distribute potatoes at a wholesale price to urban retailers such as supermarkets, restaurants, hotels, urban shops and cafes. Large-scale wholesalers also supply institutional buyers such as hospitals, schools and the army. Wholesalers' trading activities reach peak level during harvesting season when those with sufficient storage capacity and capital buy large amounts of potato in order to supply the market later in the year, when prices increase again.

Addis Ababa is the main urban market of large wholesalers from Central-Eastern Oromia. There are about 17 large-scale wholesalers in Addis Ababa's market, selling over 1 100 tonnes of potato per year.

Retailers and consumers

Retailers mostly buy potatoes from wholesalers and sell them to final customers, along with other types of vegetables, through their stores and open stalls in urban and rural markets. At times, they also buy directly from producers. Women are present at the distribution node as owners of small grocery stores and as salespersons in retail shops or large supermarkets, mainly in urban areas.

Normally retailers handle small quantities of potato, since most of the bulk buyers (e.g. schools, hospitals, hotels, prisons, etc.) source potatoes from wholesalers. Most of the open market retailers have their own trucks as they supply potatoes to their stalls independently.

Open markets happen daily in most of the cities and towns across Central-Eastern Oromia; however, Addis Ababa is the major market and a central hub for vegetable distribution and redistribution. Fresh fruits and vegetable shops are sprouting in towns like Adama and Sheshamene. In these shops, potato is always available as retailers source their products from open-air markets, commercial farmers and importers as well.

Roadside retailing (under temporary sheds in crowded areas) is another common practise in Central-Eastern Oromia. Mostly, roadside retailers receive potatoes and other vegetables directly from nearby smallholder producers; in some instances, producers themselves engage in roadside retailing.

Consumption reflects the seasonality of the crop, especially in rural areas: it is higher during harvesting season because of greater availability and lower prices of potatoes. Two major types of consumers are present in Central-Eastern Oromia: individual consumers and institutional buyers. Individual consumers are high in numbers but purchase small quantities. Contrarily, institutional buyers are limited in numbers but purchase large amounts of potatoes.



2.3.6 Physical Inputs

Adequate supply of quality inputs at an affordable price is critical for enhancing potato production and productivity in Central-Eastern Oromia. Public seed multipliers produce the largest quantity of improved potato seed, and inputs such as fertilizers and agro-chemicals are supplied by the Government through primary cooperatives and unions. The involvement of the private sector is limited as few private suppliers import and re-sell inputs to unions, wholesalers and retailers.

The Ministry of Agriculture and Livestock Resources, the Oromia Bureau of Agriculture and public institutes such as the Holeta Agricultural Research Centre are key players in agricultural inputs delivery for potato production.

Seed producers and suppliers

The national production of certified seed covers only 0.2 percent of demand. Only 800 tonnes is produced per year, while the annual demand for potato seed accounts for approximately 330 000 tonnes.

Producers in Central-Eastern Oromia use either their self-produced potato seed or they purchase it from neighbours through the informal channel. Individual farmers often multiply their own seed, selecting the best performing varieties and preserving them in order to sell them to neighbouring farmers. This informal channel dominates the potato seed supply chain, although quality is scarce: producers experience low yields and high incidence of diseases. Furthermore, local multipliers have limited access to information regarding improved seed, hence they depend on local poor varieties selected and preserved according to their limited knowledge.

Some public and private companies are engaged in potato seed production as a formal business; however, informal seed multiplication is dominant. Primary cooperatives' members often use local seed saved at household level or sourced from other producers nearby. Unions usually collect the seed from the regional warehouses and distribute at *woreda* and *kebele* levels. They charge for transport, loading and unloading but the profits for seed distribution are limited as the regional governments determine the margins.

Box 5: Example of a commercial potato seed producer in Central-Eastern Oromia

SOLAGROW PLC

Solagrow Plc is the only licensed potato seed producer in Ethiopia capable of producing export-quality potato seed. The company is currently operating in different parts of the country, including Bekoji area (Arsi zone).

Currently, Solagrow expanded its business to the whole potato value chain from production to marketing. The company supports smallholder producers engaged through an out-growers scheme with inputs (quality seeds) and technical support on good agronomic practices. The major challenge is offering complete production packages (i.e. seeds, fertilizers, barley for crop rotation, pre-finance/microfinance, training, etc.) to enable potato growers in producing adequate quantity and quality.

Solagrow is cooperating with the Ethiopian Institute for Agricultural Research as well as with the International Potato Centre and the International Livestock Research Institute. In addition, it is collaborating with Adama University and Wageningen University on the improvement of crop production.

Source: web site.

Research institutions provide base seed that is consequently distributed to cooperatives, unions and private farmers through the Ministry of Agriculture and Livestock Resources and the corresponding regional bureaus based on the assessed amount of demand of each *kebele* and *woreda*. However, the gap between research institutions and farmers needs to be closed as rural areas producers rarely benefit from innovations, trainings and affordable inputs.

Suppliers of fertilizer and other agro-chemicals

Potato producers in Central-Eastern Oromia use organic fertilizer such as manure and compost as well as inorganic fertilizer such as nitrogen and phosphorus, depending on

the availability of chemical fertilizer and of the size of the cultivated land.

Fertilizer delivery has improved over the past few years, and producers have less problems accessing it from primary cooperatives; however, for other agro-chemicals this is rarely the case. Most retailers supply low quality products (sometimes expired or not effective) that result in reduced incomes and economic losses for producers.⁸

The only fertilizer producer in Central-Eastern Oromia is the Tulu Bolo Fertilizer Blending Facility, which was inaugurated in 2014. The plant imports chemical inputs and blend them locally with a maximum production capacity of 100 tonnes per year.

The major inputs retailers are primary cooperatives, unions and traders in local markets that operate small shops in villages and towns in Central-Eastern Oromia. Most primary cooperatives and unions access fertilizers from the Agricultural Inputs Supply Enterprise, a public enterprise that buys and distributes agricultural inputs, including seeds, fertilizers, agro-chemicals and veterinary drugs, vaccines, and laboratory equipment.

2.3.7 Non-financial services

In Central-Eastern Oromia, main providers of non-financial services in the potato value chain are Government agencies at federal and regional levels (including research and higher education institutions), Non-Governmental Organization and development partners.

The Ministry of Agriculture and Livestock Resources and the Oromia Regional Bureau of Agriculture provide training on inputs utilization, good agronomic practices, marketing and commercialization as well as business advisory services through the Government extension system. Non-Governmental Organizations and development organizations also support value chain actors at different levels such as construction of irrigation facilities and credit.

⁸ Estimated cost of insecticide is ETB 1 000 per litre.

Some primary cooperatives and unions assist farmers with training and supervision on seed production and potato cultivation. In addition, cooperatives are responsible for linking farmers with inputs and service providers and with research institutions.

Finally, Government authorities have registered positive results in increasing women's participation as members of cooperatives and as recipients of trainings in an endeavour to achieve the targets set by the Federal Cooperative Agencies aiming at 30 percent women's membership. The Ministry of Women, Children and Youth Affairs established in 2011 oversees an articulated gender machinery established to translate gender equality and women's empowerment objectives into practices. Gender is mainstreamed horizontally in coordination with other line ministries and vertically, from the highest level of federal administration to grassroots associations such as the Women Development Army. Significantly, several continuing initiatives such as forums, annual conferences, platforms, networks and thematic groups are in place to discuss and advance the debate on gender equality and women's empowerment encompassing local, federal, international governmental and non-government organizations as well as grassroots women's associations.

2.3.8 Financial services

Finance service providers are essential for the development of the potato value chain. Microfinance institutions and commercial banks provide very limited loans to farmers and cooperatives in Central-Eastern Oromia. Cooperatives and unions, for their part, are often unable to deliver credit due to limited finance as well as managerial capabilities.

A number of commercial and microfinance institutions are active in several towns in Central-Eastern Oromia, providing short and long-term loans to their customers. Usually, commercial banks only serve large clients with sufficient collateral, while microfinance institutions avail short-term loans to micro and small enterprises.

At present, in Central-Eastern Oromia only limited support is provided to smallholder potato producers (both men and women) who report limited access to adequate credit and finance to improve their activities. However, this system has had significant challenges due to significant defaults, especially poor areas where there is limited access to financial institutions and, when credit was delivered, farmers used it improperly.

Nevertheless, some initiative are arising such as STARS (Strengthening African Rural Smallholders) program, launched in 2017 by Icco Terrafina Microfinance in collaboration with MasterCard Foundation on access to agricultural and financial services for rural smallholder farmers in the value chains of malt barley and potato. The program supports Microfinance Institutions to develop and implement suitable financial products for farmers. Through individual or group loans, 60 000 farmers will be able to improve their position in the value chains, diversify their crops and increase their production and food security.

2.3.9 Technology upgrading and utilization

The performance of the potato value chain in Central-Eastern Oromia is affected by low technology levels in production and in post-harvest handling, resulting in low yields per hectare, produce deterioration and poor quality.

Research is fundamental to ensure higher yielding, disease-resistant seeds, suitable potato varieties for different agro-ecologies and high-quality inputs in general. The Holeta Agricultural Research Centre coordinates all research activities on potato improvements, including joint venture research activities with agricultural universities and colleges to verify and demonstrate promising technologies on-farm. It is the only institution that serves as a centre of excellence for potato research in Ethiopia. Nevertheless, improved potato seed varieties produced in this institution hardly get to Central-Eastern Oromia.

2.3.10 Value chain governance and linkages

The potato value chain in Central-Eastern Oromia involves many actors but generally, there is a lack of collaboration among them. Also, the value chain is characterized by a disproportionate share of benefits among the actors. Producers receive a small share around 30 percent of the profit margin, while aggregators and distributors (i.e. collectors, wholesalers, and retailers) jointly share the remainder of the profit margin. A number of intermediaries play facilitation roles with very limited value addition.

There is limited support to producers on quality potato production and supply of adequate production inputs. As a result, potato producers in Central-Eastern Oromia are not able to increase potato productivity. Also, timely information on the price of potato, available technologies and other services that would improve the quality and quantity of potato either is absent or fragmented among the key actors.

There is no strong linkage between producers and buyers. Cooperatives and unions are important players, although their role in the governance is limited due to gaps in management and financial capacity. They can incentivize quality production and guarantee markets, but contractual agreement between suppliers and buyers is not very common. In addition, they play a very important role in mitigation of conflicts between buyers and suppliers.

The linkage between research institutions and producers is minimal or non-existent. As a result, the knowledge of producers on farm technologies generated by the research institutions remains inadequate. Improved potato seed varieties produced in research institution is mainly supplied to a limited amount of producers, while the majority of producers are hardly reached and rely on their own seed and from individual suppliers through the informal market.

Women and men both participate in the governance of potato value chains in Ethiopia but not to the same extent. The limited membership of women in the cooperatives and in management positions are an indication of the marginal position they hold in the value chain governance.

Policy framework

The Ministry of Agriculture and Natural Resources, the Government's main arm for agricultural and natural resources policy formulation and technical supervision, undertake horticulture development including design of strategies, preparation of programs, capacity development, provision of trainings and coordination of national agricultural development projects.

Land reform was implemented in 1998. As a result, systematic registration and user-right certification have taken place in Oromia regional state since 2002. Land is state property and citizens have user rights. Foreign investors are permitted to mortgage leased land. Currently, farmers have the right to use the land indefinitely, lease it out temporarily to other farmers, and transfer it to their children, but they cannot sell it permanently or mortgage it. The Family Code recognizes the equal rights of a married woman to the possession and administration of personal property; it envisages "community of property" in relation to property acquired after marriage and the joint administration of family property.

Ethiopia has issued a liberalized investment policy in which both domestic and foreign investors can operate. A comprehensive investment code has been put in place with Proclamation No. 37/1996. With the objective of promoting domestic investment and the inflow of foreign capital and technology into the country, the Ethiopian investment code provides the various packages of fiscal incentives to both foreign and domestic investors engaged in new enterprises and expansions, which include smallholder and commercial horticulture businesses. Licenses are issued by Trade and Industry Bureau of Oromia Regional State and the criteria for issuing license are working capital, experience and working space of the applicant, among others.



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PART 3

SYSTEMIC CONSTRAINTS AND UPGRADING OPPORTUNITIES

This section analyses and discusses major constraints related to the potato value chain in Central-Eastern Oromia. Specific

attention is paid to gender-based constraints at each node of the value chain.

3.1 CONSTRAINTS RELATED TO THE CORE VALUE CHAIN

Below are discussed the major constraints at production, aggregation, processing and distribution nodes.

Production-related

3.1.1 Lack of certified **improved seed** is a major challenge for potato producers in Central-Eastern Oromia. Their volumes of production are insufficient and there is inadequate supply of certified seeds, resulting in shortcomings in seed availability and timeliness of delivery. The utilization of non-certified seeds significantly reduces the productivity of potato.



3.1.2 Individual potato producers depend almost entirely on informal sources such as farm-saved seeds (small tubers from the previous harvesting season) from neighbours and relatives and from local markets. Local **seed multipliers** have limited access to information and depend on low-quality local potato varieties selected and multiplied according to individual knowledge.

3.1.3 The high cost of agro-chemicals limits their use and potato producers either refuse to purchase **fertilizer** or apply inadequate amounts per hectare. In addition, the use of the same type of chemicals repeatedly allows pests and diseases to develop resistance. There is limited availability of **pesticides and fungicides** – both in quality and quantity – and producers have limited knowledge on type, dosage, application techniques and timing. The frequency of potato diseases such as late blight (caused by *P. infestans*) is a major issue, contributing in poor potato yields and huge post-harvest losses.

3.1.4 Also, producers in rural areas have insufficient knowledge of **good agronomic techniques** (e.g. planting, weeding, harvesting, etc.) for business-oriented commercial potato production.

3.1.5 The use of **irrigation** is limited to certain parts of Central-Eastern Oromia; in many areas potato production is rain-fed. Diffusion of modern irrigation technologies is very limited with serious consequences related to utilization (overconsumption and misdistribution) of available water resources.

3.1.6 Most smallholder farmers cannot afford the initial investment on inputs that commercial potato production requires. **Mechanization** is limited and most of smallholder producers cannot afford farming equipment and implements, thus performing most of the farming activities manually. Mechanized agriculture is limited primarily because technology importation tariffs are unsustainable and, additionally, land fragmentation deters investments from producers operating in small plots of land.

3.1.7 One of the major constraint in potato production is **seasonality**. Seasonal production limits profitability because prices are high during the growing period and low during harvesting season. Off-season potato production is limited where irrigation is available.

Aggregation node

3.1.8 In Central-Eastern Oromia storage of potatoes for sale and consumption is traditional. Adequate **storage facilities** are generally missing along the value chain, especially in rural areas. Inadequate infrastructure for aggregation of potato is the main reason for quality deterioration and **post-harvest losses**, with implications on prices and sales volumes. Diffused Light Stores are not uncommon to store seed tubes on trays or racks, although such storing method is not enough to avoid losses and product deterioration.

3.1.9 The aggregation node involves a large number of stakeholders but most of them play a facilitation role without adding real value. The role of cooperatives is not effective and many cooperatives are unable to reduce their transaction costs due to inefficiencies. **Intermediaries** dominate the value chain, while the role of producers and cooperatives is limited and so is their benefit (that sometimes is not enough to cover costs). Also, the lack of storage facilities exposes to oversupplying the market, ultimately reducing bargaining power with intermediaries. On top, brokers and local collectors often cheat on weight measures or disregard settled agreements with producers.

3.1.10 In addition, **transportation** is particularly important at the aggregation node. Given that potato has short post-harvest life, losses occur frequently during transportation. Poor road conditions, transportation practises and inadequate logistics contribute to high post-harvest losses (damage and bruises) as well. Also, smallholder producers are often geographically dispersed, making transportation costs very high.

3.2 CONSTRAINTS RELATED TO THE EXTENDED VALUE CHAIN

The performance of the potato value chain is also influenced by aspects that are out of the control of the core value chain actors, such as provision of quality inputs, availability of extension/advisory services and policy aspects. In addition, governance issues (i.e. linkages and coordination) can limit the possibility of actors to take on certain activities along the value chain.

Support services

Business-development support providers play an essential role in facilitating the value chain process. Challenges related to support services contribute to the inefficiency and ineffectiveness of the core value chain actors.

3.2.1 There is no organized structure for improved potato seed production and commercialization. The Government's method to **estimate supply and demand** of potato seed (based on *woreda* and regional bureau's evaluations) is inaccurate.⁹ Consequently, the availability of certified seed consistently falls short of demand, and most producers in rural areas use uncertified seed.

3.2.2 In Central-Eastern Oromia, suppliers provide inputs that are mostly imported and the agro-chemicals' **supply and distribution system** is inadequate, hindered by logistics issues and market constraints (resulting in excessive prices and ultimately in dissatisfactory yields). For example, often due to lack of efficient coordination and logistic services fertilizers do not reach farmers before planting time.

3.2.3 Affordable **mechanization services** are rarely available in Central-Eastern Oromia and most potato producers use animal traction.

3.2.4 The capacity and resources of the public **extension system** are too limited to meet the needs of rural producers. Local Development Assistants struggle in the delivery of targeted trainings as well as in monitoring and follow-up. Also, the technical support is not specific on potato production techniques and input utilization, as well as on post-harvest handling of potatoes.

3.2.5 Similarly, support and follow-up received by smallholder producers from **primary cooperatives and unions** is very limited. Cooperatives in particular are involved in input supply and marketing of potatoes, but face difficulties due to limited financial resources as well as managerial capabilities (weak organizational set-up). When present, **cooperative managers** often lack sufficient competencies (e.g. business and entrepreneurial skills) required to compete in the market, and conflict of interest is common.

3.2.6 **Research centres** lack adequate equipment and facilities as well as trained professionals specialized in potato seed research and other technology research. An efficient **technology transfer system** is not in place to link knowledge generation to value chain actors (i.e. weak linkages between research, extension services and technology users).

3.2.7 Access to **information** (e.g. market prices, quality requirements, agronomic and weather information) is limited and communication mechanisms remain largely traditional (i.e. latest ICTs, which are widely adopted in other countries, have not yet made their way into rural communities and the extension system).

3.2.8 Generally, smallholder producers in Central-Eastern Oromia face issues related to limited **access to credit and financing**, especially for production inputs and machinery. The most common sources of finance are informal (e.g. informal moneylenders or personal savings) as loans

⁹ Official projections are developed at *kebele* level and then aggregated at national level to produce estimates of the quantity and quality of seeds needed by producers in the following season; this results in a rough estimates that don't consider shifts in demand.

from commercial banks are difficult to access and credit availed by microfinance institutions is insufficient. Finally, smallholder producers cannot afford **insurance products** in order to safeguard their crops from natural hazards.

Business enabling environment

The business environment is influenced by several factors such as policies, regulations and programs related to land, market, trade, food safety and quality, and public infrastructure (i.e. energy, ICT, roads, water, market facilities, etc.) among others.

3.2.9 In Central-Eastern Oromia, **formal contractual agreements** are not common and the absence of appropriate mediation and arbitration mechanisms ultimately affects quality, quantity and price of potato.

3.2.10 The absence of legal-binding agreements and the lack of clear laws and policies enforcement mechanisms affect directly the income of value chain actors; the **informality** of the selling-purchasing agreements implies unguaranteed end-market opportunities for producers. Smallholder farmers are forced to rely on informal market outlets within a short distance from the production area, selling at low farm-gate prices in order to avoid large amounts of post-harvest losses.

3.2.11 There is no **standard price** for potato in Central-Eastern Oromia. The price is imposed by intermediates that usually set a low farm-gate price to boost their profit margin at end-markets. Moreover, the absence of price standardization and the scarce access to information along the value chain allow intermediaries to conveniently disregard verbal agreements.

3.2.12 The market is affected by **financial settlement problems** related to verbal purchase and sale agreements. Because of such problems and other contract defaults, the potato market is characterized by frequent intervention of courts to settle such disputes.

Value chain governance

Often, there is a lack of coordination and synergies between the public and private actors, and this affects the efficiency and competitiveness of the value chain.

3.2.13 Producers are a broad base of men and women that participate in the value chain as main actors, but have **limited or no influence** over decisions and governance issues. In Central-Eastern Oromia, this attitude varies based on location, gender and educational level. In addition, the **role of cooperatives and unions** in influencing relevant policies is minor.

3.2.14 There is **low vertical integration** along the value chain. Since there is little or no meaningful interaction and relationships between potato producers and retailers, the gap is filled by **non value-adding actors** that control prices. Intermediaries determine the amount and flow of potato produce, which in turn affects the price. They boost their margins by imposing low prices and often cheat on weight measures and disregard verbal agreements with producers.

3.2.15 Also, insufficient **coordination** among smallholder producers negatively affects their bargaining power and increases marketing costs as producers often conduct transactions individually. Moreover, proactive communication, joint efforts and preparations are lacking between value chain actors and supporting institutions.

3.2.16 There is a lack of **synergies** between the public and private sectors, and this affects the efficiency and competitiveness of the value chain. On one hand, Government's control and intervention does not encourage the participation of the private sector in the extended value chain and, in some instances, is crowding out private investments; on the other hand, private actors do not want to get involved in what is perceived to be the scope of Government's services. A general lack of **entrepreneurial approach** translates into a tendency to depend on external aid and support.

3.3 CONSTRAINTS RELATED TO THE NATIONAL ENABLING ENVIRONMENT

Core value chain actors and support providers in the potato sub-sector operate in a particular enabling environment (e.g. socio-cultural elements, institutional elements, organizational elements, infrastructural elements and natural environmental elements).

3.3.1 There is limited **alignment of objectives and activities** between Government agencies at national, regional and local levels. This results in lack of coordination (for example, between the federal Ministry of Agriculture and Livestock Resources and the regional Bureau of Agriculture) and conflicting initiatives in support of the horticulture sector.

3.3.2 Generally, lack of **policy coherence** is a major issue. Also There is no grading system policy geared towards matching the quality of potatoes to the market demand, and the absence of a marketing policy is a big gap. In addition, one of the main challenges is that current pricing schemes cause disincentives for producers since market prices are often more than double the prices at farm-gate level.

3.3.3 The overall level of infrastructure needs to be improved. Poor roads conditions often impede trucks from reaching the farm gate and force smallholder producers to take care of the transportation with their own available means.

3.4 GENDER-BASED CONSTRAINTS AND CHALLENGES AT INDIVIDUAL AND HOUSEHOLD LEVELS

Gender dynamics influence the way individuals interact and, therefore, the way the value chain works. Several factors challenge smallholder farmers, both women and men, in their endeavour to seize opportunities within the value chain. Women though are disproportionately affected.

Gender inequality is a major challenge for women to fully participate and benefit from development endeavours in the potato sub-sector. Established gendered patterns might contribute to reinforcing existing inequalities: gender-based constraints reduce opportunities for business expansion as well as for income diversification (e.g. through processing and value addition).¹⁰ Notably, these hamper opportunities not only as individual actors but also as households.

This section presents an insight into the varied socio-cultural context of Central-Eastern Oromia, highlighting challenges and gender-specific constraints at individual and household levels that affect performances and profitability of the value chain.

3.4.1 **Local traditions and norms** play a critical part in shaping women and men's roles. They also contribute to determine the extent to which individuals participate and benefit from economic activities. In Central-Eastern Oromia, inequalities in terms of division of labour vary highly from urban to rural areas and depend on education levels, religious and cultural background, adherence to social norms, exposure to training and good practices, and gender awareness. A **patriarchal socio-cultural set-up**, particularly present in rural areas, is one of the key causes of women's limited power and agency.

3.4.2 Limited education of men and women is a major challenge. Children in rural areas tend to start their **education** at the age of seven, when they are strong enough to walk long distances to reach the school. According to key

¹⁰ As observed during field-based interactions with farmers, the extent to which women and men have access to knowledge, inputs, assets and the visibility of their work in agriculture has much to do with an issue of identity. More specifically, with their identification (or lack of) as farmers within the household, as a productive unit, and within rural communities in general. The identity factor is connected to decision making dynamics within the household and conditions of access to value chain governance structures.

informant interviews, girls are more likely than boys to drop out of school. As reported, the reasons for girls to abandon their education include the need to contribute to heavy household chores and, in some cases, early marriages.¹¹

3.4.3 Heavy work burden, unbalanced diet, early pregnancies, harmful traditional practices and harassment expose women to a number of **health challenges** that may hamper their effective involvement in productive activities; these include fistula and HIV/AIDS. The heavy workload involved in reproductive and productive tasks and the prevailing societal expectations confine rural women to the homestead.

3.4.4 Women are involved in most productive tasks throughout the year (on top of family chores), while men's workload is aligned with crops seasonality, with relatively light engagement off-season. Hence, generally, women are exposed to a much **heavier work schedule** than men. For example, ploughing is the only one exclusively conducted by men, while women are heavily engaged in all other crop-related activities including seeding, mowing, weeding and trashing.

3.4.5 Women's **access to inputs and technologies** is directly related to whether or not they are perceived as farmers. In some contexts, economic benefits are appropriated by the male-headed household and women have lower access to productive resources than men. Women in male-headed household and in polygamous marriages are particularly affected. Despite the legal provisions of federal and regional laws envisaging joint **land certification** of husbands and wives, existing customs favouring male dominance still hinder women's effective access to and control over land.

¹¹ The legal age of marriage in Ethiopia is 18 years for both girls and boys, but this law is not always enforced. Key informants reported that in certain areas of Central-Eastern Oromia girls get married as young as 14-15 years old. Ethiopia's Criminal Code outlines special provisions to punish the perpetrators of early marriage. However, Ethiopia has no functional national or regional system to register births, deaths, marriages, and divorce, making it difficult for authorities to prove that a girl is under-age.

3.4.6 Women's **access to knowledge and skills development** is limited and usually confined to traditionally gendered domains and tasks. Women are not targeted strategically by service providers and extension services¹² and, generally, men are those enjoying the greatest benefits from extension services in part due to women's mobility constraints. In male-headed households, women tend to have limited access to capacity development interventions and to improved agricultural technologies and packages promoted by the extension system. As a result, women knowledge tend to be empirical and/or anecdotal. In addition, counselling and training services might be offered without considering women's preferences in terms of time and location of training thereby limiting women's opportunities to participate. This systematically prevents women from engaging in diverse, more productive and profitable activities.¹³

3.4.7 Household's dynamics affect women's effective participation and representation in rural institutions, organizations and public life as well as their access to resources. Men are generally in **control over production benefits**, they can claim membership in cooperatives and make strategic decisions on seeds adoption mainly based on their access to training and extension services. Except for female-headed households, control over monetary gains from the sale of potato remains a male prerogative, as men are those typically responsible for undertaking economic transactions. Women though are left in control of the marginal profits deriving from other gendered farming activities.

¹² Significant inequalities are related to the higher prevalence of male extension workers. Often, within the household extension services are provided to men on the assumption that they will pass the knowledge acquired to their wives, but this seldom happens in reality. Also, in some areas it is considered inappropriate for male extension agents to approach women farmers and to talk to women alone.

¹³ As reported by extension services, those women having accessed training activities, displayed higher levels of participation and interest than men, and endeavoured to immediately translate the acquired knowledge into practice. This may indicate a different predisposition of women and men toward initiative and resourcefulness.

3.4.8 Generally, women's participation as **members of cooperatives** is low and they are almost absent from leadership positions. The share of women's membership in agricultural multipurpose, seeds and irrigation cooperatives is still below the targeted levels. Women's limited participation in cooperatives certainly represents an issue to be addressed, considering that cooperatives are the closest entry points for rural communities to a formalized value chain. Differently, women outweigh men as members in local saving and credit cooperatives, reflecting their lack of access to other types of financial institutions.

3.4.9 **Access to finance** opportunities for farm expansions and diversification remains a challenge for both women and men, although women are more disadvantaged.¹⁴ Husband or wife alone cannot access credit without consent from

¹⁴ A study conducted by FAO in 2016 revealed that female-headed households received smaller amounts of credit than male-headed households from either a bank or cooperative.

each other; this limits women's ability to make independent decisions on how to invest the money but also it guarantees re-payment at household level. The **availability of collaterals** remains the biggest challenge, particularly for women as limited ownership of assets and the need to obtain the husband's consent to present land as collateral poses an additional barrier to access formal finance institutions such as banks. In addition, women's limited education triggers a sense of inadequateness to approach financial institutions.

3.4.10 Finally, The lack of official **gender-disaggregated data** poses limits in terms of baseline assessment of gender implications for the IAIP strategy. In the absence of this type of data, it is hard to picture the actual contribution of women to the potato value chain as well as to monitor the impact of the IAIP intervention from a gender perspective.

3.5 OPPORTUNITIES FOR UPGRADING

There is great potential for increasing production and productivity of potato in Central-Eastern Oromia, in order to satisfy the growing domestic demand. The opportunity to upgrade the current production system exists in terms of product quality and productivity and/or the process by which the product is developed (i.e. operational upgrading). In addition, there are functional opportunities and channel upgrading opportunities.

The need for quality seed represents an opportunity for functional upgrading in Central-Eastern Oromia. The emergence of **specialized potato seed producers** strongly linked with research institutions would enhance the performances and competitiveness of the potato sub-sector.

Potato processing is another opportunity for operational upgrading. Ethiopia is one of the largest markets for potatoes

in Eastern Africa but relies on informal processing and import of processed products to satisfy its local demand. Although potato chips and French fries are largely consumed products, there is no potato processing company in Central-Eastern Oromia. The piloting of an **Integrated Agro-Industrial Park** will create market opportunities in the near future for producers located within the Agro-Commodities Procurement Zone, and will represent a means to develop the potato value chain in the area.

Additionally, the informality of the market represents an untapped opportunity as **shifting from informal to formal markets** will have benefits on the efficiency of the value chain and on the quality and safety of potatoes (traceability). The piloting of the Integrated Agro-Industrial Park initiative will provide the opportunity for formal business-to-business arrangements (e.g. contract farming) between producers and processors.



PART 4

STRATEGIC INTERVENTION PLAN

This section begins with the Vision and Targets (4.1.) for the development of the potato value chain in Central-Eastern Oromia. It details the envisaged Development Strategy (4.3.) to

address the systemic constraints identified in Part 3, and sets specific targets to be achieved by 2020. Finally, it proposes an Intervention Plan (4.4.) for public and private actors.

4.1 VISION AND TARGETS

By 2020, promote rapid and sustainable growth of the potato sub-sector in the Agro-Commodities Procurement Zone of the pilot Integrated Agro-Industrial Park in Central-Eastern Oromia, through:

- ◉ **enhancing production & productivity** of smallholder producers to attain Government's targets set for the Second Growth and Transformation Plan 2015-2020 period; **and**
- ◉ **strengthening commercialization** through the formalization of the market channels, in order to supply quality products to agro-processors and consumers.

Specific targets

This Strategic Analysis and Intervention Plan is aligned with the Government's plan for the development of the horticulture sector within the piloting of the Integrated Agro-Industrial Parks (see Box 6).

Box 6: Government targets related to the potato sub-sector in Ethiopia

In the Four Years Strategic Plan (2017-2020) for the Supply of Raw Material to the Integrated Agro-Industrial Park in Central-Eastern Oromia, the Government has set the following targets to be achieved during the Second Growth and Transformation Plan 2015-2020:

- ◉ Increase the quantity of potatoes supplied by cooperatives (from 642 780 tonnes to 1 035 200 tonnes);
- ◉ Increase the quantity of potato improved seeds supplied to producers (from 18 382 tonnes to 78 431 tonnes);
- ◉ Construct additional storage space for cooperatives and provide machinery and post-harvest equipment (5 warehouses per year constructed, to reach 20 new warehouses by 2020).

Accordingly, specific targets for the potato sub-sector in Central-Eastern Oromia can be set as follows:

i. increase the volumes of production by 10 percent from 1.04 million tonnes to 1.38 million tonnes in 2020;

ii. raise average productivity by 33 percent from 19 tonnes per hectare to 25.4 tonnes per hectare in 2020; and

iii. promote formalization of the market (based on cooperative actions) to increase the volume of quality potatoes reaching commercial processors.

4.2 SWOT ANALYSIS

This SWOT analysis focuses specifically on the potato value chain in Central-Eastern Oromia.

TABLE 2: Strengths and weaknesses of the potato value chain in Central-Eastern Oromia

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • The potato sub-sector has economic relevance and potential for employment creation; • The Government has an ambitious strategy and a clear vision for transforming the agricultural sector, also through the piloting of Integrated Agro-Industrial Parks; • There are institutions and development projects supporting already the potato sub-sector; • Central-Eastern Oromia is one of the best performing areas in terms of potato production and productivity; • There is an existing culture of potato processing (mostly informal) and consumption; • There are new private actors investing in the potato sub-sector; and • There are Government policies favouring gender equality and women's participation in the value chain. 	<ul style="list-style-type: none"> • Potato production volumes are low and insufficient to supply retailers and processors; • Productivity of existing potato seeds is very low and below international levels; • The quality is low due to poor post-harvest handling, storage and transportation; • Exposure and access to labour- and time-saving technologies is limited for both producers and service providers; • Extension services are generic (lack of specialized extension workers) and their coverage is insufficient; • Service providers (public and private) lack expertise on gender-related constraints; • Production is not commercially-oriented and the informal market channel is dominant; • Access to the formal market is very limited and there is a lack of incentives towards formalization. Also, most producers are not well connected to processors through formal business arrangements; • Smallholder producers and cooperatives lack adequate equipment and agro-infrastructure (i.e. facilities, etc.); • There is lack of working and investment capital and limited access to credit and financial services; and • There is lack of specific policies (on land, prices, etc.) to support the development of the potato sub-sector.

TABLE 3: Opportunities and threats of the potato value chain in Central-Eastern Oromia

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ⦿ Agro-ecological conditions are favourable for potato cultivation; ⦿ The sustained growth and the positive economic outlook of Ethiopia encourage investments in horticulture, among other sectors; ⦿ There is availability of relatively cheap labour, mostly unskilled; ⦿ There are research and academic institutions that work on technology development; ⦿ Population growth and the increasing urbanization favour consumption of more potato products; and ⦿ The establishment of the Integrated Agro-Industrial Park will provide market opportunities for producers. 	<ul style="list-style-type: none"> ⦿ Unreliable climatic conditions due to climate change; ⦿ Population increase and land fragmentation pose threats to investments in productive assets; and ⦿ There is high prevalence of plant diseases due to ineffective control and inadequate prevention and treatment measures.

4.3 DEVELOPMENT STRATEGY

A modern and efficient potato value chain in Central-Eastern Oromia should be promoted through public and private investments in production & productivity and in commercialisation (i.e. formalization of the sector and quality enhancement). All interventions must be anchored to a market-driven approach, with strong business linkages between value chain actors. Establishing a profitable model in the Agro-Commodities Procurement Zone of Central-Eastern Oromia can significantly contribute to the development of the potatoes and potato products sub-sector in Ethiopia, as well as set national standards for harnessing the unexpressed potential in other parts of the country.

4.3.1 Enhancing production & productivity

Production and productivity enhancement should be realized by targeting potato producers through: (i) supply of quality agricultural inputs – i.e. seeds, fertilizers and chemicals – and increased irrigation; (ii) improved production capacity of smallholder farmers, including mechanization; (iii) increased quality and coverage of extension/advisory services; and (iv) gender-specific interventions.

TABLE 4: Projected increase in production & productivity in Central-Eastern Oromia during GTP-2

	2017	2018	2019	2020
Total production (tonnes)	1.04 million	1.14 million	1.26 million	1.38 million
Productivity (t/ha)	19.06	21	23.1	25.41

i) Production inputs and irrigation

Agricultural inputs play a critical role in increasing production and productivity of crops. Adoption of **input packages** can significantly improve productivity for farmers. There is a need to implement a system to coordinate and track the timely delivery of inputs to producers, thus avoiding misdistribution. Furthermore, access to finance for the purchase of full packages should be promoted.

Increased production of **quality seeds** (high yielding and disease-resistant varieties), as well as supply and distribution to producers should be a top priority in order to develop the potato value chain in Central-Eastern Oromia. The large-scale implementation of Direct Seed Marketing should be promoted. The Government needs to attract private investment and create a competitive market conditions for the **seed industry** (production and certification) to grow. Moreover, the new land use policy will need to ensure that enough land is available for seed production.

Increased availability of **fertilizer** at an affordable price to smallholder producers will have a positive impact on potato productivity. Awareness on the correct use of fertilizers (i.e. amount of fertilizer that is compatible with the variety of seed, the soil fertility and the specific agro-ecological conditions) should be promoted. In addition, smallholder producers need to have enhanced access to **agro-chemicals** such as pesticides, herbicides and fungicides.

The Government should promote the expansion of small, medium and large **irrigation schemes** in areas with high potential for potato cultivation, contributing to the increase of production and productivity. Public-private partnerships should be encouraged in order to mobilize the substantial amount of capital required for these investments. Programs such as the Participatory Small-scale Irrigation Development Programme (PASIDP) by IFAD – in collaboration with the MoANR – should be promoted and replicated. Particular attention should be given to women, young people and vulnerable groups in the creation of new jobs related to irrigation.

ii) Improved capacity of potato producers

Improved input usage and agronomic practises, along with enhanced community aggregation and marketing and post-harvest handling techniques, will provide a considerable profit boost for smallholder potato producers.

Exposure to **good agronomic practices** is paramount. Particularly, focus should be placed on topics such as soil fertility management (including fertilizer application), crop rotation and row planting, and crop protection (e.g. Integrated Weed Management and Integrated Disease Management). Improved **crop protection** techniques will enhance the ability of prediction of outbreaks, thus strengthening the capacity of producers to address most common pests and potato diseases. Awareness should be raised on the optimal use of input packages (considering agro-ecological conditions), including the correct usage of improved seeds and fertilizers (e.g. amount of fertilizer that is compatible with distinct seed varieties, etc.).

Capacity development should be accompanied with the introduction of **time- and labour-saving technologies** that enhance quantity and quality of production (including post-harvest technologies), while alleviating women's work burden in particular. Exploiting the full benefits of modern technologies will require increased investment and adequate policy support. The expansion of availability and affordability of **mechanization** will have a remarkable impact on smallholder producers. The use of mechanization should be encouraged through favourable loans, taxes and incentives for the import of machineries destined to producers and producers' organizations. In addition, there is a need for expanding agricultural **mechanization services** in order to enhance potato production and productivity.

The Government should facilitate and coordinate **linkages** between producers and research institutions and core value chain actors to make technology and information available and accessible, especially to producers in remote areas. For example, in order to develop quality seed varieties, the capacity of research institutions should be enhanced. Also, **technology transfer** and producer-research-private sector relations should be improved.

iii) Extension/advisory services

The government should increase investments on agricultural extension system, for example through public and private partnerships. Expansion of **extension services' coverage** will improve the capacity of producers in the application of good agronomic practises and the utilization of technologies, ultimately improving production and productivity. This should be linked to increasing the number of **specialized extension workers**, either public or private.

Farmers Training Centres need to be organized with necessary material and equipment for training and on-farm demonstration. General training curricula shall be revised to be horticulture-specific and to include a business development component, geared toward the promotion of business-oriented farming. Furthermore, it is important to promote capacity development through the **Technical Vocational Education and Training schools** to produce sufficient professionals with specific knowledge of horticulture issues.

Access to **knowledge and information** is fundamental to enhance the competitiveness of the potato sub-sector. To facilitate sharing of information on good practises and technologies, and to improve linkages between producers and research institutions, **Information Communication Technologies** and other means of communication (radio programs, road shows, extension bulletins and leaflets, etc.) should be promoted.

iv) Gender-specific interventions

The gender dimension is critical especially in rural areas because of the key role of women in agriculture. A more **equal engagement** of women and men will be the primary driver to stimulate productivity and competitiveness from the grassroots. It will be important to promote gender sensitization to mitigate underlying stereotypes and social norms and lay out opportunities beyond traditionally gendered roles, perhaps complementing technical assistance and inputs to farming communities with awareness sessions. The implementation of **gender-responsive strategies** (i.e. supporting women-headed business activities, gender-specific financial inclusion

and creation of gender-specific common interest groups) is of critical importance for the development of the potato sub-sector and the attainment of the goals set by the Government for the Second Growth and Transformation Plan 2015-2020.

Dedicated initiatives fostering **equal access to resources** (i.e. training, information, technology, infrastructure, and credit) should be included in all Government's capacity development interventions. Coupled with this, **institutional capacity development** should be promoted as well. Gender **equality in service provision** can be promoted by sensitizing public and private service providers as well as suppliers on the productivity gains of women's empowerment. Creating women-only cooperatives should be considered in given contexts, in order to allow women to safely work and thrive.

For women to gain full benefit, there is need to foster an **entrepreneurial approach** (i.e. reinforce women's marketing, negotiation, leadership and sales skills to favor their involvement in economic transactions and empower them as effective value chain actors) that is coupled with **access to credit** that allows them to set up small businesses. A **fair distribution of economic gains** will be central to a value chain which is more inclusive, efficient, productive, profitable and sustainable.

4.3.2 Strengthening commercialization

The value chain needs to move forward towards a market-oriented production. In order to increase the volumes of potato transiting through the formal channel, value chain actors in Central-Eastern Oromia must be able to meet market requirements. Therefore, the strategy to strengthen commercialization of potato must focus on: (i) standardization and quality control of inputs and outputs; (ii) promoting formalization and business-oriented production through market linkages; (iii) enhancing management skills and business orientation of cooperatives; (iv) ensuring adequate technologies, equipment, machinery and agro-infrastructure for aggregation, storage and transportation; and (v) promoting access to credit and insurance.

i) **Standardization, certification and quality control**

The establishment and enforcement of **quality standards** is crucial to make more quality potato produce available for consumption. In this regard, the capacity of federal and regional institutions to control and certify quality standards of seed and ware potato should be strengthened. **Standardization** and avoidance of market fragmentation should be obtained through the involvement of the private sector as well.

Focus on quality should be of uttermost importance as quality products deliver higher sales and better prices. An efficient and functional **quality control system** (including certification) will provide an incentive to producers. Pricing should motivate producers to increase their efforts in good post-harvest handling practices, thereby minimizing post-harvest losses and reducing waste. For example, **quality-based grading** will help to determine market prices and will enhance commercialization through a formal channel that demand higher quality products than the informal one.

ii) **Business-oriented potato production**

Due to the dominant smallholder structure in Central-Eastern Oromia, vertical integration in the rural system is economically infeasible, and this results in mutual dependence between producers and traders. A **trust-based relationship** between buyers and suppliers will be critical to ensure stability in market access and to secure adequate flow of produce along the supply chain, reducing the number of intermediary actors that do not create meaningful value. Promotion of an **entrepreneurial attitude** instilled at individual and household level is likely to vitalize the production node, as well as to encourage women and men into potato production and allied business activities.

Producers' organizations should enhance their role in output marketing and value addition. In addition, primary cooperatives and unions should transfer knowledge and capacity to smallholder producers, specifically aiming at a **business-oriented approach** that should result in increased efficiency of production and post-harvest practises, as well as widespread use of technology and inputs.

The Government should aim at providing incentives towards the **formalization** of the market. For example, improving **market outlets** for rural producers will strengthen the formal value chain. Stronger **horizontal and vertical linkages** along value chain actors (with particular attention to business arrangements at the aggregation node) will be crucial to achieve efficiencies and improved value chain competitiveness. Value chain **governance** issues should be addressed through open dialogue, transparency and accessibility of information.

Availability of data and information on prices, market trends, on the demand for such products should be increased and facilitated. Since price is determined by supply and demand, it is important to promote a reliable, up-to-date and consistent **market information system**, and supporting investments on Information Communication Technologies for marketing and market infrastructure, in order to avoid asymmetry of market information between value chain actors.

iii) **Capacity of cooperatives**

Primary cooperatives and unions can play a pivotal role in the improvement of commercialization in the potato sub-sector. Nevertheless, most cooperatives in Central-Eastern Oromia are lacking initiative and in-depth expertise on business-related matters and should be empowered in terms of **managerial skills**. Primary cooperatives need to move towards a market-oriented approach, in order to increase their members' access to the formal channel. Improvement of relationships between rural producers and cooperatives is a vehicle for **improving quality** as well as lowering marketing costs – for instance through collection, storage, embedded services and quality management.

Cooperatives should be strengthened to facilitate **linkages with external providers** of production inputs, mechanization services and credit by negotiating the best possible conditions. Furthermore, they should function as **information sharing hubs**, and **stakeholders' platforms**, promoting discussions among members as well as exposure to other value chain actors, Government agencies and key service providers. In addition, focus should be on increasing **women's involvement** in activities where they are not strongly represented.

iv) **Equipment, machinery and agro-infrastructure**

Agricultural technology plays a critical role and the Government should encourage private sector participation in the fabrication, supply and distribution of **machinery and small-scale farm implements** in Central-Eastern Oromia.

Small- and large-scale local businesses can be promoted to serve horticulture producers, processors and transporters in order to stimulate the local economy and create employment, especially for youth groups. These business ventures may include insurance agencies, machinery shops and repairers, packaging companies, training halls, day-carers for children, etc. Business organizations should have incentives to create professional **business hubs** that will provide all the required production inputs and services in one place. For example, advice by skilled consultants can contribute to better return on investment when developing new enterprises or when optimizing existing businesses.

Post-harvest loss management is another area of major importance for the functioning of the entire agro-infrastructure. For example, adequate access to **improved storage facilities** and awareness on appropriate techniques will reduce significantly the level of post-harvest losses that characterizes the potato value chain. Proper warehouses improve business and economical activities as more volumes of produce reach the markets. In addition, the nutritional sphere is also influenced by improved storage because potatoes retain digestibility, vitamins and minerals.

Emphasis should be placed into introducing **bulk transport systems** in order to reduce transport and transaction costs and provide better incentives to rural producers. Dedicated policies should be developed in this regard.

Research and Development activities should be strengthened and expanded to meet the growing demand for technologies that will enhance production and productivity of potato. In addition, the Government should facilitate accreditation of **private laboratories** to ensure testing and certification of quality seeds and potato production.



v) **Access to credit and insurance**

Financial institutions should offer **loans and savings services** with a higher value proposition, based on the needs of potato producers. Banks and other financial service providers should be eager to lend to producers, in view of the potential profitability of the horticulture sector. Also, the Government should provide incentives to form local savings groups, such as Rural Savings and Credit Cooperatives. Existing options for **input financing** (e.g. use of vouchers, etc.) should be scaled-up to reach more potato producers in an efficient manner.

Financial institutions should improve their credit policies (e.g. alternatives to collateral-based lending, support for business plans for enterprises with earnings potential, etc.) and enhance provision of **credit facilities** and **insurance products** for potato producers. Meetings between producers and financial institutions should be promoted, especially in rural areas in Central-Eastern Oromia, and **financial education** should be improved at the level of producers, so that they can become reliable clients for formal financial services providers.

4.4 INTERVENTION PLAN

The scale, the relationships and the capabilities of main actors along the potato value chain need substantial improvement. An integrated and concentrated effort on the part of the Government and private actors is needed (through public and private investments with complementary national and regional policies) in order to address the systemic constraints identified in Part 3, and to realize the vision and the strategy detailed in Section 4.3 above.

4.4.1 Public sector and development partners

The Government (federal and regional) should focus on three main areas of intervention: (i) expand extension service coverage and improve its quality through specialized extension workers; (ii) support technology adaptation and research, especially on agricultural inputs, irrigation and mechanization; and (iii) create a conducive regulatory environment through policies, regulations, incentives and standards.

To overcome the existing challenges in Central-Eastern Oromia, the Ministry of Agriculture and Natural Resources and to the Oromia Bureau of Agriculture and Natural Resources should strengthen their capacity to coordinate value chain actors. Non-Governmental Organizations and development partners should coordinate with Government Institutions and ensure that synergies are created with existing and upcoming initiatives.

In addition, Government and development partners should have a limited role in the governance of the value chain, but can play a vital role in mediating between stakeholders to create relevant and suitable governance mechanisms.

Government services

The Ministry of Agriculture and Livestock Resources and the Oromia Bureau of Agriculture and Natural Resources need to expand **extension service coverage** and improve its quality through specialized extension workers at *woreda* and *kebele* levels. The Ministry should organize Training of Trainers in order to increase the number of qualified extension workers (men and women) through the existing network of 25 Technical Vocational Education and Training schools. In addition, synergies should be created with the on-going Second Agricultural Growth program that has a strong focus on extension services.

Government services should focus on a large-scale **capacity development** program increasing producers' technical knowledge as well as enabling them to access adequate inputs and finance. The Ministry of Agriculture and Livestock Resources should play a vital role in revising training curricula and in providing budget and coordination. In addition, **rationalizing the institutional set-up** will improve public services delivery. Government investments should also focus on public infrastructure (e.g. establishment of market places near producers) and connectivity (e.g. roads and transportation means), as well as on enabling the main value chain actors to develop an effective logistics system.

Also, there is urgent need to organize and **strengthen primary cooperatives and unions** through trainings tailored to their specific activities/needs (e.g. production, marketing, post-harvest handling, etc.). Moreover, membership of youth and women in cooperatives and unions should be promoted and incentivized. In cooperation with financial institutions, the Government should assist primary cooperatives and unions access credit and financing. Large-scale agricultural insurance schemes should be promoted. **Youth entrepreneurship** should be promoted to encourage the growth of thriving businesses connected within the potato sub-sector.

Finally, **study visits** to other countries could be organized for different stakeholders (producers' organizations, Government institutions, etc.) for learning and benchmarking purposes.

TABLE 5: Intervention plan for Government services to credit and insurance

Strategic intervention	Responsible institutions	Expected outputs	Estimated cost (ETB)
Enhance capacity of extension workers and technicians	MoALR, Oromia BoANR (TVETs)	<ul style="list-style-type: none"> ☉ Crop-specific curricula developed and training to specialized extension workers (at zonal and <i>woreda</i> levels) delivered 	11 017 500 ^A
Enhance capacity of producers and cooperatives	MoALR, ATA, Irrigation Authority, Cooperative Agency	<ul style="list-style-type: none"> ☉ Training of 476 cooperative managers (through FTCs^B) on business-oriented production, storage and post-harvest handling techniques, marketing and commercialisation 	4 360 000 ^C

^A The estimated cost for a 15-days training course for one extension worker is ETB 7 500. Normally, there is one crop extension worker per kebele, and each extension worker undergoes one refresher course training per year.

^B Each Farmers Training Centre can accommodate 5-days training rounds conducted by seven trainers for batches of 20 coop members and 3 extension workers. The estimated cost per round is ETB 218 000, which might be covered partially by farmers through a training fee.

^C Twenty training rounds were envisioned.

Research & Development

The research system should generate appropriate technologies (e.g. improved varieties, which are disease-resistant and highly performing in terms of yield) through a demand-based approach with strong links to the extension system.

Federal and regional institutions should collaborate with national and international research organizations to **identify, test and adapt existing technologies** that are adapted to the specific context of Central-Eastern Oromia, while establishing advanced laboratory and related facilities to **undertake strategic research**.

Research institutions such as the Melkasa Research Centre, the Holeta Agricultural Research Centre and others need to strengthen their research capability and release improved seed varieties ensuring higher yields and disease resistance. Further collaboration between research centres and CIP (international Potato Centre) is strongly recommended as CIP is the global centre of excellence in the field of research and development of tubers. Another priority is to establish a well-organized supply and distribution system, encouraging links between research institutions and the private sector.

TABLE 6: Intervention plan for Research & Development

Strategic intervention	Responsible institutions	Expected outputs
Strengthen linkages between research/ academia and value chain actors	MOALR, ATA, EIAR, OARI/ universities	<ul style="list-style-type: none"> ☉ Bottlenecks along the potato value chain identified and addressed ☉ Existing information and available research mapped and divulged from institutions to value chain actors
Research and release improved potato varieties and test new technologies	EIAR, OARI	<ul style="list-style-type: none"> ☉ Identification, testing and introduction of new disease-resistant and well-performing potato varieties ☉ Enhanced capacity of the research centres to multiply and disseminate improved potato seeds

Policies, regulations, standards and incentives

Conducive **policies and regulations** should recognize and reward good achievements and take corrective actions on poor performance and ensure accountability, ultimately enhancing employment creation and improving access to resources and services. For example, in Annex 2 a list of sectoral policies, proclamations and regulations is provided, with commitments and actions that are relevant to address the specific gender-based constraints of the value chain.

Concerning **standards**, the Ministry of Agriculture and Livestock Resources should establish seed certification guidelines and procedures, provide the institutional setup and build human capacity at regional level for seed certification. The Quality and Standards Authority of Ethiopia should establish quality and grading standards – and the related enforcement mechanisms, in collaboration with the regional Government.

In regard to **incentives**, the Government should promote the expansion of private sector's investments in production, processing and service provision. It will be important to facilitate the establishment of a competitive potato seed industry. Opportunities for increased and more affordable access to quality seed shall be promoted through producer-friendly incentives – including incentives for the purchase of farming inputs. Youth and women-led businesses and farming-as-a-business should be promoted as well.

Periodic **Monitoring and Evaluation** mechanisms (e.g. sex-disaggregated data collection, recording and analysis, reporting, feedback and follow-up systems) based on specific indicators developed together with all key stakeholders should be put into place.

TABLE 7: Intervention plan for the business enabling environment

Strategic intervention	Responsible institutions	Expected outputs
Strengthen the enabling environment through enforcement mechanisms and new policies and regulations	MoALR, MoI	<ul style="list-style-type: none"> Public-private platform established for stakeholders (e.g. producers and industry associations) and policymakers to strengthen governance of the potato value chain Strategy for the potato sub-sector developed in collaboration with major stakeholders (especially the private sector)
Strengthen quality control, standards and certification of products	MoALR, MoI, QSAE, FMHACA	<ul style="list-style-type: none"> Mandatory standards for products, inputs, machinery and equipment (ISO, <i>Codex Alimentarius</i>, etc.) promoted and enforcement mechanisms (testing, sampling, etc.) strengthened
Encourage participation of the private sector through adequate incentive mechanisms	MoALR, MoI, EIC	<ul style="list-style-type: none"> Enabling business environment improved to attract private investments in seed production and potato processing Establishment of private laboratories and testing facilities encouraged

TABLE 8: Monitoring & Evaluation interventions

Strategic intervention	Responsible institutions	Expected outputs
Improve M&E systems through the use of ICT for data recording and analysis	MoALR, Oromia BoANR	<ul style="list-style-type: none"> Market information, weather forecasts, etc. provided in local language through mobile phones (SMS) and other ICTs

4.4.2. Private sector

Private sector involvement in the agricultural inputs sub-sector will contribute to trigger entrepreneurship in Central-Eastern Oromia, reducing the tendency to rely and depend on external aid. The capacity of the private sector to mobilize resources and to invest in specific areas should be leveraged on by the Government, thus promoting the expansion of investments in production, processing and service provision.

For example, the private sector could play a key role – in coordination with relevant Government Institutions – in ensuring provision of adequate farming inputs and equipment.

Also, it could mobilize resources and invest in the introduction of technologies related to production, storage, packing and transportation of potato and other horticulture products.

Producers

In order to reach the production targets set above, rural producers should have better access to farming inputs such as improved seeds and agro-chemicals. The overall aim is to transform the rural farming system into an efficient production system, equipped with adequate tools and market-oriented.

TABLE 9: Investment needed at production node

Activity	Expected outputs	Investment required (ETB)	Financing mechanism(s)
Improve availability and utilization of quality farming inputs among producers	<ul style="list-style-type: none"> Potato production increased by improving the average productivity to 25.4 t/ha through better inputs and farming practices 	20 000 ETB/ha*	Cooperatives through financing mechanisms

* According to the estimation of the Ministry of Agriculture and Livestock Resources

Aggregators

Functioning storage facilities owned by cooperatives located in rural areas of the Agro-Commodities Procurement Zone will offer a steady and reliable access to market for potato producers. Additionally, adequate storage facilities will improve the quality of marketed potato, reduce post-harvest losses and

increase the quantity of potato supplied through the formal channel to processors and consumers. In addition, cooperatives should be encouraged to increase the number of women members and in management/leadership positions (ideally 50 percent women and 50 percent men).

TABLE 10: Investment needed at aggregation node

Activity	Expected outputs	Investment required (ETB)	Financing mechanism(s)
Improve quality and reduce post-harvest losses at cooperative level	<ul style="list-style-type: none"> Construction of standard storage facilities for 476 horticulture cooperatives 	405 659 100 ETB*	Cooperatives through financing mechanisms (e.g. cost-sharing)

* Based on a CGIAR report, the average cost of a standard 45 tonnes potatoes warehouse at primary cooperative level is ETB 852 000 (approximately USD 30 000).



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Processors

There is huge potential for developing a processing industry and increasing market outlets for both fresh and frozen potato products. In addition, the prices of imported processed products (French fries, for example) are higher than locally made products by over 200 percent, which indicates that there are good opportunities for import substitution.

Potential products for processing could be frozen French fries, potato chips, potato flour, starch, potato by-products (e.g. peels and wastes).

Input and service providers

Production of certified seed should be one of the key investment areas for the private sector in order to fill the gap between current availability¹⁵ and projected demand. In this regard, private sector actors can meet the needs of the producers in terms of quality seed supply (at affordable price) and timely distribution.

Horticulture-specific financial services (savings and credit) need to be included in the overall financial system, eventually supported by special credit in-kind schemes. Finally, it will be important to link rural producers (especially rural women) with financial and microfinance institutions. In Oromia region, FAO is piloting a model for linking primary cooperatives to Micro-Finance Institutions, in partnership with ICCO-Terrafina Microfinance and Agriterra.

¹⁵ 0.2 percent of the demand.

4.5 CONCLUSIONS

The Government of Ethiopia shows great commitment to transforming the agricultural sector during the Second Growth and Transformation Plan and, as a result, to increase production and productivity and strengthen commercialization of potatoes and potato products. However, a lot needs to be done in order to close the gap between demand and available supply in the domestic market.

This Strategic Analysis and Intervention Plan complements the Feasibility Report for the Agro-Commodities Procurement Zone and the Integrated Agro-Industrial Park with the aim of providing the Government of Ethiopia with a competitiveness strategy and an intervention plan that should guide interventions and investments in support of the development of the potato value chain.

Provision of quality agricultural inputs such as improved seeds and adequate agro-chemicals is a key area of intervention for increased production and productivity in the potato sub-sector. In this regard, fostering private investments, especially in the potato seed industry, should be given high priority.

The aggregation node is of key importance in the supply chain, especially for rural producers that have limited connectivity with markets. The development of marketing infrastructure will lead to increased competitiveness and efficiency – thus mitigating rising costs – in the potato value chain.

The development of the potato processing industry is paramount. Market outlets for potato products are sprouting and consumption is on the rise. In addition, local processing industries would allow consumers to access potato products at reduced prices, which indicates that there are good opportunities for import substitution and market access.

In Central-Eastern Oromia, the chain from producers to processors is usually very long and includes many intermediaries. The current system results in high transaction costs, leading to a lack of price competitiveness of the sub-sector. Improving the information flow and communication between producers and other value chain actors will result in a more equal distribution of gains along the value chain, benefiting smallholder producers in particular.

Since price is determined by supply and demand, it is important to promote a reliable, up-to-date and consistent market information system, to support investments on marketing and market infrastructure. Availability of data and information on prices, market trends, on the demand for such products should be increased and facilitated.

Finally, conducive policies and regulations should recognize and reward good achievements and take corrective actions on poor performance and ensure accountability, ultimately enhancing employment creation and improving access to resources and services.



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ANNEX 1

LIST OF KEY INSTITUTIONS AND INITIATIVES

- ◉ Agricultural Growth Program (AGP), Ministry of Agriculture and Livestock Resources (MoALR);
- ◉ Agricultural Offices at city and *woreda* levels;
- ◉ Central Statistical Agency of Ethiopia (CSA);
- ◉ Cooperatives Promotion Agency (CPA) and Cooperative Promotion Offices at *woreda* level;
- ◉ Ethiopian Agricultural Professionals Association (EAPA);
- ◉ Ethiopian Agricultural Transformation Agency (ATA);
- ◉ Ethiopian Chamber of Commerce and Sectoral Association (ECCSA);
- ◉ Ethiopian Conformity Assessment Enterprise (ECAE);
- ◉ Ethiopian Institute of Agricultural Research (EIAR);
- ◉ Ethiopian National Accreditation Office (ENAO);
- ◉ Ethiopian Standards Agency (ESA);
- ◉ Federal Office of Urban Agriculture;
- ◉ Food, Medicine and Health Care Administration and Control Authority (FMHACA);
- ◉ International Potato Centre (CIP);
- ◉ Micro and Small Enterprise Development Agency (federal);
- ◉ Ministry of Agriculture and Livestock Resources (MoALR);
- ◉ Ministry of Trade and Industry (MoTI);
- ◉ National Metrology Institute of Ethiopia;
- ◉ Oromia regional Bureau of Agriculture and Natural Resources (BoANR);
- ◉ Regional, zonal, *woreda* and *kebele* administrations and city administrations and municipalities.

TABLE 11: Activity schedule of the field mission to Arsi and East Shewa zones

Date	Activity
20 Feb	Meeting with East Shewa Irrigation Development Authority
	Visit to Meki-Batu Union Cooperative Union
21 Feb	Meeting and discussion with West Arsi irrigation Authority and Dadava Gudda primary Cooperative
	Visit to Duro-Langano Cooperative Union and Misomatuja Primary Cooperative
22 Feb	Visit and discussion with Tiyo Primary Cooperative members (Arsi Zone)
	Meeting and discussion with representatives of Bilbilo Woreda Irrigation Authority
23 Feb	Visit to Merti Tomato Processing Plant (Arsi Zone)

TABLE 12: List of key informants met by the team during the field mission

	Name of KII	Institution	Zone/woreda
1	Mr. Kefyalew Lemma	Irrigation development Authority	East Shewa
2	Mr. Gossaye Hinsano	Irrigation development Authority	Dugda
3	Mr. Motuma Tolessa	Irrigation development Authority	East Shewa
4	Ms. Tieba Yada	Meki/Batu Union	Meki
5	Mr. Biru Melka	Meki/Batu Union	Dugda Meki
6		Irrigation Development Authority	West Arsi
7	Mr. Hussen Adam	Irrigation development Authority	Arsi Negele
8	Mr. Aliye Kedir	Irrigation Development Authority	Arsi Negele
9	Mr. Benso Adam	Irrigation Development Authority	Arsi-Negele
10	Mr. Kufa Nebi	Duro Langano Union	Arsi-Negele
11	Mr. Moati Gadisa	Irrigation development Authority	Arsi
12	Mr. Fikadu Negash	Irrigation development Authority	Arsi
13	Mr. Girmal Ishetu	Irrigation development Authority	Arsi
14	Mr. Berhanu Maru	Irrigation Development Authority	Oromia Regional Government
15	Mr. Tegegn Erana	Irrigation Development Authority	Oromia Regional Government
16	Mr. Kifle	Irrigation Development Authority	Oromia Regional Government
17	Mr. Etissa	Irrigation Development Authority	Oromia Regional Government
18	Mr. Seyfedin Mahadi	Irrigation Development Authority	Oromia Regional Government
19	Mr. Tadesse Gurmu	Irrigation Development Authority	Oromia Regional Government

TABLE 13: List of participants to the technical meeting at MoALR

	Name	Institution	Title
1	Abdulsemed Abdo	MoALR	Advisor to the State minister
2	Isahias Lemma	MoALR	Director of Extension
3	Dr. Eyasu Abraha	MoALR	Minister of Agriculture and Natural Resources
4	Busuye Masresha	MoALR	Senior Horticulture Expert

ANNEX 2

KEY GENDER-BASED CONSTRAINTS IDENTIFIED IN ARSI, BALE, EAST SHEWA AND WEST ARSI ZONES

TABLE 14: Gender-based constraints in Central-Eastern Oromia

Node	Activities	Gender-based constraints (GBCs)	Causes	Consequences on value chain	Actions to address GBCs
PRODUCTION	Land preparation & ploughing (traditionally men dominate but women are increasingly involved)	Limited/empirical/indirect information on agricultural practices, technology, inputs, mechanization, markets and prices of inputs;	Social norms impose that membership be reserved to men and women heads of HH and land owners; Social norms prevent women from owning oxen and operating the oxen plough and mechanised equivalents;	Lower levels of productivity due to low quality/variety of seeds, ineffective fertilizers/pesticides or inappropriate use of same, and scarce knowledge on crops and pest management;	Link private mechanization suppliers to multipurpose cooperatives; Support multipurpose cooperatives in reaching out to women in both female and male-led HHs, run demonstrations and favour access also through leasing;
	Seeding (decision over variety of seeds to plant is taken by men based on the information men have access to and their access to improved seeds)	Lack of access to technology/mechanization, deriving work-load and mobility limitations;	Women can hardly identify themselves as farmers due to socio-cultural norms and are not inclined to approach agricultural institutions;	Lower levels of profitability due to women's need to outsource labour or rent out land, poor negotiation skills with buyers, poor knowledge about the market and opportunities for diversification and value addition;	Raise community awareness on the economic benefits deriving from more efficient participation of women in crops and strategies towards this end. Reinforce awareness about cooperatives values and empower farmers as proactive members;
	Weeding (traditionally women dominate)	Lack of access to finance for mechanization, technology/inputs;	Women possess through inheritance and manage smaller sizes of land than men; they lack collaterals needed for agricultural loans.	Transaction and production prevailing occurring in the domain of informality;	Review policies in a way to increase women's effective participation and voice in cooperatives and in value chain governance structures;
	Threshing (traditionally women dominate)	Limited decision-making on production processes and choice of seeds variety (women choice connected to nutrition factors and home consumption).			Establish a policy stakeholders' platform to review existing strategies and measures addressing specific gender-based constraints, ensure their effective and integrated implementation at the grassroots and monitor the impact;

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ANNEX 2

Key gender-based constraints identified in Arsi, Bale, East Shewa and West Arsi zones

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Node	Activities	Gender-based constraints (GBCs)	Causes	Consequences on value chain	Actions to address GBCs
PRODUCTION	<p>Transportation (when horse-drawn or motorized transportation is not available, women perform this task using donkeys if available)</p> <p>Sieving and crushing (women dominate at micro-small-scale level using basic machinery available at cooperatives)</p> <p>Storage (women dominate)</p>	<p>Limited access to and participation in cooperatives and other value chain governance structures and limited participation in leadership or management positions of same;</p> <p>Access to and control over profits from crops is limited to the head of HH, despite the load of work performed by women.</p>	<p>Socio-cultural norms expect women to tend to livestock, homestead farming (including fetching water and firewood) and family chores, preventing engagement in training and other activities. This entails a disproportionate workload between women and men. Women's work burden is also caused by male out migration (e.g. casual labour);</p> <p>Women in general possess a lower level of education than men and have limited numeracy and literacy skills;</p> <p>Socio-cultural norms prevent women's access to and control over profits from agriculture; differently they often control those deriving from dairy and husbandry.</p>	<p>High level of deterioration and waste due to lack of knowledge of and access to appropriate storage facilities and post-harvest management;</p> <p>Inadequate quantity and quality of produce supplies;</p> <p>Processors working below capacity in the face of increasing demand;</p> <p>Profitability is affected by many transaction costs along the chain.</p>	<p>Ensure that gender sensitization programmes at the grassroots be systematized as part of a coordinated effort by involved stakeholders;</p> <p>Upgrade one selected highly potential facility identified at each RTC to operate as a hub promoting business-oriented farming with a gender-sensitive and household focused approach. These hubs should address the literacy and numeracy gap of women, should enable equal access to information on the market demand, prices, location of buyers, availability and prices of inputs and link women and men to technology and knowledge providers. These centres should work in synergy with knowledge resource institutions, such as research centres, extensions, development agents and to the famers' schools. Also, they shall favour/promote/divulge the work conducted at the grassroots by the health army, the women's groups and other organizations engaged in empowering communities at the grassroots.</p>
COLLECTION	Men dominate collection from formal and informal suppliers	<p>Lack of motorized transportation means;</p> <p>Limited of access to finance;</p> <p>lack of mobility;</p> <p>Lack of enterprising attitude in a domain highly gendered.</p>	<p>Lack of collaterals;</p> <p>Social norms discourage women to engage in activities entailing mobility and interaction with the public.</p>	<p>Waste, deterioration and lack of timeliness may happen in the absence of appropriate transportation systems;</p> <p>Small scale producer may rely on informal collectors thereby missing opportunities to be part of a formalized and more secured marketing system.</p>	The above business promotion hubs could facilitate the creation of transportation facilities serving specifically women small scale producers and could facilitate their link to formal value chain structures.
MARKETING AND DISTRIBUTION	Women are involved in retailing mainly at urban level as much as men either as owner of small supermarket and as salespersons	<p>Limited access to finance to open retail stores</p> <p>Limited access to business management training to better run their businesses</p>	<p>Limited entrepreneurial attitude of women in rural areas;</p> <p>Business development facilities for women not widely present;</p> <p>Lack of collaterals;</p> <p>Socio-cultural norms prevent women from interacting with male clients and suppliers;</p> <p>Lack of incentives for women to start up new businesses .</p>	The presence of formal retail businesses at village level would secure a local market for women processors and producers who don't sell through cooperatives.	Promote at rural level a culture of entrepreneurship to favour commercialization of products and formalization of relevant transactions.

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TABLE 15: Policy documents indicating relevant commitments/actions to address gender-based constraints

Policies, strategies, plans	Gender-based constraints addressed
OVERARCHING DOCUMENTS	
<ul style="list-style-type: none"> Constitution of the Federal Democratic Republic of Ethiopia, 1995 	Women's decision making, voice and participation.
ECONOMIC DEVELOPMENT	
<ul style="list-style-type: none"> Growth and Transformation Plan (GTPII) (2016–2020) 	Inequalities in participation and access to resources.
GENDER	
<ul style="list-style-type: none"> National Policy on Ethiopian Women, 1993 National Action Plan for Gender Equality (Nap-Ge) 2006–2010 	Access and control over to productive resources and inputs, power and agency.
AGRICULTURE AND RURAL DEVELOPMENT AND NATURAL RESOURCES	
<ul style="list-style-type: none"> Rural Development Policy and Strategies (RDPS) (2003) Agricultural Policy Investment Framework (PIF) (2011–2020) Environmental Policy of Ethiopia (1997) Water sector Policy (2001) and Water Sector Development Programme (2002–2016) National Policy and Strategy on Disaster Risk Management (2013) The Agriculture Growth Program (AGP) 2010–2015 	Lack of access to productive inputs and resources (water, land, technology); Lack of mobility; Lack of women's participation.
SOCIAL PROTECTION	
<ul style="list-style-type: none"> National Social Protection Policy of Ethiopia (2012) 	Inequalities in benefiting from social protection programs, paying attention to social norms, health, education
CLIMATE CHANGE	
<ul style="list-style-type: none"> National Strategy and Action Plan for the Implementation of the Great Green Wall Initiative in Ethiopia, 2012 Ethiopia's Climate-Resilient Green Economy, Green economy strategy 	Access to productive inputs and resources with a focus to technologies and rural energy.
FOOD SECURITY AND NUTRITION	
<ul style="list-style-type: none"> Food Security Strategy (1996) Food Security Programme (2010–2014) National Nutrition Program (2013–2015) National Nutrition Programme (2016–2020) 	Unequal access to and control over resources, unequal decision making. Unequal access to information and education on nutrition; social norms discriminating on women and girls; unequal nutritional status of women and men.
EDUCATION AND VOCATIONAL TRAINING	
<ul style="list-style-type: none"> Education and Training Policy, 1994 Technical and Vocational Education and Training (TVET) Proclamation No. 391/2004 Girls' Education and Gender Equality Strategy for the Education and Training Sector, Ministry of Education, 2014 	Women's limited participation in productive activities requiring technical competences; Limited provision of inclusive advisory services by female technicians /extensionists.
COOPERATIVES AND GOVERNANCE STRUCTURES	
<ul style="list-style-type: none"> Agricultural Cooperatives Sector Development Strategy 2012–2016 Cooperatives, societies proclamation N. 895/2016 	Limited participation of women in cooperatives, as members, in management and decision-making positions; Limited access to productive inputs.

ANNEX 3

RAW DATA COLLECTED FROM GOVERNMENT OFFICES

TABLE 16: Number of *woredas* and *kebeles* in Central-Eastern Oromia (CSA, 2016)

Zone	No. of <i>woredas</i>	No. of <i>kebeles</i>
Arsi	25	498
Bale	20	349
East Shewa	12	298
West Arsi	12	324

TABLE 17: Cooperatives types and gender participation in Central-Eastern Oromia

Type of Cooperative	Number of Cooperatives	Members		
		MALE	FEMALE	TOTAL
Agricultural Multipurpose	361	71 441	11 277	82 718
Seed Store and Seed Multiplication	45	4 607	1 332	5 939
Irrigation	32	5 903	1 254	7 157
Range Land	4	1 221	129	1 350
Coffee Producers Coops	14	637	38	675
Forestry	66	22 735	3 370	26 105
Honey producer	3	71	48	119
Dairy Producers	31	2 827	1 409	4 236
Subtotal	556	109 442	18 857	128 299
Saving and credit	470	10 453	59 235	69 688
Total Number of cooperatives	1026	119 895	78 092	197 987
Elected Board Members	1026	3 995	1 599	5 594

TABLE 18: **Women's participation in cooperative actions in Bale zone
(zonal Cooperative Promotion Office, 2017)**

Type of Cooperative	Number of Cooperatives	Members	
		MALE	FEMALE
Agricultural Multipurpose	361	86	14
Seed Store and Seed Multiplication	45	78	22
Irrigation	32	82	18
Saving and credit	470	15	85

TABLE 19: **Summary of the required budget for one Farmers Training Centre**

	Description	Cost (ETB)
1	Material purchase and supplies and construction of shed	748 585
2	Training	218 000
3	Dairy animal feed, forage seed development	66 000
	Total	1 032 585

TABLE 20: **Number of Farmers Training Centres in Central-Eastern Oromia (Oromia BoLF)**

	Zone	Farmers Training Centres
1	Arsi	262
2	West Arsi	498
3	East Shewa	287
4	Bale	293
	Total	1 340

TABLE 21: Agricultural cooperatives in East Shewa (Cooperatives Promotion Agency, 2017)

No	Woreda	PA	Name	Type	Year (E.C.)	Total members			Assets (ETB)		
						MALE	FEMALE	TOTAL	CURRENT	FIXED	TOTAL
1	Bora	Eellan	M/Odaa	Irrigation	1998	27	28	55	120 000	17 835	137 835
2	Bora	Eellan	M/Qilxuu	Irrigation	1999	28	0	28	15 300	11 800	27 100
3	Bora	Eellan	Abdii Boruu	Irrigation	1999	22	0	22	15 300	2 400	17 700
4	Bora	Eellan	Burqaa Eelan	Irrigation	1999	36	27	63	94 766	38 226	132 992
5	Bora	Goralaman	Abdii Guddina	Irrigation	1999	15	0	15	16 000	4 500	20 500
6	Bora	Eellan	M/horaa	Irrigation	1999	14	1	15	1 700	15 300	17 000
7	Bora	Eellan	M/waaqayo	Irrigation	1999	20	4	24	25 084	1 400	26 484
8	Bora	Eellan	Malka Hidaa	Irrigation	1999	21	3	24	25 084	1 400	26 484
9	Bora	Eellan	O/Lamaan	Irrigation	1997	15	0	15	15 300	13 250	28 550
10	Bora	Malimabari	Maalimaa Galee	Irrigation	1999	93	35	128	25 084	1 300	26 384
11	Bora	D/Waddeessaa	Abdaarii Golbaa	Irrigation	1999	95	22	117	15 300	1 020	16 320
12	Bora	D/Waddeessaa	Doodo keentarii	Irrigation	2002	93	27	120	12 542	1 100	13 642
13	Bora	D/Waddeessaa	keenteerii mikii	Irrigation	1995	100	31	131	25 084	10 800	35 884
14	Bora	Goralaman	Melka Gili	Irrigation	2001	12	0	12	18 000	12 000	30 000
15	Bora	Goralaman	Malkagali	Irrigation	-	-	-	-	-	-	-
16	Bora	Eellan	Malka Badhadha	Irrigation	1999	8	7	15	1 700	12 542	14 242
17	Bora	Eellan	Hora Huluqaa	Irrigation	2000	190	10	200	30 600	15 500	46 100
18	Dugda	B/Girrisaa	Odaa Gugasaa	Irrigation	2001	41	4	45	23 206	56 000	79 206
19	Dugda	A/Gabrel	Odaa Bilbilaa	Irrigation	1994	11	7	18	2 000	50 000	52 000
20	Dugda	A/Gabrel	M/Araraa	Irrigation	1999	8	5	13	15 000	13 200	28 200
21	Dugda	A/Gabrel	M/Kombolchaa	Irrigation	2002	9	6	15	9 300	52 000	61 300
22	Dugda	B/Girrisaa	M/Danbaloo	Irrigation	2002	13	2	15	3 400	25 090	28 490
23	Dugda	B/Girrisaa	Dambii Irressaa	Irrigation	2003	13	2	15	3 000	31 300	34 300
24	Dugda	B/Girrisaa	Biqiltuu Qoffee	Irrigation	2003	11	3	14	2 500	25 600	28 100
25	Dugda	B/Girrisaa	Qoffee Danbal	Irrigation	2007	67	3	70	15 000	300 000	315 000

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No	Woreda	PA	Name	Type	Year (E.C.)	Total members			Assets (ETB)		
						MALE	FEMALE	TOTAL	CURRENT	FIXED	TOTAL
26	Dugda	D/Dalacha	W/Dararaa	Irrigation	2000	3	15	18	3 500	50 000	53 500
27	Dugda	D/Dalacha	Abdii Danbal	Irrigation	2007	12	3	15	1 500	68 000	69 500
28	Dugda	D/Dalacha	Malka gootuu	Irrigation	2006	10	4	14	2 100	68 000	70 100
29	Dugda	D/Danbal	D/Danbal	Irrigation	1989	21	0	21	2 600	50 000	52 600
30	Dugda	D/Danbal	Clalaqii Danbal	Irrigation	1990	23	4	27	2 000	50 000	52 000
31	Dugda	D/Danbal	Odaa Cuphaa	Irrigation	1999	28	14	42	10 000	167 000	177 000
32	Dugda	D/Danbal	D/Baatuu	Irrigation	1989	7	5	12	5 000	18 000	23 000
33	Dugda	G/Q/Adii	Odaa Qalloo	Irrigation	1999	24	6	30	1 200	68 000	69 200
34	Dugda	G/Q/Adii	A/Qoffee	Irrigation	2003	23	1	24	1 600	103 500	105 100
35	Dugda	G/Q/Adii	M/Qoffee	Irrigation	2003	5	7	12	1 200	1 000	2 200
36	Dugda	G/Q/Adii	Malkaa Re'ee	Irrigation	1999	12	0	12	-	-	-
37	Dugda	H/2	Odaa Ceekaa	Irrigation	2002	21	1	22	2 000	12 000	14 000
38	Dugda	Maqii 01	Jiituu Dandal	Irrigation	2000	9	2	11	1 100	40 000	41 100
39	Dugda	Maqii 02	Somboo Shanaan	Irrigation	2000	8	3	11	1 100	35 600	36 700
40	Dugda	Maqii 02	Danbal Gannat	Irrigation	2000	13	15	28	3 360	62 000	65 360
41	Dugda	Maqii 02	laga maqii	Irrigation	2001	13	0	13	1 300	41 000	42 300
42	Dugda	O/Boqotaa	O/Boqotaa	Irrigation	1999	0	24	24	-	-	-
43	Dugda	Sh/Gamoo	Somboo Alaltuu	Irrigation	1998	11	10	21	4 462	8 500	12 962
44	Dugda	Sh/Gamoo	Somboo Ganat	Irrigation	1999	17	4	21	2 899	8 500	11 399
45	Dugda	Sh/Gamoo	Utuubaa jireenyaa	Irrigation	2006	8	4	12	3 750	8 500	12 250
46	Dugda	Sh/Gamoo	Sombo Dhumuga	Irrigation	2007	9	6	15	1 500	68 500	70 000
47	Dugda	Sh/Gamoo	Akuruu	Irrigation	1999	8	4	12	1 200	8 500	9 700
48	Dugda	T/Danbal	T/Danbal	Irrigation	1991	19	4	23	3 000	67 000	70 000
49	Dugda	T/Danbal	Badagosaa	Irrigation	1997	17	4	21	3 500	143 000	146 500
50	Dugda	T/Danbal	Malkaa guddaa	Irrigation	2002	20	8	28	1 550	18 900	20 450
51	Dugda	T/Danbal	Gobbaa Danbal	Irrigation	2006	8	6	14	2 100	16 200	18 300
52	Dugda	W/Gabrel	Wayyoo Gabre'el	Irrigation	1994	40	7	47	3 700	135 870	139 570

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ANNEX 3

Raw data collected from Government offices

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No	Woreda	PA	Name	Type	Year (E.C.)	Total members			Assets (ETB)		
						MALE	FEMALE	TOTAL	CURRENT	FIXED	TOTAL
53	Dugda	W/Gabrel	Haroo Jaatoo	Irrigation	1999	31	3	34	3 400	56 000	59 400
54	Dugda	W/Gabrel	Wayyoo Sarritti	Irrigation	1994	41	11	52	65 500	58 554	124 054
55	Dugda	W/Maqqallaa	G/Asheeta	Irrigation	2003	17	3	20	3 050	18 000	21 050
56	Dugda	W/Qallinaa	Malka Kormaa	Irrigation	1994	15	3	18	26 000	80 000	106 000
57	Dugda	W/Qallinaa	Mudaa Misooma	Irrigation	2003	8	5	13	1 200	51 975	53 175
58	Dugda	W/Qallinaa	keenyyaa	Irrigation	2000	17	2	19	40 000	60 000	100 000
59	Dugda	W/Qallinaa	Gabbinaa	Irrigation	2003	12	0	12	1 200	51 975	53 175
60	Dugda	X/Coroqe	X/140	Irrigation	1994	27	18	45	5 700	52 000	57 700
61	Dugda	X/Coroqe	Odaa Kichaa	Irrigation	2003	14	0	14	1 400	35 000	36 400
62	Dugda	X/Coroqe	Odaa Jidhaa	Irrigation	2000	6	5	11	5 995	207 500	213 495
63	Baattuu Dagaagaa	B/Dag	B/Dag	Irrigation	1992	80	22	102	125 843	419 794	545 637
64	Irecha	B/Boraa	B/Boraa	Irrigation	1998	46	22	68	46 891	44 000	90 891
65	Bora Gorichaa	B/Garm	B/Garm	Irrigation	2000	59	21	80	111 301	47 461	158 762
66	Iddigat Bahulaachiin	W/Kur	W/Kur	Irrigation	2001	58	30	88	58 379	17 690	76 069
67	Waaqee Mi'aa	W/Miya	W/Miya	Irrigation	1999	88	1	89	47 783	9 982	57 765
68	Ada'a	Dandii Guddinaa	i Guddinaa	Milk	2000	57	57	114	208 202	208 316	416 518
69	Ada'a	Aannan Godino	Godino	Milk	1999	49	48	97	30 200	30 297	60 497
70	Ada'a	Aannan FFE Hiddii	Hidii	Milk	2002	-	20	20	224 199	224 219	448 419
71	Ada'a	Abdi booru	Adi	Milk	2000	70	70	140	-	50 000	50 000
72	Ada'a	Dhankaakaa	Dhankaka	Milk	1999	37	36	73	204 509	204 582	409 092
73	Ada'a	Qallittii Botaroo	Qaliti	Milk	1999	35	33	68	-	12 900	12 900
74	Lome	Bu'aa Aannan Lume	laga maqii	Milk	1995	84	20	104	204 794	204 898	409 692
75	Lome	Malka Jiituu	Malka	Milk	2001	5	2 006	2 011	17 000	19 011	36 011
76	Lome	Xaddee	Tade	Milk	2001	10	2 011	2 021	-	2 021	2 021
TOTAL						2 217	4 835	7 052	2 030 018	2 037 070	40 670 876

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Strategic analysis and intervention plan
for **potatoes and potato products**
in the Agro-Commodities
Procurement Zone of the pilot
Integrated Agro-Industrial Park in
Central-Eastern Oromia, Ethiopia

This study is part of a series of publications prepared through project UNJP/ETH/092/UID "Technical Support for the Implementation of an Integrated Agro-Industrial Park in Ethiopia". It provides a detailed analysis of the prioritized value chains in the Agro-Commodities Procurement Zone (ACPZ) of the pilot Integrated Agro-Industrial Park (IAIP) in Central-Eastern Oromia, Ethiopia. It relies on a review of specialized background documentation, complemented by evidence gathered through key informants and fieldwork. With a detailed development strategy and intervention plan, the study provides commodity-specific recommendations that will lead to the inclusive and sustainable development of the potato products value chain.

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